

AUG 30, 2021 04:36 PM

Danielle F. Forté

Danielle F. Forté, Clerk
Muscogee County, Georgia

IN THE STATE COURT OF MUSCOGEE COUNTY
STATE OF GEORGIA

JEREMY JONES

BETH JONES,

Plaintiffs,

— versus —

THE MEDICAL CENTER, INC.

PIEDMONT HEALTHCARE,
INC.

VINCENT M. NICOLAIS, MD

SAMUEL OSEI-BONSU, MD

RADIOLOGY PARTNERS, INC.

COLUMBUS DIAGNOSTIC
CENTER, INC.

JOSHUA KOERNER, DO

NOLEN MEDICAL
CONSULTING LLC

CHERYL STEPHENS, MD

MANASA VALLURI, MD

TABITHA MILLER, RN

CHRISTINA ORR, RN

JOHN/JANE DOE 1-10,

Defendants

CIVIL ACTION

FILE NO. _____

JURY TRIAL DEMANDED

PLAINTIFF'S COMPLAINT FOR DAMAGES

Nature of the Action

1. This medical malpractice action arises out of medical services negligently performed on Jeremy Jones on September 8-9, 2019.
2. Pursuant to OCGA § 9-11-9.1, attached to this Complaint are the Affidavits of (i) Jonathan Schwartz, MD, MBA, (ii) Paul Collier, MD, and (iii) Judith Climenson, RN, CCRN-CMC, CNRN-SCRN.
3. This Complaint incorporates the opinions and factual allegations contained in those affidavits.
4. As used in this Complaint, the phrase “standard of care” means that degree of care and skill ordinarily employed by the medical profession generally under similar conditions and like circumstances as pertained to the Defendant’s actions or omissions under discussion.

Parties, Procedure, and Roles¹

Jeremy and Beth Jones

5. Jeremy and Beth Jones, the Plaintiffs, are residents of Alabama but submit to the personal jurisdiction and venue of this Court.

¹ OCGA §§ 14-2-510 and 14-3-510 provide identical venue provisions for regular business corporations and for nonprofit corporations:

“Each domestic corporation and each foreign corporation authorized to transact business in this state shall be deemed to reside and to be subject to venue as follows: (1) In civil proceedings generally, in the county of this state where the corporation maintains its registered office.... (3) In actions for damages because of torts, wrong, or injury done, in the county where the cause of action originated, if the corporation has an

The Medical Center, Inc. (“MCI”)

6. On September 8, 2019, Jeremy Jones was admitted to Piedmont Columbus Regional Midtown Hospital at 710 Center Street, Columbus, Georgia 31901 (the “Hospital”).
7. The Hospital is owned by The Medical Center Hospital Authority.
8. The Hospital is operated by The Medical Center, Inc. (“MCI”).
9. MCI is a Georgia corporation.
10. MCI is organized pursuant to the provisions of the Georgia Nonprofit Corporation Code. MCI has no capital stock and has only one member. The sole member of MCI is Piedmont Healthcare, Inc.
11. MCI is organized to operate exclusively for public charitable, educational, and scientific uses and purposes.
12. The purpose of MCI is to serve and promote the public health of the general population and particularly to lease (from The Medical Center Hospital Authority), and operate the Hospital and its related facilities as an acute care general hospital for the benefit of the general public.

office and transacts business in that county; (4) In actions for damages because of torts, wrong, or injury done, in the county where the cause of action originated.”

These same venue provisions apply to Professional Corporations, because PCs are organized under the general “Business Corporation” provisions of the Georgia Code. *See* OCGA § 14-7-3. These venue provisions also apply to Limited Liability Companies, *see* OCGA § 14-11-1108, and to foreign limited liability partnerships, *see* OCGA § 14-8-46.

OCGA 9-10-31 provides that, “joint tort-feasors, obligors, or promisors, or joint contractors or copartners, residing in different counties, may be subject to an action as such in the same action in any county in which one or more of the defendants reside.”

13. MCI's power and authority thus extend to providing medical and hospital care.
14. As the operator of the Hospital, MCI is responsible for the management and supervision of medical and hospital services at the Hospital.
15. As the operator of the Hospital, MCI is directly (not vicariously) liable for any negligence in the management and supervision of medical and hospital services at the Hospital.
16. MCI directly employs multiple licensed physicians and nurses.
17. Through the physicians and nurses MCI employs, a great deal of medical knowledge is available to MCI.
18. MCI employed the nurses responsible for the nursing care of Jeremy Jones at the Hospital on September 8 & 9, 2019.
19. MCI is vicariously liable for any negligence by the nurses responsible for the nursing care of Jeremy Jones at the Hospital on September 8 & 9, 2019.
20. MCI provided liability insurance for the resident physicians responsible for the medical care of Jeremy Jones at the Hospital on September 8 & 9, 2019.
21. MCI had the right to direct and control the resident physicians responsible for the medical care of Jeremy Jones at the Hospital on September 8 & 9, 2019.
22. MCI set the work schedules for the resident physicians responsible for the medical care of Jeremy Jones at the Hospital on September 8 & 9, 2019.
23. MCI was responsible for creating and promulgating policies and protocols that had to be followed by the resident physicians responsible for the medical care of Jeremy Jones at the Hospital on September 8 & 9, 2019.
24. MCI was responsible for providing the resident physicians with supervision and assistance by a fully licensed physician to protect the safety of the Hospital's patients.

25. MCI employed the resident physicians responsible for the medical care of Jeremy Jones at the Hospital on September 8 & 9, 2019.
26. MCI is vicariously liable for any negligence by Dr. Manasa Valluri and Dr. Cheryls Stephens in the medical care of Jeremy Jones at the Hospital on September 8 & 9, 2019.
27. If any other entity was the principal of the resident physicians responsible for the medical care of Jeremy Jones at the Hospital on September 8 & 9, 2019, then each such entity is hereby on notice that but for a mistake concerning the identity of the proper party, the action would have been brought against it.
28. MCI's principal office is in Muscogee County at 707 Center Street, Columbus, GA 31902.
29. The cause of action originated in Muscogee County.
30. MCI has an office in Muscogee County.
31. MCI transacts business in Muscogee County.
32. MCI is subject to venue in this county.²

² OCGA §§ 14-2-510 and 14-3-510 provide identical venue provisions for regular business corporations and for nonprofit corporations:

“Each domestic corporation and each foreign corporation authorized to transact business in this state shall be deemed to reside and to be subject to venue as follows:

- (1) In civil proceedings generally, in the county of this state where the corporation maintains its registered office....
- (3) In actions for damages because of torts, wrong, or injury done, in the county where the cause of action originated, if the corporation has an office and transacts business in that county;**
- (4) In actions for damages because of torts, wrong, or injury done, in the county where the cause of action originated. If venue is based solely on this paragraph, the defendant shall

33. MCI's registered agent is CSC of Cobb County, Inc., located at 192 Anderson Street SE, Suite 125, Marietta, GA 30060, in Cobb County.
34. MCI has been properly served with this complaint.
35. MCI is subject to the personal jurisdiction of this Court.
36. MCI is subject to the subject-matter jurisdiction of this Court.
37. MCI has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

Piedmont Healthcare, Inc. ("PHI")

38. Piedmont Healthcare, Inc. ("PHI") is a Georgia corporation.
39. PHI is organized pursuant to the provisions of the Georgia Nonprofit Corporation Code.
40. PHI is organized exclusively for the benefit of, to perform the functions of, and to carry out the charitable purposes within the meaning of the Internal Revenue Code of 1986 and to carry out the charitable, scientific, and educational purposes of various healthcare organizations.
41. PHI was organized "to carry out" the purposes of the hospitals within its organization, "by providing ... management services ... and supervision" to all of them.

have the right to remove the action to the county in Georgia where the defendant maintains its principal place of business."

Note: These same venue provisions apply to Professional Corporations, because PCs are organized under the general "Business Corporation" provisions of the Georgia Code. See OCGA § 14-7-3. These venue provisions also apply to Limited Liability Companies, see OCGA § 14-11-1108, and to foreign limited liability partnerships, see OCGA § 14-8-46.

42. PHI directly employs multiple licensed physicians and nurses.
43. Through the physicians and nurses PHI employs, a great deal of medical knowledge is available to PHI.
44. On March 1, 2018, PHI bought MCI, which became a wholly-owned subsidiary and supported organization of PHI.
45. MCI became a “functionally integrated” part of PHI.
46. Piedmont Healthcare, Inc. manages the functions of MCI.
47. Piedmont Healthcare, Inc. participates in managing and supervising the provision of medical and hospital services at the Hospital.
48. PHU is liable for any negligence in the management and supervision of medical and hospital services at the Hospital.
49. PHI’s principal office is in Fulton County at 1800 Howell Mill Road, Suite 850, Atlanta, Georgia, 30318.
50. PHI’s registered agent is CSC of Cobb County, Inc., at 192 Anderson Street, N.E., Suite 125, Marietta, GA, 30060.
51. PHI has been properly served with this complaint.
52. PHI is subject to the personal jurisdiction of this Court.
53. PHI is subject to the subject-matter jurisdiction of this Court.
54. PHI is subject to venue in Muscogee County because one or more of PHI’s co-defendants resides in Muscogee County.³

³ OCGA § 9-10-31: Subject to the provisions of Code Section 9-10-31.1 [regarding forum non conveniens], joint tort-feasors ... residing in different counties, may be subject to an action as such in the same action in any county in which one or more of the defendants reside.

55. PHI has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

Vincent M. Nicolais, MD

56. Vincent M. Nicolais, MD, was a critical care physician who wrote the initial Critical Care Report on Jeremy on September 8, 2019, at 1552 hrs.

57. On September 8, 2019, at 1552 hrs, Dr. Nicolais wrote instructions to observe Jeremy 4-5 more hours in the ICU and then, if stable, to transfer Jeremy to the neurosciences unit.

58. Dr. Nicolais resides in Muscogee County.

59. Dr. Nicolais resides at 5110 Midland Trace, Midland, GA 31820-3426.

60. Dr. Nicolais acted as an agent of MCI in treating Jeremy Jones on September 8, 2019.

61. MCI is vicariously liable for any negligence by Dr. Nicolais in treating Jeremy on September 8, 2019.

62. If any other entity was Dr. Nicolais' principal in September 2019 with respect to his medical treatment of Jeremy Jones, each such entity is hereby on notice that but for a mistake concerning the identity of the proper party, the action would have been brought against it.

63. Dr. Nicolais has been properly served with this complaint.

64. Dr. Nicolais is subject to the personal jurisdiction of this Court.

65. Dr. Nicolais is subject to the subject-matter jurisdiction of this Court.

66. Dr. Nicolais is subject to venue in this Court.

67. Dr. Nicolais has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

Joshua Koerner, DO

68. Joshua Koerner, DO, was the supervising physician for Dr. Manasa Valluri and Dr. Cheryl Stephens on September 8 & 9, 2019.
69. In September 2019, Dr. Koerner was a Family Medicine physician less than 1-1/2 years into his career as a fully licensed physician.
70. Dr. Koerner was responsible for supervising and assisting Drs. Valluri and Stephens on September 8 & 9, 2019.
71. Dr. Koerner acted as an agent of “MCI” in supervising and assisting Drs. Valluri and Stephens on September 8 & 9, 2019.
72. MCI is vicariously liable for any negligence by Dr. Koerner in supervising and assisting Drs. Valluri and Stephens on September 8 & 9, 2019.
73. Dr. Koerner also acted as an agent of Nolen Medical Consulting LLC in providing medical services in September 2019.
74. Nolen Medical Consulting LLC is vicariously liable for any negligence by Dr. Koerner in providing medical services on September 8 & 9, 2019.
75. If any other entity was Dr. Koerner’s principal in September 2019 with respect to his medical treatment of Jeremy Jones, each such entity is hereby on notice that but for a mistake concerning the identity of the proper party, the action would have been brought against it.
76. Dr. Koerner resides in Muscogee County.
77. Dr. Koerner resides at 8272 Dream Boat Drive, Unit 436, Columbus, Georgia 31909.
78. Dr. Koerner has been properly served with this complaint.
79. Dr. Koerner is subject to the personal jurisdiction of this Court.
80. Dr. Koerner is subject to the subject-matter jurisdiction of this Court.

81. Dr. Koerner is subject to venue in this Court.

82. Dr. Koerner has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

Nolen Medical Consulting LLC (“NMC”)

83. Nolen Medical Consulting LLC (“NMC”) is a Georgia limited liability company.

84. NMC’s principal office address is in Muscogee County at 272 Dream Boat Drive, APT 436, Columbus, GA, 31909.

85. NMC’s registered agent is Dr. Koerner.

86. NMC’s registered office is Dr. Koerner’s residential address, 8272 Dream Boat Drive, APT 436, Columbus, GA, 31909.

87. NMC has been properly served with this complaint.

88. NMC is subject to the personal jurisdiction of this Court.

89. NMC is subject to the subject-matter jurisdiction of this Court.

90. NMC is subject to venue in this Court.

91. NMC has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

Samuel Osei-Bonsu, MD

92. In September 2019, Dr. Osei-Bonsu was an agent of Radiology Partners.

93. In September 2019, Dr. Osei-Bonsu was an agent of Columbus Diagnostic Center, located at 2040 10th Ave, Columbus, GA 31901.

94. If any other entity was Dr. Osei-Bonsu's principal in September 2019 with respect to his medical treatment of Jeremy Jones, each such entity is hereby on notice that but for a mistake concerning the identity of the proper party, the action would have been brought against it.

95. Dr. Osei-Bonsu resides in Muscogee County.

96. Dr. Osei-Bonsu resides at 7461 Blackmon Road, Apt 4710, Columbus, Georgia 31909.

97. Dr. Osei-Bonsu has been properly served with this complaint.

98. Dr. Osei-Bonsu is subject to the personal jurisdiction of this Court.

99. Dr. Osei-Bonsu is subject to the subject-matter jurisdiction of this Court.

100. Dr. Osei-Bonsu is subject to venue in this Court.

101. Dr. Osei-Bonsu has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

Radiology Partners, Inc. ("RPI")

102. Radiology Partners, Inc. ("RPI") is a Delaware corporation registered to do business in Georgia, with its principal office address in California.

103. RPI's registered agent in Georgia is Corporation Service Company in Gwinnett County at 2 Sun Court, Suite 400, Peachtree Corners, Georgia, 30092.

104. RPI says they were founded in 2012 with a mission to transform radiology.

105. RPI says "Teamwork: The core of our Practice. We work together."

106. RPI says, "We deliver quality care and experience to patients."

107. RPI says, "We exist to provide the best in radiology services. We strive to understand the needs of our clients – especially patients and referring physicians – and exceed their expectations."

108. RPI says, “We take responsibility for our actions and acknowledge that each of us has a role in the success of the Practice.”

109. Dr. Osei-Bonsu was affiliated with RPI in September 2019.

110. RPI was Dr. Osei-Bonsu’s employer or other principal in September 2019.

111. RPI is vicariously liable for any negligence by Dr. Osei-Bonsu in treating Jeremy Jones.

112. RPI has been properly served with this complaint.

113. RPI is subject to the personal jurisdiction of this Court.

114. RPI is subject to the subject-matter jurisdiction of this Court.

115. RPI is subject to venue in this Court pursuant to OCGA § 9-10-31, because various co-defendants are subject to venue here.

116. RPI has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

Columbus Diagnostic Center, Inc. (“CDI”)

117. Columbus Diagnostic Center, Inc. (“CDI”) is a healthcare provider registered with the Centers for Medicare and Medicaid Services under three National Provider Identifiers: 1700892288 and 1316108624 and 1598081093.

118. The only healthcare providers registered with NPPES as “Columbus Diagnostic Center” are providers operating in Muscogee County, Georgia, in Columbus.

119. CDI is a corporation formed in Delaware.

120. In its registration with the Georgia Secretary of State’s Corporations Division, CDI states that its principal office address is in Jupiter, Florida.

121. CDI's registered agent is Paul Cote in Fulton County at 69 Wood Place, Roswell, Georgia, 30075.
122. CDI has been properly served with this complaint.
123. CDI is subject to the personal jurisdiction of this Court.
124. CDI is subject to the subject-matter jurisdiction of this Court.
125. CDI is subject to venue in this county pursuant to OCGA §§ 14-2-510 and 14-3-510.
126. CDI is subject to venue in Muscogee County pursuant to OCGA § 9-10-31 because one or more of CDI's co-defendants resides here.
127. CDI has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

Manasa Valluri, MD

128. Manasa Valluri, MD was involved in the treatment of Jeremy Jones on September 8 & 9, 2019.
129. In September 2019, Dr. Valluri was a Family Medicine resident at the Hospital. She was two or three months into the first year of her residency.
130. MCI controlled Dr. Valluri's schedule.
131. MCI was responsible for creating and promulgating policies & protocols, which Dr. Valluri was required to comply with.
132. MCI was responsible for providing Dr. Valluri with supervision and assistance by a fully licensed physician to protect the safety of Dr. Valluri's patients.
133. MCI was Dr. Valluri's employer in September 2019.

134. If any other entity was Dr. Valluri's principal in September 2019 with respect to her medical treatment of Jeremy Jones, each such entity is hereby on notice that but for a mistake concerning the identity of the proper party, the action would have been brought against it.

135. Dr. Valluri resides in Muscogee County.

136. Dr. Valluri resides at 6600 Kitten Lake Dr, Midland, Georgia 31820.

137. Dr. Valluri has been properly served with this complaint.

138. Dr. Valluri is subject to the personal jurisdiction of this Court.

139. Dr. Valluri is subject to the subject-matter jurisdiction of this Court.

140. Dr. Valluri is subject to venue in this Court.

141. Dr. Valluri has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

Cheryl Stephens, MD

142. Cheryl Stephens, MD was involved in the treatment of Jeremy Jones on September 9, 2019.

143. In September 2019, Dr. Stephens was in her second year as a Family Medicine resident at the Hospital.

144. MCI controlled Dr. Stephens' schedule.

145. MCI was responsible for creating and promulgating policies & protocols, which Dr. Stephens was required to comply with.

146. MCI was responsible for providing Dr. Stephens with supervision and assistance by a fully licensed physician to protect the safety of Dr. Stephens' patients.

147. MCI was Dr. Stephens' employer in September 2019.

148. If any other entity was Dr. Stephens' principal in September 2019 with respect to her medical treatment of Jeremy Jones, each such entity is hereby on notice that but for a mistake concerning the identity of the proper party, the action would have been brought against it.

149. Dr. Stephens resides in Muscogee County.

150. Dr. Stephens has been properly served with this complaint.

151. Dr. Stephens is subject to the personal jurisdiction of this Court.

152. Dr. Stephens is subject to the subject-matter jurisdiction of this Court.

153. Dr. Stephens is subject to venue in this Court.

154. Dr. Stephens has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

155. Dr. Stephens may be served at 233 Grandmar Chase, Canton, Georgia 30115.

Tabitha Miller, RN

156. Tabitha Miller, RN was a nurse partly responsible for the care of Jeremy Jones on September 8, 2019.

157. Nurse Miller resides in Alabama.

158. Nurse Miller resides at 2700 College Drive, Apt 2703, Phenix City, Al 36869-2032.

159. Nurse Miller has been properly served with this complaint.

160. Nurse Miller is subject to the personal jurisdiction of this Court.

161. Nurse Miller is subject to the subject-matter jurisdiction of this Court.

162. Nurse Miller is subject to venue in this Court because various of her co-defendants are subject to venue in this Court.

163. Nurse Miller has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

164. Nurse Miller was an employee of MCI in September 2019.

165. If any other entity was Nurse Miller's principal in September 2019 with respect to her responsibility for participating in the care of Jeremy Jones, each such entity is hereby on notice that but for a mistake concerning the identity of the proper party, the action would have been brought against it.

Christina Orr, RN

166. Christina Orr, RN was a nurse partly responsible for the care of Jeremy Jones on September 8 & 9, 2019.

167. Nurse Orr resides in Muscogee County.

168. Nurse Orr resides at 2924 Hatcher Drive, Columbus, Georgia 31907-2158.

169. Nurse Orr has been properly served with this complaint.

170. Nurse Orr is subject to the personal jurisdiction of this Court.

171. Nurse Orr is subject to the subject-matter jurisdiction of this Court.

172. Nurse Orr is subject to venue in this Court.

173. Nurse Orr has no defense to this suit based on the statute of limitations, laches, or any other defense premised on delay in bringing suit.

174. Nurse Orr was an employee of MCI in September 2019.

175. If any other entity was Nurse Orr principal in September 2019 with respect to her responsibility for participating in the care of Jeremy Jones, each such entity is hereby on notice that but for a mistake concerning the identity of the proper party, the action would have been brought against it.

John/Jane Does

176. **Defendants John/Jane Doe 1-10** are those yet unidentified individuals and/or entities who may be liable, in whole or part, for the damages alleged herein. Once served with process, John/Jane Doe 1-10 are subject to the jurisdiction and venue of this Court.

177. This Court has subject matter jurisdiction, and venue is proper as to all Defendants in this Court.

General Principles

Hospital Management & Patient Safety

178. In 1999, the Institute of Medicine estimated that 44,000 to 98,000 Americans died each year from medical errors.

179. Since then, the healthcare industry, academia, and federal and state policymakers have started to focus on patient safety.

180. Nevertheless, in 2016, researchers at John Hopkins Medicine concluded that over 250,000 Americans die each year from medical errors.

181. The John Hopkins study revealed that medical error ranks as the third-leading cause of death in the United States, behind only heart disease and cancer, and ahead of respiratory disease.

182. It is now generally accepted that medical errors result largely from system failures.

183. That is, medical errors are not caused solely by “bad apple” individual clinicians directly involved in patient care.

184. Instead, medical errors often result from a combination of failures by multiple persons within an organization, rather than from individual failure alone.

185. Leaders, managers, and administrators of hospitals and other healthcare organizations are responsible for acting affirmatively to (i) protect patient safety and (ii) prevent systemic failures enabling individual error.

186. Leaders, managers, and administrators owe patients an ordinary duty to safeguard their safety.

187. Leaders, managers, and administrators do not require professional licensing.

188. While leaders, managers, and administrators work with and through licensed healthcare professionals, the ultimate responsibility for patient safety rests with leaders, managers, and administrators. The buck stops with them.

189. Certain systemic sources of medical error are well recognized. They include, in no particular order:

- a. The failure to implement or enforce protocols for patient care.
- b. Defects in the policies and procedures for the handoff of a patient's care.
- c. Lack of teamwork and communication.
- d. Flaws in procedures meant to prevent breakdowns in communication.
- e. The failure to train, supervise, and support healthcare providers, especially lower-ranking and less-experienced providers.
- f. Gaps in the systems for preventing medication mix-ups.
- g. Inadequate staffing, particularly overnight, weekends, and holidays.
- h. Absence of mechanisms to escalate patient-safety issues in real time, without fear of retaliation.
- i. A culture that punishes providers who speak out on patient-safety issues.
- j. A culture that discourages the recognition and remediation of errors.

- k. The failure to build a culture that values and rewards patient advocacy.
 - l. Problems with morale — from overwork, understaffing, unfair employment practices, and poor management decisions.
 - m. Flaws in procedures for credentialing competent providers.
190. Safeguarding patient safety thus requires, among other things:
- a. Ensuring that systems are in place to avoid known sources of medical error. Such systems include technologies (like electronic medical-record systems) as well as effective policies, protocols, and practices.
 - b. Ensuring that individual providers understand and are trained on policies, protocols, and practices, and are prepared to implement them.
 - c. Ensuring proper training, supervision, and support of individual providers, particularly nurses and residents.
 - d. Ensuring compliance through assessments, evaluations, and audits.
 - e. Ensuring competence of providers at the time of credentialing.
 - f. Maintaining provider morale through (among other things) institutional transparency, accountability, and responsiveness.
 - g. Cultivating a culture of safety that (i) vigilantly mitigates systemic sources of medical errors and (ii) acknowledges and remediates medical errors to prevent their recurrence.

Anatomy, Endovascular Procedures, & Closure

191. The various tissues of the body need blood in order to live.
192. Blood carries oxygen and other nutrients to the body.

193. Arteries consist of three “tunicae” or layers: the intima, media, and adventitia. The innermost layer of an artery is the intima.
194. Endovascular means “inside the blood vessel.” Endovascular surgery is a type of procedure that uses very small cuts and long, thin tubes called catheters, which are placed inside a blood vessel to repair it.
195. Endovascular procedures in an artery create a risk of arterial injury or occlusion (blockage) that may cause acute limb ischemia.
196. At the end of an endovascular procedure where the femoral artery was used as the access/puncture site, one option for sealing the puncture wound is an “Angio-Seal” device — a Vascular Closure Device.
197. The manufacturer of the Angio-Seal device instructs that the risks of using the device include embolism and ischemia.
198. The manufacturer of the Angio-Seal device instructs that before placing an Angio-Seal, a physician should perform an arteriogram of the site, to evaluate the femoral artery.

Limb Ischemia Generally

199. A clot or other physical obstruction in an artery may reduce or stop the blood supply to tissues downstream from the obstruction.
200. “Ischemia” refers to an inadequate blood supply to part of the body.
201. Acute limb ischemia occurs from an abrupt interruption of blood flow to an extremity.
202. “Critical limb ischemia” refers to a severe blockage of blood flow to a limb, placing the limb at risk for loss of function.
203. If treatment of a clot is delayed, the clot may get bigger, may obstruct smaller downstream arteries, and may stick more to the arterial walls and become harder to treat.

204. If blood supply to a living part of the body is halted long enough, that part of the body will die.

205. One commonly cited estimate in the medical literature is that generally a human arm or leg is at risk of irreversible injury if the arm or leg loses blood supply for more than 6 to 8 hours.

206. A limb that loses blood supply for more than 8 hours is at risk of amputation.

Acute Limb Ischemia Presentation & Management

207. Acute limb ischemia typically causes pain and involves cool skin and abnormal skin color.

208. Generally, a potential case of acute limb ischemia requires urgent assessment, because it may require emergency treatment.

209. Clinical assessment of a potentially ischemic limb generally involves (a) a physical examination of the affected limb, (b) taking a history that includes the duration of symptoms, and (c) a handheld Doppler pulse assessment including an ankle-brachial pressure index.

210. A handheld Doppler device is commonly available in hospitals and can help to assess blood flow by creating sound that indicates the strength of the pulse.

211. Generally, hospital nurses are taught how to use a handheld Doppler device.

212. Generally, physicians who provide clinical treatment to hospital patients are taught how to use a handheld Doppler device.

213. An ankle-brachial pressure index compares the blood pressure at the ankle and elbow, to help identify a weak pulse.

214. Generally, hospital nurses are taught how to take an ankle-brachial pressure measurement.

215. Generally, physicians who provide clinical treatment to hospital patients are taught how to take an ankle-brachial pressure measurement.

216. In cases of acute limb ischemia, generally a vascular surgeon should be consulted.
217. Acute limb ischemia is commonly categorized by degree of severity — class I (limb viable), class IIa (limb marginally threatened), class IIb (limb immediately threatened, and class III (limb non-viable).
218. The severity of limb ischemia is commonly assessed based on factors including (a) degree of pain, (b) degree of sensory deficit, (c) degree of motor deficit, (d) strength of arterial pulse, and (e) strength of venous signal.
219. Where motor and sensory deficits cannot be assessed for a potentially ischemic leg, the arterial and venous signal assessments become all the more important.
220. “Pedal pulse” refers to pulses in the foot, which are commonly assessed at the top of the foot or at the ankle.
221. Pedal pulses may be assessed by touch or by Doppler device.
222. An obese patient’s pedal pulses may be difficult to assess by touch. Doppler assessment is more reliable for such patients.
223. The absence of an audible arterial pedal pulse on Doppler assessment indicates at least class IIa ischemia (limb marginally threatened).
224. Acute limb ischemia of class IIa requires urgent treatment to restore and preserve blood flow.
225. Where an arterial pedal pulse is absent and the sensory or motor deficits cannot be assessed, caution requires treating the ischemia as class IIb (limb immediately threatened).
226. Acute limb ischemia of class IIb requires emergency treatment to restore blood flow.
227. In cases of critical or severe acute limb ischemia, diagnostic investigation generally should not delay therapeutic intervention. Where facilities allow, the

patient should generally be treated by an interventionalist with access to diagnostic as well as interventional tools.

Treatment of Jeremy Jones

Note: Beneath most numbered allegations below, we include page references to evidentiary sources (mainly the Bates-stamped medical records served along with this Complaint). We also include screenshots from the evidentiary sources. We include these citations and screenshots only to make it easier for the Defense to respond to the allegations. We do not intend the citations or screenshots as part of the allegations to which the Defendants must respond.

Sunday, September 8, 2019

228. In September 2019, Jeremy Jones is 33 years old and married. His wife's name is Beth.

229. Jeremy and Beth live in Auburn, Alabama.

230. Auburn, Alabama is on Central time.

Wake-up stroke & first response

231. The morning of Sunday, September 8, at approximately 0910 hrs, Jeremy awakes with right-sided weakness and altered mental status with difficulty speaking. Jeremy falls out of bed.

- AFD 1, 5

Narrative:

AFD responded to assist ETS with a patient who was possibly having a stroke. E-2 arrived on scene and found the patient upstairs on his bedroom floor and initiated patient care. E-2 gathered vitals and patient information. The wife of the occupant advised that the patient had fallen out of bed and had right side weakness. E-2 requested dispatch have Lifesaver be put on standby. ETS arrived on scene and E-2 transferred care to ETS. ETS advised they wished for Lifesaver to transport the patient. E-2 requested that Lifesaver respond to the scene and a second due unit be dispatched for landing zone. E-1 and Bat-1 responded to Loachapoka High School to set up a landing zone. E-2 assisted ETS with loading the patient for transport to the LZ. E-1 and Bat-1 arrived on scene at Loachapoka High school. ETS transported the patient to the landing zone and one firefighter rode in to assist with patient care. E-2 then responded to the landing zone. E-2 arrived on scene and Bat-1 released E-1 from the scene. Lifesaver landed at the LZ and ETS and part of E-2 crew assisted with loading the patient into the helicopter. Lifesaver transported the patient to Columbus and E-2 terminated command with all units returning to service.

232. At 0913 hrs, Beth calls 911.

- AFD 1

Incident Number	Date/Time	Exp #	Incident Type
1904200	09/08/2019	0	3111 - Medical assist, assist EMS crew

Times:

Dispatch/Alarm	Enroute	Arrival	Controlled	Last Unit Cleared
09/08/19 09:13:38	09/08/19 09:25:06	09/08/19 09:20:24		09/08/19 10:02:09

Location:

4116 MARA VISTA DR, AUBURN, AL 36832

233. An EMS crew goes to Jeremy and Beth's house. The EMS recognize Jeremy might be having a stroke. They order a helicopter EMS to fly Jeremy to Piedmont Columbus Regional Hospital, in Columbus, Georgia.

- AFD 5

Narrative:

AFD responded to assist ETS with a patient who was possibly having a stroke. E-2 arrived on scene and found the patient upstairs on his bedroom floor and initiated patient care. E-2 gathered vitals and patient information. The wife of the occupant advised that the patient had fallen out of bed and had right side weakness. E-2 requested dispatch have Lifesaver be put on standby. ETS arrived on scene and E-2 transferred care to ETS. ETS advised they wished for Lifesaver to transport the patient. E-2 requested that Lifesaver respond to the scene and a second due unit be dispatched for landing zone. E-1 and Bat-1 responded to Loachapoka High School to set up a landing zone. E-2 assisted ETS with loading the patient for transport to the LZ. E-1 and Bat-1 arrived on scene at Loachapoka High school. ETS transported the patient to the landing zone and one firefighter rode in to assist with patient care. E-2 then responded to the landing zone. E-2 arrived on scene and Bat-1 released E-1 from the scene. Lifesaver landed at the LZ and ETS and part of E-2 crew assisted with loading the patient into the helicopter. Lifesaver transported the patient to Columbus and E-2 terminated command with all units returning to service.

Acute treatment at Piedmont Columbus

234. Columbus, Georgia is on Eastern time.

235. At 1124 hrs, Dr. James Sirleaf orders a CT head without contrast and a CTA head and neck.

- PCe 271

CT head without contrast stroke protocol [392830918]

Resulted: 09/08/19 1214,

Ordering provider: James Adamah Sirleaf, MD 09/08/19 1124
Performed: 09/08/19 1128 - 09/08/19 1134
Resulting lab: EMC RAD
Narrative:
EXAM: Head CT without contrast.
CLINICAL INDICATION: Right-sided weakness, aphasia
COMPARISON: None pertinent at dictation.

Resulted by: William Todd Lewis, DO
Accession number: PCM6315111

- PCe 272

CTA head neck stroke protocol [392830922]

Resulted: 09/27/19 0949,

Ordering provider: James Adamah Sirleaf, MD 09/08/19 1124|
Performed: 09/08/19 1138 - 09/08/19 1150
Resulting lab: EMC RAD
Addenda signed by William Todd Lewis, DO on 09/27/19 0949

Resulted by: William Todd Lewis, DO
Accession number: PCM6315112

236. At 1145 hrs, Dr. Sirleaf consults with neurologist Dr. Nojan Valadi. Dr. Valadi recommends an Interventional Radiology consult.

- PCe 8

Consultations:

11:45 Discussed case with Dr. Valadi (Neurology) who is aware of the case. He will review pt's imaging and call back with recommendations. Dr. Valadi recommends IR consult.

237. At approximately 1214 hrs, Dr. William Lewis calls Dr. Sirleaf to discuss the CTA findings. Dr. Lewis' conclusion includes "Essentially complete occlusion/severe stenosis of involving the cervical and petrous portions of the left internal carotid artery, beginning just distal to the carotid bifurcation."

- PCe 272-73

CONCLUSION:

1. Essentially complete occlusion/severe stenosis of involving the cervical and petrous portions of the left internal carotid artery, beginning just distal to the carotid bifurcation. In addition, there is some hypodensity along the margin of the carotid bulb which could represent partial thrombus, ulceration or dissection.

2. Opacification but slight narrowing of supraclinoid/ophthalmic portions of left internal carotid artery.

3. Remaining visualized vessels are normal in appearance and widely patent.

Findings discussed with Dr. Sirleaf of ER at approximately 1214 hours by telephone.

Electronically signed by: William Lewis DO 9/8/2019 11:14 AM CDT

238. At 1217 hrs, Dr. Valadi requests that Jeremy be placed in the Neuro ICU.

- PCe 8

Consultations:

11:45 Discussed case with Dr. Valadi (Neurology) who is aware of the case. He will review pt's imaging and call back with recommendations. Dr. Valadi recommends IR consult.

11:55, Case discussed with Dr. Osei-Bonsu (Interventional Radiology) will review scans and call back with recommendations.

12:05, Dr. Osei-Bonsu (Interventional Radiology) will admit this patient for thrombectomy.

12:17, Dr. Valadi (Neurology) requests patient placed in Neuro ICU bed.

13:38, Discussed case with Dr. Shirvanian Namagerdi (Medicine) who will admit this patient to the ICU.

239. At approximately 1245 hrs, Jeremy is taken to Interventional Radiology.

- PCe 275

Radiology Results (continued)

IR Called: 11:55

Patient to IR: 12:45

Procedure started: 12:58

Procedure completed with complete recanalization: 13:16

240. At 1308 hrs, Dr. Valadi enters a consult note. He records a physical examination showing motor strength of 0/5 for Jeremy's right lower extremity proximally, 2/5 knee extension, and 4/5 foot dorsiflexion plantarflexion.

- PCe 21, 23

Consults by Nojan Valadi, MD at 9/8/2019 12:45 PM

Author: Nojan Valadi, MD

Filed: 9/8/2019 1:08 PM

Editor: Nojan Valadi, MD (Physician)

Related Notes: Original Note by Nojan Valadi, MD (Physician) filed at 9/8/2019 1:08 PM

Service: Neurology

Date of Service: 9/8/2019 12:45 PM

Author Type: Physician

Status: Addendum

...

Motor: Strength: Patient with mildly increased tone distally in the right hand, 2/5 proximal strength in the right upper extremity, 4/5 distally, 0/5 right lower extremity proximally, 2/5 knee extension, 4/5 foot dorsiflexion plantarflexion.

Deep tendon reflexes: 3+ on the right, 1+ in the left. Toes upgoing on the right, downgoing on the left.

Coordination: Finger-to-nose intact on the left.

Gait and Romberg not tested.

241. From 1258 hrs to 1316 hrs, Dr. Osei-Bonsu performs a thrombectomy.

- PCE 275

IR Called: 11:55

Patient to IR: 12:45

Procedure started: 12:58

Procedure completed with complete recanalization: 13:16

TICI Procedural Rating: Grade 3

COMPLICATIONS: None

SPECIMENS: None

ESTIMATE OF BLOOD LOSS: Minimal

CONCLUSION:

Successful mechanical thrombectomy of the left internal carotid artery with complete recanalization achieved

Electronically signed by: Samuel Osei-Bonsu MD 9/8/2019 1:16 PM CDT

Workstation: 109-1099

Narrative:

EXAMINATIONS:

1. Ultrasound-guided vascular access
2. Selective left internal carotid arteriogram
3. Intra-arterial aspiration thrombectomy of the left internal carotid artery using Penumbra
4. Post intervention selective left internal carotid arteriogram

HISTORY: Acute onset right-sided weakness

OPERATORS: Dr. Samuel Osei-Bonsu, VIR staff

242. Dr. Osei-Bonsu punctures Jeremy's right femoral artery, to perform a thrombectomy in Jeremy's left internal carotid artery.

- PCE 274

Through an anesthetized skin approach, under continuous ultrasound guidance, the patent right common femoral artery was accessed using a 21-gauge micropuncture needle in retrograde fashion. A copy of the sonographic image was stored. The access needle was then replaced over serial dilators for a 0.035" Glide Advantage wire and a 6 French Neuron Max vascular sheath. The sheath was maintained to a continuous heparinized saline infusion. A 5 French Berenstein catheter was then directed through the sheath over a 0.035 inch Glidewire and used to select the right internal carotid artery and arteriogram was performed.

FINDINGS:

Thrombotic occlusion of the left internal carotid artery just distal to the bifurcation

243. At the conclusion of the procedure, Dr. Osei-Bonsu closes the femoral-artery puncture site with a 6 French Angio-Seal device.

- PCe 274

All catheters and wires were removed. A 6 French Angio Seal device was then deployed in the standard fashion, and hemostasis was achieved. A dry sterile dressing was applied. There were no immediate complications. Following the procedure the patient was transferred to the ICU in stable condition.

244. Dr. Osei-Bonsu does not document an arteriogram of the access site to confirm proper placement of the Angio-Seal device.

- PCe 274

EXAMINATIONS:

1. Ultrasound-guided vascular access
2. Selective left internal carotid arteriogram
3. Intra-arterial aspiration thrombectomy of the left internal carotid artery using Penumbra
4. Post intervention selective left internal carotid arteriogram

...

All catheters and wires were removed. A 6 French Angio Seal device was then deployed in the standard fashion, and hemostasis was achieved. A dry sterile dressing was applied. There were no immediate complications. Following the procedure the patient was transferred to the ICU in stable condition.

245. The radiology images from Piedmont Columbus do not include an arteriogram of Jeremy’s femoral artery at the end of the stroke thrombectomy on September 8.

- DICOM metadata

Patient name	Age	Accession Number	Study Description	Modality	Date Acquired	^
▶ Jones Jeremy Blake	35/33 y	PCM6315112	Cta Head Neck Stroke Protocol	CT	9/8/19, 11:27 AM	
▶ Jones Jeremy Blake	35/33 y	PCM6315111	Ct Head Wo Contrast Stroke Protocol	CT	9/8/19, 11:27 AM	
▶ Jones Jeremy Blake	35/33 y	PCM6315297	Ir Stroke Thrombectomy	XA\US	9/8/19, 1:06 PM	
▶ Jones Jeremy Blake	35/33 y	PCM6316880	Cta Lower Extremity Right W Wo Contrast	CT	9/9/19, 3:11 AM	
▶ Jones Jeremy Blake	35/33 y	PCM6316996	Ir Angiogram Lower Extremity Right	US\XA	9/9/19, 5:38 AM	

246. At 1316 hrs, Dr. Valadi enters a set of orders for Jeremy’s post-thrombectomy care.

- PCe 184-192

Vital signs/neuro checks/MEND exam every 4 hours. Perform NIHSS with any decline in neurological function/increase in MEND score by greater than or equal to 1 [392844926]

Electronically signed by: **Nojan Valadi, MD on 09/08/19 1316** Status: **Discontinued**
 Ordering user: **Nojan Valadi, MD 09/08/19 1316** Ordering provider: Nojan Valadi, MD
 Authorized by: Ranson Hughes, MD
 Frequency: Routine Q4H 09/08/19 1800 - Until Specified Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]
Vital signs/neuro checks/MEND exam every 4 hours. Perform NIHSS with any decline in neurological function/increase in MEND score by greater than or equal to 1 [392844952]

...

MRI brain without contrast [392844951]

Electronically signed by: **Nojan Valadi, MD on 09/08/19 1316** Status: **Completed**
 Ordering user: **Nojan Valadi, MD 09/08/19 1316** Ordering provider: Nojan Valadi, MD
 Authorized by: Bruce H Brennaman, MD
 Frequency: Routine Once 09/09/19 0600 - 1 occurrence Indications of use: Stroke, follow up

247. At 1316 hrs, Dr. Valadi’s orders include an order for “ICU vital signs/neuro checks/MEND exam every hour for 48 hours, then per ICU routine while in ICU.”

- PCe 191

ICU vital signs/neuro checks/MEND exam every hour for 48 hours, then per ICU routine while in ICU. Perform NIHSS with any decline in neurological function/increase in MEND score by greater than or equal to 1 [392844948]

Electronically signed by: Nojan Valadi, MD on 09/08/19 1316	Ordering provider: Nojan Valadi, MD	Status: Discontinued
Ordering user: Nojan Valadi, MD 09/08/19 1316		
Authorized by: Ronson Hughes, MD		
Frequency: Routine Every 2 hours 09/08/19 1400 - Until Specified	Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]	
ICU vital signs/neuro checks/MEND exam every hour for 48 hours, then per ICU routine while in ICU. Perform NIHSS with any decline in neurological function/increase in MEND score by greater than or equal to 1 [392847751]		

248. At 1338 hrs, Dr. Sirleaf discusses the case with Dr. Shirvanian Namagerdi, who agrees to admit Jeremy to the ICU.

- PCe 8

Consultations:

11:45 Discussed case with Dr. Valadi (Neurology) who is aware of the case. He will review pt's imaging and call back with recommendations. Dr. Valadi recommends IR consult.

11:55, Case discussed with Dr. Osei-Bonsu (Interventional Radiology) will review scans and call back with recommendations.

12:05, Dr. Osei-Bonsu (Interventional Radiology) will admit this patient for thrombectomy.

12:17, Dr. Valadi (Neurology) requests patient placed in Neuro ICU bed.

13:38, Discussed case with Dr. Shirvanian Namagerdi (Medicine) who will admit this patient to the ICU.

249. At 1354 hrs, Nurse Sarah Hartsell notes, “pt constantly moving legs, continuously reminded to keep right leg straight and down, but forgets easily. No hematoma noted at this time.”

- PCe 892

13:51	Custom Formula Data	Vital Signs MAP (mmHg) (calculated): 107 Vitals Change in Systolic BP since last reading: -4 mmHg	Sarah E Hartsell, RN
13:54:28	Other Event	PT CONSTANTLY MOVING LEGS, CONTINUOUSLY REMINDED TO KEEP RIGHT LEG STRAIGHT AND DOWN, BUT FORGETS EASILY. NO HEMATOMA NOTED AT THIS TIME.	Sarah E Hartsell, RN
13:57:53	Lab Ordered	LIPID PANEL, HEMOGLOBIN A1C	Maura E Gonzalez, MD

250. At 1357 hrs, Dr. Maura Gonzalez orders an inpatient neurology consult for a stroke admission.

- PCe 197

Inpatient consult to Neurology [392847770]

Electronically signed by: **Maura E Gonzalez, MD on 09/08/19 1357** Status: **Discontinued**
Ordering user: **Maura E Gonzalez, MD 09/08/19 1357** Ordering provider: Maura E Gonzalez, MD
Authorized by: Ronson Hughes, MD
Frequency: Routine Once 09/08/19 1400 - 1 occurrence Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]

Questionnaire

Question	Answer
Reason for Consult?	stroke admission

251. At 1401 hrs, Dr. Gonzalez becomes Jeremy's attending physician.

- PCe 892

14:00	Readmission Risk Score	Other flowsheet entries 30-Day Readmission Risk Score: 0	Batch Job Adt
14:01	Remove Attending	James Adamah Sirleaf, MD removed as Attending	Maura E Gonzalez, MD
14:01	Assign Attending	Maura E Gonzalez, MD assigned as Attending	Maura E Gonzalez, MD

252. At 1401 hrs, Dr. Gonzalez enters a set of orders for Jeremy's post-thrombectomy care.

- PCe 200-202

Vital signs every 12 hours/shift [392847799]

Electronically signed by: **Maura E Gonzalez, MD on 09/08/19 1401** Status: **Discontinued**
Ordering user: **Maura E Gonzalez, MD 09/08/19 1401** Ordering provider: Maura E Gonzalez, MD
Authorized by: Ronson Hughes, MD
Frequency: Routine Q 12 hrs/shift 09/08/19 1405 - Until Specified Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]

...

Pharmacological Contraindications [392853131]

Electronically signed by: **Maura E Gonzalez, MD on 09/08/19 1401** Status: **Completed**
Ordering user: **Maura E Gonzalez, MD 09/08/19 1401** Ordering provider: Maura E Gonzalez, MD
Authorized by: Maura E Gonzalez, MD
Frequency: Routine Once 09/08/19 1405 - 1 occurrence

Questionnaire

Question	Answer
Pharmacological Contraindications	Bleeding risk

253. At 1401 hrs, Dr. Gonzalez identifies Jeremy as at low risk for a deep vein thrombosis.

- PCe 201

VTE: Low Risk [392853130]		Status: Completed
Electronically signed by: Maura E Gonzalez, MD on 09/08/19 1401		
Ordering user: Maura E Gonzalez, MD 09/08/19 1401	Ordering provider: Maura E Gonzalez, MD	
Authorized by: Maura E Gonzalez, MD		
Frequency: Routine Once 09/08/19 1405 - 1 occurrence		
Questionnaire		
Question	Answer	
VTE Low Risk?	Yes	

254. At 1401 hrs, Dr. Gonzalez enters an order for an intermittent pneumatic compression device for Jeremy.

- PCe 200

Intermittent pneumatic compression (IPC) [392853125]		Status: Discontinued
Electronically signed by: Maura E Gonzalez, MD on 09/08/19 1401		
Ordering user: Maura E Gonzalez, MD 09/08/19 1401	Ordering provider: Maura E Gonzalez, MD	
Authorized by: Ronson Hughes, MD		
Frequency: Routine Until Discontinued 09/08/19 1400 - Until Specified	Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]	
Intermittent pneumatic compression (IPC) [392853136]		
Electronically signed by: Maura E Gonzalez, MD on 09/08/19 1401		
Ordering user: Maura E Gonzalez, MD 09/08/19 1401	Ordering provider: Maura E Gonzalez, MD	Status: Discontinued

255. At 1401 hrs, Dr. Gonzalez requests a bed for Jeremy in the Neuro ICU.

- PCe 893

14:01:13	ED Admit Order Placed	Admit to Inpatient - [392853137]	Maura E Gonzalez, MD
14:01:13	Orders Completed	Admit to Inpatient ; VTE: Low Risk ; Pharmacological Contraindications	Maura E Gonzalez, MD
14:01:14	ED IP Bed Requested	Requested: Neuro ICU	Maura E Gonzalez, MD
14:01:14	Bed Request Ready to Plan	Ready to Plan: Neuro ICU	Maura E Gonzalez, MD
14:01:46	Assign Provider		Maura E Gonzalez, MD

In the ICU after the thrombectomy

256. At 1451 hrs, Jeremy is admitted to the ICU.

- PCe 894

14:47:47	Other Ordered	Referral to post acute care - [392853158]	Maura E Gonzalez, MD
14:50:25	Orders Placed	Advance diet if passed bedside swallowing test, if not passed keep npo until speech and swallow evaluates	Maura E Gonzalez, MD
14:51	Patient admitted	To department PCM 7 ICU	Jerrie Allen
14:51:43	Patient admitted		Jerrie Allen

257. At 1500 hrs, Nurse Charles Brand notes Jeremy's "peripheral vascular" as "WDL" — within defined limits.

- PCe 789

Flowsheet (all recorded) (continued)					
Complex Assessment - Sun September 08, 2019 (continued)					
Row Name	1800	1700	1600	1500	1406
VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	—	—	In Use -CB	—
Intermittent Pneumatic Compression Device	—	—	—	IPC- Bilateral knee high -CB	—
Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	—	WDL -CB	—

- PCe 825

User Key (continued)

Initials	Name
CJ	Candies S Jackson
MU	Marissa N Upshaw
LN	Leslie B Nettles, RN
IB	Ivey Brogden
JBA	Justine A Brewer, RN
EP	Erica K Pearson
KH	Kandy R Hayes
SI	Simone S Ivey
CB	Charles W Brand, RN
DG	Daulton J Gaddis

258. At 1500 hrs, Nurse Brand notes Jeremy has no pain.

- PCe 796

Row Name	1600	1500	1406	1351	1346
Pain Assessment					
Pain Assessment Scale Used	—	0-10 -CB	—	—	—
Pain Score	—	Zero -CB	—	—	—
Sedation Level	—	Dozing Intermittently -CB	—	—	—

259. At 1500 hrs, Nurse Brand notes Jeremy's skin is intact.

- PCe 798

Assessment - Sun September 08, 2019 (continued)

Row Name	1600	1500	1406	1351	1346
Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	WDL -CB	—	—	—
Musculoskeletal					
Musculoskeletal (WDL)	—	WDL -CB	—	—	—

260. At 1552 hrs, Dr. Vincent Nicolais writes an Initial Critical Care Report. He documents intact distal pulses, persistent right-sided weakness, a Babinski sign on the right, and that Jeremy's skin is warm and dry.

- PCe 42

Progress Notes by Vincent M Nicolais, MD at 9/8/2019 3:52 PM

Author: Vincent M Nicolais, MD
 Filed: 9/8/2019 4:04 PM
 Editor: Vincent M Nicolais, MD (Physician)

Service: Intensivists
 Date of Service: 9/8/2019 3:52 PM

Author Type: Physician
 Status: Signed

**CRITICAL CARE TEACHING CONSULT SERVICE,
 INITIAL CRITICAL CARE REPORT**
 Vincent M. Nicolais MD, FCCM, MACP
 9/8/2019

- PCe 43-44

Physical Exam

Constitutional: He appears well-developed and well-nourished.

Increased body mass index

HENT:

Head: Normocephalic and atraumatic.

Eyes: Pupils are equal, round, and reactive to light. Conjunctivae are normal.

Neck: Neck supple.

Cardiovascular: Normal rate, regular rhythm, normal heart sounds and intact distal pulses. Exam reveals no gallop and no friction rub.

Progress Notes by Vincent M Nicolais, MD at 9/8/2019 3:52 PM (continued)

No murmur heard.

Pulmonary/Chest: Breath sounds normal.

Abdominal: Soft. Bowel sounds are normal.

Increased adiposity noted

Musculoskeletal: He exhibits no edema, tenderness or deformity.

Neurological: He is alert.

This patient does have some right-sided weakness with expressive aphasia and a Babinski on the right

Skin: Skin is warm and dry.

Nursing note and vitals reviewed.

261. At 1552 hrs, Dr. Nicolais writes instructions to observe Jeremy 4-5 more hours in the ICU and then, if stable, to transfer Jeremy to the neurosciences unit.

- PCe 48

ASSESSMENT RECOMMENDATIONS AND MANAGEMENT

This patient has had an acute CVA with evidence of this on imaging. The patient has required a thrombectomy. He did not receive TPA. He is to be observed for a number of hours that is 4-5 more hours in the intensive care unit and if the patient remains stable he can then be transferred to the neurosciences unit. At this point our goal is to prevent any further deterioration in his condition. He has required insulin supplementation for diabetes mellitus. We discussed his care at the bedside with his wife as well as his mother. They understand the importance of care once discharged to prevent a recurrence of stroke or other ischemic event.

- PCe 204-05

Transfer patient [392853164]

Electronically signed by: Vincent M Nicolais, MD on 09/08/19 1609

Ordering user: Vincent M Nicolais, MD 09/08/19 1609

Authorized by: Vincent M Nicolais, MD

Frequency: Routine Once 09/08/19 1607 - 1 occurrence

Ordering provider: Vincent M Nicolais, MD

Status: Completed

Questionnaire

Transfer patient [392853164] (continued)

Question	Answer
Level of Care	Acute Care
Unit	PCM 10 MAIN
Bed request comments	May be transferred if stable neurologically, hemodynamically, and from a respiratory perspective for 4 hours.

262. At 1600 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status.

- PCe 798

Assessment - Sun September 08, 2019 (continued)

Row Name	1600	1500	1406	1351	1346
VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	In Use -CB	—	—	—
Intermittent Pneumatic Compression Device	—	IPC- Bilateral knee high -CB	—	—	—
Peripheral Vascular					
Peripheral Vascular (WDL)	—	WDL -CB	—	—	—
Braden Scale					
Sensory Perceptions	—	3 -CB	—	—	—
Moisture	—	4 -CB	—	—	—
Activity	—	1 -CB	—	—	—
Mobility	—	3 -CB	—	—	—
Nutrition	—	3 -CB	—	—	—
Friction and Shear	—	3 -CB	—	—	—
Braden Scale Score	—	17 -CB	—	—	—
Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	WDL -CB	—	—	—

- PCe 821

Row Name	1800	1700	1600	1500	1406
Vitals					
Temp	—	—	97.4 °F (36.3 °C) -CB	—	—
Temp Source	—	—	Axillary -CB	—	—
Heart Rate	112 -CB	94 -CB	100 -CB	108 -CB	107 -SH
Resp	19 -CB	18 -CB	18 -CB	(!) 31 -CB	30 -SH
BP	151/88 -CB	120/64 -CB	(!) 157/94 -CB	—	147/82 -SH
SpO2	—	98 % -CB	96 % -CB	94 % -CB	97 % -SH
Pain Score	—	—	—	Zero -CB	—

263. At 1700 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status.

- PCe 795

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
----------	------	------	------	------	------

VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	—	In Use -TM	—	—
Intermittent Pneumatic Compression Device	—	—	IPC - Left knee high R calf muscle cramping -TM	—	—
Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	WDL -TM	WDL -TM	—
Cyanosis	—	—	None -TM	—	—
Capillary Refill	—	—	Less than 3 seconds (All extremities) -TM	—	—
Pulses	—	—	R radial;L radial;R pedal;L pedal -TM	—	—
PVS Additional Assessments	—	—	No -TM	—	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	+2 -TM	—	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	+2 -TM	—	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	+2 -TM	+2 -TM	—
LLE Peripheral Vascular Assessment					
L Pedal Pulse	—	—	+2 -TM	—	—
Braden Scale					
Sensory Perceptions	—	—	3 -TM	—	—

- PCE 796

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
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...

Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	—	WDL -TM	—	—
Skin Color	—	—	Appropriate for ethnicity -TM	—	—
Skin Condition/Temp	—	—	Clammy,Diaphoretic -TM	—	—

- PCE 821

Row Name	1800	1700	1600	1500	1406
Vitals					
Temp	—	—	97.4 °F (36.3 °C) -CB	—	—
Temp Source	—	—	Axillary -CB	—	—
Heart Rate	112 -CB	94 -CB	100 -CB	108 -CB	107 -SH
Resp	19 -CB	18 -CB	18 -CB	(!) 31 -CB	30 -SH
BP	151/88 -CB	120/64 -CB	(!) 157/94 -CB	—	147/82 -SH
SpO2	—	98 % -CB	96 % -CB	94 % -CB	97 % -SH
Pain Score	—	—	—	Zero -CB	—

264. At 1800 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status.

- PCE 795

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	—	In Use -TM	—	—
Intermittent Pneumatic Compression Device	—	—	IPC - Left knee high R calf muscle cramping -TM	—	—
Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	WDL -TM	WDL -TM	—
Cyanosis	—	—	None -TM	—	—
Capillary Refill	—	—	Less than 3 seconds (All extremities) -TM	—	—
Pulses	—	—	R radial;L radial;R pedal;L pedal -TM	—	—
PVS Additional Assessments	—	—	No -TM	—	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	+2 -TM	—	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	+2 -TM	—	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	+2 -TM	+2 -TM	—
LLE Peripheral Vascular Assessment					
L Pedal Pulse	—	—	+2 -TM	—	—
Braden Scale					
Sensory Perceptions	—	—	3 -TM	—	—

• PCe 796

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	—	WDL -TM	—	—
Skin Color	—	—	Appropriate for ethnicity -TM	—	—
Skin Condition/Temp	—	—	Clammy;Diaphoretic -TM	—	—

• PCe 821

Row Name	1800	1700	1600	1500	1406
Vitals					
Temp	—	—	97.4 °F (36.3 °C) -CB	—	—
Temp Source	—	—	Axillary -CB	—	—
Heart Rate	112 -CB	94 -CB	100 -CB	108 -CB	107 -SH
Resp	19 -CB	18 -CB	18 -CB	(!) 31 -CB	30 -SH
BP	151/88 -CB	120/64 -CB	(!) 157/94 -CB	—	147/82 -SH
SpO2	—	98 % -CB	96 % -CB	94 % -CB	97 % -SH
Pain Score	—	—	—	Zero -CB	—

265. At 1900 hrs, Nurse Tabitha Miller documents an NIH Stroke Scale assessment. She notes a total score of 10, with right-side deficits. She notes a sensory deficit score of 1.

- PCe 814

Stroke Non-Alteplase - Sun September 08, 2019

Row Name	2255	2200	2100	2000	1900
...					
NIH Stroke Scale					
Level of Consciousness (1a.)	—	—	—	0 -TM	0 -TM
LOC Questions (1b.)	—	—	—	0 -TM	0 -TM
LOC Commands (1c.)	—	—	—	0 -TM	0 -TM
Best Gaze (2.)	—	—	—	0 -TM	0 -TM
Visual (3.)	—	—	—	0 -TM	0 -TM
Facial Palsy (4.)	—	—	—	0 -TM	0 -TM
Motor Arm, Left (5a.)	—	—	—	0 -TM	0 -TM
Motor Arm, Right (5b.)	—	—	—	3 -TM	3 -TM
Motor Leg, Left (6a.)	—	—	—	0 -TM	0 -TM
Motor Leg, Right (6b.)	—	—	—	3 -TM	3 -TM
Limb Ataxia (7.)	—	—	—	2 -TM	2 -TM
Sensory (8.)	—	—	—	1 -TM	1 -TM
Best Language (9.)	—	—	—	1 -TM	1 -TM
Dysarthria (10.)	—	—	—	0 -TM	0 -TM
Extinction and Inattention (formerly Neglect) (11.)	—	—	—	0 -TM	0 -TM
Total	—	—	—	10 -TM	10 -TM

- PCe 825

SM	Shannon McIirath, RN
LWA	Latonya Warren, RN
KS	Kailey M Scott, RN
➔ TM	Tabitha C Miller, RN
SBA	Samantha Rose Brewer, RN
JA	Jacquelyne E Adams

266. At 1900 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg but that Jeremy shows a flicker of muscle on his right leg.

- PCe 793

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
...					
RLE Motor Response	Responds to commands -TM	Responds to commands -TM	Responds to commands -TM	Responds to commands will flicker toes -TM	—
RLE Sensation	No sensation -TM	No sensation -TM	No sensation -TM	No sensation -TM	—
RLE Motor Strength	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	—

267. At 1900 hrs, Nurse Miller documents that Jeremy’s peripheral vascular status is WDL, within defined limits, and that his right leg pedal pulse is “+2.”

- PCE 795

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
...					
Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	WDL -TM	WDL -TM	—
Cyanosis	—	—	None -TM	—	—
Capillary Refill	—	—	Less than 3 seconds (All extremities) -TM	—	—
Pulses	—	—	R radial;L radial;R pedal;L pedal -TM	—	—
PVS Additional Assessments	—	—	No -TM	—	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	+2 -TM	—	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	+2 -TM	—	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	+2 -TM	+2 -TM	—
LLE Peripheral Vascular Assessment					
L Pedal Pulse	—	—	+2 -TM	—	—

268. At 2000 hrs, Nurse Miller documents an NIH Stroke Scale assessment. She notes a total score of 10, with right-side deficits. She notes a sensory deficit score of 1.

- PCE 814

Stroke Non-Alteplase - Sun September 08, 2019

Row Name	2255	2200	2100	2000	1900
...					

NIH Stroke Scale

Level of Consciousness (1a.)	—	—	—	0 -TM	0 -TM
LOC Questions (1b.)	—	—	—	0 -TM	0 -TM
LOC Commands (1c.)	—	—	—	0 -TM	0 -TM
Best Gaze (2.)	—	—	—	0 -TM	0 -TM
Visual (3.)	—	—	—	0 -TM	0 -TM
Facial Palsy (4.)	—	—	—	0 -TM	0 -TM
Motor Arm, Left (5a.)	—	—	—	0 -TM	0 -TM
Motor Arm, Right (5b.)	—	—	—	3 -TM	3 -TM
Motor Leg, Left (6a.)	—	—	—	0 -TM	0 -TM
Motor Leg, Right (6b.)	—	—	—	3 -TM	3 -TM
Limb Ataxia (7.)	—	—	—	2 -TM	2 -TM
Sensory (8.)	—	—	—	1 -TM	1 -TM
Best Language (9.)	—	—	—	1 -TM	1 -TM
Dysarthria (10.)	—	—	—	0 -TM	0 -TM
Extinction and Inattention (formerly Neglect) (11.)	—	—	—	0 -TM	0 -TM
Total	—	—	—	10 -TM	10 -TM

269. At 2000 hrs, Nurse Miller documents that Jeremy has sudden, cramping pain at a level of 6/10, that Jeremy's right calf muscle is cramping, and that Jeremy's skin is clammy and diaphoretic (*i.e.*, sweating heavily). Nurse Miller documents that as a pain intervention, Jeremy received massage and emotional support.

- PCe 806

Daily Cares/Safety - Sun September 08, 2019 (continued)

Row Name	2300	2200	2100	2000	1900
----------	------	------	------	------	------

...

VTE Mechanical Prophylaxis

VTE Mechanical Prophylaxis	—	—	—	In Use -TM	—
Intermittent Pneumatic Compression Device	—	—	—	IPC - Left knee high R calf muscle cramping -TM	—

- PCe 823

Pain - Sun September 08, 2019

Row Name	2000	1500
Pain Assessment		
Pain Score	Six -TM	Zero -CB
Pain Location	Leg calf muscle -TM	—
Pain Orientation	Right -TM	—
Pain Intervention(s)	Massage;Emotional support -TM	—
Pain Goal		
Patient's Stated Pain Goal	No pain -TM	No pain -CB

- PCe 796

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
----------	------	------	------	------	------

...

Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	—	WDL -TM	—	—
Skin Color	—	—	Appropriate for ethnicity -TM	—	—
Skin Condition/Temp	—	—	Clammy;Diaphoretic -TM	—	—

270. Notwithstanding Jeremy’s sudden pain, at 2000 hrs, Nurse Miller documents that Jeremy’s peripheral vascular status is Within Defined Limits, that he has no cyanosis, that his capillary refill is less than three seconds, and that his right leg pedal pulse is +2.

- PCE 795

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
----------	------	------	------	------	------

...

Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	WDL -TM	WDL -TM	—
Cyanosis	—	—	None -TM	—	—
Capillary Refill	—	—	Less than 3 seconds (All extremities) -TM	—	—
Pulses	—	—	R radial;L radial;R pedal;L pedal -TM	—	—
PVS Additional Assessments	—	—	No -TM	—	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	+2 -TM	—	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	+2 -TM	—	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	+2 -TM	+2 -TM	—

271. At 2000 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg but that Jeremy shows a flicker of muscle on his right leg.

- PCE 793

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
----------	------	------	------	------	------

...

RLE Motor Response	Responds to commands -TM	Responds to commands -TM	Responds to commands -TM	Responds to commands will flicker toes -TM	—
RLE Sensation	No sensation -TM	No sensation -TM	No sensation -TM	No sensation -TM	—
RLE Motor Strength	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	—

272. At approximately 2031 hrs, Nurse Miller notifies Dr. Manasa Valluri of “pt’s constant pain/knot in R calf muscle.” Nurse Miller notes that Jeremy’s pedal pulse is present and “no drainage/hematoma present on R groin incision.” Nurse Miller notes, “will closely monitor pt.”

- PCe 145

Nursing Note by Tabitha C Miller, RN at 9/8/2019 8:31 PM

Author: Tabitha C Miller, RN	Service: —	Author Type: Registered Nurse
Filed: 9/8/2019 8:35 PM	Date of Service: 9/8/2019 8:31 PM	Status: Signed
Editor: Tabitha C Miller, RN (Registered Nurse)		

Dr Valluri notified about pt's constant pain/knot in R calf muscle, no redness/warmth present, +2 pedal pulse present, pain worsens when leg is straightened. No drainage/hematome present on R groin incision. Will closely monitor pt.

273. In September 2019, Dr. Valluri is a Family Medicine resident. She is two or three months into the first year of her residency.

- Manasa Valluri, MD, LinkedIn page

Experience



Resident Physician

Piedmont Columbus Regional
Jul 2019 – Present · 2 yrs 1 mo

Education



Univeristy of Medicine and Health Sciences

Doctor of Medicine - MD, Medicine
2013 – 2017

- Piedmont Columbus Resident Biographies:
<https://www.piedmont.org/locations/piedmont-columbus/residency/ContentPage.aspx?nd=14850>

274. At 2100 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg and shows a flicker of muscle in his right leg.

- PCe 793

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
----------	------	------	------	------	------

...

RLE Motor Response	Responds to commands -TM	Responds to commands -TM	Responds to commands -TM	Responds to commands will flicker toes -TM	--
RLE Sensation	No sensation -TM	No sensation -TM	No sensation -TM	No sensation -TM	--
RLE Motor Strength	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	--

275. At 2100 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature.

- PCe 795

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
----------	------	------	------	------	------

...

Peripheral Vascular					-TM
Peripheral Vascular (WDL)	--	--	WDL -TM	WDL -TM	--
Cyanosis	--	--	None -TM	--	--
Capillary Refill	--	--	Less than 3 seconds (All extremities) -TM	--	--
Pulses	--	--	R radial,L radial,R pedal,L pedal -TM	--	--
PVS Additional Assessments	--	--	No -TM	--	--
RUE Peripheralvascular Assessment					
R Radial Pulse	--	--	+2 -TM	--	--
LUE Peripheralvascular Assessment					
L Radial Pulse	--	--	+2 -TM	--	--
RLE Peripheral Vascular Assessment					
R Pedal Pulse	--	--	+2 -TM	+2 -TM	--
LLE Peripheral Vascular Assessment					

- PCe 787

Complex Assessment - Sun September 08, 2019 (continued)

Row Name	2255	2200	2100	2000	1900
----------	------	------	------	------	------

Silicone Border Dressing	--	--	--	Not due,Underlying skin assessed -TM	--
Integumentary / Describe Intact Skin					
Integumentary (WDL)	--	--	--	WDL -TM	--
Skin Color	--	--	--	Appropriate for ethnicity -TM	--
Skin Condition/Temp	--	--	--	Clammy,Diaphoretic -TM	--

276. At 2105 hrs, Dr. Manasa Valluri orders 5 mg of Flexeril (a muscle relaxer) for Jeremy.

- PCe 159

cyclobenzaprine (FLEXERIL) tablet 5 mg [392901348]

Electronically signed by: **Manasa Valluri, MD on 09/08/19 2105**
Ordering user: Manasa Valluri, MD 09/08/19 2105
Authorized by: Manasa Valluri, MD
Frequency: Routine Once 09/08/19 2115 - 1 occurrence


Status: **Completed**
Ordering provider: Manasa Valluri, MD
Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
Package: 63739-531-10

277. Dr. Valluri does not write a note concerning Jeremy's leg pain.

- See search of records for "Author: Manasa"

Looking For:
Author: Manasa in the current document


Results:
0 document(s) with 0 instance(s)

 ▼

- See search of records for "Author: Valluri"

Looking For:
Author: Valluri in the current document


Results:
0 document(s) with 0 instance(s)

 ▼

- See search of records for "Note by Manasa"

Looking For:
Note by Manasa in the current document


Results:
0 document(s) with 0 instance(s)

 ▼

- See search of records for “Note by Valluri”

Looking For:
Note by Valluri in the current document

Results:
0 document(s) with 0 instance(s)

 ▼

278. At 2200 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg and shows a flicker of muscle in his right leg.

- PCe 793

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
...					
RLE Motor Response	Responds to commands -TM	Responds to commands -TM	Responds to commands -TM	Responds to commands -TM	will flicker toes -TM
RLE Sensation	No sensation -TM	No sensation -TM	No sensation -TM	No sensation -TM	No sensation -TM
RLE Motor Strength	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM

279. At 2200 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature.

- PCe 795

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
-TM					
Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	WDL -TM	WDL -TM	—
Cyanosis	—	—	None -TM	—	—
Capillary Refill	—	—	Less than 3 seconds (All extremities) -TM	—	—
Pulses	—	—	R radial,L radial;R pedal,L pedal -TM	—	—
PVS Additional Assessments	—	—	No -TM	—	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	+2 -TM	—	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	+2 -TM	—	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	+2 -TM	+2 -TM	—
LLE Peripheral Vascular Assessment					

- PCe 787

Complex Assessment - Sun September 08, 2019 (continued)

Row Name	2255	2200	2100	2000	1900
Silicone Border Dressing	—	—	—	Not due,Underlying skin assessed -TM	—
Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	—	—	WDL -TM	—
Skin Color	—	—	—	Appropriate for ethnicity -TM	—
Skin Condition/Temp	—	—	—	Clammy,Diaphoretic -TM	—

Transfer to Neuro floor

280. At 2240 hrs, Nurse Miller calls Nurse Christina Orr to give a report on Jeremy, in preparation for transferring Jeremy out of the ICU, to room 1001.

- PCe 145

Nursing Note by Tabitha C Miller, RN at 9/8/2019 10:40 PM

Author: Tabitha C Miller, RN Service: — Author Type: Registered Nurse
Filed: 9/8/2019 10:53 PM Date of Service: 9/8/2019 10:40 PM Status: Signed
Editor: Tabitha C Miller, RN (Registered Nurse)

Report called to Christina on 10 main.

Nursing Note by Tabitha C Miller, RN at 9/8/2019 10:51 PM

Author: Tabitha C Miller, RN Service: — Author Type: Registered Nurse
Filed: 9/8/2019 10:53 PM Date of Service: 9/8/2019 10:51 PM Status: Signed
Editor: Tabitha C Miller, RN (Registered Nurse)

Pt transferred to 1001 via bed with telepack on with RN and MA. Bed locked, call light placed with pt, pt's wife and friend at bedside. RN notified of pt's arrival. Chart left at front desk.

281. At approximately 2251 hrs, Jeremy is transferred to a Neuro floor, room 1001. This transfer is contrary to the wishes of neurologist Dr. Nojan Valadi. This transfer is also contrary to the prior order of Dr. Nicolais to transfer Jeremy out of the ICU only if Jeremy remained stable.

- PCe 145

Nursing Note by Tabitha C Miller, RN at 9/8/2019 10:51 PM

Author: Tabitha C Miller, RN Service: — Author Type: Registered Nurse
Filed: 9/8/2019 10:53 PM Date of Service: 9/8/2019 10:51 PM Status: Signed
Editor: Tabitha C Miller, RN (Registered Nurse)

Pt transferred to 1001 via bed with telepack on with RN and MA. Bed locked, call light placed with pt, pt's wife and friend at bedside. RN notified of pt's arrival. Chart left at front desk.

- PCe 61

Progress Notes by Nojan Valadi, MD at 9/9/2019 9:30 PM

Author: Nojan Valadi, MD Service: Neurology Author Type: Physician
Filed: 9/9/2019 11:29 PM Date of Service: 9/9/2019 9:30 PM Status: Signed
Editor: Nojan Valadi, MD (Physician)

Neurology Progress Note

Subjective:

Interval History: Interval history since yesterday evening/early morning hours reviewed. I was contacted earlier in the day regarding the patient going to a floor bed from the ICU by stroke coordinator Jessica, and advised her to pass along to staff that I would like the patient to remain in the ICU. However shortly after midnight at 12:36 AM, I was contacted by nurse Christina informing me that the patient had arrived on the floor/neurology unit and inquired regarding order clarification for CT angiography of the neck and head. I gave the verbal order to the nurse Christina to kindly move the patient by the back to the ICU or to the neuro ICU with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower

282. At 2255 hrs, Matannah Muhammed records some flowsheet assessments, including vital signs.

- PCe 821

Code Vitals - Sun September 08, 2019

Row Name	2255
Vitals	
Temp	96 °F (35.6 °C) -MM
Temp Source	Oral -MM
Heart Rate	111 -MM
Heart Rate Source	—
Resp	20 -MM
BP	154/85 -MM
SpO2	95 % -MM
Pain Score	—

- PCe 825

DD	Deborah Dawson, RN
KF	Kayla J. Fountain, RN
MM	Matannah Muhammed
DDA	Dana M Dannunzio
LA	Lda Discharge Automatic

283. At 2255 hrs and 2300 hrs, no assessment is documented for Jeremy’s peripheral vascular status. No assessment is documented for cyanosis, capillary refill, pulses, or skin color and temperature.

- PCe 772

PACU - Sun September 08, 2019 (continued)

Row Name	2255	2200	2100	2000	1900
----------	------	------	------	------	------

...

Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	—	WDL -TM	WDL -TM
Cyanosis	—	—	—	None -TM	—
Capillary Refill	—	—	—	Less than 3 seconds (All extremities) -TM	—
Pulses	—	—	—	R radial;L radial;R pedal;L pedal -TM	—
PVS Additional Assessments	—	—	—	No -TM	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	—	+2 -TM	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	—	+2 -TM	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	—	+2 -TM	+2 -TM
LLE Peripheral Vascular Assessment					
L Pedal Pulse	—	—	—	+2 -TM	—
Integumentary					

- PCE 773

PACU - Sun September 08, 2019 (continued)

Row Name	2255	2200	2100	2000	1900
Skin Color	—	—	—	Appropriate for ethnicity -TM	—
Skin Condition/Temp	—	—	—	Clammy;Diaphoretic -TM	—










Musculoskeletal

- Note: All Sept 8, 2300 hrs flowsheet records copied below

Looking For:
2300 in the current document

Results:
1 document(s) with 8 instance(s)

New Search 

- Results:
-  JONES, JEREMY BLAKE - 6/9/2021
 -  Name **2300** 2200 2000 1500 Precautions Precautions -- -- As
 -  Name **2300** 2200 2000 1500 VTE Mechanical Prophylaxis VTE
 -  Name **2300** 2200 2100 2000 1900 OTHER 30-Day Readmissic
 -  **2300** 2240 2220 2200 Generated by Troy Pickens [C106542] at
 -  **2300** 2240 2220 2200 OTHER Sepsis Predictive Analytics Scor
 -  Name **2300** 2200 2100 2000 1900 Precautions Precautions --
 -  Name **2300** 2200 2100 2000 1900 Telemetry Details Telemetry
 -  Name **2300** 2200 2100 2000 1900 Comfort and Environment I



Flowsheet (al
Custom Formula Data - Sun September 08, 2019 (continued)

Row Name	1251	12:46:07
BMI = 25		
Percent Weight Change Since Birth	---	---
IBW/kg (Calculated)	---	---
Low Range Vt 6cc/kg	---	---
Adult Moderate Range Vt 8cc/kg	---	---
Adult High Range Vt 10cc/kg	---	---
Neonatal Standard Range 4cc/kg	---	---
Low Range Vt 2.5cc/kg	---	---
Neonatal High Range Vt 6cc/kg	---	---

Row Name **1201** **1134**

Relevant Labs and Vitals

Temp (in Celsius)	---	36.4 -KF
-------------------	-----	----------

Vital Signs

MAP (mmHg) (calculated)	116 -JBA	115 -KF
-------------------------	----------	---------

Vitals

Change in Systolic BP since last reading	10 mmHg -JBA	---
--	--------------	-----

PT Charges - Sun September 08, 2019
 No documentation.

SLP Charges - Sun September 08, 2019
 No documentation.

- PCE 767

Daily Cares/Safety - Sun September 08, 2019

Row Name	2300	2200	2000	1500
Precautions				
Precautions	—	—	Aspiration,Fall risk -TM	—
Safe Environment				
Arm Bands On	—	—	ID:Fall -TM	—
Call Light Within Reach	—	—	Yes -TM	—
Overbed Table Within Reach	—	—	Yes -TM	—
Bed In Lowest Position	—	—	Yes -TM	—
Bed Wheels Locked	—	—	Yes -TM	—
Side Rails/Bed Safety	—	—	3/4 -TM	—
NonSkid Footwear	—	—	Patient in bed;Off -TM	—
Telemetry Details				
Telemetry Monitor On	—	—	Yes -TM	Yes -CB
Telemetry Audible	—	—	Yes -TM	Yes -CB
Telemetry Alarms Set	—	—	Yes -TM	Yes -CB
Family/Significant Other Communication				
Family/Significant Other Update	—	—	Updated;Visiting wife -TM	—
Mobility				
Activity	—	—	Bedrest -TM	Bedrest -CB
Level of Assistance	—	—	Moderate assist, patient does 50-74% -TM	Moderate assist, patient does 50-74% -CB
Transfer Equipment	—	—	Hospital bed -TM	—
Head of Bed Elevated	—	—	HOB 30 -TM	Self regulated -CB
Range of Motion	—	—	Active;All extremities;Passive -TM	Active;Passive;All extremities -CB
Transport Method	—	—	Bed -TM	Bed -CB
Repositioned	—	Turns self -TM	Turns self -TM	—
Positioning Frequency	—	Able to turn self -TM	Able to turn self -TM	—

- PCE 768

Daily Cares/Safety - Sun September 08, 2019 (continued)

Row Name	2300	2200	2000	1500
VTE Mechanical Prophylaxis				
VTE Mechanical Prophylaxis	—	—	In Use -TM	In Use -CB
Intermittent Pneumatic Compression Device	—	—	IPC - Left knee high R calf muscle cramping -TM	IPC- Bilateral knee high -CB
Nutrition				
Feeding	—	—	Needs set up;Needs assist low carb -TM	—
Swallow Signs/Symptoms	—	—	Swallows without difficulty -TM	—
Tube Feeding				
Tube Feeding	—	—	No -TM	—
Hygiene				
Hygiene	—	—	— face washed, bathed on day shift -TM	—
Skin Prevention Interventions				
Sensory, Activity, Motor	—	—	Heels elevated off bed;Wedge;Pillows -TM	—
Moisture, Friction, Shear	—	—	All tubes free or padded;Head of bed at 30 degrees -TM	—
Frequent repositioning or weight shifts	—	—	Patient independent -TM	—
Silicone Border Dressing	—	—	Not due;Underlying skin assessed -TM	—
Comfort and Environment Interventions				
Comfort	Repositioned -MM	—	Repositioned;Linen changed -TM	—
Safety Equipment at Bedside				
Safety Equipment at Bedside	—	—	Suction -TM	—

Readmission Risk Score - Sun September 08, 2019

Row Name	2300	2200	2100	2000	1900
OTHER					
30-Day Readmission Risk Score	8 -BA	8 -BA	8 -BA	7 -BA	7 -BA
Row Name	1800	1700	1600	1500	1400
OTHER					
30-Day Readmission Risk Score	7 -BA	7 -BA	7 -BA	0 -BA	0 -BA

- PCe 769

Sepsis Predictive Analytics - Sun September 08, 2019

Row Name	2321	2300	2240	2220	2200
----------	------	------	------	------	------

Generated by Troy Pickens [C106542] at 6/9/21 4:49 PM

- PCe 770

Sepsis Predictive Analytics - Sun September 08, 2019 (continued)

Row Name	2321	2300	2240	2220	2200
OTHER					
Sepsis Predictive Analytics Score	9.5 -NI	9.5 -NI	3.9 -NI	3.9 -NI	3.9 -NI
Row Name	2140	2120	2100	2040	2020

- PCe 805

Daily Cares/Safety - Sun September 08, 2019

Row Name	2300	2200	2100	2000	1900
Precautions					
Precautions	—	—	—	Aspiration,Fall risk -TM	—
Safe Environment					
Arm Bands On	—	—	—	ID,Fall -TM	—
Call Light Within Reach	—	—	—	Yes -TM	—
Overbed Table Within Reach	—	—	—	Yes -TM	—
Bed In Lowest Position	—	—	—	Yes -TM	—
Bed Wheels Locked	—	—	—	Yes -TM	—
Side Rails/Bed Safety	—	—	—	3/4 -TM	—
NonSkid Footwear	—	—	—	Patient in bed;Off -TM	—

- PCE 806

Daily Cares/Safety - Sun September 08, 2019 (continued)

Row Name	2300	2200	2100	2000	1900
Telemetry Details					
Telemetry Monitor On	—	—	—	Yes -TM	—
Telemetry Audible	—	—	—	Yes -TM	—
Telemetry Alarms Set	—	—	—	Yes -TM	—
Family/Significant Other Communication					
Family/Significant Other Update	—	—	—	Updated;Visiting wife -TM	—
Morse Fall Risk					
History of Falling	—	—	—	0 -TM	—
Secondary Diagnosis	—	—	—	15 -TM	—
Ambulatory Aids	—	—	—	0 -TM	—
IV Therapy/Heparin (saline) lock/equipment	—	—	—	0 -TM	—
Gait/Transferring	—	—	—	0 -TM	—
Mental Status Score	—	—	—	15 -TM	—
Fall Prevention Interventions					
General Fall Risk Interventions (Score 0-35)	—	—	—	Yes -TM	—
Mobility					
Activity	—	—	—	Bedrest -TM	—
Level of Assistance	—	—	—	Moderate assist, patient does 50-74% -TM	—
Transfer Equipment	—	—	—	Hospital bed -TM	—
Head of Bed Elevated	—	—	—	HOB 30 -TM	—
Range of Motion	—	—	—	Active;All extremities;Passive -TM	—
Transport Method	—	—	—	Bed -TM	—
Repositioned	—	Turns self -TM	—	Turns self -TM	—
Positioning Frequency	—	Able to turn self -TM	—	Able to turn self -TM	—
Progressive Mobility Assessment (ICU/Shepherd Patients Only)					
Richmond Agitation Sedation Scale (RASS)	—	0 -TM	0 -TM	+1 -TM	+1 -TM
VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	—	—	In Use -TM	—
Intermittent Pneumatic Compression Device	—	—	—	IPC - Left knee high R calf muscle cramping -TM	—
Infection Screening					
Signs and Symptoms of New or Worsening Infection?	—	—	—	No -TM	—

Nutrition						
Feeding	—	—	—	—	Needs set up;Needs assist low carb -TM	—
Swallow Signs/Symptoms	—	—	—	—	Swallows without difficulty -TM	—
Tube Feeding	—	—	—	—	No -TM	—
Hygiene						
Hygiene	—	—	—	—	— face washed, bathed on day shift -TM	—
Skin Prevention Interventions						
Sensory, Activity, Motor	—	—	—	—	Heels elevated off bed;Wedge;Pillows -TM	—
Moisture, Friction, Shear	—	—	—	—	All tubes free or padded;Head of bed at 30 degrees -TM	—
Frequent repositioning or weight shifts	—	—	—	—	Patient independent -TM	—
Silicone Border Dressing	—	—	—	—	Not due;Underlying skin assessed -TM	—

- PCe 807

Daily Cares/Safety - Sun September 08, 2019 (continued)

Row Name	2300	2200	2100	2000	1900
Comfort and Environment Interventions					
Comfort	Repositioned -MM	—	—	Repositioned;Linen changed -TM	—
Safety Equipment at Bedside					
Safety Equipment at Bedside	—	—	—	Suction -TM	—
Row Name	1500	1211			
Telemetry Details					

284. At 2304 hrs, Nurse Christina Orr writes that Jeremy has arrived in Room 1001.

- PCe 145

Nursing Note by Christina N Orr, RN at 9/8/2019 11:04 PM

Author: Christina N Orr, RN Service: — Author Type: Registered Nurse
 Filed: 9/8/2019 11:05 PM Date of Service: 9/8/2019 11:04 PM Status: Signed
 Editor: Christina N Orr, RN (Registered Nurse)

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. Assessment complete. C/o RLE cramping after receiving Flexeril 5mg at 21:17. Physician paged at this time regarding patient request for medication to alleviate discomfort. Will continue to monitor patient closely. Call light in reach.

285. At 2304 hrs, Nurse Christina Orr writes, “assessment complete.” But as indicated above, Nurse Orr records no assessment at or around 2300 hrs.

- PCe 145

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. **Assessment complete** C/o RLE cramping after receiving Flexeril 5mg at 21:17. Physician paged at this time regarding patient request for medication to alleviate discomfort. Will continue to monitor patient closely. Call light in reach.

286. At 2304 hrs, Nurse Christina Orr notes that Jeremy complains of right leg cramping despite receiving Flexeril at 2117 hrs.

- PCe 145

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. **Assessment complete**. C/o RLE cramping after receiving Flexeril 5mg at 21:17. Physician paged at this time regarding patient request for medication to alleviate discomfort. Will continue to monitor patient closely. Call light in reach.

287. At 2304 hrs, Nurse Christina Orr writes that a physician was paged concerning Jeremy's leg cramping.

- PCe 145

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. **Assessment complete**. C/o RLE cramping after receiving Flexeril 5mg at 21:17. **Physician paged at this time regarding patient request for medication to alleviate discomfort**. Will continue to monitor patient closely. Call light in reach.

288. At 2304 hrs, Nurse Christina Orr writes that she will continue to monitor Jeremy closely.

- PCe 145

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. **Assessment complete**. C/o RLE cramping after receiving Flexeril 5mg at 21:17. Physician paged at this time regarding patient request for medication to alleviate discomfort. **Will continue to monitor patient closely**. Call light in reach.

289. At 2314 hrs, Dr. Valluri orders 10 mg of Flexeril for Jeremy.

- PCe 159

cyclobenzaprine (FLEXERIL) tablet 10 mg [392901349]

Electronically signed by: **Manasa Valluri, MD on 09/08/19 2314**
Ordering user: **Manasa Valluri, MD 09/08/19 2314**
Authorized by: Bruce H Brennaman, MD
PRN reasons: Muscle spasms
Frequency: Routine TID PRN 09/08/19 2314 - 09/11/19 1454
Package: 63739-531-10

Ordering provider: Manasa Valluri, MD
Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
Discontinued by: Ronson Hughes, MD 09/11/19 1454

Status: **Discontinued**

290. The order for 10 mg of Flexeril states that it was authorized by Dr. Bruce Brennaman, a vascular surgeon.

- PCe 159

cyclobenzaprine (FLEXERIL) tablet 10 mg [392901349] Status: **Discontinued**

Electronically signed by: Manasa Valluri, MD on 09/08/19 2314	Ordering provider: Manasa Valluri, MD
Ordering user: Manasa Valluri, MD 09/08/19 2314	Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
Authorized by: Bruce H Brennaman, MD	Discontinued by: Ronson Hughes, MD 09/11/19 1454
PRN reasons: Muscle spasms	
Frequency: Routine TID PRN 09/08/19 2314 - 09/11/19 1454	
Package: 63739-531-10	

291. The authorization attributed to Dr. Brennaman is not specifically time-stamped.

- PCe 159

cyclobenzaprine (FLEXERIL) tablet 10 mg [392901349] Status: **Discontinued**

Electronically signed by: Manasa Valluri, MD on 09/08/19 2314	Ordering provider: Manasa Valluri, MD
Ordering user: Manasa Valluri, MD 09/08/19 2314	Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
Authorized by: Bruce H Brennaman, MD	Discontinued by: Ronson Hughes, MD 09/11/19 1454
PRN reasons: Muscle spasms	
Frequency: Routine TID PRN 09/08/19 2314 - 09/11/19 1454	
Package: 63739-531-10	

292. Apart from non-time-stamped references to Dr. Brennaman having authorized certain medication orders, the medical records contain no reference to Dr. Brennaman having been involved in Jeremy’s case until September 9 at 0852 hrs, when he enters an order for cefazolin.

- PCe 160


ceFAZolin (ANCEF) injection 2 g [393006641] Status: **Discontinued**

Electronically signed by: Bruce H Brennaman, MD on 09/09/19 0852	Ordering provider: Bruce H Brennaman, MD
Ordering user: Bruce H Brennaman, MD 09/09/19 0852	Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
Authorized by: Bruce H Brennaman, MD	Indications of use: Surgical Prophylaxis
Frequency: Routine + 1HR 09/09/19 0851 - 09/09/19 0904	
Discontinued by: Jillian Davis, PharmD 09/09/19 0904 [Order Clean up]	
Diagnoses	
Ischemia of right lower extremity [I99.8] (Added automatically from request for surgery 779506)	

- See search of records for “author: Bruce”

Looking For:
author: Bruce in the current document

Results:
1 document(s) with 7 instance(s)

New Search 

Results:

- JONES, JEREMY BLAKE - 6/9/2021
 - Author: Bruce H Brennaman, MD Service: Vascular Surgery
 - Author: Bruce H Brennaman, MD Service: Vascular Surgery
 - Author: Bruce H Brennaman, MD Service: Vascular Surgery
 - Author: Bruce H Brennaman, MD Service: Vascular Surgery
 - Author: Bruce H Brennaman, MD Service: Vascular Surgery
 - Author: Bruce H Brennaman, MD Service: Vascular Surgery
 - Author: Bruce H Brennaman, MD Service: Vascular Surgery

Electronically signed by Marcel W Coleman, PT on 9/9/2019 4:17 PM

Brief Op Note by Bruce H Brennaman, MD at 9/9/2019 1:00 PM

Author: Bruce H Brennaman, MD Service: Vascular Surgery
 Filed: 9/9/2019 1:21 PM Date of Service: 9/9/2019 1:00 PM
 Editor: Bruce H Brennaman, MD (Physician)

Brief OpNote
Surgeon(s) and Role:
 * Bruce H Brennaman, MD - Primary

Staff and Assistants: Circulator: Patricia Gilbreath, RN
Relief Circulator: Desiree Barksdale, RN; Mattie A. Dickerson, RN
Scrub Person: Sarah Hersh

Pre-op Diagnosis: Ischemia of right lower extremity [I99.8]

Post-op Diagnosis: Ischemia of right lower extremity [I99.8]

Anesthesia Type: General

Generated by Troy Pickens [C106542] at 6/9/21 4:48 PM

- PCE 140 — earliest note authored by Dr. Brennaman, time-stamped Sept 9 at 1300 hrs

Brief Op Note by Bruce H Brennaman, MD at 9/9/2019 1:00 PM

Author: Bruce H Brennaman, MD	Service: Vascular Surgery	Author Type: Physician
Filed: 9/9/2019 1:21 PM	Date of Service: 9/9/2019 1:00 PM	Status: Signed
Editor: Bruce H Brennaman, MD (Physician)		

293. Dr. Brennaman's own records indicate that he was not involved until after Dr. Osei-Bonsu attempted a thrombectomy in Jeremy's leg on the morning of September 9.

- PCE 26 — consult note by Dr. Brennaman, indicating he was called on Sept 9, after CTA & thrombectomy attempt by Dr. Osei-Bonsu

Consults by Bruce H Brennaman, MD at 9/9/2019 9:38 PM

Author: Bruce H Brennaman, MD	Service: Vascular Surgery	Author Type: Physician
Filed: 9/9/2019 10:21 PM	Date of Service: 9/9/2019 9:38 PM	Status: Signed
Editor: Bruce H Brennaman, MD (Physician)		

...

Referring Physician: Dr. Samuel Osei-Bonsu

Date of Consultation:

9/9/2019

Reason for Consultation: Jeremy Blake Jones is a 33 y.o. male, seen in consultation at the request of Dr. Samuel Osei-Bonsu, for the evaluation of acute right lower extremity ischemia. Current symptoms are positive for cold, pulseless foot. Patient denies complaints of none as he is sedated. Onset of symptoms was between 2030 hours and 2230 hours 9/8/2019 based on history. Symptoms are currently worsening. Aggravating factors include unknown. Alleviating factors include unknown. This history is provided by spouse/SO, relative(s) and Dr. Osei-Bonsu. Patient seen yesterday for acute stroke with right side weakness and slurred speech. Outside of window for TPA. Cerebral angio and thrombectomy done with closure device placed right groin. Last noted palpable pulses 2030 hours with wife/sister seeing and reporting change in LLE BK with pale cool skin and discoloration of calf. Told by nurse patient pulses palpable and area of calf was a "charlie horse" per wife. Report of loss of RLE pulses at 0130 hours and caring physicians called. CTA ordered and findings suggestive of "flap" seen in right CFA. Dr. Osei-Bonsu called around 4 AM and patient taken to IR with CFA stent for suspected dissection CFA and flow restored to level of knee. Unable to show contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. NO movement or sensation RLE. Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

- PCE 35 — amputation op note by Dr. Brannaman, saying he first saw Jeremy about 10 hours after the initial finding of limb ischemia

Op Note signed by Bruce H Brennaman, MD at 9/11/2019 5:20 AM

Author: Bruce H Brennaman, MD	Service: Vascular Surgery	Author Type: Physician
Filed: 9/11/2019 5:20 AM	Date of Service: 9/9/2019 12:00 AM	Status: Signed
Editor: Bruce H Brennaman, MD (Physician)		Trans ID: 11270578
Dictation Time: 9/9/2019 1:19 PM	Trans Time: 9/9/2019 11:08 PM	Trans Doc Type: Operative Note
		Trans Status: Available

...

INDICATIONS: This gentleman was brought to the hospital yesterday after suffering a stroke which left him with right hemiparesis. He underwent a right transfemoral angiogram to evaluate for thrombectomy, which was not done for a stroke. During the night, the patient's right lower extremity became pulseless and attempts to restore flow below the knee were unsuccessful. At the time that I saw the patient, he was approximately 10 hours from the initial finding of acute ischemia. He was taken to the operating room emergently for exploration and revascularization if

294. However, the records identify Dr. Brennaman as having authorized medications ordered by other physicians on September 8, at 1309 hrs, 1445 hrs, 1446 hrs, and 2314 hrs.

- PCE 157

aspirin EC tablet 81 mg [392844925]

Electronically signed by: **Nojan Valadi, MD on 09/08/19 1309**
Ordering user: **Nojan Valadi, MD 09/08/19 1309**
Authorized by: **Bruce H Brennaman, MD**
Frequency: **STAT Daily 09/08/19 1310 - 09/09/19 2333**
Package: 63739-522-01

Status: **Discontinued**
Ordering provider: **Nojan Valadi, MD**
Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
Discontinued by: **Nojan Valadi, MD 09/09/19 2333**

- PCe 158

atorvaSTATin (LIPITOR) tablet 40 mg [392853145]

Electronically signed by: **Maura E Gonzalez, MD on 09/08/19 1445**
Ordering user: **Maura E Gonzalez, MD 09/08/19 1445**
Authorized by: **Bruce H Brennaman, MD**
Frequency: **Routine Nightly 09/08/19 2100 - 09/09/19 2333**
Package: 0904-6292-61

Status: **Discontinued**
Ordering provider: **Maura E Gonzalez, MD**
Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
Discontinued by: **Nojan Valadi, MD 09/09/19 2333**

...

pantoprazole (PROTONIX) EC tablet 40 mg [392853155]

Electronically signed by: **Maura E Gonzalez, MD on 09/08/19 1445**
Ordering user: **Maura E Gonzalez, MD 09/08/19 1445**
Authorized by: **Bruce H Brennaman, MD**
Frequency: **Routine Daily 09/08/19 1450 - 09/09/19 1454**
Package: 66993-068-51

Status: **Discontinued**
Ordering provider: **Maura E Gonzalez, MD**
Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
Discontinued by: **Lynn Doan, PharmD 09/09/19 1454 [Duplicate Order]**

metoclopramide HCl (REGLAN) solution 10 mg [392853156]

Electronically signed by: **Maura E Gonzalez, MD on 09/08/19 1446**
Ordering user: **Maura E Gonzalez, MD 09/08/19 1446**
Authorized by: **Bruce H Brennaman, MD**
Frequency: **Routine QAM AC 09/09/19 0730 - 09/10/19 1257**
Package: 0121-1576-10

Status: **Discontinued**
Ordering provider: **Maura E Gonzalez, MD**
Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
Discontinued by: **Ronson Hughes, MD 09/10/19 1257**

- PCe 159

cyclobenzaprine (FLEXERIL) tablet 10 mg [392901349]

Electronically signed by: **Manasa Valluri, MD on 09/08/19 2314**
Ordering user: **Manasa Valluri, MD 09/08/19 2314**
Authorized by: **Bruce H Brennaman, MD**
PRN reasons: **Muscle spasms**
Frequency: **Routine TID PRN 09/08/19 2314 - 09/11/19 1454**
Package: 63739-531-10

Status: **Discontinued**
Ordering provider: **Manasa Valluri, MD**
Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
Discontinued by: **Ronson Hughes, MD 09/11/19 1454**

295. At midnight, no assessments of Jeremy are recorded in the flowsheets.

- PCe 765 — last flowsheet times for Sept 8

Data - Sun September 08, 2019

Row Name	2255	2200	2100	2000	1900
Vitals					
BP	154/85 -MM	155/79 -TM	153/89 -TM	164/85 -TM	159/79 -TM
Temp	96 °F (35.6 °C) -MM	—	—	98.2 °F (36.8 °C) -TM	—
Temp Source	Oral -MM	—	—	Axillary -TM	—
Heart Rate	111 -MM	114 -TM	112 -TM	110 -TM	110 -TM
Resp	20 -MM	26 -TM	(I) 33 -TM	25 -TM	22 -TM
SpO2	95 % -MM	97 % -TM	96 % -TM	97 % -TM	97 % -TM
OTHER					
Pain Score	—	—	—	Six -TM	—

- PCe 674 — first flowsheet times for Sept 9

- PCe 61

Progress Notes by Nojan Valadi, MD at 9/9/2019 9:30 PM

Author: Nojan Valadi, MD
 Filed: 9/9/2019 11:29 PM
 Editor: Nojan Valadi, MD (Physician)

Service: Neurology
 Date of Service: 9/9/2019 9:30 PM

Author Type: Physician
 Status: Signed

Neurology Progress Note

Subjective:

Interval History: Interval history since yesterday evening/early morning hours reviewed. I was contacted earlier in the day regarding the patient going to a floor bed from the ICU by stroke coordinator Jessica, and advised her to pass along to staff that I would like the patient to remain in the ICU. However shortly after midnight at 12:36 AM, I was contacted by nurse Christina informing me that the patient had arrived on the floor/neurology unit and inquired regarding order clarification for CT angiography of the neck and head. I gave the verbal order to the nurse Christina to kindly move the patient by the back to the ICU or to the neuro ICU with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower extremity symptoms, and advised and recommended CT angiography, notification of Dr.Osui-Bensu, and consideration for vascular surgery consultation. I asked that I kindly be notified if there are any plans to start the patient on anticoagulants. I spoke with Dr. Koerner after that and made the same recommendations above.

297. At 0036 hrs, Dr. Valadi orders that Jeremy be returned to the ICU or moved to the Neuro ICU.

- PCe 145

Nursing Note by Christina N Orr, RN at 9/9/2019 12:36 AM

Author: Christina N Orr, RN
 Filed: 9/9/2019 12:39 AM
 Editor: Christina N Orr, RN (Registered Nurse)

Service: —
 Date of Service: 9/9/2019 12:36 AM

Author Type: Registered Nurse
 Status: Signed

Spoke with Dr. Valadi for order clarification. Ordered for CTA to be repeated 9/9/2019 at 12:00 and for patient to be transferred to neuro ICU with Q1 hour neuro checks. Patient is stable at this time.

- PCe 61

Interval History: Interval history since yesterday evening/early morning hours reviewed. I was contacted earlier in the day regarding the patient going to a floor bed from the ICU by stroke coordinator Jessica, and advised her to pass along to staff that I would like the patient to remain in the ICU. However shortly after midnight at 12:36 AM, I was contacted by nurse Christina informing me that the patient had arrived on the floor/neurology unit and inquired regarding order clarification for CT angiography of the neck and head. I gave the verbal order to the nurse Christina to kindly move the patient by the back to the ICU or to the neuro ICU with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower extremity symptoms, and advised and recommended CT angiography, notification of Dr.Osui-Bensu, and

298. At 0100 hrs, Nurse Christina Orr does not record assessments of Jeremy.

- PCe 765 — last flowsheet times for Sept 8

Data - Sun September 08, 2019

Row Name	2255	2200	2100	2000	1900
Vitals					
BP	154/85 -MM	155/79 -TM	153/89 -TM	164/85 -TM	159/79 -TM
Temp	96 °F (35.6 °C) -MM	—	—	98.2 °F (36.8 °C) -TM	—
Temp Source	Oral -MM	—	—	Axillary -TM	—
Heart Rate	111 -MM	114 -TM	112 -TM	110 -TM	110 -TM
Resp	20 -MM	26 -TM	(!) 33 -TM	25 -TM	22 -TM
SpO2	95 % -MM	97 % -TM	96 % -TM	97 % -TM	97 % -TM
OTHER					
Pain Score	—	—	—	Six -TM	—

- PCe 674 — first flowsheet times for Sept 9

Data - Mon September 09, 2019 (continued)

Row Name	0633	06:28:08	06:23:03	0618	06:13:01
Vitals					
BP	169/75 -SH	173/76 -SH	167/77 -SH	177/80 -SH	172/82 -SH
Heart Rate	95 -SH	97 -SH	97 -SH	98 -SH	105 -SH
Resp	23 -SH	24 -SH	23 -SH	22 -SH	20 -SH
SpO2	93 % -SH	96 % -SH	97 % -SH	97 % -SH	98 % -SH
Row Name	0608	0603	0558	0553	0548
Vitals					
BP	159/74 -SH	162/74 -SH	163/73 -SH	162/77 -SH	158/78 -SH
Heart Rate	102 -SH	103 -SH	107 -SH	105 -SH	105 -SH
Resp	27 -SH	27 -SH	24 -SH	24 -SH	22 -SH
SpO2	97 % -SH	98 % -SH	98 % -SH	97 % -SH	95 % -SH
Row Name	0543	05:38:29	0525	0400	0300
Vitals					
BP	158/79 -SH	169/80 -SH	(!) 180/91 -SH	(!) 156/92 -EW	156/80 -EW
Temp	—	—	—	99.6 °F (37.6 °C) -EW	—
Temp Source	—	—	—	Oral -EW	—
Heart Rate	103 -SH	107 -SH	107 -SH	113 -EW	114 -EW
Resp	24 -SH	21 -SH	24 -SH	27 -EW	30 -EW
SpO2	94 % -SH	95 % -SH	96 % -SH	94 % -EW	96 % -EW
Row Name	0230	0219	0200	0123	0120
Vitals					
BP	(!) 147/93 -EW	—	(!) 155/91 -EW	159/88 -EW	—
Temp	—	—	—	99.6 °F (37.6 °C) -EW	—
Temp Source	—	—	—	Oral -EW	—
Heart Rate	114 -EW	—	119 -EW	110 -EW	—
Resp	(!) 33 -EW	—	28 -EW	26 -EW	—
SpO2	93 % -EW	—	94 % -EW	92 % -EW	—
OTHER					
Pain Score	—	Zero -LWA	—	—	Zero -LWA

Custom Formula Data - Mon September 09, 2019

Row Name	2300	2200	2100	2000	1921
----------	------	------	------	------	------

Transfer to Neuro ICU (presumed)

299. At 0104 hrs, Nurse Orr enters an order authorized by Dr. Valadi, to transfer Jeremy to the ICU.

- PCe 206

Transfer patient [392901357]

Electronically signed by: **Nojan Valadi, MD on 09/09/19 2359**
Mode: Ordering in Telephone with readback mode
Ordering user: **Christina N Orr, RN 09/09/19 0104**
Authorized by: **Nojan Valadi, MD**
Frequency: Routine Once 09/09/19 0104 - 1 occurrence

Communicated by: **Christina N Orr, RN**
Ordering provider: **Nojan Valadi, MD**

Status: **Completed**

Questionnaire

Question	Answer
Level of Care	Intensive Care
Bed request comments	Transfer to Neuro ICU with q 1 hour neuro checks. Continue all orders

300. At approximately 0118 hrs, Nurse Orr transfers Jeremy to the Neuro ICU.

- PCe 145

Nursing Note by Latonya Warren, RN at 9/9/2019 1:18 AM

Author: Latonya Warren, RN Service: — Author Type: Registered Nurse
Filed: 9/9/2019 2:17 AM Date of Service: 9/9/2019 1:18 AM Status: Signed
Editor: Latonya Warren, RN (Registered Nurse)

Pt. Arrived to unit via bed with RN christina. Pt is complaining of being hot. Temp is 99.6.

301. At the time of the 0118 hrs handoff, Jeremy has been in the care of Nurse Christina Orr since approximately 2300 hrs — about 2 hours and 20 minutes. In that time, Nurse Orr does not record any assessment of Jeremy’s right leg.

- See above.

302. At 0118 hrs, Nurse Latonya Warren notes that Jeremy is complaining of being hot, and that his temperature is 99.6.

- PCe 145

Pt. Arrived to unit via bed with RN christina. **Pt is complaining of being hot. Temp is 99.6.**

303. At 0120 hrs, within minutes of Jeremy being transferred to her care, Nurse Warren performs an assessment of Jeremy — including the vascular status of Jeremy’s right leg.

- PCe 729

Assessment - Mon September 09, 2019 (continued)

Row Name	0219	0200	0123	0120
L Foot Plantar Flexion	—	—	—	Weak -LWA
RUE Motor Response	—	—	—	Flaccid;Movement to painful stimulus -LWA
RUE Sensation	—	—	—	Pain;Other (Comment);No sensation real painful stimuli arm will jerk. -LWA

- PCE 825

VD	Veronica F Dipippo, SLP
SM	Shannon McIlrath, RN
LWA	Latonya Warren, RN
KS	Kailey M Scott, RN
TM	Tabitha C Miller, RN
SBA	Samantha Rose Brewer, RN
JA	Jacquelyne E Adams

Recognition of Right Leg Ischemia

304. At 0120 hrs, Nurse Warren notes that Jeremy's right leg has no pedal pulses, and that his skin is cool and cyanotic.

- PCE 731

Assessment - Mon September 09, 2019 (continued)

Row Name	0219	0200	0123	0120
LUE Peripheralvascular Assessment				
L Radial Pulse	—	—	—	+3 -LWA
RLE Peripheral Vascular Assessment				
R Pedal Pulse	—	—	—	Absent -LWA
LLE Peripheral Vascular Assessment				
L Pedal Pulse	—	—	—	+3 -LWA
Braden Scale				

...

Integumentary / Describe Intact Skin

Integumentary (WDL)	—	—	—	WDL -LWA
Skin Color	—	—	—	Circumoral cyanosis RLE -LWA
Skin Condition/Temp	—	—	—	Cool; Other (Comment) RLE -LWA
Skin Integrity	—	—	—	Intact -LWA
Musculoskeletal				

305. At 0138 hrs, Nurse Warren pages Dr. Valluri to notify her that Jeremy has no pedal pulse in his right leg.

- PCE 144

Nursing Note by Latonya Warren, RN at 9/9/2019 1:38 AM

Author: Latonya Warren, RN	Service: —	Author Type: Registered Nurse
Filed: 9/9/2019 5:39 AM	Date of Service: 9/9/2019 1:38 AM	Status: Signed
Editor: Latonya Warren, RN (Registered Nurse)		

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

306. At 0142 hrs, Dr. Valluri is at Jeremy's bedside.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

307. At 0152 hrs Dr. Cheryl Stephens is at Jeremy's bedside.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

- PCe 49

Progress Notes by Joshua Koerner, DO at 9/9/2019 2:41 AM

Author: Joshua Koerner, DO	Service: Hospitalist	Author Type: Physician
Filed: 9/9/2019 5:01 AM	Date of Service: 9/9/2019 2:41 AM	Status: Signed
Editor: Joshua Koerner, DO (Physician)		
Related Notes: Original Note by Cheryl Stephens, MD (Resident) filed at 9/9/2019 4:11 AM		

Paged at 2:20 for absent DP pulses of RLE. Spoke with neurologist Dr. Valadi and IR Dr. Osei Bonsu over the telephone. Ordered stat CTA-RLE for possible occlusion/complications post procedure. On physical examination, patient is alert and oriented, unable to extend RLE, cold to touch below the knee, doppler absent DP pulse to RLE. Spoke with wife over the telephone, updated on condition and received written consent. STAT CTA leg showed occlusion per comment by technologist contrast did not penetrate. Called Dr. Bonsu back to reevaluate.

- PCe 206

CT angiogram lower extremity right [392901359]

Electronically signed by: Cheryl Stephens, MD on 09/09/19 0218
Ordering user: Cheryl Stephens, MD 09/09/19 0218
Authorized by: Maura E Gonzalez, MD
Frequency: Routine Once 09/09/19 0219 - 1 occurrence
Discontinued by: Cheryl Stephens, MD 09/09/19 0219

Ordering provider: Cheryl Stephens, MD

Status: Discontinued

Indications of use: Lower leg trauma, neurovasc/lig/tendon injury suspected

308. At 0150 hours, it has been almost six hours since Jeremy was found (at 2000 hrs) with sudden pain in his right leg.

309. In September 2019, Dr. Cheryl Stephens is in her second year as a Family Medicine resident.

- Cheryl Stephens, MD, LinkedIn page

Experience



Resident Doctor

Piedmont Columbus Regional

2018 – Present · 3 yrs

Columbus, Georgia Area

- Piedmont Columbus Resident Biographies:
<https://www.piedmont.org/locations/piedmont-columbus/residency/resident-profiles>

310. On the morning of September 9, Dr. Stephens is supervised by Joshua Koerner, DO.

- PCe 49

Progress Notes by Joshua Koerner, DO at 9/9/2019 2:41 AM

Author: Joshua Koerner, DO

Service: Hospitalist

Author Type: Physician

Filed: 9/9/2019 5:01 AM

Date of Service: 9/9/2019 2:41 AM

Status: Signed

Editor: Joshua Koerner, DO (Physician)

Related Notes: Original Note by Cheryl Stephens, MD (Resident) filed at 9/9/2019 4:11 AM

311. In September 2019, Dr. Koerner is a Family Medicine physician less than 1-1/2 years into his career as a licensed physician.

- Georgia Composite Medical Board licensee information

Name: Joshua Nolen Koerner, DO		Designation: DO	
Lic #: 80124	Profession: Physician	Subtype: Full	
Status: Active	Issued: 4/4/2018	Expires: 2/28/2022	
Specialties			
Specialty/Subspecialty	Certifying Board	Primary Specialty?	
Family Medicine	ABFM	Y	
		N	

- US News biography page for Dr. Koerner (accessed 7/1/2021):
<https://health.usnews.com/doctors/joshua-koerner-1157346>

Diagnostic CTA

312. At approximately 0152 hrs, a plan is made to order a CT angiogram of Jeremy's right leg.

- PCe 144

0152: Dr. Stephens at bedside. Plan to do angiogram.

313. Dr. Stephens speaks to neurologist Dr. Valadi and interventional radiologist Dr. Osei-Bonsu.

- PCe 49

Progress Notes by Joshua Koerner, DO at 9/9/2019 2:41 AM

Author: Joshua Koerner, DO

Service: Hospitalist

Author Type: Physician

Filed: 9/9/2019 5:01 AM

Date of Service: 9/9/2019 2:41 AM

Status: Signed

Editor: Joshua Koerner, DO (Physician)

Related Notes: Original Note by Cheryl Stephens, MD (Resident) filed at 9/9/2019 4:11 AM

Paged at 2:20 for absent DP pulses of RLE. Spoke with neurologist Dr. Valadi and IR Dr. Osei Bonsu over the telephone. Ordered stat CTA-RLE for possible occlusion/complications post procedure. On physical examination, patient is alert and oriented, unable to extend RLE, cold to touch below the knee, doppler absent DP pulse to RLE. Spoke with wife over the telephone, updated on condition and received written consent. STAT CTA leg showed occlusion per comment by technologist contrast did not penetrate. Called Dr. Bonsu back to reevaluate.

314. Dr. Valadi advises "CT angiography, notification of Dr. Osui-Bonsu, and consideration for vascular surgery consultation."

- PCe 61

Neurology Progress Note

Subjective:

Interval History: Interval history since yesterday evening/early morning hours reviewed. I was contacted earlier in the day regarding the patient going to a floor bed from the ICU by stroke coordinator Jessica, and advised her to pass along to staff that I would like the patient to remain in the ICU. However shortly after midnight at 12:36 AM, I was contacted by nurse Christina informing me that the patient had arrived on the floor/neurology unit and inquired regarding order clarification for CT angiography of the neck and head. I gave the verbal order to the nurse Christina to kindly move the patient by the back to the ICU or to the neuro ICU with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower extremity symptoms, and advised and recommended CT angiography, notification of Dr.Osui-Bensu, and consideration for vascular surgery consultation. I asked that I kindly be notified if there are any plans to start the patient on anticoagulants. I spoke with Dr. Koerner after that and made the same recommendations above. When I contacted nursing staff in ICU today, I was informed that the patient unfortunately had undergone an above-the-knee amputation due to right lower extremity ischemia, myonecrosis, and compartment syndrome

315. Dr. Valadi then calls Dr. Koerner and makes the same recommendations.

- PCe 61

with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower extremity symptoms, and advised and recommended CT angiography, notification of Dr.Osui-Bensu, and consideration for vascular surgery consultation. I asked that I kindly be notified if there are any plans to start the patient on anticoagulants. I spoke with Dr. Koerner after that and made the same recommendations above. When I contacted nursing staff in ICU today, I was informed that the patient unfortunately had undergone an above-the-knee amputation due to right lower extremity ischemia, myonecrosis, and compartment syndrome

316. At 0220 hrs, Dr. Stephens enters an order for a CT angiogram — ordering it stat, and adding comments, “Post op day 1, thrombectomy, right groin insertion surgical site, absent RLE DP pulse.”

- PCe 206

CT angiogram lower extremity right [392901363]

Electronically signed by: Cheryl Stephens, MD on 09/09/19 0220

Status: Completed

Ordering user: Cheryl Stephens, MD 09/09/19 0220

Ordering provider: Cheryl Stephens, MD

Authorized by: Maura E Gonzalez, MD

Frequency: STAT Once 09/09/19 0220 - 1 occurrence

Indications of use: Lower leg trauma, neurovasc/lig/tendon injury suspected

Order comments: Post op day 1, thrombectomy, right groin insertion surgical site, absent RLE DP pulse

317. At 0233 hrs, Nurse Warren calls neurologist Dr. Valadi. She writes that Dr. Valadi agrees with the plan for an angiogram.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

318. At 0243 hrs, Nurse Warren calls Jeremy's wife, Beth, to gain consent for a diagnostic CT angiogram.

- PCE 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

319. At 0311 hrs, the diagnostic CT angiogram of Jeremy's right leg is performed.

- PCE 277

CT angiogram lower extremity right [392901364]

Resulted: 09/09/19 0554, Result status: Edited Result - FINAL

Ordering provider: Cheryl Stephens, MD 09/09/19 0220

Resulted by: Erik Richter, MD

Performed: 09/09/19 0311 - 09/09/19 0354

Accession number: PCM6316880

Resulting lab: EMC RAD

Addenda signed by Erik Richter, MD on 09/09/19 0554

320. At 0425 hrs Eastern (0325 hrs Central), radiologist Dr. Erik Richter calls Nurse Warren to report his interpretation of the CTA — an “extensive nearly completely occlusive thrombus throughout the right leg arterial vasculature.”

- PCE 277

Ordering provider: Cheryl Stephens, MD 09/09/19 0220
Performed: 09/09/19 0311 - 09/09/19 0354
Resulting lab: EMC RAD
Addenda signed by Erik Richter, MD on 09/09/19 0554
***** ADDENDUM #1 *****

Resulted by: Erik Richter, MD
Accession number: PCM6316880

Clinical findings were discussed with and acknowledged by nurse Tonya Warren on 9/9/2019 3:25 AM CDT.

Electronically signed by: Erik Richter MD 9/9/2019 4:54 AM CDT
Workstation: 103-1191

- PCe 278

Impression:

Extensive nearly completely occlusive thrombus throughout the right leg arterial vasculature.

Electronically signed by: Erik Richter MD 9/9/2019 3:23 AM CDT Workstation: 103-1191

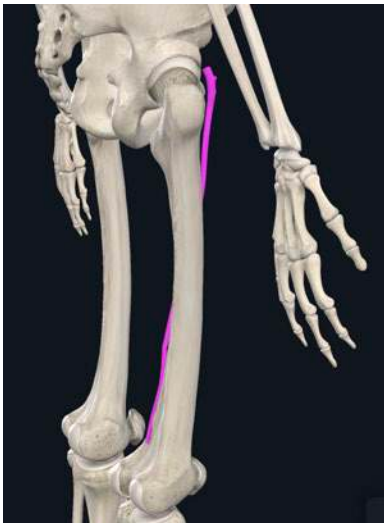
321. Dr. Richter finds, “Right common femoral, femoral, popliteal artery as well as runoff vessels are essentially nearly completely occluded with trace peripheral flow. The profunda branch of the femoral artery is patent.”

- PCe 278

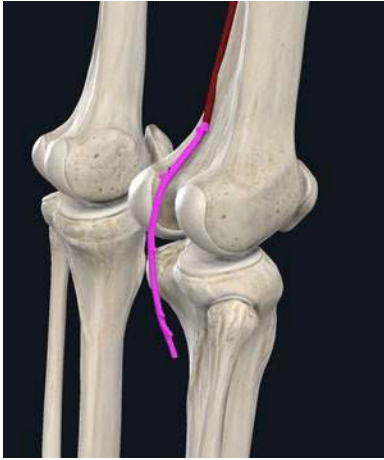
FINDINGS:

There is no acute fracture. Soft tissues are unremarkable. The bilateral common iliac and external iliac arteries are patent. Right common femoral, femoral, popliteal artery as well as runoff vessels are essentially nearly completely occluded with trace peripheral flow. The profunda branch of the femoral artery is patent.

322. The common femoral artery runs through the upper leg, from the groin to the knee.



323. The popliteal artery runs behind the knee.



324. The downstream arteries include the anterior and posterior tibial arteries.



325. At 0425 hrs, Nurse Warren writes a note to record her conversation with Dr. Richter.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

326. At 0428 hrs, Nurse Warren calls Dr. Stephens to convey what Dr. Richter reported.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

0428-spoke with Dr. Stephens about plans for IR intervention plans and reported Dr. Richter's report.

327. By 0428 hrs, it has been almost 8-1/2 hours since Jeremy was found with sudden pain in his right leg (at 2000 hrs), and over three hours since Jeremy was found (at 0120 hrs) to have no pedal pulse in his right leg.

Thrombectomy Attempt

328. At 0428 hrs, Nurse Warren and Dr. Stephens discuss a plan for a therapeutic interventional radiology procedure.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

0428-spoke with Dr. Stephens about plans for IR intervention plans and reported Dr. Richter's report.

329. After learning of the CTA findings, Dr. Stephens calls neurologist Dr. Osei-Bonsu to reevaluate.

- PCe 49

Paged at 2:20 for absent DP pulses of RLE. Spoke with neurologist Dr. Valadi and IR Dr. Osei Bonsu over the telephone. Ordered stat CTA-RLE for possible occlusion/complications post procedure. On physical examination, patient is alert and oriented, unable to extend RLE, cold to touch below the knee, doppler absent DP pulse to RLE. Spoke with wife over the telephone, updated on condition and received written consent. STAT CTA leg showed occlusion per comment by technologist contrast did not penetrate. Called Dr. Bonsu back to reevaluate.

330. At 0438 hrs, Nurse Warren calls Jeremy's wife, Beth, to obtain consent for an interventional radiology procedure. Beth consents.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

0428-spoke with Dr. Stephens about plans for IR intervention plans and reported Dr. Richter's report.

0438- called Beth Jones (wife) to gain consent for IR procedure. Consent was obtained.

331. At 0455 hrs, interventional radiologist Dr. Samuel Osei-Bonsu is at Jeremy's bedside.

- PCE 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

0428-spoke with Dr. Stephens about plans for IR intervention plans and reported Dr. Richter's report.

0438- called Beth Jones (wife) to gain consent for IR procedure. Consent was obtained.

0455 dr. Onsei- Bonsu At bedside.

332. At 0500 hrs, Nurse Warren calls Beth to notify her of the planned procedure.

- PCE 145

Nursing Note by Latonya Warren, RN at 9/9/2019 1:38 AM (continued)

0500- Called wife to notify her of stat procedure.

333. At 0512 hrs, Nurse Warren takes Jeremy to the interventional radiology suite.

- PCe 145

0500- Called wife to notify her of stat procedure.

0512- Patient taken to IR via Bed with Tonya Warren, RN. Handoff was done with Sarah, RN.

334. Dr. Osei-Bonsu writes that “Written and oral informed consent [for an IR angiogram of Jeremy’s leg] was obtained after discussing the risks, benefits, and alternatives.”

- PCe 278

PROCEDURE:

Written and oral informed consent was obtained after discussing the risks, benefits, and alternatives. The patient was prepped and draped in the usual sterile fashion adhering to maximum sterile barrier techniques. Cap, mask, sterile gown and gloves, hand hygiene, large sterile sheet and 2% chlorhexidine (or acceptable alternative antiseptics per current guidelines) for cutaneous antiseptics, sterile ultrasound probe and sterile ultrasound gel were used. 1% lidocaine was used for local anesthetic.

335. At 0530 hrs, Dr. Osei-Bonsu begins an IR angiogram of Jeremy’s right leg.

- IR angiogram Exam Protocol summary (from DICOM image files)

Exam Protocol

Patient Info:											
Name: JONES, JEREMY						Sex: M ID: 907614844					
Patient Position: HFS											
											09-Sep-19 05:30:08
2	DSA	FIXED	CARE RT	Extremity	6s	2F/s	09-Sep-19	05:59:07			
A	70kV	304mA	157.5ms	0.1CL small 0.1Cu 48cm	667.72µGym ²	34.3mGy	0LAO	1CAU	12F		
4	DSA	FIXED	CARE RT	Extremity	7s	2F/s	09-Sep-19	06:06:29			
A	71kV	298mA	160.7ms	0.1CL small 0.1Cu 48cm	1356.5µGym ²	37.8mGy	0LAO	1CAU	13F		
6	DSA	FIXED	CARE RT	Extremity	8s	2F/s	09-Sep-19	06:36:23			
A	70kV	305mA	151.7ms	0.3CL small 0.1Cu 48cm	1425.9µGym ²	39.7mGy	0LAO	1CAU	15F		
11	DSA	FIXED	CARE RT	Extremity	5s	2F/s	09-Sep-19	07:25:22			
A	70kV	307mA	137.3ms	0.4CL small 0.1Cu 48cm	548.47µGym ²	24.6mGy	1LAO	0CRA	10F		
12	PERI	(4) PERIMAN	Rt Leq	PERI	*****	2F/s	09-Sep-19	07:47:33			
A	67kV	303mA	67.0ms	0.4CL small 0.1Cu 48cm	30.34µGym ²	1.0mGy	0LAO	0CRA	1F		
12	PERI	(3) PERIMAN	Rt Leq	PERI	3s	2F/s	09-Sep-19	07:47:35			
A	65kV	312mA	86.1ms	0.4CL small 0.2Cu 48cm	158.68µGym ²	5.3mGy	0LAO	0CRA	8F		
12	PERI	(2) PERIMAN	Rt Leq	PERI	7s	3F/s	09-Sep-19	07:47:40			
A	70kV	295mA	79.5ms	0.4CL small 0.0Cu 48cm	957.96µGym ²	32.3mGy	0LAO	0CRA	22F		
12	PERI	(1) PERIMAN	Rt Leq	PERI	3s	3F/s	09-Sep-19	07:47:43			
A	80kV	253mA	90.7ms	0.4CL small 0.0Cu 48cm	939.87µGym ²	31.7mGy	0LAO	0CRA	10F		

336. Dr. Osei-Bonsu finds intimal injury of the right common femoral artery with thrombosis of the superficial femoral artery. The intima is the innermost part of the artery.

- PCe 278

Under ultrasound guidance, the patent left common femoral artery was accessed with a 21-gauge needle in a retrograde fashion. A copy of the sonographic image was stored. An Omni flush catheter was advanced over a wire into the abdominal aorta to the level of the bifurcation. Using an 035 glide wire up and over access was achieved into the right external iliac artery. The Omni flush catheter was exchanged over a wire for a 4 French glide catheter. The Glidewire was exchanged for a long Amplatz wire. The glide catheter was then exchanged for a 7 French 35 cm vascular sheath. The wire was removed and a right lower extremity runoff was performed. There was intimal injury of the right common femoral artery with thrombosis of the SFA. The occlusion was crossed with a Glidewire and assistance of a 4 French glide catheter. Access into the distal popliteal artery was obtained. Over the wire,

337. Dr. Osei-Bonsu performs a partial thrombectomy using an AngioJet device.

- PCe 278

The glide catheter was then exchanged for a 7 French 35 cm vascular sheath. The wire was removed and a right lower extremity runoff was performed. There was intimal injury of the right common femoral artery with thrombosis of the SFA. The occlusion was crossed with a Glidewire and assistance of a 4 French glide catheter. Access into the distal popliteal artery was obtained. Over the wire, aspiration thrombectomy was performed with a 6 French solent catheter via the AngioJet device.

338. An AngioJet is a catheter-based device to break up a blood clot using high pressure liquid and pulsing action to break apart and remove the clot.

339. In the upper part of the femoral artery, Dr. Osei-Bonsu performs an angioplasty — using a catheter and balloon to widen the area of the artery in which blood can flow.

- PCe 278

aspiration thrombectomy was performed with a 6 French solent catheter via the AngioJet device. Angioplasty with an 8mm balloon was performed of the right common femoral and superficial femoral artery. A 10 mm x 38 cm atrium vascular stent was deployed at the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts

340. Dr. Osei-Bonsu places a 38-centimeter (15 inch) long stent in the upper part of the femoral artery.

- PCe 278

aspiration thrombectomy was performed with a 6 French solent catheter via the AngioJet device. Angioplasty with an 8mm balloon was performed of the right common femoral and superficial femoral artery. A 10 mm x 38 cm atrium vascular stent was deployed at the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts

341. These procedures improve blood flow in the upper femoral artery, where the stent was placed.

- PCe 278

Angioplasty with an 8mm balloon was performed of the right common femoral and superficial femoral artery. A 10 mm x 38 cm atrium vascular stent was deployed at the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed.

342. Despite the procedure, the clot remains in the lower femoral artery and popliteal artery.

- PCe 278

the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed. Despite multiple attempts there was still persistent thrombosis of the distal SFA and popliteal artery. Decision was then made to abort procedure and seek vascular surgical consultation.

343. Despite multiple attempts to remove the clot in the lower femoral artery and popliteal artery, the clot remains.

- PCe 278

flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed.
 Despite multiple attempts there was still persistent thrombosis of the distal SFA and popliteal artery. Decision was then made to abort procedure and seek vascular surgical consultation.

344. Dr. Osei-Bonsu finally aborts the thrombectomy and consults a vascular surgeon.

- PCe 278

flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed.
 Despite multiple attempts there was still persistent thrombosis of the distal SFA and popliteal artery. Decision was then made to abort procedure and seek vascular surgical consultation.

345. At the end of the procedure, Jeremy has no discernible blood flow below his right knee.

- PCe 278

FINDINGS:
 A. Right lower extremity runoff: Significant intimal injury seen at the level of the right common femoral artery with thrombosis of the superficial femoral artery and the popliteal artery.
 No flow was visualized below the knee.
 B. Status post stent placement within the right common femoral artery with improved antegrade flow into the proximal superficial femoral artery. Following multiple attempts at mechanical thrombectomy, there was improved flow in the superficial femoral artery with persistent thrombosis of the distal SFA and popliteal artery. Again no vascular flow seen below the knee.

346. The IR angiogram procedure lasts through 0816 hrs. The procedure takes approximately 2 hours and 45 minutes (having begun at 0530 hrs).

- Exam Protocol summary (from DICOM file)

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Exam Protocol
-----
Patient Info:
Name: JONES, JEREMY                               Sex: M ID: 907614844
-----

14  DSA          FIXED    RT Extremity          15s  2F/s  09-Sep-19 08:05:22
A  60kV 353mA  142.4ms 0.4CL small 0.6Cu 48cm 235.54µGym² 6.4mGy 0LAO 0CRA 28F

15  DSA          FIXED    RT Extremity          16s  2F/s  09-Sep-19 08:16:39
A  60kV 354mA  140.5ms 0.4CL small 0.6Cu 48cm 257.88µGym² 7.0mGy 0LAO 0CRA 31F

***Accumulated exposure data***
Performing Physician:                               Exposures: 10
Total Fluoro: 23.9min                               Total: 26978µGym² 881.9mGy
A Fluoro: 23.9min 20227µGym² 655.9mGy              Total: 26978µGym² 881.9mGy
=====

```

- Radiology image metadata (from DICOM file)

▼ Jones Jeremy Blake	9/9/19, 5:38 AM
FL Enh. Con.	9/9/19, 5:45 AM
IR ANGIOGRAM LOWER EXTREMITY RIGHT	9/9/19, 5:38 AM
CARE RT Extremity	9/9/19, 5:59 AM
CARE RT Extremity	9/9/19, 5:59 AM
FL Enh. Con.	9/9/19, 6:03 AM
CARE RT Extremity	9/9/19, 6:06 AM
CARE RT Extremity	9/9/19, 6:06 AM
FL Enh. Con.	9/9/19, 6:19 AM
CARE RT Extremity	9/9/19, 6:36 AM
CARE RT Extremity	9/9/19, 6:36 AM
FL Enh. Con.	9/9/19, 6:54 AM
FL Enh. Con.	9/9/19, 6:54 AM
FL Enh. Con.	9/9/19, 7:12 AM
FL Enh. Con.	9/9/19, 7:12 AM
FL Enh. Con.	9/9/19, 7:14 AM
FL Enh. Con.	9/9/19, 7:24 AM
CARE RT Extremity	9/9/19, 7:25 AM
Rt Leg PERI	9/9/19, 7:47 AM
Rt Leg PERI	9/9/19, 7:47 AM
Rt Leg PERI	9/9/19, 7:47 AM
Rt Leg PERI	9/9/19, 7:47 AM
FL Angio	9/9/19, 8:01 AM
RT Extremity	9/9/19, 8:05 AM
RT Extremity	9/9/19, 8:16 AM
Exam Protocol SR	9/9/19, 9:04 AM

347. Around 0816 hrs, Dr. Osei-Bonsu seeks a vascular surgery consultation from Dr. Bruce Brennaman — more than 12 hours after Jeremy’s sudden pain in his right leg (at 2000 hrs), and approximately seven hours after Jeremy was found with no pedal pulse in his right foot (at 0120 hours).

- PCe 278

IR angiogram lower extremity right [392901368]

Resulted: f

Ordering provider: Cheryl Stephens, MD 09/09/19 0430
Performed: 09/09/19 0913 - 09/09/19 0914
Resulting lab: EMC RAD
Narrative:

Resulted by: Samuel A. Osei-Bonsu, MD
Accession number: PCM6316996

EXAMINATION:

1. Ultrasound-guided vascular access
2. Right lower extremity angiogram
3. Mechanical thrombectomy of the right superficial and popliteal artery
4. Angioplasty of the right common, superficial femoral and popliteal artery
5. Conscious sedation

COMPARISON: None

HISTORY: Acute right limb ischemia

...

Under ultrasound guidance, the patent left common femoral artery was accessed with a 21-gauge needle in a retrograde fashion. A copy of the sonographic image was stored. An Omni flush catheter was advanced over a wire into the abdominal aorta to the level of the bifurcation. Using an 035 glide wire up and over access was achieved into the right external iliac artery. The Omni flush catheter was exchanged over a wire for a 4 French glide catheter. The Glidewire was exchanged for a long Amplatz wire. The glide catheter was then exchanged for a 7 French 35 cm vascular sheath. The wire was removed and a right lower extremity runoff was performed. There was intimal injury of the right common femoral artery with thrombosis of the SFA. The occlusion was crossed with a Glidewire and assistance of a 4 French glide catheter. Access into the distal popliteal artery was obtained. Over the wire, aspiration thrombectomy was performed with a 6 French solvent catheter via the AngioJet device.

Angioplasty with an 8mm balloon was performed of the right common femoral and superficial femoral artery. A 10 mm x 38 cm atrium vascular stent was deployed at the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed.

Despite multiple attempts there was still persistent thrombosis of the distal SFA and popliteal artery. Decision was then made to abort procedure and seek vascular surgical consultation.

All catheters, wires and sheaths were removed. Hemostasis was achieved with manual compression. A clean dressing was applied to the access site.

FINDINGS:

A. Right lower extremity runoff: Significant intimal injury seen at the level of the right common femoral artery with thrombosis of the superficial femoral artery and the popliteal artery. No flow was visualized below the knee.

B. Status post stent placement within the right common femoral artery with improved antegrade flow into the proximal superficial femoral artery. Following multiple attempts at mechanical thrombectomy, there was improved flow in the superficial femoral artery with persistent thrombosis of the distal SFA and popliteal artery. Again no vascular flow seen below the knee.

- PCE 26

Vascular Surgery Consultation

Jeremy Blake Jones

907614844

Surgeon: Bruce H. Brennaman, MD

Referring Physician: Dr. Samuel Osei-Bonsu

Date of Consultation:

9/9/2019

Reason for Consultation: Jeremy Blake Jones is a 33 y.o. male, seen in consultation at the request of Dr. Samuel Osei-Bonsu, for the evaluation of acute right lower extremity ischemia . Current symptoms are positive for cold, pulseless foot. Patient denies complaints of none as he is sedated. Onset of symptoms was between 2030 hours and 2230 hours 9/8/2019 based on history. Symptoms are currently worsening. Aggravating factors include unknown. Alleviating factors include unknown. This history is provided by spouse/SO, relative(s) and Dr. Osei-Bonsu. Patient seen yesterday for acute stroke with right side weakness and slurred speech. Outside of window for TPA. Cerebral angio and thrombectomy done with closure device placed right groin. Last noted palpable pulses 2030 hours with wife/sister seeing and reporting change in LLE BK with pale cool skin and discoloration of calf. Told by nurse patient pulses palpable and area of calf was a "charlie horse" per wife. Report of loss of RLE pulses at 0130 hours and caring physicians called. CTA ordered and findings suggestive of "flap" seen in right CFA. Dr. Osei-Bonsu called around 4 AM and patient taken to IR with CFA stent for suspected dissection CFA and flow restored to level of knee. Unable to show contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. NO movement or sensation RLE. Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

348. At some point after the IR procedure, Jeremy is taken to the operating room.

- PCe 278-79

The patient was transferred to the OR in stable condition.

ESTIMATED BLOOD LOSS: Minimal

SPECIMENS: None

Vascular Surgery Consult & Amputation

349. After the IR procedure, vascular surgeon Bruce H. Brenneman, MD comes to examine Jeremy.

- PCe 26

"charlie horse" per wife. Report of loss of RLE pulses at 0130 hours and caring physicians called. CTA ordered and findings suggestive of "flap" seen in right CFA. Dr. Osei-Bonsu called around 4 AM and patient taken to IR with CFA stent for suspected dissection CFA and flow restored to level of knee. Unable to show contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. NO movement or sensation RLE. Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

350. Dr. Brennaman concludes that Jeremy's leg symptoms began between 2030 hrs and 2230 hrs — between approximately 10 and 12 hours before Dr. Brennaman was consulted.

- PCe 26

Reason for Consultation: Jeremy Blake Jones is a 33 y.o. male, seen in consultation at the request of Dr. Samuel Osei-Bonsu, for the evaluation of acute right lower extremity ischemia . Current symptoms are positive for cold, pulseless foot. Patient denies complaints of none as he is sedated. Onset of symptoms was between 2030 hours and 2230 hours 9/8/2019 based on history. Symptoms are currently worsening. Aggravating factors include unknown. Alleviating factors include unknown. This history is provided by spouse/SO, relative(s) and Dr. Osei-Bonsu. Pateint seen yesterday for acute stroke with right side weakness and slurred speech. Outside of window for TPA. Cerebral angio and thrombectomy done with closure device placed right groin. Last noted palpable pulses 2030 hours with wife/sister seeing and reporting change in LLE BK with pale cool skin and discoloration of calf. Told by nurse patient pulses palpable and area of calf was a "charlie horse" per wife. Report of loss of RLE pulses at 0130 hours and caring physicians called. CTA

351. When Dr. Brennaman examines him, Jeremy's foot is cold and pulseless, and Jeremy's symptoms are worsening.

- PCe 26

Reason for Consultation: Jeremy Blake Jones is a 33 y.o. male, seen in consultation at the request of Dr. Samuel Osei-Bonsu, for the evaluation of acute right lower extremity ischemia . Current symptoms are positive for cold, pulseless foot. Patient denies complaints of none as he is sedated. Onset of symptoms was between 2030 hours and 2230 hours 9/8/2019 based on history. Symptoms are currently worsening. Aggravating factors include unknown. Alleviating factors include unknown. This history is provided by

- PCe 28

Physical Examination:

General- appears stated age and sedated

Eyes – lids and lashes normal, conjunctivae and sclerae normal, corneas clear and pupils equal, round, reactive to light and accomodation

Mouth- mucous membranes moist, pharynx normal without lesions

Neck – nontender, no masses, no stridor, no JVD, thyroid nonenlarged, carotid bruit left

Lymph/Heme - no lymphadenopathy

Lungs- normal air entry, lungs clear to auscultation, air entry: good and no rales, rhonchi or wheezing

Cardiac – regular rate and rhythm, S1, S2 normal, no murmur, click, rub or gallop and normal apical impulse

Chest- Normal

Abdomen – abdomen soft, normal active bowel sounds, no abnormal masses, no hepatosplenomegaly, no bruits and no hernias

Extremities – Cold, pulseless right leg with changes of myonecrosis and compartment syndrome seen. No motor or sensation right BK lower extremity. Diminished strength right upper extremity from stroke. Left side without issue.

Skin/Nails- RLE BK consistent with compartment syndrome and myonecrosis.

Musculoskeletal- no joint tenderness, deformity or swelling, abnormal exam of right U/LE, abnormal active range of motion of reduced right U/LE, abnormal muscle strength and tone of right U/L extremities

Nervous/ Sensory- Unable to obtain

Psych- sedated

352. On Dr. Brennaman's examination, Jeremy has no movement or sensation in his right foot.

- PCe 26

taken to IR with CFA stent for suspected dissection CFA and flow restored to level of knee. Unable to show contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. **NO movement or sensation RLE.** Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

353. Earlier, neurologist Dr. Valadi's examination showed Jeremy had 4/5 motor strength in his right foot.

- PCe 26

contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. **NO movement or sensation RLE.** Report of Neurologist showed right foot 4/5 on exam at ankle and foot. **Now no motor or sensory.** Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

- PCe 23

Consults by Nojan Valadi, MD at 9/8/2019 12:45 PM (continued)

Mental Status: Alert, a phasic, oriented to self, hospital, but not hospital name, March 2013, Speech: No dysarthria. N Language: Is able to name 3 out of 5 objects, unable to repeat, is able to follow some simple commands, perseverates, and is unable to follow more complex commands. Attention: No neglect or inattention.

Cranial Nerves II-XII: PERRL, EOMI, right homonymous hemianopsia, facial sensation diminished on the right, minimal right-sided nasolabial fold flattening, tongue midline, palate elevates symmetrically

Motor: Strength: Patient with mildly increased tone distally in the right hand, 2/5 proximal strength in the right upper extremity, 4/5 distally, **0/5 right lower extremity proximally, 2/5 knee extension, 4/5 foot dorsiflexion plantarflexion.**

Deep tendon reflexes: 3+ on the right, 1+ in the left. Toes upgoing on the right, downgoing on the left.

Coordination: Finger-to-nose intact on the left.

Gait and Romberg not tested.

354. On examining Jeremy, Dr. Brennaman concludes that Jeremy's lower right leg is probably not viable.

- PCe 26

contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. **NO movement or sensation RLE.** Report of Neurologist showed right foot 4/5 on exam at ankle and foot. **Now no motor or sensory.** Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

- PCe 29

Impression:

Patient with likely non-salvageable RLE from prolonged acute ischemia. See above for details. Patient with normal flow to RLE prior to events. Remainder of extremities with normal resting arterial flow.

Plan:

To OR emergently for RLE exploration and, if viable fasciotomy and revascularization and if non-salvageable RLE will perform AKA. Discussed at length with patient's wife and family with attendant risks, benefits of surgery and nonop treatment with risks and benefits. Wife us nurse and understands strong likelihood of non-salvageable RLE agreeing to AKA. All questions answered. Will proceed to OR.

355. Dr. Brennaman proceeds to the operating room for an emergency exploratory surgery with the hope of saving Jeremy's leg, but anticipating that amputation is likely necessary.

- PCe 29

Plan:

To OR emergently for RLE exploration and, if viable fasciotomy and revascularization and if non-salvageable RLE will perform AKA. Discussed at length with patient's wife and family with attendant risks, benefits of surgery and nonop treatment with risks and benefits. Wife us nurse and understands strong likelihood of non-salvageable RLE agreeing to AKA. All questions answered. Will proceed to OR.

356. At 0916 hrs, Jeremy is taken to a holding room from interventional radiology.

- PCe 144

Nursing Note by Tracy C. Frailey, RN at 9/9/2019 10:47 AM

Author: Tracy C. Frailey, RN	Service: Other	Author Type: Registered Nurse
Filed: 9/9/2019 10:50 AM	Date of Service: 9/9/2019 10:47 AM	Status: Signed
Editor: Tracy C. Frailey, RN (Registered Nurse)		

Received to holding room at 0916 from ir on hospital bed. Lethargic, awakens to verbal stimuli, opens eyes. Speech clear but does not answer questions appropriately, follows most simple commands. Unable to lift right arm but has weak grip right hand. Right calf is hardened, rle very pale with no palpable pulse, unable to move right leg.. Moving left side ext well.. No c/o at this time. Spouse at bedside. Consents signed per spouse. sr up x 3. Cont to assess closely. Anesthesia at bedside..

357. In preparation for the surgery, hospital staff places a Foley catheter in Jeremy's bladder. Dr. Brennaman notes that Jeremy's urine had a dark color similar to Coca-Cola. The color indicates myoglobinuria (an excess amount of myoglobin in the urine, mostly caused by muscle breakdown).

- PCe 36

left thigh and abdomen were prepped and draped in sterile fashion by Ancef solution. A Foley catheter had been placed at the beginning of the case and the patient had changes that were most consistent with myoglobinuria with very dark Coca Cola appearing urine. His IV fluids were continued with bicarbonate in addition. The patient's mid posterior compartment was

358. At 0953 hrs, the anesthesia pre-procedure is complete.

- PCe 149

Events		
Date	Time	Event
9/9/2019	0953	Anesthesia Pre Procedure Complete
	1027	Anesthesia Start
	1027	Patient in Room
	1027	Start Data Collection
	1044	Induction
	1045	Intubation
	1117	Patient Ready for Procedure
	1124	Procedure Start
	1312	Begin Emergence
	1312	Extubation
	1312	Stop Data Collection

359. During the exploratory surgery, Dr. Brennaman finds that the right lower leg has no viable muscle. “The entire 4 compartments of the right lower extremity showed no viable muscle whatsoever. There was no movement to electric current. The muscle was dark red and all 4 compartments were tightly encumbered resulting in a dead leg.”

- PCe 35

Op Note signed by Bruce H Brennaman, MD at 9/11/2019 5:20 AM

Author: Bruce H Brennaman, MD	Service: Vascular Surgery	Author Type: Physician
Filed: 9/11/2019 5:20 AM	Date of Service: 9/9/2019 12:00 AM	Status: Signed
Editor: Bruce H Brennaman, MD (Physician)		Trans ID: 11270578
Dictation Time: 9/9/2019 1:19 PM	Trans Time: 9/9/2019 11:08 PM	Trans Doc Type: Operative Note
		Trans Status: Available

...

FINDINGS: The entire 4 compartments of the right lower extremity showed no viable muscle whatsoever. There was no movement to electric current. The muscle was dark red and all 4 compartments were tightly encumbered resulting in a dead leg.

360. During the surgery, Dr. Brennaman finds the muscle very dark, cold, and unresponsive to stimulation.

- PCE 36

with very dark Coco Cola appearing urine. His IV fluids were continued with bicarbonate in addition. The patient's mid posterior compartment was then exposed through a longitudinal incision. The muscle was very dark, cold, and did not respond to any stimulation. I checked in several places and pulled the muscle down to completely expose the area of the popliteal artery and again there was no muscle function noted. I then opened the anterior compartment and extended that down into the lateral compartment, finding the same finding with all muscle appearing to be nonviable and nonreactive. At this point, I elected to proceed to an above-knee amputation. With that in mind, instruments were swapped and a 2-0 silk tie

361. Dr. Brennaman then amputates Jeremy's right leg above the knee.

- PCE 36

artery and again there was no muscle function noted. I then opened the anterior compartment and extended that down into the lateral compartment, finding the same finding with all muscle appearing to be nonviable and nonreactive. At this point, I elected to proceed to an above-knee amputation. With that in mind, instruments were swapped and a 2-0 silk tie was used to create a fish mouth type marking for amputation. The entire area of exposure was incised sharply and cautery used to get through the

Causes of Action

Count 1 Ordinary Negligence (The Medical Center, Inc. Piedmont Healthcare, Inc., Radiology Partners, Inc., and Columbus Diagnostic Center, Inc.)⁴

362. Plaintiff incorporates by reference, as if fully set forth herein, all preceding paragraphs of this Complaint.

363. The Medical Center, Inc. and Piedmont Healthcare, Inc. each participate in managing Piedmont Columbus Regional Hospital, in Columbus, Georgia.

364. The leadership, management, and administrative roles for the hospital do not require professional licensure by the State of Georgia.

⁴ A claim of negligence against hospital managers is not a claim of professional negligence against a licensed professional (or based on negligence by a licensed professional). Therefore such a claim is not subject to OCGA 9-11-9.1 or 24-7-702(c). Rather, such a claim is for ordinary negligence subject to ordinary notice pleading.

OCGA 9-11-9.1 governs claims for professional negligence:

- (i) against “A professional licensed by the State of Georgia and listed in subsection (g) of this Code section,”
- (ii) against a business entity “based upon the action or inaction of a professional licensed by the State of Georgia and listed in subsection (g) of this Code section,” and
- (iii) against a health care facility “based upon the action or inaction of a health care professional licensed by the State of Georgia and listed in subsection (g) of this Code section.”

Hospital management and administrative staff are not required to be licensed and are not listed in OCGA 9-11-9.1(g).

365. Multiple members of the Board of Directors of MCI have no professional license.

366. Multiple members of the Board of Directors of PHI have no professional license.

367. Multiple members of the senior management/administration of MCI have no professional license.

368. Multiple members of the senior management/administration of PHI have no professional license.

369. The Medical Center, Inc. Piedmont Healthcare, Inc., Radiology Partners, Inc., and Columbus Diagnostic Center, Inc. (collectively, the “Corporate Defendants”) each owed the patients of the Hospital an ordinary duty to manage the healthcare services at the Hospital in a manner designed to safeguard patients against medical error.

370. Each of the Corporate Defendants, through its respective leaders, managers, and administrators, breached that duty, by failing to implement policies, procedures, and practices sufficient to safeguard patients against medical error.

371. The repeated confounding failures by the individual Defendants reveal and exemplify those systemic failures.

372. The systemic breaches by the Corporate Defendants were thus causes of Jeremy Jones’ injuries and Beth Jones’ loss of consortium.

373. The systemic breaches by the Corporate Defendants include but are not limited to the following:

i. Task: Institute supervision and support for residents

Requirement

374. Hospital management and attending physicians are responsible for ensuring that residents are properly supervised and supported. Failure to do so endangers patients.

375. The overall responsibility lies with hospital management, who need not be licensed physicians or nurses. The managers must recruit the efforts of the hospital's medical and nursing staff.

Violation

376. The clinical failings in this Complaint indicate that the hospital management and supervising physicians likely failed to act reasonably to ensure proper supervision and support for the resident physicians involved in the treatment of Jeremy Jones.

Causation & Damages

377. This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia.

378. This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

ii. Task: Institute patient safety systems

Requirement

379. Hospital management, working through clinical staff, is responsible for developing and implementing patient safety systems. This includes, among other things, leading efforts to create protocols to avoid or mitigate known risks, efforts to promulgate and train staff concerning such protocols, efforts to monitor compliance, and efforts to remediate deficiencies.

Violation

380. The clinical failings discussed below indicate that the hospital management likely failed to act reasonably to develop and implement patient safety systems pertaining to risks of acute limb ischemia in patients who have recently undergone endovascular procedures.

Causation & Damages

381. This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia.

382. This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

Count 2 Professional Negligence (all Defendants)

383. Plaintiffs incorporate by reference, as if fully set forth herein, all preceding paragraphs of this Complaint.

384. The Defendants and their agents violated their standards of care and caused harm in at least the following respects:

- iii. Task: Sept 8, approx. 1400 hrs** — Provide for peripheral vascular monitoring for patients who have recently undergone an endovascular procedure (such as a stroke thrombectomy).

Requirement

385. Provision must be made for frequent (*e.g.*, hourly) monitoring of the peripheral vascular status of patients in the 12-24 hours after undergoing an endovascular procedure such as a thrombectomy for stroke.

386. This responsibility ultimately lies with hospital management. Additionally, the interventionalist bears responsibility for ensuring adequate post-procedure assessment. Depending on the structure of responsibility at the hospital, responsibility may also lie with the ICU or other unit management, with the ICU physicians responsible for the patient, and with the nursing management.

Violation

387. No orders were entered for routine peripheral vascular checks. And as shown by the pattern of infrequent checks, the hospital and ICU effectively had no policies or protocols requiring frequent peripheral vascular checks.

388. In this respect, MCI, PHI, and the interventionalist who performed the thrombectomy (Dr. Samuel Osei-Bonsu) violated their standards of care. Depending on the division of responsibility at the hospital, the ICU management, the responsible ICU physicians, and/or the nursing leadership may have violated their standards of care.

Causation & Damages

389. This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia. The thrombosis ultimately identified in Jeremy's right leg was the cause of Jeremy's leg pain identified — despite sensory deficits in that leg — at 2000 hrs on Sept 8. If MCI, PHI, or Dr. Osei-Bonsu had performed their duties in this respect, the thrombus likely would have been identified and treated before the thrombus caused any long-term harm to Jeremy.

390. This violation contributed to Jeremy's suffering an unnecessary above-the-knee amputation.

- iv. **Task: Sept 8, 1552 hrs** — Order and provide ICU care for a post-stroke-thrombectomy patient.

Requirement

391. A physician admitting a patient to an ICU after thrombectomy for a stroke should admit the patient for 24 hours, unless exigent circumstances require a shorter time. Twenty-four hour observation is routinely ordered for post-stroke thrombectomy patients, and 24-hour observation facilitates close monitoring and prompt response to complications.

392. A physician and nurse providing ICU care pursuant to an order to discharge the patient after remaining stable for 4-5 more hours must keep the patient in the ICU until a physician's examination finds the patient stable.

Violation

393. Dr. Nicolais violated the standard of care by ordering that Jeremy be discharged from the ICU without an adequate period for monitoring.

394. Dr. Valluri, Dr. Stephens, and Nurse Tabitha Miller violated the standard of care by discharging Jeremy from the ICU at around 2250 hrs on September 8. Jeremy was not stable, and no physician examined Jeremy at that time to determine whether he was stable.

Causation & Damages

395. These violations caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia. The premature transfer of Jeremy from one nurse (Tabitha Miller) to another (Christina Orr) likely contributed to the failure of hourly monitoring of Jeremy's vascular status — and thus in turn to the delayed diagnosis and treatment of Jeremy's right leg acute ischemia.

396. These violations contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

- v. **Task: Sept 8, 2000 hrs** — Manage a post-thrombectomy patient with sudden, serious pain in the leg used for the puncture/access site for the thrombectomy.

Requirement

397. On being informed of this situation, the responsible physician must perform a physical examination of the leg and, unless vascular injury can be ruled out, order stat diagnostic imaging and/or consult vascular surgery.

Violation

398. Dr. Valluri did not document and did not perform any bedside physical examination of Jeremy's leg. Nor did Dr. Valluri consult vascular surgery. Dr. Valluri violated the standard of care in this respect.

Causation & Damages

399. This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia and contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

- vi. Task: Sept 8, 2300 hrs** — Again, manage a post-thrombectomy patient with sudden, serious pain in the leg used for the puncture/access site for the thrombectomy.

Requirement

400. A nurse identifying the patient in this situation must perform and document a physical assessment of the leg and request the responsible physician to examine the leg.

401. On being informed of this situation, the responsible physician must perform a physical examination of the leg and, unless vascular injury can be ruled out, order stat diagnostic imaging and/or consult vascular surgery.

Violation

402. Nurse Christina Orr failed to perform and document an assessment of Jeremy's leg. And again Dr. Valluri failed to examine Jeremy's leg and order proper followup. Dr. Valluri and Nurse Orr violated the standard of care in this respect.

Causation & Damages

403. These violations caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia and contributing to Jeremy's suffering an unnecessary leg above-the-knee amputation.

- vii. Task: After Sept 8, 2000 hrs until Sept 9, 0120 hrs** — Ongoing monitoring to assess the leg of a post-thrombectomy patient with sudden, serious pain in the leg used for the puncture/access site for the thrombectomy.

Requirement

404. In addition to notifying the responsible physician(s), a nurse responsible for a patient in this circumstance must perform frequent (at least hourly) assessments of the vascular status of the patient's leg.

Violation

405. Despite Jeremy's post-thrombectomy risk for leg ischemia, despite significant pain being noted both at 2000 hrs and 2304 hrs, and despite recognizing that they must "closely monitor" Jeremy's leg, the nursing staff failed to perform even hourly assessments of Jeremy's leg. In this respect, the nursing staff (Nurse Miller and Nurse Orr) violated the standard of care.

Causation & Damages

406. These violations caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia and contributing to an unnecessary above-the-knee amputation.

- viii. **Task: Sept 9, 0130 hrs** — Manage (or supervise residents managing) the leg of the same patient hours later, when the leg is found without pedal pulses, and where evaluation of sensory and motor function is limited by deficits from a stroke.

Requirement

407. Physicians assessing a patient in these circumstances must inform themselves of the relevant medical history — including the leg pain beginning hours earlier. The physicians must act on the possibility that acute limb ischemia had begun 5-1/2 hours earlier, meaning that the time window for saving the leg might be quickly closing.

408. Accordingly, the physicians must treat the case as a limb-threatening emergency, requiring emergent diagnosis and treatment by a vascular surgeon.

Violation

409. The residents did not treat Jeremy's pulseless leg as an emergency. They did not document (and likely did not perform) a bedside diagnostic examination by Doppler device, to assess the degree of weakness of arterial and venous flow in the leg — which was important to understand the severity of ischemia. Nor did the residents consult vascular surgery (the most important action) despite being advised to do so by Dr. Valadi. The residents did order stat diagnostic imaging

(though it was not performed quickly). The residents did not, however, order any treatment for Jeremy's ischemic leg. In these respects, the residents — Dr. Valluri and Dr. Cheryl Stephens — violated the standard of care.

410. Additionally, the supervising physician, Dr. Koerner, failed to provide the residents any supervision or support as they dealt with a surgical emergency — despite being alerted and advised by Dr. Valadi. In this respect Dr. Koerner violated the standard of care.

Causation & Damages

411. These violations caused harm to Jeremy. They further delayed the treatment of Jeremy's ischemic leg and contributed to the painful death of Jeremy's lower right leg.

412. These violations caused Jeremy to undergo an otherwise unnecessary above-the-knee leg amputation.

- ix. **Task: Sept 9, 0200 hrs** — Consult on the same patient shortly after the leg was found to be pulseless.

Requirement

413. Any physician consulting on a patient in Jeremy's condition as of 0130 hours on Sept 9 was required to ask about the history of the patient's leg issues — which in this case went back to the sudden pain noted at 2000 hrs the night before. Accordingly, the consulting physician must advise or provide emergent diagnosis and treatment — preferably by a vascular surgeon (if available) but at least by an interventional radiologist with a vascular surgeon standing by.

414. The requirement to act to ensure emergent treatment applies to any physician involved, regardless of specialty. While the physician's particular practice area dictate the specific assistance the physician can offer (e.g., recommendations vs. hands-on treatment), the general duty to ensure emergent treatment applies across specialties.

Violation

415. The interventional radiologist, Dr. Samuel Osei-Bonsu, did not recommend an immediate vascular surgery consult when first notified of Jeremy's pulseless leg. Nor did Dr. Osei-Bonsu immediately come in to treat Jeremy. Instead, Dr. Osei-Bonsu advised purely diagnostic imaging that caused a delay of approximately three hours (from approximately 0200 hrs when Dr. Osei-Bonsu was consulted until approximately 0500 hrs when Dr. Osei-Bonsu was bedside.) In failing to act to ensure emergent treatment, Dr. Osei-Bonsu violated the standard of care.

Causation & Damages

416. This violation further delayed treatment of Jeremy's ischemic leg and contributed to the death of Jeremy's lower right leg.

417. This violation caused Jeremy to undergo an otherwise unnecessary above-the-knee leg amputation.

418. This list of negligent acts is not exhaustive.

419. The corporate Defendants are vicariously liable for the negligence of their employees or other agents, because the agents acted within the scope of their agency for the corporate Defendants.

420. Pursuant to OCGA Title 51, Chapter 4, Jeremy Jones is entitled to recover from all Defendants for all damages caused by the Defendants' professional negligence.

Count 3 Loss of Consortium (all Defendants)

421. Plaintiffs incorporate by reference, as if fully set forth herein, all preceding paragraphs of this Complaint.

422. As a result of the standard-of-care violations discussed above, Beth Jones has suffered a loss of consortium.

423. Mrs. Jones is entitled to recover from all Defendants for the loss of consortium she has suffered.

Damages & Jury Demand

424. Plaintiffs incorporate by reference, as if fully set forth herein, all preceding paragraphs of this Complaint.

425. As a direct and proximate result of the Defendants' conduct, Plaintiffs are entitled to recover from Defendants reasonable compensatory damages in an amount exceeding \$10,000.00 to be determined by a fair and impartial jury for all damages Plaintiff suffered, including physical, emotional, and economic injuries.

426. WHEREFORE, Plaintiffs demand a trial by jury and judgment against the Defendants as follows:

- a. Compensatory damages in an amount exceeding \$10,000.00 to be determined by a fair and impartial jury;
- b. All costs of this action;
- c. Expenses of litigation pursuant to OCGA 13-6-11;
- d. Punitive damages; and
- e. Such other and further relief as the Court deems just and proper.

August 30, 2020

Respectfully submitted,

/s/ Lloyd N. Bell

Georgia Bar No. 048800

Daniel E. Holloway

Georgia Bar No. 658026

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**AFFIDAVIT OF JONATHAN M. SCHWARTZ, MD, MBA REGARDING TREATMENT OF
JEREMY JONES AT PIEDMONT COLUMBUS REGIONAL MIDTOWN HOSPITAL**

PERSONALLY APPEARS before the undersigned authority, duly authorized to administer oaths, comes JONATHAN M. SCHWARTZ, MD, MBA, who after first being duly sworn, states as follows:

Introduction

1. This affidavit addresses medical negligence that occurred during Jeremy Jones' admission at Piedmont Columbus Regional Midtown Hospital that began on September 8, 2019.
2. This is a preliminary affidavit for a limited purpose. I understand the limited purpose of this affidavit is to satisfy the requirements of Georgia statute OCGA § 9-11-9.1.
3. This affidavit addresses specific matters that Plaintiff's counsel have asked me to address. I have not attempted to identify all standard-of-care violations. I have not attempted to state every causation opinion I have.
4. I use the term "standard of care" to refer to that degree of care and skill ordinarily exercised by members of the medical profession generally under the same or similar circumstances and like surrounding conditions as pertained to the medical providers I discuss here.
5. Plaintiff's counsel drafted this affidavit after consulting with me, and I reviewed the draft and edited it to make sure it correctly states my views. I have not, however, edited this affidavit for style, so it does not necessarily "sound" like me.
6. I would not expect my substantive opinions to be unique to me. The matters addressed here are well-known, and I would expect many other physicians to hold the same opinions I express below.
7. I hold all the opinions expressed below to a reasonable degree of medical certainty — that is, more likely than not.
8. If additional information becomes available later, my views may change.
9. I understand that Plaintiff's counsel will provide this affidavit to the Defendants, and that their insurance company will hire lawyers and medical experts to review this case and to review this affidavit. I invite the Defense to communicate with me by letter, copied to Plaintiff's counsel, if the Defense believes I have not been given, or have overlooked or misconstrued, any relevant information — for example, data points the Defense believes I have overlooked in the medical records.
10. The Defense need not wait to take my deposition to communicate with me. I will consider any information the Defense wishes to bring to my attention by letter. If appropriate, I will then provide a supplemental affidavit.

Qualifications

11. I am more than 18 years old, suffer from no legal disabilities, and give this affidavit based upon my own personal knowledge and belief.
12. I do not recite my full qualifications here. I recite them only to the extent necessary to establish my qualifications for purposes of expert testimony under OCGA 24-7-702. However, my Curriculum Vitae is attached hereto as Exhibit "A." My CV provides further detail about my qualifications. I incorporate and rely on that additional information here.
13. The events at issue here occurred in September 2019.
14. I am qualified to provide expert testimony pursuant to OCGA 24-7-702. That is:
 - a. In September 2019, I was licensed by an appropriate regulatory agency to practice

my profession in the state in which I was practicing or teaching in the profession.

Specifically, I was licensed by the State of Michigan to practice as a physician.

- b. In September 2019, I had actual professional knowledge and experience in the areas of practice on which I offer licensed-professional standard-of-care opinions.

I had this knowledge and experience as the result of having been regularly engaged in the active practice of the foregoing areas of specialty of my profession for at least three of the five years prior to September 2019, with sufficient frequency to establish an appropriate level of knowledge of the matter my opinions address.

Specifically, I am a hospitalist, and I am familiar with the evaluation and initial management of patients with limb ischemia.

Evidence Considered

15. I have reviewed medical records from Piedmont Columbus Regional Midtown Hospital pertaining to Jeremy Jones.

16. I invite the Defense to send me any evidentiary materials or commentary they believe may help to exonerate any Defendant.

Reference Materials

17. The Jones' counsel have shared with me various materials prepared by counsel and which I understand they intend to share with the Defense. These materials include:

- a Factual Summary stamped: "Last printed 8/24/21 5:43:00 PM,"
- a Medical Principles document stamped: "Last printed 8/3/21 4:21:00 PM," and
- screenshots from a visual timeline.

18. I have not relied on these documents in forming my opinions. Nor have I edited those documents.

19. However, the factual summary and visual timeline provide useful references for many of the facts concerning the treatment of Jeremy Jones. In particular, the screenshots from the medical records in the factual summary provide a useful reference to pinpoint specific facts.

20. The "medical principles" document correctly recites basic medical facts or principles that apply to this case and that should be well known to physicians responsible for assessing and managing a patient who may be suffering limb ischemia.

Opinions

21. In deposition or trial testimony I may elaborate on the opinions stated below, and in doing so I may offer related, subsidiary, or incidental opinions.

- i. **Task:** Supervision and support for residents

Requirement

Hospital management and attending physicians are responsible for ensuring that residents are properly supervised and supported. Failure to do so endangers patients.

The overall responsibility lies with hospital management, who need not be licensed physicians or nurses. The managers must recruit the efforts of the hospital's medical and nursing staff.

Violation

The clinical failings discussed below indicate that the hospital management and attending physicians likely failed to act reasonably to ensure proper supervision and support for the resident physicians involved in the treatment of Jeremy Jones.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's

leg ischemia.

This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

ii. **Task:** Patient safety systems

Requirement

Hospital management, working through clinical staff, is responsible for developing and implementing patient safety systems. This includes, among other things, leading efforts to create protocols to avoid or mitigate known risks, efforts to promulgate and train staff concerning such protocols, efforts to monitor compliance, and efforts to remediate deficiencies.

Violation

The clinical failings discussed below indicate that the hospital management likely failed to act reasonably to develop and implement patient safety systems pertaining to risks of acute limb ischemia in patients who have recently undergone endovascular procedures.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia.

This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

iii. **Task: Sept 8, approx. 1400 hrs** — Provide for peripheral vascular monitoring for patients who have recently undergone an endovascular procedure (such as a stroke thrombectomy).

Requirement

Provision must be made for frequent (e.g., hourly) monitoring of the peripheral vascular status of patients in the 12-24 hours after undergoing an endovascular procedure such as a thrombectomy for stroke.

This responsibility ultimately lies with hospital management. Additionally, the interventionalist bears responsibility for ensuring adequate post-procedure assessment. Depending on the structure of responsibility at the hospital, responsibility for general responsibility may also lie with the ICU or other unit management, with the ICU physicians responsible for the patient, and with the nursing management.

Key Facts & Violation

- From 1258 hrs to 1316 hrs, Dr. Osei-Bonsu performs a thrombectomy. (Factual Summary, ¶ 26.)
- At 1401 hrs, Dr. Maura Gonzalez enters a set of orders for Jeremy's post-thrombectomy care. (Factual Summary, ¶ 39.)
- At 1451 hrs, Jeremy is admitted to the ICU. (Factual Summary, ¶ 43.)
- At 1552 hrs, Dr. Vincent Nicolais writes an Initial Critical Care Report. (Factual Summary, ¶ 47.)
- At 1600 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 49.)
- At 1700 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 50.)
- At 1800 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 51.)
- At 1900 hrs, Nurse Miller documents that Jeremy's peripheral vascular status is WDL, within defined limits, and that his right leg pedal pulse was "+2." (Factual Summary, ¶ 54.)
- At 2000 hrs, Nurse Miller documents that Jeremy has sudden, cramping pain at a level of 6/10, that Jeremy's right calf muscle is cramping, and that as a pain intervention

Jeremy received massage and emotional support. Nurse Miller also documents that Jeremy's skin is clammy and diaphoretic (i.e., sweating heavily). (Factual Summary, ¶ 56.)

- At approximately 2031 hrs, Nurse Miller notifies Dr. Manasa Valluri of "pt's constant pain/knot in R calf muscle." Nurse Miller notes that Jeremy's pedal pulse is present and "no drainage/hematoma present on R groin incision." Nurse Miller notes, "will closely monitor pt." (Factual Summary, ¶ 59.)
- At 2100 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 62.)
- At 2200 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 66.)
- At 2255 hrs and 2300 hrs, no assessment is documented for Jeremy's peripheral vascular status. No assessment is documented for cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 70.)
- At midnight, no assessments of Jeremy are recorded in the flowsheets. (Factual Summary, ¶ 82.)
- At 0100 hrs, Nurse Christina Orr does not record assessments of Jeremy. (Factual Summary, ¶ 85.)
- At approximately 0118 hrs, Nurse Orr transfers Jeremy to another nurse (presumably to the Neuro ICU). (Factual Summary, ¶ 87.)
- At the time of the 0118 hrs handoff, Jeremy has been in the care of Nurse Christina Orr since approximately 2300 hrs — about 2 hours and 20 minutes. In that time, Nurse Orr does not record any assessment of Jeremy's right leg. (Factual Summary, ¶ 88.)
- At 0120 hrs, within minutes of Jeremy being transferred to her care, Nurse Warren performs an assessment of Jeremy — including the vascular status of Jeremy's right leg. (Factual Summary, ¶ 90.) Nurse Warren notes that Jeremy's right leg has no pedal pulses, and that the skin was cool and cyanotic. (Factual Summary, ¶ 91.)

I find no orders for routine peripheral vascular checks. And from the pattern of infrequent checks, I conclude the hospital and ICU likely had no policies or protocols requiring frequent peripheral vascular checks.

In this respect, the hospital management and the interventionalist who performed the thrombectomy (Dr. Samuel Osei-Bonsu) violated their standards of care. Depending on the division of responsibility at the hospital, the ICU management, the responsible ICU physicians, and/or the nursing leadership may have violated their standards of care.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia. The thrombosis ultimately identified in Jeremy's right leg likely was the cause of Jeremy's leg pain identified — despite sensory deficits in that leg — at 2000 hrs on Sept 8. If the hospital's ICU management, the critical care physicians, or the interventionalist had performed their duties in this respect, the thrombus likely would have been identified and treated before the thrombus caused any long-term harm to Jeremy.

This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

iv. Task: Sept 8, 1552 hrs — Order ICU care for a post-stroke-thrombectomy patient.

Requirement

A physician admitting a patient to an ICU after thrombectomy for a stroke should admit the patient for 24 hours, unless exigent circumstances require a shorter time. Twenty-four hour observation is routinely ordered for post-stroke thrombectomy patients, and 24-hour observation facilitates close monitoring and prompt response to complications such patients are at risk for (including acute limb ischemia).

Key facts & violation

- On Sept 8 at 1217 hrs, Dr. Valadi requests that Jeremy be placed in the ICU after a

planned thrombectomy for an ischemic stroke. (Factual Summary, ¶ 23.)

- From 1258 hrs to 1316 hrs, Dr. Osei-Bonsu performs a thrombectomy. (Factual Summary, ¶ 26.)
- At 1451 hrs, Jeremy is admitted to the ICU. (Factual Summary, ¶ 43.)
- At 1552 hrs, Dr. Nicolais writes instructions to observe Jeremy 4-5 more hours in the ICU and then, if stable, to transfer Jeremy to the neurosciences unit. (Factual Summary, ¶ 48.)
- At approximately 2251 hrs, contrary to the wishes of neurologist Dr. Nojan Valadi, Jeremy is transferred to a Neuro floor, room 1001. (Factual Summary, ¶ 68.)
- On Sept 9 at 0036 hrs, Nurse Christina Orr calls neurologist Dr. Nojan Valadi, to inform him that Jeremy has been moved from the ICU to the Neuro floor, and to seek clarification of orders. (Factual Summary, ¶ 83.)
- At 0036 hrs, Dr. Valadi orders that Jeremy be returned to the ICU or moved to the Neuro ICU. (Factual Summary, ¶ 84.)
- At 0100 hrs, Nurse Christina Orr does not record assessments of Jeremy. (Factual Summary, ¶ 85.)
- At 0104 hrs, Nurse Orr enters an order authorized by Dr. Valadi, to transfer Jeremy to the ICU. (Factual Summary, ¶ 86.)
- At approximately 0118 hrs, Nurse Orr transfers Jeremy to another nurse. (Factual Summary, ¶ 87.)

Dr. Nicolais violated the standard of care by ordering that Jeremy be discharged from the ICU prematurely.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia. The premature transfer of Jeremy from one nurse (Tabitha Miller) to another (Christina Orr) likely contributed to the failure of hourly monitoring of Jeremy's vascular status — and thus in turn to the delayed diagnosis and treatment of Jeremy's right leg acute ischemia.

This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

- v. **Task: Sept 8, 2000 hrs** — Manage a post-thrombectomy patient with sudden, serious pain in the leg used for the puncture/access site for the thrombectomy.

Requirement

On being informed of this situation, the responsible physician must perform a physical examination of the leg and, unless vascular injury can be ruled out, order stat diagnostic imaging and/or consult vascular surgery.

Key facts & violation

- At 1900 hrs, Nurse Miller documents that Jeremy's peripheral vascular status is WDL, within defined limits, and that his right leg pedal pulse was "+2." (Factual Summary, ¶ 54.)
- At 2000 hrs, Nurse Tabitha Miller documents an NIH Stroke Scale assessment. She notes a total score of 10, with right-side deficits. She notes a sensory deficit score of 1. (Factual Summary, ¶ 55.)
- At 2000 hrs, Nurse Miller documents that Jeremy has sudden, cramping pain at a level of 6/10, that Jeremy's right calf muscle is cramping, and that as a pain intervention Jeremy received massage and emotional support. Nurse Miller also documents that Jeremy's skin is clammy and diaphoretic (i.e., sweating heavily). (Factual Summary, ¶ 56.)
- At 2000 hrs, Nurse Miller documents that Jeremy's peripheral vascular status is Within Defined Limits, that he has no cyanosis, that his capillary refill is less than three seconds, and that his right leg pedal pulse is +2. (Factual Summary, ¶ 57.)
- At 2000 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg but that Jeremy shows a flicker of muscle on his right leg. (Factual Summary, ¶ 58.)

- At approximately 2031 hrs, Nurse Miller notifies Dr. Manasa Valluri of “pt’s constant pain/knot in R calf muscle.” Nurse Miller notes that Jeremy’s pedal pulse is present and “no drainage/hematoma present on R groin incision.” Nurse Miller notes, “will closely monitor pt.” (Factual Summary, ¶ 59.)

Dr. Valluri did not document (and likely did not perform) any bedside physical examination of Jeremy’s leg. Nor did Dr. Valluri consult vascular surgery. Dr. Valluri violated the standard of care in this respect.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy’s leg ischemia. The thrombosis ultimately identified in Jeremy’s right leg likely was the cause of Jeremy’s leg pain identified — despite sensory deficits in that leg — at 2000 hrs on Sept 8. If Dr. Valluri had complied with the standard of care, the thrombus likely would have been identified and treated before the thrombus caused any long-term harm to Jeremy.

This violation contributed to Jeremy’s suffering an unnecessary leg above-the-knee amputation.

- vi. **Task: Sept 8, 2300 hrs** — Again, manage a post-thrombectomy patient with sudden, serious pain in the leg used for the puncture/access site for the thrombectomy.

Requirement

A nurse identifying the patient in this situation must perform and document a physical assessment of the leg and request the responsible physician to examine the leg.

On being informed of this situation, the responsible physician must perform a physical examination of the leg and, unless vascular injury can be ruled out, order stat diagnostic imaging and/or consult vascular surgery.

Key facts & violation

- At 2255 hrs and 2300 hrs, no assessment is documented for Jeremy’s peripheral vascular status. No assessment is documented for cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 70.)
- At 2304 hrs, Nurse Christina Orr writes that Jeremy had arrived in Room 1001. (Factual Summary, ¶ 71.)
- At 2304 hrs, Nurse Christina Orr writes, “assessment complete.” (As indicated above, Nurse Orr records no assessment at or around 2300 hrs.) (Factual Summary, ¶ 72.)
- At 2304 hrs, Nurse Christina Orr notes that Jeremy complains of right leg cramping despite receiving Flexeril at 2117 hrs. (Factual Summary, ¶ 73.)
- At 2304 hrs, Nurse Christina Orr writes that a physician was paged concerning Jeremy’s leg cramping. (Factual Summary, ¶ 74.)
- At 2304 hrs, Nurse Christina Orr writes that she will continue to monitor Jeremy closely. (Factual Summary, ¶ 75.)
- At 2314 hrs, Dr. Valluri ordered 10 mg of Flexeril for Jeremy. (Factual Summary, ¶ 76.)
- At midnight, no assessments of Jeremy are recorded in the flowsheets. (Factual Summary, ¶ 82.)

Nurse Christina Orr failed to perform and document an assessment of Jeremy’s leg. Nurse Orr violated the standard of care in this respect. And again Dr. Valluri failed to examine Jeremy’s leg and order proper followup.

Causation & Damages

These violations caused harm to Jeremy, by contributing to the delay in treating Jeremy’s leg ischemia. The thrombosis ultimately identified in Jeremy’s right leg likely was the cause of Jeremy’s leg pain identified (again) at 2304 hrs on Sept 8. If Nurse Orr and Dr. Valluri had complied with their standards of care, the thrombus likely would have been identified and treated before the thrombus caused any long-term harm to Jeremy.

This violation contributed to Jeremy’s suffering an unnecessary leg above-the-knee amputation.

- vii. **Task: After Sept 8, 2000 hrs until Sept 9, 0120 hrs** — Ongoing monitoring to assess the leg of a post-thrombectomy patient with sudden, serious pain in the leg used for the puncture/access site for the thrombectomy.

Requirement

A nurse responsible for a patient in this circumstance must perform frequent (at least hourly) assessments of the patient's leg for deteriorating vascular status.

Key facts & violation

- At 1600 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 49.)
- At 1700 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 50.)
- At 1800 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 51.)
- At 2000 hrs, Nurse Miller documents that Jeremy has sudden, cramping pain at a level of 6/10, that Jeremy's right calf muscle is cramping. Nurse Miller also documents that Jeremy's skin is clammy and diaphoretic (i.e., sweating heavily). (Factual Summary, ¶ 56.)
- At approximately 2031 hrs, Nurse Miller notes "will closely monitor pt." (Factual Summary, ¶ 59.)
- At 2100 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 62.)
- At 2200 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 66.)
- At 2255 hrs and 2300 hrs, no assessment is documented for Jeremy's peripheral vascular status. No assessment is documented for cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 70.)
- At 2304 hrs, Nurse Christina Orr notes that Jeremy complains of right leg cramping despite receiving Flexeril at 2117 hrs. (Factual Summary, ¶ 73.)
- At 2304 hrs, Nurse Christina Orr writes that she will continue to monitor Jeremy closely. (Factual Summary, ¶ 75.)
- At midnight, no assessments of Jeremy are recorded in the flowsheets. (Factual Summary, ¶ 82.)
- At 0100 hrs, Nurse Christina Orr does not record assessments of Jeremy. (Factual Summary, ¶ 85.)

Despite Jeremy's post-thrombectomy risk for leg ischemia, despite significant pain being noted both at 2000 hrs and 2304 hrs, and despite recognizing that they must "closely monitor" Jeremy's leg, the nursing staff failed to perform even hourly assessments of Jeremy's leg. In this respect, the nursing staff (Nurse Miller and Nurse Orr) violated the standard of care.

Causation & Damages

These violations caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia.

This violation caused Jeremy to suffer an unnecessary leg above-the-knee amputation.

- viii. **Task: Sept 9, 0130 hrs** — Manage (or supervise residents managing) the leg of the same patient hours later, when the leg is found without pedal pulses, and where evaluation of sensory and motor function is limited by deficits from a stroke.

Requirement

Physicians assessing a patient in these circumstances leg must inform themselves of the relevant medical history — including the leg pain beginning hours earlier. The physicians must act on the possibility that acute limb ischemia had begun 5-1/2 hours earlier, meaning that the time window for saving the leg might be quickly closing.

Accordingly, the physicians must treat the case as a limb-threatening emergency, requiring emergent diagnosis and treatment by a vascular surgeon.

Key facts & violation

- At 0120 hrs, Nurse Warren notes that Jeremy's right leg has no pedal pulses, and that the skin was cool and cyanotic. (Factual Summary, ¶ 91.)
- At 0138 hrs, Nurse Warren pages Dr. Valluri to notify her that Jeremy had no pedal pulse in his right leg. (Factual Summary, ¶ 92.)
- At 0142 hrs, Dr. Valluri is at Jeremy's bedside. (Factual Summary, ¶ 93.)
- At 0152 hrs, Dr. Cheryl Stephens is at Jeremy's bedside — according to Nurse Warren's note. (Factual Summary, ¶ 94.)
- In September 2019, Dr. Cheryl Stephens is in her second year as a Family Medicine resident. (Factual Summary, ¶ 95.)
- On the morning of September 9, Dr. Stephens is supervised by Joshua Koerner, DO. (Factual Summary, ¶ 96.)
- In September 2019, Dr. Koerner is a Family Medicine physician less than 1-1/2 years into his career as a licensed physician. (Factual Summary, ¶ 97.)
- According to a later note by Dr. Stephens, she speaks to neurologist Dr. Valadi and interventional radiologist Dr. Osei-Bonsu. (This note is timestamped 0411 hrs.) (Factual Summary, ¶ 99.)
- According to a later note by Dr. Valadi, he advises "CT angiography, notification of Dr. Osei-Bonsu, and consideration for vascular surgery consultation." (Note filed 9/9/2019 at 2329 hrs.) (Factual Summary, ¶ 100.)
- According to the same note by Dr. Valadi, he then calls Dr. Koerner and makes the same recommendations. (Factual Summary, ¶ 101.)
- At 0152 hrs, according to Nurse Warren, Dr. Stephens is at bedside and a plan is made to order a CT angiogram of Jeremy's right leg. (Factual Summary, ¶ 98.)
- At 0218 hrs, Dr. Stephens enters an order for a CT angiogram of Jeremy's right leg. Dr. Stephens noted, as indications for the CTA, "Lower leg trauma, neurovasc/lig/tendon injury suspected." (Factual Summary, ¶ 102.)
- At 0220 hrs, another minute later, Dr. Stephens re-enters the order for a CT angiogram — ordering it stat, and adding comments, "Post op day 1, thrombectomy, right groin insertion surgical site, absent RLE DP pulse." (Factual Summary, ¶ 104.)
- At 0233 hrs, Nurse Warren calls neurologist Dr. Valadi. She writes that Dr. Valadi agrees with the plan for an angiogram. (Factual Summary, ¶ 105.)
- At 0243 hrs, Nurse Warren calls Jeremy's wife, Beth, to gain consent for a diagnostic CT angiogram. (Factual Summary, ¶ 106.)
- At 0311 hrs, the diagnostic CT angiogram of Jeremy's right leg is performed. (Factual Summary, ¶ 107.)
- At 0425 hrs Eastern (0325 hrs Central), radiologist Dr. Erik Richter calls Nurse Warren to report his interpretation of the CTA — an "extensive nearly completely occlusive thrombus throughout the right leg arterial vasculature." (Factual Summary, ¶ 108.)
- By 0428 hrs, it has been over three hours since Jeremy was found (at 0120 hrs) to have no pedal pulse in his right leg. (Factual Summary, ¶ 115.)
- After learning of the CTA findings, Dr. Stephens calls interventional radiologist Dr. Osei-Bonsu to reevaluate. (Factual Summary, ¶ 117.)
- At 0455 hrs, interventional radiologist Dr. Samuel Osei-Bonsu is at Jeremy's bedside. (Factual Summary, ¶ 119.)
- At 0530 hrs, Dr. Osei-Bonsu begins an IR angiogram of Jeremy's right leg. (Factual Summary, ¶ 123.)
- Dr. Osei-Bonsu finds intimal injury of the right common femoral artery with thrombosis of the SFA. (Factual Summary, ¶ 124.)
- Dr. Osei-Bonsu performs a partial thrombectomy using an AngioJet device. (Factual Summary, ¶ 125.)

- In the upper part of the femoral artery, Dr. Osei-Bonsu performs an angioplasty — using a catheter and balloon to widen the area of the artery in which blood can flow. (Factual Summary, ¶ 127.)
- Dr. Osei-Bonsu places a 38-centimeter (15 inch) long stent in the upper part of the femoral artery. (Factual Summary, ¶ 128.)
- These procedures improve blood flow in the upper femoral artery, where the stent was placed. (Factual Summary, ¶ 129.)
- Despite multiple attempts to remove the clot in the lower femoral artery and popliteal artery, the clot remains. (Factual Summary, ¶ 131.)
- Dr. Osei-Bonsu finally aborts the thrombectomy and consults a vascular surgeon. (Factual Summary, ¶ 132.)
- At the end of the procedure, Jeremy has no discernible blood flow below his right knee. (Factual Summary, ¶ 133.)
- The IR angiogram procedure lasts through 0816 hrs. The procedure takes approximately 2 hours and 45 minutes (having begun at 0530 hrs). (Factual Summary, ¶ 134.)
- Around 0816 hrs, Dr. Osei-Bonsu seeks a vascular surgery consultation from Dr. Bruce Brennaman. (Factual Summary, ¶ 135.)
- Dr. Brennaman concludes that Jeremy’s leg symptoms began between 2030 hrs and 2230 hrs. (Factual Summary, ¶ 138.)
- Dr. Brennaman proceeds to the operating room for an emergency exploratory surgery with the hope of saving Jeremy’s leg, but anticipating that amputation is likely necessary. (Factual Summary, ¶ 143.)
- During the exploratory surgery, Dr. Brennaman finds that the right lower leg has no viable muscle. “The entire 4 compartments of the right lower extremity showed no viable muscle whatsoever. There was no movement to electric current. The muscle was dark red and all 4 compartments were tightly encumbered resulting in a dead leg.” (Factual Summary, ¶ 151.)
- Dr. Brennaman proceeded to amputate Jeremy’s right leg above the knee. (Factual Summary, ¶ 154.)

The residents did not treat Jeremy’s pulseless leg as an emergency. They did not document (and likely did not perform) a bedside diagnostic examination by Doppler device, to assess the degree of weakness of arterial and venous flow in the leg — important to understand the severity of ischemia. Nor did the residents consult vascular surgery (the most important action) despite being advised to do so by Dr. Valadi. The physicians did order stat diagnostic imaging (though it was not performed quickly). The residents did not, however, order any treatment for Jeremy’s ischemic leg. In these respects, the physicians violated the standard of care.

Additionally, it appears from the records that the supervising physician, Dr. Koerner, failed to provide the residents any supervision or support as they dealt with a surgical emergency — despite being alerted and advised by Dr. Valadi. In this respect Dr. Koerner violated the standard of care.

Causation & Damages

These violations caused harm to Jeremy. They further delayed the treatment of Jeremy’s ischemic leg and contributed to the death of Jeremy’s lower right leg.

These violations caused Jeremy to undergo an otherwise unnecessary above-the-knee leg amputation.

- ix. **Task:** Consult on the same patient shortly after the leg was found to be pulseless.

Requirement

Any physician consulting on a patient in Jeremy’s condition as of 0130 hours on Sept 9 was required to ask about the history of the patient’s leg issues — which in this case went back to the sudden pain noted at 2000 hrs the night before. Accordingly, the consulting physician must advise or provide emergent diagnosis and treatment — preferably by a

vascular surgeon (if available) but at least by an interventional radiologist with a vascular surgeon standing by.

The requirement to act to ensure emergent treatment applies to any physician involved, regardless of specialty. While the physician's particular practice area dictate the specific assistance the physician can offer (e.g., recommendations vs. hands-on treatment), the general duty to ensure emergent treatment applies across specialties.

Key facts & violation

The facts recited above indicate that the interventional radiologist, Dr. Samuel Osei-Bonsu, did not recommend an immediate vascular surgery consult when first notified of Jeremy's pulseless leg. Nor did Dr. Osei-Bonsu immediately come in to treat Jeremy. Instead, Dr. Osei-Bonsu advised purely diagnostic imaging that caused a delay of approximately three hours (from approximately 0200 hrs when Dr. Osei-Bonsu was consulted until approximately 0500 hrs when Dr. Osei-Bonsu was bedside.) In failing to act to ensure emergent treatment, Dr. Osei-Bonsu violated the standard of care.

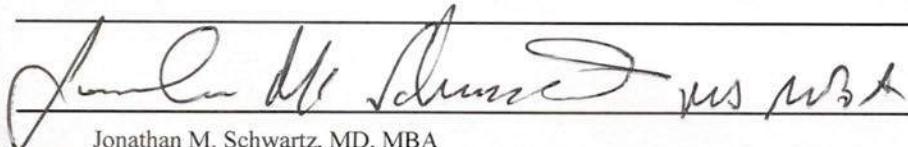
Causation & Damages

This violation further delayed treatment of Jeremy's ischemic leg and contributed to the death of Jeremy's lower right leg.

This violation caused Jeremy to undergo an otherwise unnecessary above-the-knee leg amputation.

CONCLUSION

22. These are not necessarily all my opinions pertaining to this case.


Jonathan M. Schwartz, MD, MBA

SWORN TO AND SUBSCRIBED before me

August 27, 2021



NOTARY PUBLIC

MEGAN SAXTON
Notary Public - State of Michigan
County of Wayne
My Commission Expires Mar 11, 2025
Acting in the County of *Wayne*

My Commission Expires: 03/11/2025

Jonathan M. Schwartz, MD MBA

Board Certification

Diplomat, American Board of Internal Medicine

Certificate Number 215221

Initial Certification

08/19/2003 – 12/31/2013

Recertification

09/25/2013 – 12/31/2023

Professional Experience

Grosse Pointe Physician Services, PLLC

01/2016 – present

Grosse Pointe Farms, MI

Owner, Hospitalist

Wayne Health

07/2019 — 12/2020

Wayne State University Physician Practice Group

Detroit, Michigan

Memorial Hospital of Sweetwater County

10/2018 – 4/2021

Rock Spring, Wyoming

Hospitalist

University of Michigan Hospital and Medical Center

4/2015 – 12/2015

Ann Arbor, Michigan

Hospitalist

University of Michigan School of Medicine

4/2015 – 12/2015

Ann Arbor, Michigan

Assistant Professor of Medicine

The Grosse Pointe Medical Group, PLLC

1/2013 – 3/2015

Grosse Pointe Park, Michigan

Owner, Private Practice, Internal Medicine

Henry Ford Medical Group

7/2002 – 12/2012

Detroit, Michigan

Medical Director, Managed Care

7/2007 – 12/2012

Senior Staff Physician, Internal Medicine

7/2004 – 12/2012

Associate Staff, Internal Medicine

7/2002 – 6/2004

Director, Physician Leadership Development Program

7/2005 – 12/2012

Medical Director, Referring Physician Office

7/2007 – 6/2010

Director, Referring Physician Programs & Services

7/2004 – 6/2007

Associate Medical Director, Managed Care

7/2003 – 6/2007

Assistant to the Chief Executive Officer

7/2003 – 6/2004

Education

Health Services Administration Fellowship (non-clinical) Henry Ford Health System One Ford Place Detroit, Michigan 48202	7/2002 – 6/2003
Internal Medicine Residency Henry Ford Hospital 2799 W. Grand Blvd Detroit, Michigan 48202	7/2000 – 6/2002
Internal Medicine Internship Henry Ford Hospital Detroit, Michigan	7/1999 – 6/2000
Doctor of Medicine Case Western Reserve University School of Medicine 2109 Adelbert Rd Cleveland, Ohio 44106	7/1995 – 6/1999
Master of Business Administration Case Western Reserve University Weatherhead School of Management 10900 Euclid Avenue Cleveland, Ohio 44106	7/1993 – 6/1995
Premedical Coursework, Non Degree Case Western Reserve University	7/1992 – 6/1993
Bachelor of Science in Business Administration (Summa Cum Laude) The Ohio State University College of Business Administration (Honors Program) 2100 Neil Avenue Columbus, Ohio 43210 <i>Major Field of Study: Accounting & Management Information Systems</i>	1/1988 – 3/1991

Hospital Privileges

Covenant Healthcare (Locum, CompHealth) 1447 N Harrison Street Saginaw, Michigan 48602	5/2021 - present
Detroit Receiving Hospital 4201 St. Antoine Street Detroit, Michigan 48201	07/01/2019 – 12/2020
Memorial Hospital of Sweetwater County 1200 College Drive Rock Springs, Wyoming 82901	12/07/2018 – 04/2021
Aultman Hospital (Locum, Hayes Locums) 2609 6 th Street SW Canton, Ohio 44710	11/2018 – 01/2019
SageWest Riverton (Locum, Locum Life) 2100 W. Sunset Drive Riverton, Wyoming 82501	7/13/2017 – 11/14/2019
TriHealth Good Samaritan Hospital (Locum, Hayes Locums) 375 Dixmyth Ave Cincinnati, Ohio 45220	6/21/2017 – 09/2018
TriHealth Bethesda North Hospital (Locum, Hayes Locums) 10500 Montgomery Road Cincinnati, Ohio 45242	10/19/2016 – 09/2018
Billings Clinic Hospital (Locum, Hayes Locums) 2800 10 th Ave N Billings, Montana 59101	7/15/2016 – 8/31/2018
Altru Hospital (Locum, CompHealth) 1200 S. Columbia Rd Grand Forks, North Dakota 58201	1/1/2016 – 9/01/2016
University of Michigan Medical Center 1500 E. Medical Center Drive Ann Arbor, Michigan 48109	4/1/2015 – 12/31/2015
Gallup Indian Medical Center (Locum, CompHealth) 516 E. Nizhoni Blvd Gallup, New Mexico 87301	10/1/2014 – 3/31/2015
Great River Medical Center (Locum, CompHealth) 1221 S. Gear Ave West Burlington, Iowa 52655	12/1/2014 – 3/31/2015

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Grosse Pointe, Michigan 48230

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4/1/2014 – 12/31/2014

Henry Ford Hospital
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Detroit, Michigan 48202

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Henry Ford Cottage Hospital
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Grosse Pointe Farms, Michigan 48236

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CAQH Number 10892228

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Expires 01/31/2024

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License Number 5315008848

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License Number 35.094492

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State of Iowa Physician License

License Number MD.42160

Issued 10/24/2014

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State of Wyoming Board of Pharmacy Controlled Substance Provider

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License Number MD60881154
Issued 09/20/2018
Expires 11/12/2021

State of Minnesota

License Number 68420
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State of Wisconsin

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DEA Controlled Substance Prescriber

License Number BS7696315
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Michigan Assignment

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Wyoming Assignment

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Other Certifications

Advanced Cardiac Life Support (ACLS)

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Basic Life Support (BLS)

expires 7/2022

Examinations

USMLE

Exam I (attempted and completed once) 06/10/1997
Exam II (attempted and completed once) 08/25/1998
Exam III (attempted and completed once) 09/25/2001

Medical Malpractice Insurance

Certificates of Insurance available on request

Publications

Schwartz, J.M.: Insurance Status and the Transfer of Hospitalized Patients. *Annals of Internal Medicine*, 2014;160(11):810

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Frolkis, J P; Zyzanski S J; Schwartz, J M; Suhan, P S: Physician Noncompliance with the 1993 National Cholesterol Education Program (NCEP–ATPII) Guidelines. *Circulation*. 1998; 98:851–855.

Teaching

Oakland University School of Business Administration (Rochester Hills, Michigan) 2011 – 2012

Adjunct Faculty

Hospital Administration (HCM 634) Executive MBA Program

Guest Lecturer

2010

Executive MBA Program

University of Michigan Ross School of Business (Ann Arbor, Michigan)

2007 – 2012

Guest Lecturer

MBA program, Seminar in Healthcare Management

Research

Physician Compliance with NCEP–ATPII Guidelines in a Cardiac ICU 1996 – 1997

Mt. Sinai Medical Center, Cleveland, Ohio

Lectures and Presentations

Oakland University School of Management

Conference on Cost in Healthcare

Expert Panel Member and Lecturer

2008

American Medical Group Association Annual Conference

“Physician Leadership Education”

2008

“Specialty Access: A Novel Approach”

2007

Six Clinics Annual Meeting

“Specialty Access: A Novel Approach”

2006

Board of Trustees, Henry Ford Hospital and Health Network

“Specialty Access”

2006

Board of Trustees, Henry Ford Health System Joint Conference

“Specialty Access”

2005

“Physician Leadership Development”

2005

“In–Sourcing Care of HFMDG Capitated Patients”

2004

Advisory Board and Panel Membership

Oakland University Executive MBA Program Advisory Board	2007 – 2012
United Health, South East Michigan Physician Advisory Committee	2007 – 2009
American Medical Group Association Expert Panel on the Economic Costs Associated with Metabolic Syndrome	2007

Committee Experience

United Physicians. Regional Physician Leadership Council, East Region	2014
Henry Ford Health System Henry Ford Medical Group Care Management Redesign Team	2011 – 2012
Chair, Patient Alignment Work Group	
Chair, End Stage Renal Disease Patient Work Group	
Chair, Radiology Utilization Work Group	
Chairs Council	2003 – 2012
Finance Committee	2003 – 2012
Contracting Subcommittee	2010 – 2012
Practice Affairs Committee	2009 – 2012
Credentials Committee	2006 – 2008
Specialty Access Task Force	2005 – 2007
Referring Physician Committee	2002 – 2003
Henry Ford Health System Growth, Contact Center Subcommittee	2008 – 2012
Service Excellence Committee	2006
Corporate University Steering Committee	2005 – 2012
Safety Net Access and Charity Care	2006 – 2012
Telecommunications Assessment Steering Committee	2006
Patient Transportation Steering Committee	2006 – 2007
Retail Strategies Committee, Access Subcommittee	2006
Health Alliance Plan Benefits Administration Committee	2007 – 2012
Network Medical Director Committee	2007 – 2012
Henry Ford Physician Network Payment and Contract Advisory Committee	2011 – 2012
HFMG–HAP–HFH Steering Committee	2007 – 2012
HFMG–HAP–HFH Joint Operating Committee	2007 – 2012
HFMG – HAP – HFH Leadership Committee	2003 – 2009

Professional Society Membership

American College of Physicians	2002 – present
American Medical Association	2004 – present
Society of General Internal Medicine	2014 – 2015
Society of Hospital Medicine	2014 – 2015
American College of Healthcare Executives	2002 – 2013
American College of Physician Executives	2007 – 2013
Michigan State Medical Society	2005 – 2014
Liaison Committee with Third Party Payers	2005 – 2012
Committee on Health Care Quality, Efficiency, and Economics	2005 – 2014
Sub Committee on Data Integrity	2005
Sub Committee on Pay for Performance	2005
Wayne County Medical Society	2005 – 2014
Delegate Body Member	2005 – 2009
Legislative Affairs Committee	2006 – 2012
Young Physician Committee	2006 – 2009

Awards and Special Recognition

Henry Ford Health System Board of Trustees: “Focus on People” 2008
An award given for exceptional contributions to financial and operational performance, awarded for team work related to development of a corporate policy and practice for uninsured and underinsured patients.

Henry Ford Health System Board of Trustees: “Focus on People” 2004
An award given for exceptional contributions to financial and operational performance, awarded for work related to improving insourcing of admissions to Henry Ford Hospital.

Academic Scholarships and Honors

Pace Setters Award for Outstanding Achievement in the College of Business,
The Ohio State University

The Ohio State University–University College Summa Award,
The Ohio State University

Beta Alpha Psi National Accounting Honors Fraternity

Golden Key National Honor Society

Community Involvement

Detroit Institute for Children
Board of Directors and Executive Committee of Board 2013 – 2015

MEDICAL PRINCIPLES: LIMB ISCHEMIA

JEREMY JONES

This statement of medical principles will be provided to the Defense.

The principles recited here are drawn from medical literature.

We are providing this statement to the Defense to ensure that all participants are working from a common base of medical principles.

We invite the Defense to identify any errors they believe exist in this statement. We also invite the Defense to identify any additional principles — *with supporting literature* — the Defense says may help exonerate any Defendant.

This exchange of information may enable the case to be resolved without a jury trial. If the case does go to trial, this exchange of information will narrow the disputes, shorten the trial, and assist the jury with an agreed-upon statement of undisputed points.

We ask the Defense to provide this statement to the Defense's retained experts. We will provide this to Plaintiff's retained experts, along with any disagreements or additional points identified by the Defense.

This document consists of two main sections. First, the Table of Contents states each of the medical principles laid out in this document. Second, the body of the document restates each principle and includes screenshots of supporting medical literature.

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33. The absence of an arterial pedal pulse indicates at least class IIa ischemia. 56

34. Acute limb ischemia of class IIa requires urgent treatment to restore and preserve blood flow. 57

35. Where an arterial pedal pulse is absent and the sensory or motor deficits cannot be assessed, caution requires treating the ischemia as class IIb. 58

36. Acute limb ischemia of class IIb requires emergency treatment to restore blood flow. 58

37. In cases of critical or severe acute limb ischemia, diagnostic investigation generally should not delay therapeutic intervention. Where facilities allow, the patient should generally be treated by an interventionalist with access to diagnostic as well as interventional tools. 59

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Note: Where this document cites medical literature, the citations are given in abbreviated form. Each book, article, etc. is given an index number (e.g., “B42” or “A201”). For books, the page numbers are identified by Bates numbers applied to the books. For example: B42 — MLA 103592.

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Anatomy, Endovascular Procedures, & Closure

1. The various tissues of the body need blood in order to live.
2. Blood carries oxygen and other nutrients to the body.
3. Arteries consist of three “tunicae” or layers: the intima, media, and adventitia. The innermost layer of an artery is the intima.

- B452 — MLA 461876

Arterial Wall Anatomy

The arterial wall exhibits a common organizational structure throughout the body, although proportions of components fluctuate through different regions. It consists of cells and matrix fibers arranged in three tunicae: intima, media, and adventitia (Fig. 3.1).

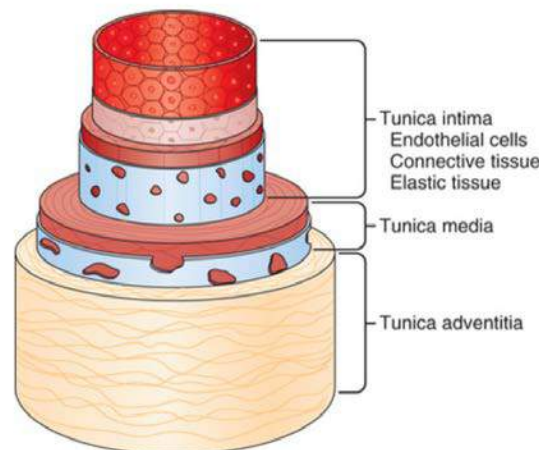


FIGURE 3.1 Anatomy of the Vessel Wall. Arteries and veins maintain the same basic structure, which consists of the tunica adventitia, tunica media, and tunica intima, although capillaries consist of no more than endothelium, connective tissue, and support cells called pericytes. (Redrawn from Hast J. *Self-mixing interferometry and its applications in noninvasive pulse detection* [dissertation]. Finland, University of Oulu; 2003.)

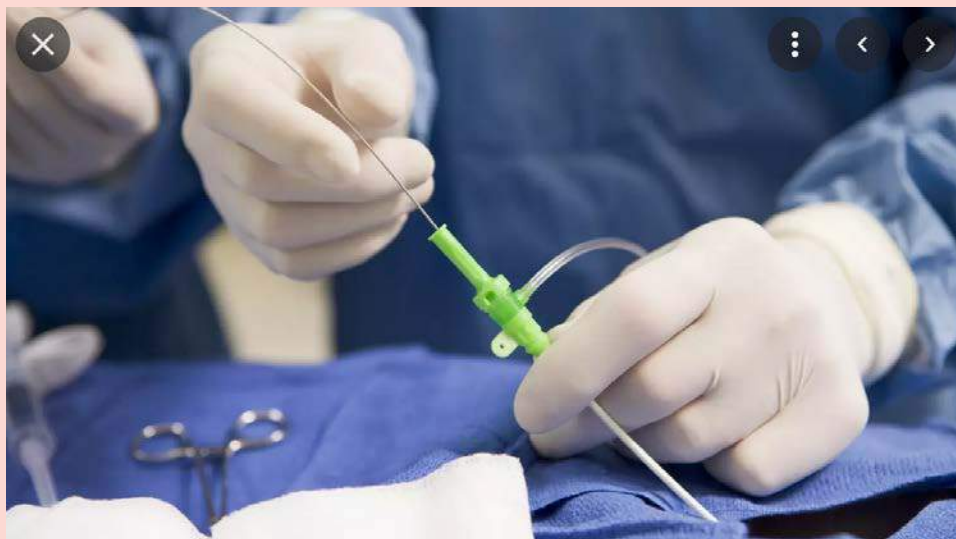
4. Endovascular means “inside the blood vessel.” Endovascular surgery is a type of procedure that uses very small cuts and long, thin tubes called catheters, which are placed inside a blood vessel to repair it.

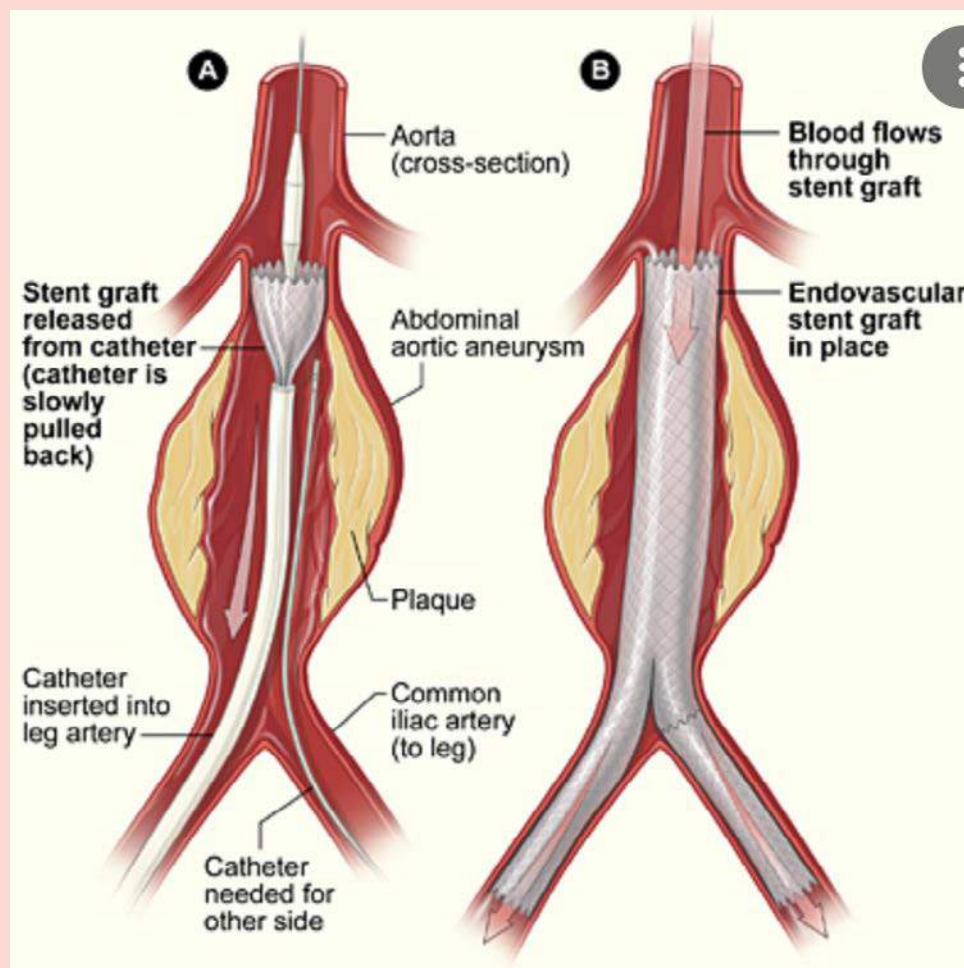
- <https://share.upmc.com/2016/11/about-endovascular-surgery/>

What Is Endovascular Surgery?

Endovascular means "inside the blood vessel." Endovascular surgery is a type of procedure that uses very small cuts and long, thin tubes called [catheters](#), which are placed inside a blood vessel to repair it.

- Google image search





5. Endovascular procedures in an artery create a risk of arterial injury or occlusion that may cause acute limb ischemia.

- B6 — MLD 2965

ACUTE LIMB ISCHEMIA

MECHANISM: embolism (cardiac; Ao; peripheral arteries); thrombosis *in situ*; thromboembolism from a popliteal artery aneurysm (repair of aneurysm as primary prevention if > 20 mm); thrombosis of infrainguinal bypass graft; trauma; dissection; thrombophilia - hyperviscosity; *phlegmasia cerulea dolens*; **iatrogenic (endovascular procedure; IABP; extracorporeal cardiac mechanical support)**

PRESENTATION: Pain; Coldness; Pallor; Loss of pulse (Doppler PRN); Paresthesia / Sensory deficit; Weakness / Paralysis

MANAGEMENT: Medical emergency; **A)** IV Heparin; **B)** Percutaneous thromboembolectomy and/or direct intraarterial thrombolysis (first-line); **C)** Surgical revascularization (second-line)

- B441 — MLA 446783

Acute thromboembolic occlusions (Fig. 32.3) may occur in peripheral arteries from remote vascular beds, most commonly the heart, secondary to atrial fibrillation [18,19] or paradoxical embolization through an interatrial septal defect [20,21], or from ulcerated plaques or aneurysms in the aorta [22], or from iatrogenic causes such as intravascular catheter manipulations. Other cardiac pathologies that lead to peripheral emboli include valvular heart disease, cardiomyopathy, cardiac tumors, and endocarditis [23,24]. The occurrence of thromboemboli is sudden and the presentation is most frequently acute. A sudden occlusion of a relatively normal lower extremity artery is likely to lead to acute limb ischemia (ALI) needing emergent treatment.

- B44 — MLA 66172 (Note: IABP = Intra-Aortic Balloon Pump)

► Complications of IABP Therapy

Although the mortality rate directly associated with the use of the IABP is low, the rate of major complications is reported to be at 2.6%; 4.2% of patients experienced minor complications (Haddad, 2015).

The most prevalent complications are vascular in nature, with the most common being lower-limb ischemia below the insertion site.

Fortunately, catheter sizes are becoming smaller and many do not require a sheath for placement. Over the years, smaller catheter size and sheathless introducers have helped to reduce complication rates (Webb et al., 2015). Some patients, however, are more prone to limb ischemia. Especially vulnerable populations include the elderly, diabetics, females, obese patients, and individuals with peripheral vascular disease (De Jong et al., 2018; Webb et al., 2015; White & Ruygrok, 2015). Limb ischemia can occur while the catheter is in place or within hours of its removal and is related to presence of a clot at the catheter site. Thrombectomy is usually required to treat this complication (De Jong et al., 2018; Goldich, 2014; Parissis et al., 2016).

Other vascular complications include bleeding or hemorrhage from the insertion site, perforation of the femoral artery, superficial or deep vein thrombosis, stroke, aortic dissection or perforation, and compartment syndrome (DeWaha et al., 2014; Parissis et al., 2016; Webb et al., 2015). Vascular complications can result in severe consequences, to the point that the patient may require an amputation, thrombectomy, blood transfusions, or vascular surgery (De Jong et al., 2018).

- A220 — pg 2

Acute limb ischemia (ALI) results from an acute decrease in arterial perfusion that threatens limb viability. ALI is frequently of cardioembolic etiology, however it can also result from iatrogenic complications, such as distal embolization of thrombus or atheromatous plaque during peripheral arterial interventions. The acute and long-term morbidity associated

- A224 — pg 1

RATIONALE FOR TRA IN ACUTE STROKE

Access site complications from TFA include superficial hematoma, dissection, pseudoaneurysm, embolic complications, and critical limb ischemia. The access site complication rates from TFA in mechanical thrombectomy are not insignificant. The SWIFT PRIME, ESCAPE, REVASCAT, and EXTEND-IA trials reported severe access-related adverse events occurring in 2% to 12% of interventions.⁶⁻⁹ It is noteworthy that the potential for TFA complications extends beyond simply accessing the femoral artery, as various closure devices are frequently used after TFA procedures. These devices may fail and result in hematoma, cause vessel injury, or, rarely, embolize causing distal occlusion. The aforementioned TFA-related complications are associated with patient dissatisfaction, increased cost, need for blood transfusion, longer hospitalization, and increased morbidity and mortality.¹³

- A207 — pg 3

Instrumentation — The incidence of lower extremity embolization as result of cardiac or peripheral interventions (catheter based or surgical) is quite low, but it is important to consider as a potential etiology when evaluating an embolic event. (See "[Complications of diagnostic cardiac catheterization](#)", section on 'Atheroembolism'.)

Endovascular intervention — Careful manipulation of wires, catheters, and treatment devices during endovascular interventions is important to minimize damage from the intervention itself. Disruption of plaque or thrombus can occur during any type of intervention, including diagnostic studies and stent or stent-graft placement. (See "[Endovascular techniques](#)

- A207 — pg 4

Arterial closure devices — A variety of arterial closure devices (suture-mediated closure, metal clip-mediated closure, collagen or other soluble plugs) can be used at the end of endovascular procedures, usually with good results [16]. Vessel thrombosis and/or distal embolization are potential complications of these devices, with embolization occurring infrequently (<1 percent) [17-19].

Such complications are usually related to an unrecognized maldeployment of the device such that an external component is deployed within the vessel wall or intraluminally. Although the component is generally designed to dissolve over time, the timeframe is usually over weeks to months. Any narrowing of the vessel causing ischemia will usually need to be addressed sooner.

- A207 — pg 7

History and physical — The history should evaluate risk factors associated with lower extremity embolism. (See '[Etiology](#)' above.)

...

- The patient should also be asked about any recent catheterization procedures.

- A215 — pg 1

Description

ALI results from a sudden obstruction in the arterial flow to the extremity due to an embolism or thrombosis.⁵ Embolic problems result in a greater degree of ischemia than thrombosis. PAD progression is the most thrombotic cause of the ALI. Graft thrombosis or thrombosis of a popliteal aneurysm may also be seen. Cardiac embolization is responsible for 75% of the ALI cases.⁶ Aortic dissection or embolization, entrapment or cyst, trauma, phlegmasia cerulea, ergotism, hypercoagulable states, and iatrogenic complications related to cardiac catheterization, endovascular procedures, intra-aortic balloon pump, extracorporeal cardiac assistance, as well as vessel closure devices are the potential embolic causes which are related to a sudden decrease in arterial perfusion in the limb (Table 1). The embolus characteristically lodges in vascular bed with no prior collateral development, besides an in situ thrombosis occurs in vessels with prior, gradual atherosclerotic narrowing that has stimulated the formation of collateral channels. The presence of these col-

- A449 — pg 3

Based on clinical experience, the following describes possible treatments for risks or situations that are associated with use of the Angio-Seal device or vascular access procedures.

- *Bleeding or hematoma* - Apply light digital or manual pressure to the puncture site. If manual pressure is necessary, monitor pedal pulses.
- *AV fistula or pseudoaneurysm* - If suspected, the condition may be evaluated with duplex ultrasound. When indicated, ultrasound guided compression of a pseudoaneurysm may be used after the Angio-Seal device has been placed.
- *Device non-deployment* - If device pulls out with sheath upon withdrawal, apply manual or mechanical pressure per standard procedure. Examine the device to ensure all absorbable components have been withdrawn.
- *Anchor fracture or embolism* - Examine device to determine if anchor has been withdrawn. If bleeding occurs, apply manual or mechanical pressure to the puncture site per standard procedures. If anchor is not attached to the device, monitor the patient (for at least 24 hours) for signs of vascular occlusion. Clinical experience to date indicates that tissue ischemia from an embolized anchor is unlikely. Should ischemic symptoms appear, treatment options include thrombolysis, percutaneous extraction of the anchor or fragments, or surgical intervention.
- *Infection* - Any sign of infection at the puncture site should be taken seriously and the patient monitored carefully. Surgical removal of the device should be considered whenever an access site infection is suspected.
- *Collagen deposition into the artery or thrombosis at puncture site* - If this condition is suspected, the diagnosis can be confirmed by duplex ultrasound. Treatment of this event may include thrombolysis, percutaneous thrombectomy, or surgical intervention.

6. At the end of an endovascular procedure where the femoral artery was used as the access/puncture site, one option for sealing the puncture wound is an “Angio-Seal” device — a Vascular Closure Device.

- A449 — pg 2

DEVICE DESCRIPTION

The **Angio-Seal™ VIP Vascular Closure Device** consists of the Angio-Seal VIP device, an insertion sheath, an arteriotomy locator (modified dilator) and a guidewire. The Angio-Seal VIP device is composed of an absorbable collagen sponge and a specially designed absorbable polymer anchor that are connected by an absorbable self-tightening suture (STS). The device seals and sandwiches the arteriotomy between its two primary members, the anchor and collagen sponge. Hemostasis is achieved primarily by the mechanical means of the anchor-arteriotomy-collagen sandwich, which is supplemented by the coagulation-inducing properties of the collagen. The device is contained in a delivery system that stores and then delivers the absorbable components to the arterial puncture. The delivery system features a Secure Cap that facilitates proper technique for delivery and deployment of the absorbable unit. The implanted components of the device are MRI Safe. The product is not made with natural rubber latex.

INDICATIONS

The Angio-Seal device is indicated for use in closing and reducing time to hemostasis at the femoral arterial puncture site in patients who have undergone diagnostic angiography procedures or interventional procedures using an 8 French or smaller procedural sheath for the 8F Angio-Seal device and a 6 French or smaller procedural sheath for the 6F Angio-Seal device.

The Angio-Seal device is also indicated for use to allow patients who have undergone diagnostic angiography to ambulate safely as soon as possible after sheath removal and device placement.

The Angio-Seal device is also indicated for use to allow patients who have undergone an interventional procedure to ambulate safely after sheath removal and device placement.

7. The manufacturer of the Angio-Seal device instructs that the risks of using the device include embolism and ischemia.

- A449 — pg 2

TO ENSURE PROPER DEPLOYMENT AND USE OF THIS DEVICE AND TO PREVENT INJURY TO PATIENTS, READ ALL INFORMATION CONTAINED IN THESE INSTRUCTIONS FOR USE.

- A449 — pg 3

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- **Bleeding or hematoma** - Apply light digital or manual pressure to the puncture site. If manual pressure is necessary, monitor pedal pulses.
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- **Infection** - Any sign of infection at the puncture site should be taken seriously and the patient monitored carefully. Surgical removal of the device should be considered whenever an access site infection is suspected.
- **Collagen deposition into the artery or thrombosis at puncture site** - If this condition is suspected, the diagnosis can be confirmed by duplex ultrasound. Treatment of this event may include thrombolysis, percutaneous thrombectomy, or surgical intervention.

8. The manufacturer of the Angio-Seal device instructs that before placing an Angio-Seal, a physician should perform an arteriogram of the site, to evaluate the femoral artery.

- A449 — pg 2

TO ENSURE PROPER DEPLOYMENT AND USE OF THIS DEVICE AND TO PREVENT INJURY TO PATIENTS, READ ALL INFORMATION CONTAINED IN THESE INSTRUCTIONS FOR USE.

- A449 — pg 5

ANGIO-SEAL™ DEVICE INSERTION PROCEDURE

The medical techniques and procedures described in these Instructions for Use do not represent ALL medically acceptable protocols, nor are they intended as a substitute for the clinician's experience and judgment in treating any specific patient.

The Angio-Seal procedure is composed of three stages:

- Locate the Artery
- Set the Anchor
- Seal the Puncture

A. Locate the Artery

- Assess the puncture site location and evaluate the femoral artery characteristics prior to placing the Angio-Seal device by injecting contrast medium through the procedure sheath followed by an angiogram.
- Under strict sterile conditions and using a sterile field, remove the Angio-Seal device contents from the foil package, taking care to pull foil apart completely before removing the Angio-Seal device.

NOTE: The Angio-Seal device must be used within one hour after opening the foil pouch due to the moisture-sensitive nature of the product.

Limb Ischemia Generally

9. A clot or other physical obstruction in an artery may reduce or stop the blood supply to tissues downstream from the obstruction.

10. “Ischemia” refers to an inadequate blood supply to part of the body.

11. Acute limb ischemia occurs from an abrupt interruption of blood flow to an extremity.

- B401 — MLA 391699

Acute limb ischemia occurs from an abrupt interruption of blood flow to an extremity, usually because of embolic or thrombotic vascular occlusion. It can also result from trauma and dissection. Thrombosis in situ mainly occurs in the setting of underlying atherosclerotic disease and accounts for about 85% of the acute limb ischemia [3]. The gradual progression of

12. “Critical limb ischemia” refers to a severe blockage of blood flow to a limb, placing the limb at risk for loss of function.

- B401 — MLA 391413

Critical limb ischemia (CLI) is a more advanced state of arterial occlusive disease, which places the extremity at risk for loss of function, gangrene, or limb loss. In 2003, more than 2.5 million Americans had CLI, which resulted in more than 240,000 amputations in the United States and Europe [18, 19]. Critical limb ischemia can be split into acute or chronic and has different etiologies and natural histories.

13. If treatment of a clot is delayed, the clot may get bigger, may obstruct smaller downstream arteries, and may stick more to the arterial walls and become harder to treat.

- B452 — MLA 466381

neurosensory deficit. Embolic occlusion is also progressive; the ischemia worsens as secondary thrombus forms both proximal and distal to the occlusion. The secondary thrombus is the plum-colored clot removed at embolectomy (Fig. 100.1). It is particularly important that this secondary thrombus be removed because it may be responsible for obstruction in smaller distal vessels. If the presentation is delayed, the secondary thrombus adheres to the arterial wall, making it particularly resistant to removal with an embolectomy catheter and less easily lysed by thrombolytic drugs.

14. **If blood supply to part of the body is halted long enough, that part of the body will die.**
15. **One commonly cited estimate in the medical literature is that generally a human arm or leg is at risk of irreversible injury if the arm or leg loses blood supply for more than 6 to 8 hours.**
- B452 — MLA 466391

History

The initial symptoms depend on the severity of ischemia and can range from incapacitating pain to the sudden onset of mild claudication. Obviously, the more severe the ischemia, the faster the patient seeks medical attention. Severe acute ischemia is usually obvious, with extreme pain and loss of sensation and power in the limb. Less severe ischemia can be difficult to diagnose and may be confused with musculoskeletal pain, sciatica, and other causes of limb discomfort. **The duration of symptoms is the most important part of the history; in patients with severe ischemia, irreversible muscle necrosis occurs within 6 to 8 hours if the condition is untreated.** Patients with an acute white leg require urgent intervention. The symptoms of sensory loss and muscle pain are also evidence of critical ischemia.

- B448 — MLA 454773

Once an embolus or thrombus occludes an artery, the distal vasculature goes into spasm. Extension of the thromboembolus then forms proximal to the site of occlusion, back to the point of adequate collateralization. The distal spasm lasts for approximately 8 hours and then subsides. At this point, clot forms in the arterial system distal to the site of obstruction and propagates downward, obstructing any residual collateral flow, resulting in worsening of the ischemia. As a result, the skin usually becomes patchy, blue and mottled. **Skeletal muscle and peripheral nerves withstand acute ischemia for some 8 hours without permanent damage; skin can withstand severe ischemia for as long as 24 hours. The extent of the ischemic necrosis depends on the adequacy of collateral circulation, the patient's underlying cardiovascular function, viscosity of the blood, oxygen-carrying capacity of the blood, propagation of clot into the microvasculature and effectiveness and promptness of treatment.**

- B30 — MLA 53299

PATHOPHYSIOLOGY

Acute limb ischemia results from a sudden decrease in blood supply to a limb, leading to tissue hypoperfusion and threatening limb viability. As time proceeds, cell death or irreversible tissue damage occurs. Without the presence of collateral vessels, peripheral nerves and skeletal muscle may suffer irreversible changes within 4 to 6 hours of vessel occlusion.

- B30 — MLA 53304

Limb viability is dependent on the effectiveness of collateral circulation, and no arbitrary time period can exclude treatment options despite the common belief that “treatment must occur in 4 to 6 hours.”²

- B332 — MLA 303406

Clinical Manifestations

Clinical manifestations of acute arterial ischemia include the *six Ps*: *pain, pallor, pulselessness, paresthesia, paralysis, and poikilothermia* (adaptation of the limb to the environmental temperature, most often cool). Without immediate intervention, ischemia may progress to tissue necrosis and gangrene within a few hours. If you detect these signs, immediately notify the HCP.

- B448 — MLA 454780

The onset of symptoms is important to note in the history. If the patient is seen within 4–6 hours of onset of ischemia and viability of the limb is in question – as manifest by pain, paralysis or paresthesia – immediate operative or endovascular intervention is indicated. In the patient with probable thrombosis superimposed on pre-existing vascular disease who has an ischemic but viable limb, revascularization is delayed until anticoagulation has resulted in improved collateralization and stabilization of the level of ischemia. An extensive early reconstructive procedure compromises the ability to administer full heparin therapy postoperatively

- B448 — MLA 454781

because of a prohibitively high rate of hemorrhage. Emergent operations on patients who present with ischemia of longer than 8 hours duration is currently not indicated. If the ischemic insult is severe enough to result in muscle necrosis, the necrosis will already be established within 8 hours. Revascularization after this period of time salvages no more muscle beyond that salvaged by anticoagulation, a treatment associated with a lower mortality. As a result, the rate of limb amputation rises following 6–8 hours after the onset of ischemic symptoms. Before the decision to revascularize a patient is made, they must be medically optimized based on their current co-morbidities. Revascularization of ischemic tissue washes products of ischemia into the central circulation, where such by-products can cause multi-organ failure.

- B27 — MLA 42514

Distal ischemia results from the inability of tissues to continue aerobic metabolism. Eventually, anaerobic metabolism consumes all substrate, thereby resulting in the accumulation of lactic acid. As ischemia progresses, cellular integrity is lost and irreversible cell death occurs. A vicious cycle of tissue edema and further impairment of the blood supply occurs. When no specific measures are taken to cool the limb, it is said that the limb is undergoing “warm ischemia” at ambient temperature. After 6 hours of complete warm ischemia, 10% of patients will have irreversible damage; by 12 hours, 90% will have irreversible damage. Artificially cooling the limb to near freezing temperature (“cold ischemia”) will reduce the metabolic demands and greatly prolong the tissue's tolerance of ischemia to 24 hours or more.

- B133 — MLB 131973

arterial occlusion or injury. Severe injuries to the extremities from explosions, high-velocity missiles (common in wars) are typically tx with complete excision of nonviable tissue and removal of foreign material, leaving the wound open, and delayed primary closure. Amputations are common as the explosion drives mud, grass and other debris into the wound with significant soft tissue damage. Delayed primary closure may be done at 4 to 7 days. The amputation level depends on the injury as well as the interval between injury and tx (if >24 hours after injury, have a 4-fold greater chance of requiring a higher amputation). A warm ischemia time of >6 hours means that inevitable tissue damage has occurred.

- A patient with multiple injuries who requires intensive resuscitation and/or emergency surgery for extremity or other injuries is not a candidate for replantation of upper extremity injury.

16. A limb that loses blood supply for more than 8 hours is at risk of amputation.

- B448 — MLA 454781

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- B201 — MLA 113288

These studies have influenced our current management of the mangled extremity. Absolute indications for amputation are few and include a severe crush injury, a mangled stump or distal tissue not amenable to repair, and a missing extremity. An extremity with warm ischemia time of more than 6 hours should be strongly considered for amputation as well. Finally, if possible, a discussion with the patient should be undertaken to determine the patient's wishes. This may take place after an initial limb salvage procedure if the patient is obtunded on presentation. Should primary amputation be indicated, thorough documentation must take place. It is important to document all pertinent local and systemic factors accurately. A MESS should be calculated for each patient but should be used with caution as a guideline to supplement the clinical findings. Whenever possible, pictures should be taken and added to the permanent medical record. When the indications are not absolute, it is essential that several surgeons evaluate the patient independently and document their opinions in the medical record.

- B30 — MLA 58499

■ NEUROVASCULAR INJURIES

Popliteal artery injury can occur from fractures about the knee, especially femoral condyle fractures or displaced tibial plateau fractures, and from ligamentous injuries such as isolated posterior cruciate ligament injuries,

multiple ligamentous injuries, or knee dislocation.¹⁻³ Popliteal artery circulation must be restored within 8 hours to avoid amputation, because collateral circulation is insufficient to maintain blood flow to the leg. Measure distal pulses on ED admission and after any manipulation, and compare pulses to those in the noninjured leg. A diminished pulse raises concern for vascular injury and should not be interpreted as vascular spasm.

- B202 — MLA 123814

directly behind the knee and may kink or sustain a tear of the intimal wall when the knee dislocates. A neurovascular exam is extremely important, focusing on the common peroneal nerve and the vascular status of the extremity, followed by immediate reduction of the knee and repeat neurovascular exam. If the pulses are normal, the ankle brachial index (ABI) should be measured. If the ABI is more than 0.9, then the patient should be monitored with serial examination. If the ABI is less than 0.9, then a CTA or an arterial duplex ultrasound should be performed. If there is evidence of diminished pulses after reduction, an angiogram must be performed. If the pulses are absent after reduction, immediate surgical exploration and/or repair should be done by a vascular surgeon. Prophylactic fasciotomy of the leg is usually done. Time is critical to reestablish the circulation of the limb. If ischemia time is more than 8 hours, then there is a very high rate of amputation. With regard to the ligamentous injuries, an external fixator may be initially used to stabilize the unstable knee and protect the reduction. Subsequently, an MRI will identify what structures have been torn. Because a dislocation causes so much damage to the knee, a delayed

- B451 — MLA 461272

Ischaemic Window

This is the time from onset of acute ischaemia before irreversible tissue necrosis occurs, which in the lower limb is about 4–6 hours. The amputation rate rises exponentially after this time. However, the ischaemic window is variable depending on numerous factors including history of PVD and collateral supply, acuteness of onset and whether systemic hypoperfusion (shock) is also present. Reperfusion should be re-established as soon as possible after onset of ischaemia.

- B451 — MLA 461307

Factors Associated with Higher Amputation Rates

- Treatment delay (>6 hours).
- Shock (the 4–6 hour ischaemic window may be 1–2 hours after trauma (for limb loss and good functional outcomes).
- Blunt injury leading to ischaemia.
- Lower extremity (compared with upper extremity).
- Associated injuries (nerve [most important], bone, vein, soft tissue).
- High velocity GSW.
- Pre-existing disease (especially PVD).
- Failure/delay in performing fasciotomy.

- B451 — MLA 461313

Ischaemic Time

The lower limb has a 4–6 hour ischaemic window before irreversible damage occurs, although this timeframe can be variable depending on collateral supply, presence of shock, acuteness of the ischaemia and amount of tissue trauma. The ischaemic window is greatly shortened if there is underlying shock, and it may be as short as 2 hours for amputation and <1 hour for a good functional outcome!

- B369 — MLA 359771

Knee dislocations are classified by tibial displacement relative to the femur (anterior, posterior, medial, lateral, or rotatory). They invariably cause multiple ligamentous injuries and are usually the result of motor vehicle collisions, falls, sports, and industrial injuries. Anterior dislocations are more common and usually occur after high-energy hyperextension injuries. Knee dislocations are associated with popliteal artery and common peroneal and tibial nerve injuries. Popliteal artery injury can result from both anterior and posterior dislocations and is more common than nerve injury. Injury can be present despite normal pulses, and if not identified and repaired within 8 hours, amputation may be necessary. Common peroneal nerve injury can cause decreased sensation on the lateral foot, impaired dorsiflexion and eversion, and impaired sensation over the 1st dorsal web space. Knee dislocations can spontaneously relocate, so the physician must maintain a high index of suspicion. Injuries are painful and visually striking. An effusion will often be absent since the capsule has been violated. On exam, the knee will be grossly unstable since dislocations tend to injure most of the surrounding ligaments.

- B369 — MLA 359773

Pearls

1. Knee dislocations are often associated with a fracture of the tibial plateau.
2. The presence of distal pulses in the foot does not rule out an arterial injury.
3. Vascular repair after 8 hours of injury carries an amputation rate of greater than 80%.

- B192 — MLA 104035

Acute limb ischaemia

Clinical features

The classical six 'Ps': pain, paraesthesia, paralysis, pallor, pulselessness and perishingly cold (Table 12.1). The first three are neurological and the last three vascular in origin. The presence of neurological signs indicates a need for urgent treatment. Sometimes isolated toes/fingers turn blue indicating the segment of occlusion. In the case of acute limb arterial insufficiency, surgery should be performed for acute occlusion within 6 hours for ideal results and avoidance of amputation. With longer ischaemic times, there is a higher chance of amputation and mortality from reperfusion injury and toxins.

- B145 — MLB 142096

Acute limb ischaemia

This is most frequently caused by acute thrombotic occlusion of a pre-existing stenotic arterial segment, thromboembolism, and trauma that may be iatrogenic. The typical presentation is with paralysis (inability to wiggle toes/fingers) and paraesthesia (loss of light touch over the dorsum of the foot/hand), the so-called 'Ps of acute ischaemia' (Box 16.57). These features are non-specific, however, and inconsistently related to its severity. Pain on squeezing the calf indicates muscle infarction and impending irreversible ischaemia. All patients with suspected acutely ischaemic limbs must be discussed immediately with a vascular surgeon; a few hours can make the difference between death/amputation and complete recovery of limb function. If there are no contraindications (acute

- B452 — MLA 466483

Sequelae of Missed Compartment Syndrome

A delayed or missed compartment syndrome will have devastating consequences for the patient and the limb, increasing the risk of neurologic deficit, amputation, and renal failure. Sheridan and colleagues found that the overall complication rate increased dramatically if fasciotomy was delayed more than 12 hours (54%), compared with early fasciotomies (4.5%).⁷⁶ Nearly half of the patients with delayed fasciotomies required

amputation and 92% had a significant neuropathy.⁷⁶ Not surprisingly, delay of fasciotomy for more than 36 hours almost invariably results in amputation. After 3 to 4 days, compartment syndrome is not indicated since the rate of infection and muscle necrosis is prohibitively high.

Acute Limb Ischemia — presentation & management

17. **Acute limb ischemia typically causes pain and involves cool skin and abnormal skin color.**

- B452 — MLA 466391

Physical Findings

Examination of the leg is used to define the severity of the ischemia and is therefore fundamental. The well-known rule of Ps—pain, pallor, paresthesia, pulse deficit, paresthesia, and perishing with cold—remains a good guide to both symptoms and signs. The color of the skin reflects its vascular supply. Marble-white skin is associated with acute total ischemia. Slow capillary refill is a sign that at least a small degree of distal flow is present and runoff vessels are probably patent. Sensation may be lost completely

- B192 — MLA 104036

Take a history to confirm the exact time of onset as well as a focused vascular and complete general history. In an acutely ischaemic leg caused by a superficial femoral artery embolus (commonest cause), the classic presentation is that of a patient experiencing a sudden onset of pain in their leg. Examination reveals a cold, pale leg which may be tender to touch and has absent pulses. Paraesthesiae and paralysis are late signs.

- B401 — MLA 391490

Clinical Presentation of Acute Limb Ischemia

History and Physical Exam in Acute Limb Ischemia

Occlusive arterial embolism to an otherwise normal arterial bed will nearly universally result in the abrupt onset of severe pain in the affected extremity. These patients lack collateral vessels around the flush occlusion, making the affected limb completely devoid of any arterial flow. The physical exam findings in this state are the presence of bounding “water hammer” pulses proximal to the occlusion and absent pulses distal to the occlusion. The distal extremity will be cool to touch and after 3–4 h may have neurological abnormalities (sensory loss followed by motor loss). The limb is pale with poor capillary refill. The contralateral limb in this situation will typically have normal pulses, unless the patient has underlying peripheral artery occlusive disease (PAD). Revascularization within 6 h is critical to avoid limb loss. Sources of arterial embolism are:

- B193 — MLA 105522, pdf 1380

Symptoms suggesting acute lower limb ischaemia

- Sudden onset of continuous pain, usually in one periphery. *Note:* may be painless in diabetic neuropathy
- Sudden and persistent coldness, usually in one periphery
- Sudden numbness or paraesthesia, usually in one periphery

Signs of acute lower limb ischaemia

- Pallor or blueness of the periphery; in late cases, the fixed pigmentation of necrosis or skin blistering
- Unexpected coldness of the peripheral part of one or (less commonly) both legs
- Absent lower limb pulses (particularly if known to have been present before)
- Poor peripheral capillary return after pressure blanching
- Progressive paralysis and foot drop (late sign)
- Ankle pulses undetectable by Doppler or very low ankle systolic pressure

Later, tissue ischaemia becomes obvious when the affected area becomes mottled, dusky blue and discoloured. If the mottling still blanches, then the limb may still be saved but worsening ischaemia leads to fixed mottling and skin blistering; this is now irreversible and limb loss inevitable. These changes always involve the foot and may extend proximally (though rarely above the knee). At this stage, the upper limit of necrosis is usually well demarcated from proximal viable tissue.

18. Generally, a potential case of acute limb ischemia requires urgent assessment, because it may require emergency treatment.

- B401 — MLA 391489

Introduction

Acute limb ischemia occurs when there is a sudden arterial occlusion resulting in an abrupt cessation of flow to an extremity. **Acute limb ischemia is a surgical emergency mandating urgent extremity revascularization to avoid the need for amputation.** The potential sources of acute limb ischemia are:

1. Arterial embolus
2. In situ arterial thrombosis in the setting of advanced chronic arterial occlusive disease
3. Acute occlusion of previous vascular reconstruction
4. Peripheral artery aneurysm with distal embolization or thrombosis
5. Major arterial trauma

The clinical hallmark of acute limb ischemia is the acute onset of extremity pain in conjunction with absent pulses in the affected extremity. The severity of pain symptoms can vary dramatically depending on the etiology of the acute arterial occlusion. Patients who experience acute limb ischemia secondary to an arterial embolism versus patients who experience in situ arterial thrombosis in the setting of chronic arterial occlusive disease can have significantly different clinical presentations.

- B401 — MLA 391413

Acute limb ischemia (ALI) refers to an abrupt cutoff in the circulation to an extremity—in the absence of trauma or iatrogenic injury—caused by either embolism or thrombosis. Cases of CLI with onset <4 days are deemed acute. The significance of ALI is seen in the high limb loss and mortality rates, thus early recognition and treatment is essential to salvage the ischemic extremity [20].

- B4 — MLA 19819

Management of Acute Limb Ischemia

The ACCF/AHA guidelines state that patients with symptoms and signs of acute limb ischemia should undergo emergency evaluation and treatment to preserve viability in a salvageable extremity.

Revascularization strategies include catheter-based thrombolysis/thrombectomy or surgical revascularization. Considerations for determining the type of revascularization procedure used to treat acute limb ischemia include the cause of acute arterial occlusion, the duration of time since the onset of symptoms, and the severity of limb ischemia (Table 64G.9).

- B406 — MLA 394991

Current Endovascular Management of Acute Limb Ischemia

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Acute limb ischemia is a vascular emergency, threatening the viability of the affected limb and requiring immediate recognition and treatment.

Even with revascularization of the affected extremity, acute limb ischemia is associated with significant morbidity and mortality resulting in up to a 15% risk of amputation during the initial hospitalization and a 1 in 5 risk of mortality within 1 year of the index event. This review summarizes the current management of acute limb ischemia. Understanding the diagnosis and therapeutic options will aid clinicians in treating these critically ill patients.

- B388 — MLA 383039

Overview

- Acute limb ischaemia is a vascular surgical emergency that carries a high morbidity and mortality.
- Complete arterial ischaemia leads to tissue necrosis and the need for amputation within 6–12 h unless reperfusion occurs.
- Loss of motor function in the calf and foot muscles is an indication for immediate revascularisation.
- Thrombolysis will often unmask the underlying lesion that triggered thrombosis and permit subsequent correction by a percutaneous intervention or open surgery.
- Calf swelling and pain out of proportion following reperfusion of an ischaemic limb indicates compartment syndrome that should be relieved by emergency fasciotomy.

- B201 — MLA 117004

stent placement may have an acute occlusion from graft or stent failure or may have disease progression. This history and the location of the occlusive lesion will affect surgical decision making. Acute limb ischemia constitutes a surgical emergency. As in most cases of vascular disease, there are endovascular and open surgical methods for addressing the problem.

- B27 — MLA 44700

Management

The first step is to identify patients whose symptoms are the sole result of arteriosclerosis obliterans without coexistent thromboembolic disease. Treatment for symptomatic patients depends on whether patients have functional ischemia or limb-threatening ischemia.²¹

Limb-threatening ischemia constitutes a surgical emergency. Angiography should be arranged to identify sufficiently localized disease to permit emergency bypass grafting.²¹ Patients with functional ischemia should have outpatient arrangements for elective invasive or noninvasive vascular testing to determine treatment options. Ischemic ulcers or skin lesions should be cultured in the emergency department and systemic antibiotics initiated to cover skin organisms if infection is present. Radiographs of underlying bones should be acquired when osteomyelitis is suspected. Patients with ischemic rest pain require hospitalization even if they are not surgical candidates. Bed rest, a warm environment, and maintenance of the limb in a dependent position usually relieve pain.

- B483 — MLA 509084

Ankle-Brachial Pressure Index

The ABI is a rapid and objective screening measurement of arterial insufficiency and should be assessed in any patient in whom arterial insufficiency is suspected. If the ABI can be measured, the limb is not immediately threatened but may still be ischemic. If arterial signals are absent, limb loss is probable without emergent revascularization. Absent venous pulsations indicate severe ischemia. It is helpful to check the ABI in the unaffected leg to ascertain whether the patient has underlying arterial disease or noncompressible vessels. The technique and interpretation of ABI measurements are summarized in **Figure 98.1, Tables 98.3 and 98.4.**^{1,8} While the typically used ABI cut-off of 0.9 maximizes sensitivity and specificity, any value <1.0 in a symptomatic patient should be considered sufficient evidence of arterial insufficiency.^{1,8}

- B14 — MLA 29521

Once the clinician is convinced that the patient's symptoms are related to PAD, the first priority is to determine whether the symptoms represent PAD without occlusion (nonischemic) or whether ischemic PAD is present. The next step is to determine whether the extremity is viable, threatened, or nonviable (**Box 68.4**). When arterial blood flow is insufficient to meet the metabolic demands of resting muscle or tissue, limb-threatening ischemia results. This is the most common indication for emergency arterial reperfusion. The selected group of patients requires immediate assessment of their vascular system. Arteriography provides the most useful information in the setting of acute arterial occlusion because in addition to providing information on anatomy, it can distinguish between embolism and thrombosis. Embolism has a sharp cutoff of contrast agent with a reverse meniscus sign; thrombosis usually has a more tapered cutoff. Diffuse atheromatous disease is also usually found around a thrombotic occlusion.

- B446 — MLA 452247

at intermediate follow-up and faster/shorter recovery.⁸ Contraindications to endovascular stent grafting for popliteal artery aneurysms include compressive symptoms and single-vessel run-off. An acutely thrombosed popliteal artery aneurysm often presents as an acutely ischemic limb and requires emergent therapy. Systemic anti-coagulation should be initiated immediately and directed thrombolytics improve distal run-off in preparation for surgical repair. [Q5: A, B, C]

- A218 — pdf pg 1

1. Introduction

Peripheral artery disease (PAD) is responsible for 12 to 15% of deaths in Europe [1] and is a major burden for the health system. The spectrum ranges from asymptomatic or intermittent claudication to necrosis and limb loss.

A sudden decrease in limb perfusion that threatens limb viability defines acute limb ischemia (ALI) and represents a major vascular emergency. The clinical presentation is considered to be acute if it occurs within 14 days after symptom onset [2,3]. In contrast to critical limb ischemia (CLI), also called chronic limb-threatening ischemia (CLTI) [4], in which collateral blood supply is often present, ALI threatens limb viability in a very short interval, because there is insufficient time for new blood vessel growth to compensate for the loss of perfusion. The sudden ischemia affects all the metabolically active tissues of the limb: skin, muscles, and nerves. Thus, urgent recognition with prompt revascularization is required to preserve limb viability [2,3].

19. Clinical assessment of a potentially ischemic limb generally involves physical examination of the affected limb, handheld Doppler pulse assessment including an ankle-brachial pressure index, and taking a history that includes the duration of symptoms.

- B452 — MLA 466391

Clinical Assessment

The initial assessment of acute critical ischemia involves an evaluation of both the limb and the patient as a whole.

History

The initial symptoms depend on the severity of ischemia and can range from incapacitating pain to the sudden onset of mild claudication. Obviously, the more severe the ischemia, the faster the patient seeks medical attention. Severe acute ischemia is usually obvious, with extreme pain and loss of sensation and power in the limb. Less severe ischemia can be difficult to diagnose and may be confused with musculoskeletal pain, sciatica, and other causes of limb discomfort. The duration of symptoms is the most important part of the history; in patients with severe ischemia, irreversible muscle necrosis occurs within 6 to 8 hours if the condition is untreated. Patients with an acute white leg require urgent intervention. The symptoms of sensory loss and muscle pain are also evidence of critical ischemia.

- B452 — MLA 466391

Physical Findings

Examination of the leg is used to define the severity of the ischemia and is therefore fundamental. The well-known rule of Ps—pain, pallor, paresis, pulse deficit, paresthesia, and perishing with cold—remains a good guide to both symptoms and signs. The color of the skin reflects its vascular supply. Marble-white skin is associated with acute total ischemia. Slow capillary refill is a sign that at least a small degree of distal flow is present and runoff vessels are probably patent. Sensation may be lost completely

and the foot may be numb, but more often there is loss of fine touch and proprioception, which should be tested specifically. Muscle tenderness, particularly in the calf, is a sign of advanced ischemia. Acute ischemia is associated with the loss of peripheral pulses, which also helps define the level of the occlusion. Palpable normal pulses in the contralateral leg point toward embolism as the cause.

- B452 — MLA 466392

A full vascular examination reveals the level of the occlusion by the loss of arterial pulsation. A strong pulse can, however, mask an occlusion at that level because of the water-hammer effect. Other possible sources of embolization may become apparent, such as aortic or popliteal aneurysm or cardiac abnormalities such as atrial fibrillation. Patients with acute leg ischemia are often older adults with multiple comorbidities, and a full physical examination should be undertaken because the final outcome may depend as much on associated conditions as on the severity of the leg ischemia.

- B452 — MLA 466392

Handheld Doppler examination is also a basic part of the examination. Pedal arterial signals may be absent or reduced. The presence of normal biphasic signals excludes the diagnosis. Soft monophasic signals are associated with patent distal vessels but proximal arterial occlusion. Absent Doppler signals in the ankle arteries is a poor prognostic sign. The arteries may be patent but with little flow, or they may be occluded with thrombus. In severe ischemia, ankle Doppler pressures are impossible to measure, partly owing to the lack of signal but also because of muscle tenderness. In less severe ischemia, an ankle pressure of 30 to 50 mm Hg can be expected, and an ankle-brachial index of about 0.3 is diagnostic of subcritical acute ischemia. Doppler can also be used to examine the extremity veins. In particular, a lack of a venous signal in the popliteal fossa suggests popliteal venous occlusion, which is a particularly poor prognostic sign in a patient with acute arterial ischemia.

20. A handheld Doppler device is commonly available in hospitals and can help to assess blood flow by creating sound that indicates the strength of the pulse.



21. Generally, hospital nurses are taught how to use a handheld Doppler device.
- B120 — MLB 121435, pdf 1374

Doppler Ultrasound Device

Peripheral pulses that cannot be detected by palpation may be assessed with an ultrasonic Doppler device. A conductive gel is first applied to the skin to reduce resistance to sound transmission. The transmitter of the device is then placed over the artery to be assessed (Fig. 19-5). High-frequency waves directed at the artery from the transmitter are disturbed by the pulsating flow of blood and are reflected back to the ultrasound device. The sound disturbances (Doppler shifts) are amplified and heard through earpieces or a speaker attached to the device.



FIGURE 19-5 An ultrasonic Doppler device can be used to assess a peripheral pulse.

- B119 — MLB 117431, pdf 1279

Peripheral Vascular Assessment

Inspection and palpation of the peripheral vascular system include assessment of peripheral pulses and blood flow, which the nurse performs while assessing other body systems. A critical aspect of a peripheral vascular examination is assessment of the jugular veins and carotid arteries, which is conducted during examination of the neck (see earlier discussion under [Head, Ears, Eyes, Nose, and Throat](#)). Auscultation is performed to obtain a blood pressure reading and to listen for bruits over the peripheral arteries. A Doppler ultrasound unit may be used to assess weak peripheral pulses.

- B306 — MLA 267247, pdf 637

Descending Aorta Pulse

When the patient is in the supine position, the abdominal aortic pulsation is located in the epigastric area and can be felt as a forward movement when firm fingertip pressure is applied above the umbilicus. If prominent or diffuse, the pulsation may indicate an abdominal aneurysm.

A diminished or absent pulse may indicate low cardiac output, arterial stenosis, or occlusion proximal to the site of the examination. An abnormally strong or bounding pulse suggests the presence of an aneurysm or an occlusion distal to the examination site. If a distal pulse cannot be palpated by using light finger pressure, a Doppler ultrasound stethoscope may enhance diagnostic accuracy. It is important to mark the location of the audible signal with an indelible ink marker pen for future evaluation of pulse quality.

- B332 — MLA 301697, pdf 1304

Diagnostic Studies

- Admission serum blood glucose level 272 mg/dL (15.2 mmol/L), glycosylated hemoglobin (Hb A1C) 14%
- Morning capillary blood glucose level 198 mg/dL (11 mmol/L)
- Doppler pulses for right lower leg weak, absent in right foot
- Doppler pulses in left lower leg present, weak in left foot
- Serum creatinine 2.0 mg/dL (176 mmol/L)

- B320 — MLA 285342, pdf 1671

c) Palpation

- (1) Tenderness
- (2) Deformity
- (3) Arterial pulses of extremity; signs of compromise
 - (a) Local pulses may be difficult to palpate because of swelling
 - (b) Doppler pulses may be present
 - (c) Arterial flow should return after reduction is completed; if insufficiency remains, vascular injury must be ruled out
 - (d) Delayed capillary refill time (<2 seconds is normal)
 - (e) Temperature of extremity distal from injury
- (4) Range of motion: active and passive testing
- (5) Motor strength testing using scale 1–5
- (6) Neurologic examination: paresthesia, numbness, paralysis

- B434 — MLA 435179, pdf 2558

Doppler scanning Doppler velocity waveform analysis uses continuous-wave Doppler ultrasound to record arterial pulsations in various lower-extremity arteries.

Dorsalis pedis artery the continuation of the anterior tibial artery of the lower leg. It starts at the ankle joint, divides into five branches, and supplies various muscles of the foot and toes.

Dorsiflexion bending the foot upward or toward the shin.

- B113 — MLB 102286, pdf 1206

Nursing Management

Maintaining Circulation Postoperatively

The primary objective in postoperative management of patients who have had vascular procedures is to maintain adequate circulation through the arterial repair.

- Check pulses, Doppler assessment, color and temperature, capillary refill, and sensory and motor function of the affected extremity and compare with those of the other extremity; record values initially every 15 minutes and then at progressively longer intervals.
- Perform Doppler evaluation of the vessels distal to the bypass graft for all patients after vascular surgery because it is more sensitive than palpation for pulses.
- Monitor ABI every 8 hours for the first 24 hours and then once daily until discharge.
- Notify surgeon immediately if a peripheral pulse disappears; this may indicate thrombotic occlusion of the graft.

- B48 — MLA 73040, pdf 124

Based on these definitions, Penelope is presenting with severe sepsis, and possibly septic shock. She meets the criteria for SIRS. In addition, she has inadequate tissue perfusion evidenced by a metabolic acidemia, raised lactate and an elevated SvO₂. She is also hypotensive with a mean arterial blood pressure (MABP) 65 mmHg, and her respiratory and renal function appear to be deteriorating (raised urea and creatinine). However, these abnormalities could be due to inadequate fluid resuscitation. This would need to be determined, ideally with the use of advanced haemodynamic monitoring, for example, pulmonary artery catheter, pulse-induced contour cardiac output (PiCCO) or oesophageal Doppler prior to assuming she is in septic shock.

22. Generally, physicians who provide clinical treatment to hospital patients are taught how to use a handheld Doppler device.

- B462 — MLA 483465, pdf 794

Essential anatomy and physiology

Rings will most often become entrapped between the metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joints. The PIP joint typically has the largest circumference of the digit and poses the most challenging anatomic location over which to pass the ring. Patients with underlying arthritic conditions may have enlarged PIP joints at baseline and can pose a particular challenge when edema develops in the digit.

The digits of the hand are supplied by neurovascular bundles located on both the radial and ulnar sides of the digits.⁶ If a laceration is associated with ring entrapment, be particularly cautious of a neurovascular injury if the laceration is present on the lateral portion of the digit.

A simple way to assess for adequate perfusion in the distal digit is to check **capillary refill** time and compare it with the unaffected hand. Concerning features would be capillary refill longer than three seconds or significant delay compared with the unaffected opposite hand. [Box 26.1](#) has other features suggesting ischemia of the digit.

Box 26.1 Signs and Symptoms of Ischemia

- Prolonged capillary refill
- Severe pain
- Paresthesias or loss of sensation
- Mottling of skin
- Dusky or white discoloration
- Inability to locate distal digital arterial pulses with vascular Doppler

Assess for neurovascular compromise by checking capillary refill and two-point discrimination

23. An ankle-brachial pressure index compares the blood pressure at the arm and the ankle, to help identify a weak pulse.

- B332 — MLA 303392, pdf 2999

The *ankle-brachial index* (ABI) is a PAD screening tool. It is performed using a hand-held Doppler. The ABI is calculated by dividing the ankle systolic BPs by the higher of the left and right brachial systolic BPs. PAD guidelines recommend uniform reporting of ABI results⁶ (Table 37-3). In older patients and those with diabetes, the arteries often are calcified and noncompressible. This results in a falsely elevated ABI.

Table 37-3

Interpreting Ankle-Brachial Index Results

Ankle-Brachial Index (ABI)	Clinical Significance
>1.30	Noncompressible arteries
1.00-1.30	Normal ABI
0.91-0.99	Borderline ABI
≤0.90	Abnormal ABI
Classification of PAD Severity	
0.90-0.71	Mild PAD
0.70-0.41	Moderate PAD
≤0.40	Severe PAD

PAD, Peripheral artery disease.

- B434 — MLA 434047, pdf 1426

Ankle Brachial Index (ABI)

One of the most commonly used noninvasive tests is the ABI, which provides an indirect assessment of arterial blood flow in the lower limbs by comparing the brachial systolic pressure to the systolic pressure at the ankle. ABI is recommended as a first-line, noninvasive test to establish a diagnosis in individuals at high risk or suspected of having LEAD such as individuals who have leg pain with walking, have nonhealing wounds, are 65 years of age or older, or are 50 years of age or older with a history of smoking or diabetes (Rooke et al., 2011).

24. Generally, hospital nurses are taught how to take an ankle-brachial pressure measurement.

- B332 — MLA 303392, pdf 2999

The *ankle-brachial index* (ABI) is a PAD screening tool. It is performed using a hand-held Doppler. The ABI is calculated by dividing the ankle systolic BPs by the higher of the left and right brachial systolic BPs. PAD guidelines recommend uniform reporting of ABI results⁶ (Table 37-3). In older patients and those with diabetes, the arteries often are calcified and noncompressible. This results in a falsely elevated ABI.

- B434 — MLA 432845, pdf 224

7. A wound care nurse measures a patient's ankle-brachial index (ABI), and records a value of 0.78. What condition does this reading indicate?

- A. Dehydration
- B. Fluid and electrolyte imbalances
- C. Edema
- D. Arterial insufficiency

- B120 — MLB 121453, pdf 1392

Sometimes, ankle blood pressure measurements are taken to calculate an ankle-brachial index (ABI) to determine if it is safe to use compression therapy for venous ulcers. To measure blood pressure in the ankle, place the patient in a flat, supine position, and place a standard arm cuff just above the malleolus. Auscultate or palpate the posterior tibialis or dorsalis pedis pulse as you deflate the cuff. A lower blood pressure in the lower extremity than in the upper arm may indicate poor arterial circulation to the leg.

- B130 — MLB 129603, pdf 293

Doppler ultrasound—measures velocity of blood flow through a vessel and emits an audible signal

Duplex imaging—uses Doppler system to map blood throughout artery and gives anatomic and physiological information about the blood vessels

Ankle-brachial index (ABI)—divide ankle blood pressure by brachial blood pressure; normal is greater than or equal to 0.9.

- B113 — MLB 101271, pdf 191

Nursing Management

- Maintain patient on bed rest with the affected extremity level or slightly dependent (15 degrees) before an intervention or surgery.
- Keep the affected part at room temperature and protected from trauma.
- Postoperatively assess for evidence of local (surgical incision) and systemic hemorrhage, including mental status changes.
- Encourage movement of patient's leg to stimulate circulation and prevent stasis.
- Continue anticoagulants to prevent thrombosis of the affected artery and to diminish development of subsequent thrombi.
- If treating with thrombolytic therapy, ensure weight-based dosing and continuous monitoring including vital signs; monitor for bleeding. Minimize punctures when inserting IV lines and obtaining blood samples; avoid IM injections; prevent any possible tissue trauma. Apply pressure at least twice as long as usual after any puncture is performed.
- Assess patient's pulses, Doppler signals, ankle brachial index (ABI), and motor and sensory function every hour for the first 24 hours, because significant changes may indicate reocclusion.
- Assess patient for complications such as metabolic abnormalities, kidney disease, and compartment syndrome.

- B320 — MLA 284134, pdf 463

2) Diagnostic procedures

- a) CBC with differential
- b) Coagulation profile: PT-INR, aPTT
- c) Arteriography
 - (1) Conventional (intraarterial)
 - (a) Digital subtraction angiography
 - (2) CT angiography (CTA)
 - (3) MR angiography (MRA)
- d) Doppler flow studies
- e) Ankle-brachial index (ABI): a comparison of ankle BP with arm pressure; ABI < 0.30 is not compatible with limb viability
- f) ECG

- B327 — MLA 292479, pdf 996

Practice guidelines should be incorporated in the evaluation of the patient at risk for PAD. This includes a careful vascular examination of the extremities and assessment of all peripheral pulses, including the measurement of segmental pressures in the legs and the ankle/brachial index (ABI). The ABI is the ratio of ankle to brachial systolic blood

- B306 — MLA 267701, pdf 1091

Assessment and Diagnosis

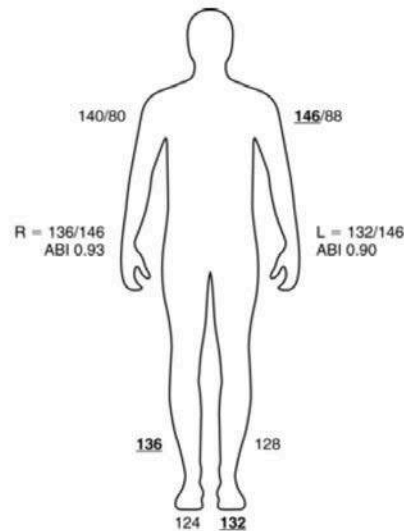
Ankle-Brachial Index

The ankle-brachial index (ABI) is a noninvasive test used to estimate the severity of arterial disease in the leg by comparing it with the measured arterial pressure in the arm. The systolic BP is measured on the arm and on the leg (just above the ankle). A cuff is used to occlude the pressure, and the systolic BP is measured at the posterior tibial pulse and the dorsalis pedis pulse locations.⁹⁷ The systolic BP can be palpated with the fingers or auscultated using a handheld 5- to 7-MHz Doppler device. To calculate the ABI, the arm systolic BP is divided into the ankle systolic BP number.⁹⁷ A normal ABI value is between 0.9 and 1.0, signifying that the peripheral arteries are normal. Patients with an ABI value between 0.71 and 0.9 have mild PAD; patients with an ABI between 0.41 and 0.7 have moderate PAD; and patients with an ABI less than 0.4 have severe PAD.^{95,97} Generally, as the ABI value decreases, symptoms of peripheral ischemia increase.

- B329 — MLA 297927, pdf 1613

The ABI is a ratio of ankle to brachial blood pressure. PAD is present if the ABI is 0.90 or less.² Box 36-1 describes the calculation of an ABI. This test may also be used postoperatively to assess patency of vessels following stent placement, percutaneous transluminal angioplasty (PTA), bypass graft placement, or endarterectomy. In patients with diabetes who have developed calcification of the large vessels, an ABI might not be obtainable because of the inability to fully compress the vessels to obtain a pressure. In these patients, toe-brachial index is a useful tool for assessing distal blood flow.⁸

BOX 36-1 Obtaining an Ankle Brachial Index



1. Obtain the blood pressure in both arms with the patient lying supine.
2. Obtain the blood pressure with a Doppler scan at the dorsalis pedis and posterior tibial pulses on each ankle.

3. Calculate the ABI with the highest ankle pressure divided by the highest arm pressure. (Example: Right BP 140/80 mm Hg; left BP 146/88 mm Hg; right DP 136 mm Hg; right PT 124 mm Hg; left DP 128 mm Hg; left PT 132 mm Hg; right ABI = 136 mm Hg/146 mm Hg [0.93]; left ABI = 132 mm Hg/146 mm Hg [0.90].)

ABI, Ankle brachial index.

- B44 — MLA 66178, pdf 419

BOX 10.4 Nursing Interventions for the Patient Receiving IABP Therapy**Preinsertion Interventions**

- Perform a two-person identification verification and time-out to ensure the correct patient for the procedure.
- Provide as calm an environment as possible because the patient will likely be overwhelmed.
- Provide reassurance that the IABP therapy is temporary.
- Explain the procedure and the steps to help ensure safety (as time permits).
- Allow families to participate in discussions and to express concerns.
- Ascertain that consent is signed and complete if required.
- Obtain a 12-lead ECG; insert a urinary catheter.
- Assist with the insertion of invasive lines such as an arterial line and a pulmonary artery catheter.
- Obtain baseline hemodynamic readings: HR, RR, BP, MAP, PAP, PAOP, CVP, CO or CI, SVR, and urine output.
- Obtain baseline blood work: ABG, mixed venous blood gas, chemistries with BUN/creatinine, CBC with platelets and differential, coagulation profile, and type and crossmatch.
- Perform a peripheral vascular assessment, including checking ankle-brachial index,* skin temperature, presence and strength of pulses, and capillary refill in lower extremities.
- Monitor for the presence of a left radial pulse. Inform the health care provider if the pulse is lost so that the catheter can be repositioned.

25. Generally, physicians who provide clinical treatment to hospital patients are taught how to take an ankle-brachial pressure measurement.

- B14 — MLA 29502, pdf 2880

Peripheral Arterial Disease

Christopher Ross, Theresa Schwab

Key Points

- Intermittent claudication is the earliest clinical manifestation of pathologically significant peripheral arterial disease.
- The ankle-brachial index can help confirm clinical suspicion of occlusive arterial disease.
- Ischemic rest pain signals critical, limb-threatening disease.

26. In cases of acute limb ischemia, generally a vascular surgeon should be consulted.

- B354 — MLA 337383, pdf 1758

Patients with thromboembolism of the extremities present with one or more of the six “classic Ps” of limb ischemia: pain, pallor, paresthesia, paralysis, pulselessness, and poikilothermia (cold limb). Since each patient has a critical window before irreversible tissue damage may occur, attempting to determine the duration of symptoms is important. Six hours is commonly considered to be the span before such irreversible damage begins. It cannot be overemphasized that immediate referral to a vascular surgeon is absolutely paramount if a patient presents with acute limb ischemia, as delays in triage or unnecessary imaging can ultimately compromise the potential for limb salvage. Diagnosis can usually be made by history and physical examination, although imaging studies may be necessary to assist with management decisions for some patients.

- B27 — MLA 41357

The Raynaud's phenomenon is treated by warming the affected digits and extremities. Systemic vasodilating agents (eg, calcium channel blockers [nifedipine] or nitrates, endothelin antagonists, statins, phosphodiesterase inhibitors, botulinum toxin) may be useful in the acute setting, although data are limited.¹¹ If there is no improvement of peripheral cyanosis with warming and administration of 100% oxygen, arterial insufficiency or occlusion may be present. In cases of critical limb ischemia, IV heparin should be considered in consultation with a vascular surgeon. Embolic sources, such as endocarditis and abdominal aortic aneurysms, should be considered. Vascular bypass, intraarterial thrombolysis, or stenting may be indicated.

- B27 — MLA 44749

77.3. A 63-year-old male presents with acute onset of left leg pain while walking. He describes it as a shock-like sensation that made his knee buckle. Past history is remarkable for hypertension, diabetes (diet controlled), tobacco use, and a recent lateral wall myocardial infarction. Current medications are aspirin, metoprolol, and lisinopril. Vital signs are: temperature, 37.0° C oral; heart rate, 98 beats per minute; blood pressure, 160/105 mm Hg; respiratory rate, 20

breaths per minute; and oxygen (O₂) saturation, 96%. Physical examination is remarkable for left lower extremity pallor with decreased light touch sensation, nonpalpable left foot pulses, and minimal capillary refill. What would be the most appropriate next step in the diagnosis and management of this patient?

- A. Abdominal ultrasonography
- B. Arteriogram
- C. Serum lactate level
- D. Thoracolumbar magnetic resonance imaging (MRI) scan
- E. Vascular surgery consultation

Answer: E. This patient has acute limb ischemia from an acute arterial embolus, most likely originating from his left ventricle secondary to a recent myocardial infarction. Loss of light touch sensation on physical examination indicates jeopardized tissue viability, requiring immediate vascular surgery consultation for emergent Fogarty catheter embolectomy. Reliable diagnosis of an acute arterial embolism can almost always be made by history and physical examination alone. Any additional diagnostic evaluation constitutes an unnecessary delay. Serum lactate level, abdominal ultrasonography, and thoracolumbar magnetic resonance imaging (MRI) scan would not provide useful information. An arteriogram before going to the operating room is an unnecessary delay and may further exacerbate limb ischemia.

- B30 — MLA 53295

Symptomatic peripheral artery aneurysms require rapid diagnosis and consultation, especially in light of the potential for rupture, thrombosis, and limb ischemia (Table 60-2). For patients with clinical extremity ischemia, consult immediately with a vascular surgeon to expedite repair and limb

salvage. Asymptomatic peripheral aneurysms are managed by a vascular consultant as an outpatient.

- B30 — MLA 58979

VASCULAR INFECTIONS

Vascular infections associated with injection drug use include inadvertent arterial injection with resultant vasospasm or thrombosis, septic thrombophlebitis, venous and arterial pseudoaneurysms, and infected hematomas. Arterial injection causes pain, edema, and patchy mottling of the affected limb due to ischemia. Tissue necrosis and gangrene are the consequence of persistent focal ischemia.²⁸ When suspecting limb ischemia, promptly consult a vascular surgeon to determine whether anticoagulation, surgical intervention, or intra-arterial thrombolysis is best. Limb edema and

ischemia can progress to compartment syndrome or may be complicated by rhabdomyolysis.²⁹

- B159 — MLB 155944

■ INPATIENT MANAGEMENT

The diagnosis of acute limb ischemia should immediately prompt vascular surgery consultation (Figure 256-2). In addition, to augment perfusion the affected limb should be placed in a dependent position and the patient started on supplemental oxygen, irrespective of oxygen saturation. In the absence of contraindications, intravenous heparin should be started to prevent thrombus propagation with a goal-activated partial thromboplastin time of two to three times above normal. Many institutions have established heparin protocols but in the absence of these the patient may be given a

...

Prompt vascular surgery consultation is important to determine the need for additional imaging as discussed above and surgical intervention. Patients with class I ischemia—no neurologic defect with Doppler-proven arterial flow—do not have an acutely threatened limb and warrant a workup in addition to anticoagulation. Patients with an irreversibly ischemic leg will benefit from heparin to prevent thrombus propagation but not from aggressive limb salvage. They should receive amputation when medically appropriate. All other patients—meaning those with sensorimotor loss and a viable limb—need revascularization immediately. Broadly, this may consist of open surgery (eg, thromboembolectomy, arterial bypass) or endovascular therapy (eg, percutaneous mechanical thrombectomy, thrombolysis), or both as determined by patient factors and local expertise.

- B133 — MLB 131848

III. When and from whom should I request a consultation for a patient with a diabetic foot infection?

8. For both outpatients and inpatients with a DFI, clinicians should attempt to provide a well-coordinated approach by those with expertise in a variety of specialties, preferably by a multidisciplinary diabetic foot care team (strong, moderate). Where such a team is not yet available, the primary treating clinician should try to coordinate care among consulting specialists.

9. Diabetic foot care teams can include (or should have ready access to) specialists in various fields; patients with a DFI may especially benefit from consultation with an infectious disease or clinical microbiology specialist and a surgeon with experience and interest in managing DFIs (strong, low).

10. Clinicians without adequate training in wound debridement should seek consultation from those more qualified for this task, especially when extensive procedures are required (strong, low).

11. If there is clinical or imaging evidence of significant ischemia in an infected limb, we recommend the clinician consult a vascular surgeon for consideration of revascularization (strong, moderate).

- B30 — MLA 53308, pdf 1631

■ IMAGING

Acute critical limb ischemia is a time-sensitive diagnosis; once suspected, consult a surgeon as soon as possible, even while obtaining diagnostic imaging. Duplex US is very accurate for detecting complete or incomplete arterial obstruction. Sensitivity declines for localization of thromboembolic occlusion at or below the calf level. Emergency physician–performed POCUS focusing on the aorta, iliac vessels, and femoral artery bifurcation may localize emboli or thromboses, expediting diagnosis and management.¹⁸ Transthoracic cardiac echocardiography can help detect embolic sources, and transesophageal approaches add the ability to detect aortic root pathology.

Arteriography often occurs in the operating room or intervention lab just prior to direct therapy. CT with contrast is the most readily available study in the ED, and it has a sensitivity similar to that of conventional uniplanar contrast studies in large vessels. MRI has higher sensitivity and specificity than CT angiography but is less readily available. The selection of most timely and appropriate imaging technique is best a joint decision between the ED physician, vascular surgeon, and/or interventional radiologist.

TREATMENT

The objectives of therapy for acute arterial obstruction are restoration of blood flow to preserve limb and life and prevention of recurrent thrombosis

- B159 — MLB 155953, pdf 5875

Avoiding delays in acute limb ischemia

- Acute limb ischemia is associated with considerable morbidity and mortality. Time to intervention is crucial to favorable outcomes. Obtain immediate surgical consultation. The diagnosis is a clinical one and imaging should not be ordered without expert consultation because of the risk of delay in treatment. Assessment of sensorimotor function is the most important aspect of physical examination and will often determine the urgency of intervention.

27. Acute limb ischemia is commonly categorized by degree of severity — class I (limb viable), class IIa (limb marginally threatened), class IIb (limb immediately threatened, and class III (limb non-viable).

- B401 — MLA 391416, pdf 39

Patients with ALI present in different stages of severity . Three stages were developed for ALI standardization (Table 1.1) [29]. Stage I is termed “viable.” The limb is not immediately threatened, without continuing ischemic pain, without neurologic deficit, and clear audible arterial signal in the pedal arteries. Stage II is termed “threatened.” Within this stage there are two levels, split for managing therapies. Stage IIa is marginally threatened and IIb is immediately threatened . Neither have clear audible signals in the pedal arteries. Those patients in IIa will have transient or minimal sensory loss which is usually limited to the toes. Those in IIb have persistent ischemic rest pain, sensory loss above the toes, and any motor disturbance. Stage III is termed “irreversible .” These patients have permanent neuromuscular damage with profound sensory loss and muscle paralysis, absent venous, and capillary flow distally. Typically there are skin changes such as skin marbling and muscle. The distribution of the stages of ALI at presentation is shown in Fig. 1.1 [1].

Table 1.1 Classification of acute limb ischemia

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 1	Absent	Absent	Audible	Present	Urgent workup
Stage 2a	None—minimal	Absent	Absent (often)	Present	Urgent surgery

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 2b	Moderate	Mild— moderate	Absent (usually)	Present	Emergent surgery
Stage 3	Profound	Profound	Absent	Absent	Amputation

Data from Rutherford et al. [29]

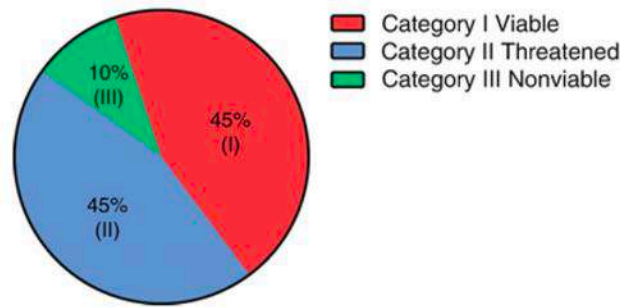


Fig. 1.1 Categories of ALI on presentation. Data from Norgren et al. [1]

- A205 — pg 20

Classification of acute limb ischemia				
	Viable (I)*	Marginally threatened (IIa)*	Immediately threatened (IIb)*	Nonviable (III)*
Pain	Mild	Moderate	Severe	Variable
Capillary refill	Intact	Delayed	Delayed	Absent
Motor deficit	None	None	Partial	Complete, paralysis (rigor)
Sensory deficit	None	None or minimal (toes)	More than toes	Complete, anesthetic
Arterial Doppler	Audible	Inaudible	Inaudible	Inaudible
Venous Doppler	Audible	Audible	Audible	Inaudible
Treatment	Urgent evaluation	Urgent revascularization	Emergency revascularization	Amputation

* Corresponds to the categories of acute limb ischemia as specified by Rutherford.

28. The severity of limb ischemia is commonly assessed based on factors including (a) degree of pain, (b) degree of sensory deficit, (c) degree of motor deficit, (d) strength of arterial pulse, and (e) strength of venous signal.

- B401 — MLA 391416, pdf 39

Table 1.1 Classification of acute limb ischemia

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 1	Absent	Absent	Audible	Present	Urgent workup
Stage 2a	None—minimal	Absent	Absent (often)	Present	Urgent surgery

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 2b	Moderate	Mild—moderate	Absent (usually)	Present	Emergent surgery
Stage 3	Profound	Profound	Absent	Absent	Amputation

- A205 — pg 20

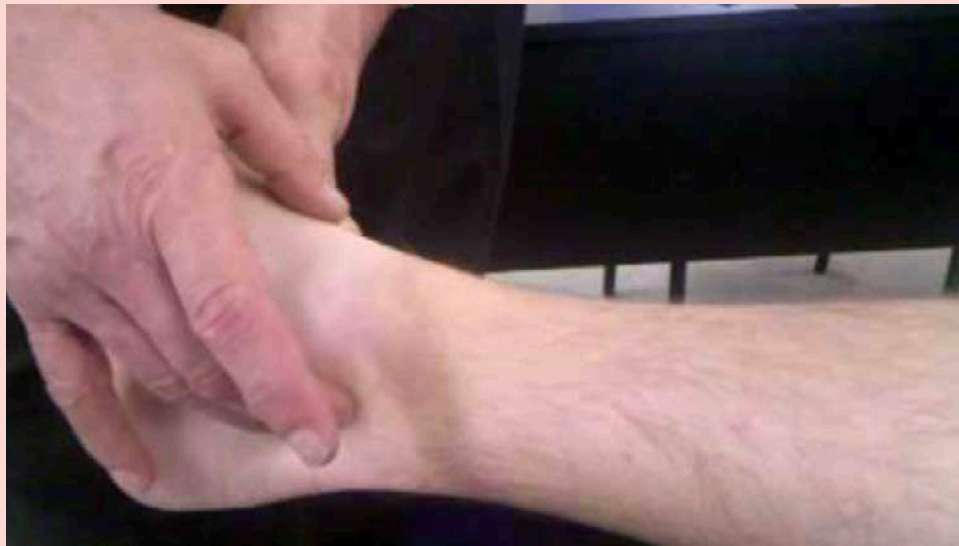
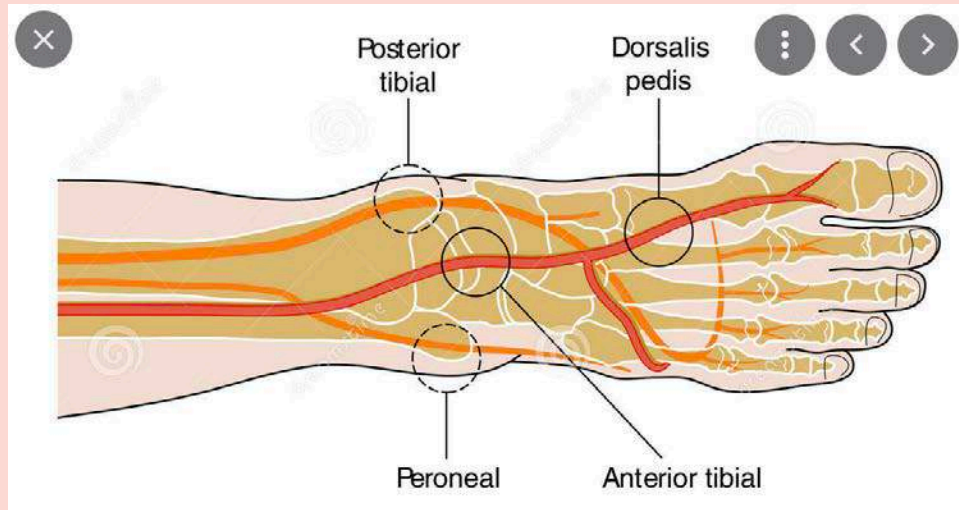
Classification of acute limb ischemia

	Viable (I)*	Marginally threatened (IIa)*	Immediately threatened (IIb)*	Nonviable (III)*
Pain	Mild	Moderate	Severe	Variable
Capillary refill	Intact	Delayed	Delayed	Absent
Motor deficit	None	None	Partial	Complete, paralysis (rigor)
Sensory deficit	None	None or minimal (toes)	More than toes	Complete, anesthetic
Arterial Doppler	Audible	Inaudible	Inaudible	Inaudible
Venous Doppler	Audible	Audible	Audible	Inaudible
Treatment	Urgent evaluation	Urgent revascularization	Emergency revascularization	Amputation

* Corresponds to the categories of acute limb ischemia as specified by Rutherford.

29. Where motor and sensory deficits cannot be assessed for a potentially ischemic leg, the arterial and venous signals assessments become all the more important.

30. “Pedal pulse” refers to pulses in the foot, which are commonly assessed at the top of the foot or at the ankle.





31. Pedal pulses may be assessed by touch or by Doppler device.

- B118 — MLB 113270, pdf 1993

Ultrasound Stethoscopes

If a pulse is difficult to palpate, an ultrasound (Doppler) stethoscope is a useful tool that amplifies the sounds of a pulse wave. Factors that weaken a pulse or make palpation difficult include obesity, reduction in the stroke volume of the heart, diminished blood volume, or arterial obstruction. Apply a thin layer of transmission gel to the patient's skin at the pulse site or directly onto the transducer tip of the probe. Turn on the volume control and place the tip of the transducer at a 45- to 90-degree angle on the skin (Fig. 30.49). Move the transducer until you hear a pulsating "whooshing" sound that indicates that arterial blood flow is present.

- [image search]



32. An obese patient's pedal pulses may be difficult to assess by touch. Doppler assessment is more reliable for such patients.

- B118 — MLB 113072, pdf 1795

Pulse Rate

- If it is difficult to palpate the pulse of an obese older adult, a Doppler device provides a more accurate reading.
- Pedal pulses are often difficult to palpate in older adults.
- The older adult has a decreased heart rate at rest.
- It takes longer for the heart rate to rise in the older adult to meet sudden increased demands that result from stress, illness, or excitement. Once elevated, the pulse rate takes longer to return to normal resting rate.
- Heart sounds are sometimes muffled or difficult to hear in older adults because of an increase in air space in the lungs.

33. The absence of an arterial pedal pulse indicates at least class IIa ischemia.

- B401 — MLA 391416, pdf 39

Table 1.1 Classification of acute limb ischemia

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 1	Absent	Absent	Audible	Present	Urgent workup
Stage 2a	None—minimal	Absent	Absent (often)	Present	Urgent surgery

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 2b	Moderate	Mild—moderate	Absent (usually)	Present	Emergent surgery
Stage 3	Profound	Profound	Absent	Absent	Amputation

- A205 — pg 20

Classification of acute limb ischemia

	Viable (I)*	Marginally threatened (IIa)*	Immediately threatened (IIb)*	Nonviable (III)*
Pain	Mild	Moderate	Severe	Variable
Capillary refill	Intact	Delayed	Delayed	Absent
Motor deficit	None	None	Partial	Complete, paralysis (rigor)
Sensory deficit	None	None or minimal (toes)	More than toes	Complete, anesthetic
Arterial Doppler	Audible	Inaudible	Inaudible	Inaudible
Venous Doppler	Audible	Audible	Audible	Inaudible
Treatment	Urgent evaluation	Urgent revascularization	Emergency revascularization	Amputation

* Corresponds to the categories of acute limb ischemia as specified by Rutherford.

34. Acute limb ischemia of class IIa requires urgent treatment to restore and preserve blood flow.

- B401 — MLA 391416, pdf 39

Table 1.1 Classification of acute limb ischemia

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 1	Absent	Absent	Audible	Present	Urgent workup
Stage 2a	None—minimal	Absent	Absent (often)	Present	Urgent surgery

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 2b	Moderate	Mild—moderate	Absent (usually)	Present	Emergent surgery
Stage 3	Profound	Profound	Absent	Absent	Amputation

- A205 — pg 20

	Viable (I)*	Marginally threatened (IIa)*	Immediately threatened (IIb)*	Nonviable (III)*
Pain	Mild	Moderate	Severe	Variable
Capillary refill	Intact	Delayed	Delayed	Absent
Motor deficit	None	None	Partial	Complete, paralysis (rigor)
Sensory deficit	None	None or minimal (toes)	More than toes	Complete, anesthetic
Arterial Doppler	Audible	Inaudible	Inaudible	Inaudible
Venous Doppler	Audible	Audible	Audible	Inaudible
Treatment	Urgent evaluation	Urgent revascularization	Emergency revascularization	Amputation

* Corresponds to the categories of acute limb ischemia as specified by Rutherford.

35. Where an arterial pedal pulse is absent and the sensory or motor deficits cannot be assessed, caution requires treating the ischemia as class IIb.

36. Acute limb ischemia of class IIb requires emergency treatment to restore blood flow.

- B401 — MLA 391416, pdf 39

Table 1.1 Classification of acute limb ischemia

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 1	Absent	Absent	Audible	Present	Urgent workup
Stage 2a	None—minimal	Absent	Absent (often)	Present	Urgent surgery

Ischemic stage	Sensory deficit	Motor deficit	Arterial signal	Venous signal	Treatment
Stage 2b	Moderate	Mild—moderate	Absent (usually)	Present	Emergent surgery
Stage 3	Profound	Profound	Absent	Absent	Amputation

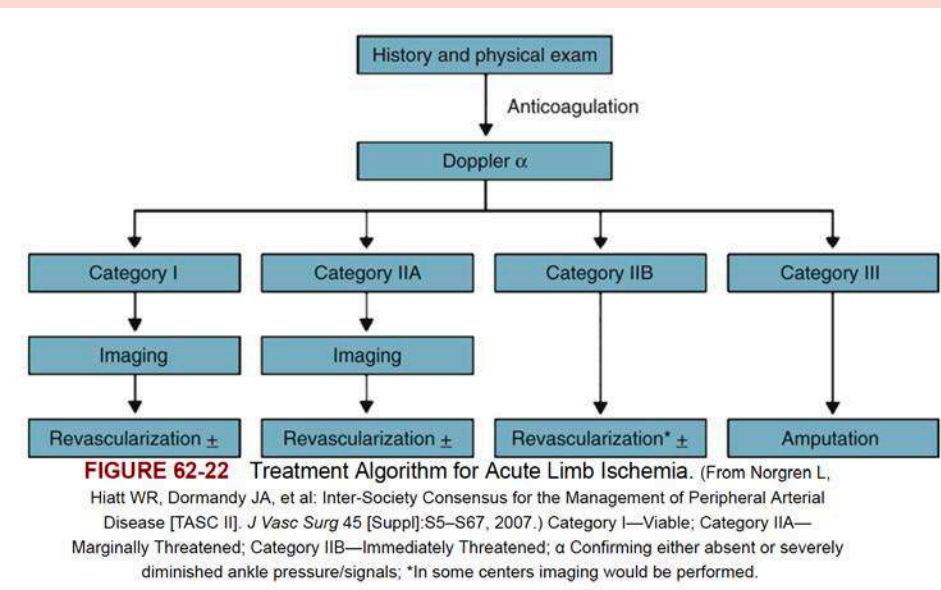
- B201 — MLA 117004, pdf 5240

stent placement may have an acute occlusion from graft or stent failure or may have disease progression. This history and the location of the occlusive lesion will affect surgical decision making. Acute limb ischemia constitutes a surgical emergency. As in most cases of vascular disease, there are endovascular and open surgical methods for addressing the problem.

As in all cases, a detailed history and physical examination are needed for a clinical diagnosis of the severity of disease:

- Category I limbs are viable and not immediately threatened.
- Category IIa limbs are threatened but salvageable if treated.
- Category IIb limbs are salvageable if treated as an emergency.
- Category III limbs have irreversible ischemia and are not salvageable.

Therefore, patients whose limbs are viable and do not appear immediately threatened (category I) as well as patients whose limbs are threatened but salvageable without paralysis but with mild sensory changes (category IIa) are potential candidates for thrombolytic therapy. Patients with threatened limbs with more significant neurologic changes (category IIb) require a more urgent intervention and may best be served with an operative intervention. Patients with irreversible ischemia and a nonsalvageable limb usually require primary amputation (Fig. 62-22).



37. In cases of critical or severe acute limb ischemia, diagnostic investigation generally should not delay therapeutic intervention. Where facilities allow, the patient should generally be treated by an interventionalist with access to diagnostic as well as interventional tools.

- B452 — MLA 466397

Investigation

Investigation may be valuable in confirming the clinical diagnosis and planning the appropriate treatment for patients with acute ischemia. However, when the ischemia is critical, there may be no time for investigation if direct operative intervention is required. It is possible to employ on-table angiography to assist in decision making in the operating room. In a modern vascular service, treatment in a hybrid operating theater with access to the full range of interventional and surgical procedures is optimal. Time permitting, a number of methods can be used to definitively determine the site and nature of the arterial occlusion.

- B452 — MLA 463840, pdf 2245

Assessment of Neurologic Status

A primary determinant of the necessity for and urgency of aggressive intervention is the patient's neurologic status at initial evaluation. As the level of neurologic dysfunction increases from dysesthesia to paralysis, the impetus for rapid resolution of the situation grows. Consequently, the time available for lengthy diagnostic or therapeutic measures outside the operating room decreases correspondingly. Considerable clinical judgment is required in these cases because delay in treatment may precipitate irreversible tissue injury and culminate in untoward outcomes, including limb loss or death. A standardized approach to and reporting of the acutely ischemic limb was published by Rutherford et al. in 1997.⁶⁴ We feel that the Rutherford criteria of acute limb ischemia based on sensory function, motor function, and presence or absence of ankle Doppler signals continue to provide a good measure of the degree of acute ischemia. This approach will aid the clinician in determining the rapidity with which revascularization is necessary or perhaps even contraindicated. A nonviable limb, Rutherford category III, would preclude an attempt at revascularization, while a Rutherford category IIb limb should prompt urgent revascularization.

If there is no neurologic compromise and the degree of tissue ischemia appears minimal, such as in Rutherford category IIa or category I, diagnostic or alternative therapeutic maneuvers, including thrombolysis, can be contemplated (see [Chapter 41](#)). This is predicated on recognition of

- A207 — pg 19

SUMMARY AND RECOMMENDATIONS

- Clinical manifestations of acute embolism to the lower extremities can range from isolated digital ischemia to profound acute global limb ischemia. Some patients will experience a subclinical progressive loss of outflow vessels from recurrent embolism leading to a chronic peripheral artery disease (PAD)-like picture. (See '[Clinical presentations](#)' above.)
- A variety of etiologies can potentially lead to embolization of the lower extremities, and understanding these should guide an efficient and thorough clinical evaluation, treatment, and source control. (See '[Etiology](#)' above.)
- The history and physical examination may be sufficient to determine the most likely etiology and to initiate treatment. Whenever feasible, we suggest obtaining computed tomographic (CT) angiography because it provides valuable information about the location of the disease and level of baseline atherosclerotic plaque burden. Even in the setting of acute limb ischemia, CT angiography can usually be quickly accomplished while preparing the patient for intervention, but imaging can be deferred if it will delay treatment. (See '[Vascular imaging](#)' above.)

- A228 — pg 39

E2.2.2 Imaging – arteriography. Arteriography is of major value in localizing an obstruction and visualizing the distal arterial tree. It also assists in distinguishing patients who will benefit more from percutaneous treatment than from embolectomy or open revascularization procedures.

In limb-threatening ischemia, an important consideration is whether the delay in performing formal angiography in an angiographic suite can be tolerated. Angiography makes the most sense when catheter-based treatment is an option.

- B159 — MLB 155953, pdf 5875

Avoiding delays in acute limb ischemia

- Acute limb ischemia is associated with considerable morbidity and mortality. Time to intervention is crucial to favorable outcomes. Obtain immediate surgical consultation. The diagnosis is a clinical one and imaging should not be ordered without expert consultation because of the risk of delay in treatment. Assessment of sensorimotor function is the most important aspect of physical examination and will often determine the urgency of intervention.

- B193 — MLA 105522, pdf 1380

Principles of managing the acutely ischaemic limb

Management should be carefully planned at the outset. The window of opportunity before necrosis is short and delay or procrastination increases morbidity or mortality. Treatment is best carried out by cooperation between vascular surgical and radiological specialists so the full range of appropriate and timely treatment can be offered. As a first step, the patient should be anticoagulated with a bolus dose of 5000 U of **intravenous heparin** to prevent propagation of thrombus proximal and distal to the

- B194 — MLA 107456, pdf 1357

The poor reliability of physical diagnosis in accurately assessing the location and extent of vascular injury mandates diagnostic studies whenever arterial injury is suspected. If the patient has a viable extremity with an ABI of 1.0, then limb-threatening arterial injury is unlikely and the vessels that are near the region of trauma can be further evaluated by duplex ultrasound studies. If the extremity is ischemic, angiography is indicated unless the delay puts the limb or organ at risk. Because of the tremendous concussive energy of high-velocity missiles, extensive damage can result even if the vessels are not in the direct line of the penetrating bullet. Certain types of blunt trauma (especially dislocation of the knees and elbows) are so often associated with arterial injury that duplex ultrasonography or arteriography is prudent even if no symptoms are present.

- B27 — MLA 44749-50, pdf 3956-57

77.3. A 63-year-old male presents with acute onset of left leg pain while walking. He describes it as a shock-like sensation that made his knee buckle. Past history is remarkable for hypertension, diabetes (diet controlled), tobacco use, and a recent lateral wall myocardial infarction. Current medications are aspirin, metoprolol, and lisinopril. Vital signs are: temperature, 37.0° C oral; heart rate, 98 beats per minute; blood pressure, 160/105 mm Hg; respiratory rate, 20

breaths per minute; and oxygen (O₂) saturation, 96%. Physical examination is remarkable for left lower extremity pallor with decreased light touch sensation, nonpalpable left foot pulses, and minimal capillary refill. What would be the most appropriate next step in the diagnosis and management of this patient?

- A. Abdominal ultrasonography
- B. Arteriogram
- C. Serum lactate level
- D. Thoracolumbar magnetic resonance imaging (MRI) scan
- E. Vascular surgery consultation

Answer: E. This patient has acute limb ischemia from an acute arterial embolus, most likely originating from his left ventricle secondary to a recent myocardial infarction. Loss of light touch sensation on physical examination indicates jeopardized tissue viability, requiring immediate vascular surgery consultation for emergent Fogarty catheter embolectomy. Reliable diagnosis of an acute arterial embolism can almost always be made by history and physical examination alone. Any additional diagnostic evaluation constitutes an unnecessary delay. Serum lactate level, abdominal ultrasonography, and thoracolumbar magnetic resonance imaging (MRI) scan would not provide useful information. An arteriogram before going to the operating room is an unnecessary delay and may further exacerbate limb ischemia.

- B354 — MLA 337383, pdf 1758

Patients with thromboembolism of the extremities present with one or more of the six “classic Ps” of limb ischemia: pain, pallor, paresthesia, paralysis, pulselessness, and poikilothermia (cold limb). Since each patient has a critical window before irreversible tissue damage may occur, attempting to determine the duration of symptoms is important. Six hours is commonly considered to be the span before such irreversible damage begins. It cannot be overemphasized that immediate referral to a vascular surgeon is absolutely paramount if a patient presents with acute limb ischemia, as delays in triage or unnecessary imaging can ultimately compromise the potential for limb salvage. Diagnosis can usually be made by history and physical examination, although imaging studies may be necessary to assist with management decisions for some patients.

- B388 — MLA 383061, pdf 178

Clinical scenario: a patient with acute limb ischaemia

Presentation: A 78-year-old female with known insulin-dependent diabetes mellitus, atrial fibrillation (but not on warfarin) and heart failure presented with a 6-h history of acute onset pain in her right leg associated with paraesthesia of the foot.

Examination findings: She had a pale, cold right foot with mild sensory and motor deficit. There was no tenderness of the calf muscles. She had absent pulses from the femoral artery down on the right side. The left leg had full complement of pulses.

Differential diagnosis: Acute limb ischaemia secondary to an embolus, acute cardiac event with poor peripheral perfusion, acute on chronic arterial ischaemia, nerve root compression, ruptured Baker's cyst.

Investigations: Blood tests and ECG. The diagnosis is essentially clinical and imaging only delays the treatment (and increases risks of complications from prolonged limb ischaemia). Imaging should only be performed at the discretion of a vascular surgeon.

Management: A clinical diagnosis of acute limb ischaemia secondary to thromboembolism was made and the patient taken immediately to the operating theatre for femoral embolectomy under local anaesthesia. Thrombus from the common and superficial femoral artery was removed with an embolectomy catheter, restoring normal foot pulses after repair of the artery. Post-operatively, the patient was anti-coagulated with intravenous heparin and then warfarinised. She was discharged home 7 days later with an uneventful recovery.

- B401 — MLA 391852, pdf 475

Noninvasive Instrumental Diagnostics

Although diagnosis of acute limb ischemia is essentially based on clinical examination, instrumental investigations may allow a better evaluation of the level of obstruction and severity of ischemia. In case of immediately threatened limbs, any further radiologic or vascular laboratory tests may be unnecessary and should not be performed to avoid any delay of treatment. When the ischemic limb is still viable or marginally threatened, there is room for a more precise diagnostic evaluation.

- B450 — MLA 460336, pdf 1674

The most likely etiology of ALI in this case is a cardiac embolism and is the most common site of origin in general. Diagnostic tests, such as duplex and/or arteriography, may be considered, but minimizing delay in treatment for ALI is essential, because he has evidence of grade IIB limb ischemia. The patient needs revascularization within 1 to 2 hours (total ischemic time ≤ 6 hours), or he may suffer permanent muscle and nerve damage, rendering a nonsalvageable limb. A duplex or CT angiogram with runoff may be helpful to establish the level of thrombus/embolus, possibly identify a source (aortic thrombus), and demonstrate the presence of disease distal to the occlusion. Arteriography with thrombolysis is an option, but given the patient's classic history for an arterial thromboembolism (an antecedent cardiac event and normal vascular examination on his contralateral asymptomatic leg), this step may delay reperfusion that could be achieved more readily with surgery. The physical examination is very helpful to localize the site of occlusion in the setting of ALI. In this case, the patient has a diminished femoral pulse on the affected side, suggesting a more proximal lesion.

- B469 — MLA 490731, pdf 2509

Acute Limb Ischemia (ALI)

In the absence of contraindications, patients with acute critical ischemia should receive anticoagulation with unfractionated heparin.^{1,2,11} Supplemental oxygen may be helpful and should be provided when acute ischemia is considered. Options for definitive therapy include surgical or interventional procedures at the discretion of the vascular surgeon. Considerations include degree and duration of ischemia, contraindications, local resources and results of imaging studies. In patients with severe ischemia, angiography may be performed intraoperatively to minimize delay in care. Revascularization should be performed emergently, ideally within 6 hours, for marginally or immediately threatened limbs. Management options include catheter-directed intra-arterial thrombolysis and surgical thromboembolectomy. The specific method should be determined by local resources. There is currently no accepted role for intravenous thrombolytics, although this treatment merits discussion with a vascular surgeon if definitive care is expected to be significantly delayed.¹ In patients with a nonsalvageable limb, amputation is usually performed.

FACTUAL SUMMARY — TREATMENT AT ISSUE

JEREMY JONES

This factual summary will be provided to the Defense.

This summary quotes from the evidence in this case — mainly medical records and deposition transcripts.

This summary does not substitute for the underlying evidentiary documents and should not be relied on as evidence. While we have tried to be careful, this summary may contain errors. And since it's a summary, it is obviously incomplete. However, this summary provides a single, chronological reference for many of the facts scattered over thousands of pages of diverse evidentiary documents.

We are providing this summary to the Defense to ensure that all participants are working from a common base of facts.

We invite the Defense to identify any errors they believe exist in this summary. We also invite the Defense to identify any additional facts — *with supporting evidence* — the Defense believes may exonerate any Defendants.

This exchange of information may enable the case to be resolved without a jury trial. If the case does go to trial, this exchange of information will narrow the disputes, shorten the trial, and assist the jury with an agreed-upon statement of undisputed facts.

We ask the Defense to provide this factual summary and the related materials to the Defense's retained experts. We will provide this to Plaintiff's retained experts, along with any disagreements, corrections, or additional facts identified by the Defense.

The Table of Contents lists facts from the medical records and deposition testimony. The body of the document contains those same facts, along with excerpts from the supporting evidence.

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57.	At 2000 hrs, Nurse Miller documents that Jeremy's peripheral vascular status is Within Defined Limits, that he has no cyanosis, that his capillary refill is less than three seconds, and that his right leg pedal pulse is +2. .	42
58.	At 2000 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg but that Jeremy shows a flicker of muscle on his right leg.	43

59.	At approximately 2031 hrs, Nurse Miller notifies Dr. Manasa Valluri of “pt’s constant pain/knot in R calf muscle.” Nurse Miller notes that Jeremy’s pedal pulse is present and “no drainage/hematoma present on R groin incision.” Nurse Miller notes, “will closely monitor pt.”	43
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68.	At approximately 2251 hrs, contrary to the wishes of neurologist Dr. Nojan Valadi, Jeremy is transferred to a Neuro floor, room 1001.....	49
69.	At 2255 hrs, Matannah Muhammed records some flowsheet assessments, including vital signs.	50
70.	At 2255 hrs and 2300 hrs, no assessment is documented for Jeremy’s peripheral vascular status. No assessment is documented for cyanosis, capillary refill, pulses, or skin color and temperature.	50
71.	At 2304 hrs, Nurse Christina Orr writes that Jeremy had arrived in Room 1001.	55
72.	At 2304 hrs, Nurse Christina Orr writes, “assessment complete.” (As indicated above, Nurse Orr records no assessment at or around 2300 hrs.)	55

73.	At 2304 hrs, Nurse Christina Orr notes that Jeremy complains of right leg cramping despite receiving Flexeril at 2117 hrs.	56
74.	At 2304 hrs, Nurse Christina Orr writes that a physician was paged concerning Jeremy's leg cramping.....	56
75.	At 2304 hrs, Nurse Christina Orr writes that she will continue to monitor Jeremy closely.....	56
76.	At 2314 hrs, Dr. Valluri ordered 10 mg of Flexeril for Jeremy.....	56
77.	The order for 10 mg of Flexeril states that it was authorized by Dr. Bruce Brennaman, a vascular surgeon.....	56
78.	The authorization attributed to Dr. Brennaman is not specifically time-stamped.....	57
79.	Apart from non-time-stamped references to Dr. Brennaman having authorized certain medication orders, the medical records contain no reference to Dr. Brennaman having been involved in Jeremy's case until September 9 at 0852 hrs, when he entered an order for cefazolin.	57
80.	Dr. Brennaman's own records indicate that he was not involved until after Dr. Osei-Bonsu attempted a thrombectomy in Jeremy's leg on the morning of September 9.	58
81.	However, the records identify Dr. Brennaman as having authorized medications ordered by other physicians on September 8, at 1309 hrs, 1445 hrs, 1446 hrs, and 2314 hrs.	59
82.	At midnight, no assessments of Jeremy are recorded in the flowsheets....	60
	<i>Monday, September 9</i>	<i>61</i>
	<i>Early morning hours: On neuro floor</i>	<i>62</i>
83.	On Sept 9 at 0036 hrs, Nurse Christina Orr calls neurologist Dr. Nojan Valadi, to inform him that Jeremy has been moved from the ICU to the Neuro floor, and to seek clarification of orders.....	62
84.	At 0036 hrs, Dr. Valadi orders that Jeremy be returned to the ICU or moved to the Neuro ICU.	62
85.	At 0100 hrs, Nurse Christina Orr does not record assessments of Jeremy.	63
	<i>Transfer to Neuro ICU (presumed)</i>	<i>64</i>
86.	At 0104 hrs, Nurse Orr enters an order authorized by Dr. Valadi, to transfer Jeremy to the ICU.....	64

87.	At approximately 0118 hrs, Nurse Orr transfers Jeremy to another nurse (presumably to the Neuro ICU, although Plaintiffs' counsel sees no explicit statement to that effect in the medical records).....	64
88.	At the time of the 0118 hrs handoff, Jeremy has been in the care of Nurse Christina Orr since approximately 2300 hrs — about 2 hours and 20 minutes. In that time, Nurse Orr does not record any assessment of Jeremy's right leg.....	64
89.	At 0118 hrs, Nurse Latonya Warren notes that Jeremy was complaining of being hot, and that his temperature was 99.6.....	64
90.	At 0120 hrs, within minutes of Jeremy being transferred to her care, Nurse Warren performs an assessment of Jeremy — including the vascular status of Jeremy's right leg.....	65
	Recognition of Right Leg Ischemia	65
91.	At 0120 hrs, Nurse Warren notes that Jeremy's right leg has no pedal pulses, and that the skin was cool and cyanotic.....	65
92.	At 0138 hrs, Nurse Warren pages Dr. Valluri to notify her that Jeremy had no pedal pulse in his right leg.....	66
93.	At 0142 hrs, Dr. Valluri is at Jeremy's bedside.....	66
94.	At 0152 hrs, Dr. Cheryl Stephens is at Jeremy's bedside — according to Nurse Warren's note. However, according to Dr. Stephens' note, she is not paged until 0220 hrs (two minutes after she entered her first order for a CT angiogram of Jeremy's leg).	66
95.	In September 2019, Dr. Cheryl Stephens is in her second year as a Family Medicine resident.	67
96.	On the morning of September 9, Dr. Stephens is supervised by Joshua Koerner, DO.....	68
97.	In September 2019, Dr. Koerner is a Family Medicine physician less than 1-1/2 years into his career as a licensed physician.....	68
	Diagnostic CTA.....	69
98.	At 0152 hrs, according to Nurse Warren, Dr. Stephens is at bedside and a plan is made to order a CT angiogram of Jeremy's right leg.....	69
99.	According to a later note by Dr. Stephens, she speaks to neurologist Dr. Valadi and interventional radiologist Dr. Osei-Bonsu. (This note is time-stamped 0411 hrs.)	69

100. According to a later note by Dr. Valadi, he advises “CT angiography, notification of Dr. Osui-Bensu, and consideration for vascular surgery consultation.” (Note filed 9/9/2019 at 2329 hrs.) 70
101. According to the same note by Dr. Valadi, he then calls Dr. Koerner and makes the same recommendations..... 70
102. At 0218 hrs, Dr. Stephens enters an order for a CT angiogram of Jeremy’s right leg. Dr. Stephens noted, as indications for the CTA, “Lower leg trauma, neurovasc/lig/tendon injury suspected.” Dr. Stephens enters this order routine. 71
103. At 0219 hrs, a minute later, Dr. Stephens cancels this order..... 71
104. At 0220 hrs, another minute later, Dr. Stephens re-enters the order for a CT angiogram — ordering it stat, and adding comments, “Post op day 1, thrombectomy, right groin insertion surgical site, absent RLE DP pulse.” 71
105. At 0233 hrs, Nurse Warren calls neurologist Dr. Valadi. She writes that Dr. Valadi agrees with the plan for an angiogram. 71
106. At 0243 hrs, Nurse Warren calls Jeremy’s wife, Beth, to gain consent for a diagnostic CT angiogram. 72
107. At 0311 hrs, the diagnostic CT angiogram of Jeremy’s right leg is performed. 72
108. At 0425 hrs Eastern (0325 hrs Central), radiologist Dr. Erik Richter calls Nurse Warren to report his interpretation of the CTA — an “extensive nearly completely occlusive thrombus throughout the right leg arterial vasculature.” 72
109. Dr. Richter finds, “Right common femoral, femoral, popliteal artery as well as runoff vessels are essentially nearly completely occluded with trace peripheral flow. The profunda branch of the femoral artery is patent.” 73
110. The common femoral artery runs through the upper leg, from the groin to the knee..... 73
111. The popliteal artery runs behind the knee. 73
112. The downstream arteries include the anterior and posterior tibial arteries. 74
113. At 0425 hrs, Nurse Warren writes a note to record her conversation with Dr. Richter. 74
114. At 0428 hrs, Nurse Warren calls Dr. Stephens to convey what Dr. Richter reported..... 75

115.	By 0428 hrs, it has been over three hours since Jeremy was found (at 0120 hrs) to have no pedal pulse in his right leg.....	75
	Thrombectomy Attempt	75
116.	At 0428 hrs, Nurse Warren and Dr. Stephens discuss a plan for a therapeutic (not solely diagnostic) interventional radiology procedure.	75
117.	After learning of the CTA findings, Dr. Stephens calls interventional radiologist Dr. Osei-Bonsu to reevaluate.	76
118.	At 0438 hrs, Nurse Warren calls Jeremy’s wife, Beth, to obtain consent for an interventional radiology procedure. Beth consents.....	76
119.	At 0455 hrs, interventional radiologist Dr. Samuel Osei-Bonsu is at Jeremy’s bedside.....	77
120.	At 0500 hrs, Nurse Warren calls Beth to notify her of the planned procedure.	77
121.	At 0512 hrs, Nurse Warren takes Jeremy to the interventional radiology suite.....	78
122.	Dr. Osei-Bonsu writes that “Written and oral informed consent [for an IR angiogram of Jeremy’s left leg] was obtained after discussing the risks, benefits, and alternatives.”	78
123.	At 0530 hrs, Dr. Osei-Bonsu begins an IR angiogram of Jeremy’s right leg.	78
124.	Dr. Osei-Bonsu finds intimal injury of the right common femoral artery with thrombosis of the SFA. The intima is the innermost part of the artery.	79
125.	Dr. Osei-Bonsu performs a partial thrombectomy using an AngioJet device.	79
126.	An AngioJet is a catheter-based device to break up a blood clot using high pressure saline and pulsing action to break apart and remove the blood clot.	79
127.	In the upper part of the femoral artery, Dr. Osei-Bonsu performs an angioplasty — using a catheter and balloon to widen the area of the artery in which blood can flow.	80
128.	Dr. Osei-Bonsu places a 38-centimeter (15 inch) long stent in the upper part of the femoral artery.	80
129.	These procedures improve blood flow in the upper femoral artery, where the stent was placed.	80

130.	The clot remained in the lower femoral artery and popliteal artery.....	80
131.	Despite multiple attempts to remove the clot in the lower femoral artery and popliteal artery, the clot remains.	81
132.	Dr. Osei-Bonsu finally aborts the thrombectomy and consults a vascular surgeon.	81
133.	At the end of the procedure, Jeremy has no discernible blood flow below his right knee.	81
134.	The IR angiogram procedure lasts through 0816 hrs. The procedure took approximately 2 hours and 45 minutes (having begun at 0530 hrs).	81
135.	Around 0816 hrs, Dr. Osei-Bonsu seeks a vascular surgery consultation from Dr. Bruce Brennaman.	83
136.	At some point after the IR procedure, Jeremy is taken to the operating room.	84
	Vascular Surgery Consult & Amputation.....	84
137.	After the IR procedure, vascular surgeon Bruce H. Brennaman, MD comes to examine Jeremy.	84
138.	Dr. Brennaman concludes that Jeremy's leg symptoms began between 2030 hrs and 2230 hrs.	84
139.	When Dr. Brennaman examines him, Jeremy's foot is cold and pulseless, and Jeremy's symptoms are worsening.	85
140.	On Dr. Brennaman's examination, Jeremy has no movement or sensation in his right foot.	85
141.	Earlier, neurologist Dr. Valadi's examination showed Jeremy had 4/5 motor strength in his right foot.	86
142.	On examining Jeremy, Dr. Brennaman concludes that Jeremy's lower right leg is probably not viable.	86
143.	Dr. Brennaman proceeds to the operating room for an emergency exploratory surgery with the hope of saving Jeremy's leg, but anticipating that amputation is likely necessary.	87
144.	At 0852 hrs, Dr. Brennaman enters an order for cefazolin (an antibiotic) as part of pre-surgery procedures.	87
145.	At 0916 hrs, Jeremy is taken to a holding room from interventional radiology.	87
146.	At 0953 hrs, the anesthesia pre-procedure is complete.	88

147.	At 1027 hrs, anesthesiologist Paige H. King, MD, and anesthesiologist PA Jeb Bridges begin anesthesia for Jeremy.	88
148.	At 1124 hrs, Dr. Brennaman begins the operation.	88
149.	At 1312 hrs, the surgery is over and the anesthesia team begins bringing Jeremy out of anesthesia.	89
150.	When Jeremy regains consciousness, his right leg has been amputated above the knee.	89
151.	During the exploratory surgery, Dr. Brennaman had found that the right lower leg had no viable muscle. “The entire 4 compartments of the right lower extremity showed no viable muscle whatsoever. There was no movement to electric current. The muscle was dark red and all 4 compartments were tightly encumbered resulting in a dead leg.”	89
152.	In preparation for the surgery, hospital staff had placed a Foley catheter in Jeremy’s bladder. Dr. Brennaman noted that Jeremy’s urine had a dark color similar to Coca-Cola. The color indicated myoglobinuria (an excess amount of myoglobin in the urine, mostly caused by muscle breakdown). 90	
153.	During the surgery, Dr. Brennaman found the muscle very dark, cold, and unresponsive to stimulation.	90
154.	Dr. Brennaman proceeded to amputate Jeremy’s right leg above the knee.	90

Treatment of Jeremy Jones

Saturday, September 7, 2019

Calendar for Year 2019 (United States)

September						
Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

1. In September 2019, Jeremy Jones is 33 years old and married. His wife's name is Beth.

- PCe 1

Patient Demographics	
Name	Birth Date
Jones, Jeremy Blake	04/07/86 (33 yrs)

- PCe 763

Adult Assessment - Mon September 09, 2019	
Row Name	1646
Adult Assessment	
Assessment Created By (Name of Case Manager/Social Worker)	Kaye Sinkule, RNC -DS
Assessment Created On	09/09/19 -DS
Assessment Included/Contact	Family;Record Review Beth Jones, spouse -DS
Insurance Coverage	Commercial BCBS -DS
Income Source	Employment Lee County Commisioner's Office -DS

2. Jeremy and Beth live in Auburn, Alabama.

- PCe 1

Patient Demographics	
Name	Jones, Jeremy Blake
Address	4116 MARA VISTA DRIVE AUBURN AL 36832

3. Auburn, Alabama is on Central time.

Central Daylight Time
Time zone in Auburn, AL (GMT-5)

4. On Saturday, September 7, 2019, Jeremy goes to bed around midnight (Central time). At that time he is at his mental and physical baseline.

- AM 10

09:52	Alert	4/4/6	Stroke 1
Legitimate values w/o interventions such as intubation and sedation			
Found this 33 year old male. His wife states when he got out of the bed this morning he was weak and fell. Pt also has altered mental status and right sided weakness. Actual onset time is unknown, but pt went to bed normal around midnight.			

- PCe 4

ED Provider Notes by James Adamah Sirleaf, MD at 9/8/2019 11:23 AM

Author: James Adamah Sirleaf, MD

Service: Emergency Medicine

Author Type: Physician

Filed: 9/9/2019 10:31 AM

Date of Service: 9/8/2019 11:23 AM

Status: Addendum

Editor: James Adamah Sirleaf, MD (Physician)

Related Notes: Original Note by James Adamah Sirleaf, MD (Physician) filed at 9/8/2019 3:13 PM

The history is provided by the patient and the spouse. The history is limited by the condition of the patient. No language interpreter was used.

Time Seen By Physician(s): 11:23 (MSE), (James Adamah Sirleaf, MD)

Treatment PTA: none (see EMS report)

33 y.o. male with PMHx of DM and HTN presents to ED via ambulance with c/o right-sided weakness and aphasia since 9:10 am first noted by wife upon waking. Per EMS, patient works as an EMT at Auburn football games. They report that patient worked as an EMT last night and went to bed between 10pm and 11pm at his mental and physical baseline.

HPI and ROS are limited secondary to the condition of the patient and the absence of family from bedside.

Sunday, September 8, 2019

Calendar for Year 2019 (United States)

September						
Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Wake-up stroke & first response

5. The morning of Sunday, September 8, at approximately 0910 hrs, Jeremy awakes with right-sided weakness and altered mental status with difficulty speaking. Jeremy falls out of bed.

- AFD 1, 5

Incident Report: 1904200				
Basic Information				
Incident Number	Date/Time	Exp #	Incident Type	
1904200	09/08/2019	0	3111 - Medical assist, assist EMS crew	
Times:				
Dispatch/Alarm	Enroute	Arrival	Controlled	Last Unit Cleared
09/08/19 09:13:38	09/08/19 09:25:06	09/08/19 09:20:24		09/08/19 10:02:09
Location:				
4116 MARA VISTA DR, AUBURN, AL 36832				

...

Narrative:

AFD responded to assist ETS with a patient who was possibly having a stroke. E-2 arrived on scene and found the patient upstairs on his bedroom floor and initiated patient care. E-2 gathered vitals and patient information. The wife of the occupant advised that the patient had fallen out of bed and had right side weakness. E-2 requested dispatch have Lifesaver be put on standby. ETS arrived on scene and E-2 transferred care to ETS. ETS advised they wished for Lifesaver to transport the patient. E-2 requested that Lifesaver respond to the scene and a second due unit be dispatched for landing zone. E-1 and Bat-1 responded to Loachapoka High School to set up a landing zone. E-2 assisted ETS with loading the patient for transport to the LZ. E-1 and Bat-1 arrived on scene at Loachapoka High school. ETS transported the patient to the landing zone and one firefighter rode in to assist with patient care. E-2 then responded to the landing zone. E-2 arrived on scene and Bat-1 released E-1 from the scene. Lifesaver landed at the LZ and ETS and part of E-2 crew assisted with loading the patient into the helicopter. Lifesaver transported the patient to Columbus and E-2 terminated command with all units returning to service.

- AM 8

Chief Complaint (Category: CVA/Stroke-Ischemic TPA NOT administered)																						
Possible Stroke																						
Duration: 30 Minutes																						
History of Present Illness																						
Pt presents as a 33 y.o. male that woke up this morning and was found by wife to have altered mental status and right sided weakness. Pt has hx of hypertension and diabetes. Pt requires rapid transport to nearest hospital with comprehensive neurology services. Local community hospital does not offer interventional neurology. LifeSaver 3 utilized for speed of transport from a rural area to definitive care in order to reduce mortality and morbidity with a time sensitive neurological condition.																						
Medical History	Current Medications	Allergies																				
Diabetes Mellitus (DM) Hypertension Obtained From: Not Recorded	Metformin	None																				
Neurological Exam																						
Level of Consciousness: Alert	Loss of Consciousness: No	<table border="1"> <thead> <tr> <th colspan="5">Glasgow Coma Scale</th> </tr> <tr> <th></th> <th>E</th> <th>V</th> <th>M</th> <th>Tot</th> </tr> </thead> <tbody> <tr> <td>Int:</td> <td>4</td> <td>4</td> <td>6</td> <td>= 14</td> </tr> <tr> <td>Qual:</td> <td colspan="4">Legitimate values w/o interventions such as intubation and sedation</td> </tr> </tbody> </table>	Glasgow Coma Scale						E	V	M	Tot	Int:	4	4	6	= 14	Qual:	Legitimate values w/o interventions such as intubation and sedation			
Glasgow Coma Scale																						
	E		V	M	Tot																	
Int:	4		4	6	= 14																	
Qual:	Legitimate values w/o interventions such as intubation and sedation																					
Chemically Paralyzed: No																						
Stroke Scale: Cincinnati Positive																						
Stroke/CVA Symptoms No																						
Resolved:																						
Neurological Present: <u>Weakness-Right Sided, Speech Slurring, Aphasia, Arm Drift - Right</u>																						
Neurological Not Present: Normal Baseline for Patient																						
<u>Time Last Known Well: 09/08/2019 00:00</u>																						
Mental Present: Confused																						

- PCE 4

Treatment PTA: none (see EMS report)

33 y.o. male with PMHx of DM and HTN presents to ED via ambulance with c/o right-sided weakness and aphasia since 9:10 am first noted by wife upon waking. Per EMS, patient works as an EMT at Auburn football games. They report that patient worked as an EMT last night and went to bed between 10pm and 11pm at his mental and physical baseline.

6. At 0913 hrs, Beth calls 911.

- AFD 1

Incident Number	Date/Time	Exp #	Incident Type		
1904200	09/08/2019	0	3111 - Medical assist, assist EMS crew		
Times:					
Dispatch/Alarm	Enroute	Arrival	Controlled	Last Unit Cleared	
09/08/19 09:13:38	09/08/19 09:25:06	09/08/19 09:20:24		09/08/19 10:02:09	
Location:					
4116 MARA VISTA DR, AUBURN, AL 36832					

7. An EMS crew goes to Jeremy and Beth’s house. The EMS recognize Jeremy might be having a stroke. They order a helicopter EMS to fly Jeremy to Piedmont Columbus Regional, in Columbus, Georgia.

- AFD 5

Narrative:

AFD responded to assist ETS with a patient who was possibly having a stroke. E-2 arrived on scene and found the patient upstairs on his bedroom floor and initiated patient care. E-2 gathered vitals and patient information. The wife of the occupant advised that the patient had fallen out of bed and had right side weakness. E-2 requested dispatch have Lifesaver be put on standby. ETS arrived on scene and E-2 transferred care to ETS. ETS advised they wished for Lifesaver to transport the patient. E-2 requested that Lifesaver respond to the scene and a second due unit be dispatched for landing zone. E-1 and Bat-1 responded to Loachapoka High School to set up a landing zone. E-2 assisted ETS with loading the patient for transport to the LZ. E-1 and Bat-1 arrived on scene at Loachapoka High school. ETS transported the patient to the landing zone and one firefighter rode in to assist with patient care. E-2 then responded to the landing zone. E-2 arrived on scene and Bat-1 released E-1 from the scene. Lifesaver landed at the LZ and ETS and part of E-2 crew assisted with loading the patient into the helicopter. Lifesaver transported the patient to Columbus and E-2 terminated command with all units returning to service.

- AM 6

AirMethods
DEFENDERS OF TOMORROW™

PCS
Medical Necessity for Air Medical Transport

Date of Service: 9-8-19 Patient Name: Jeremy Blake Jones Flight #: 19-129770
Diagnosis: CVA

Presenting time-critical condition / required intervention: Neurosurgical services

Ground transport would have been hazardous due to the LENGTH OF TRANSPORT.
Ground transport time of 55 minutes versus air transport time of 18 minutes.

8. The local hospital does not have interventional neurology services. Piedmont Columbus is the closest appropriate hospital — approximately 45 miles away, and a 55 minute drive.

- AM 8

History of Present Illness
Pt presents as a 33 y.o. male that woke up this morning and was found by wife to have altered mental status and right sided weakness. Pt has hx of hypertension and diabetes. Pt requires rapid transport to nearest hospital with comprehensive neurology services. <u>Local community hospital does not offer interventional neurology.</u> Lifesaver 3 utilized for speed of transport from a rural area to definitive care in order to reduce mortality and morbidity with a time sensitive neurological condition.

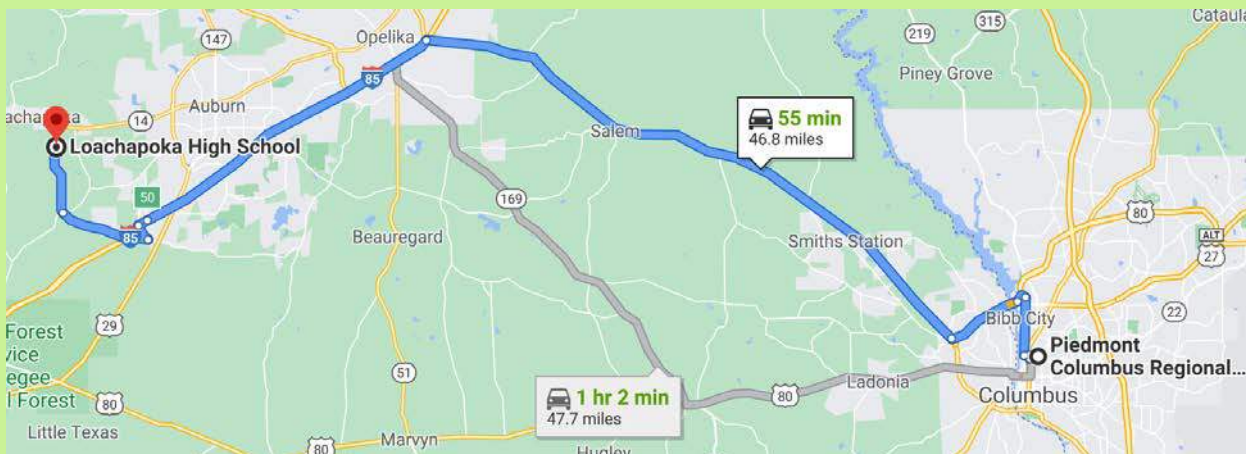
- AM 7

<p>Location: East Alabama EMS (ETS) 685 Lee Rd 61 Loachapoka, AL 36865</p> <p>Ref. GPS: 32.5895, -85.57817</p>	<p>Receiving: Hospital Columbus Medical Center</p> <p>Emergency Department 710 Center Street Columbus, GA 31901 706-571-1081</p> <p>Dest. GPS: 32.481277, -84.983022</p> <p>Rec. MD: Sirleaf</p> <p>Rec. RN: Fountain</p> <p><u>Destination Basis: Closest Appropriate Facility</u></p>
--	--

- AM 6

Ground transport would have been hazardous due to the LENGTH OF TRANSPORT.
 Ground transport time of 55 minutes versus air transport time of 18 minutes.

- Google Maps



9. The ground EMS meets the helicopter at a field at Loachapoka High School, near Auburn, Alabama. The helicopter flies Jeremy to Piedmont Columbus.

- AFD 5

Lifesaver to transport the patient. E-2 requested that Lifesaver respond to the scene and a second due unit be dispatched for landing zone. E-1 and Bat-1 responded to Loachapoka High School to set up a landing zone. E-2 assisted ETS with loading the patient for transport to the LZ. E-1 and Bat-1 arrived on scene at Loachapoka High school. ETS transported the patient to the landing zone and one firefighter rode in to assist with patient care. E-2 then responded to the landing zone. E-2 arrived on scene and Bat-1 released E-1 from the scene. Lifesaver landed at the LZ and ETS and part of E-2 crew assisted with loading the patient into the helicopter. Lifesaver transported the patient to Columbus and E-2 terminated command with all units returning to service.

- AM 7

Location: East Alabama EMS (ETS)
685 Lee Rd 61
Loachapoka, AL 36865
Ref. GPS: 32.5895, -85.57817

Receiving: Hospital
Columbus Medical Center
Emergency Department
710 Center Street
Columbus, GA 31901
706-571-1081

Dest. GPS: 32.481277, -84.983022

Rec. MD: Sirleaf

Rec. RN: Fountain

Destination Basis: Closest Appropriate Facility

- AM 8

Scene Information
Description: Large field secured by fire and PD
First Agency Unit on Scene?: Yes
Num. Patients On Scene: 1
Patient Belongings: Worn Clothing

10. Timing of events: Beth calls 911 at 0913 hrs. The ground EMS arrives at Jeremy & Beth's house at approximately 0920 hrs. EMS requests a helicopter transport at approximately 0923 hrs. Ground EMS is driving Jeremy to the school at approximately 0927 hrs. The helicopter is dispatched at approximately 0928 hrs and is in the air heading to the school at approximately 0938 hrs. The helicopter lands at the school at approximately 0949 hrs. The helicopter is in the air with Jeremy, heading toward Piedmont Columbus at approximately 0956 hrs.

- AFD 4

Narrative:

10:07:12: transported to Piedmont Midtown, Columbus
 09:59:19: lifesaver in the air - fbat1
 09:49:39: LS ON GROUND
 09:47:19: PT FATHER IS X84
 09:45:31: Life Saver 4 min out
 09:35:54: LZ in field beside school, pd unit marking the drive
 09:32:53: Life Saver ETA 15 min
 09:32:41: COOR: 32.35 26N -85.34 46W
 09:27:32: FE1 enroute to Loachapoka High School (685 Lee Rd 61)
 09:25:52: 107 | AFD X84 FOR LZ
 09:25:08: per 107 | req ls in air
 09:23:21: req life light on stand by - fe2
 09:19:02: upstairs to the end of the hallway, front door is unlocked - per ETS
 09:14:28: caller adv glucose meter isn't functioning

- AM 7

Times	
Onset:	09:00
Received:	09:24
Notified:	09:24
Dispatch:	09:28
Acknowledged:	09:29
EnRoute:	09:38
At Ref:	09:50
At Patient:	09:52
Leave w/ Pt:	09:56
Leave Ref:	09:58
At Rec:	10:16
Transfer Care Dest:	10:21
Available:	10:47
In Qtrs:	11:02

11. At approximately 1016 hrs (Central time), the helicopter arrives with Jeremy at Piedmont Columbus.

- AM 7

At Patient:	09:52
Leave w/ Pt:	09:56
Leave Ref:	09:58
At Rec:	10:16
Transfer Care Dest:	10:21

- PCe 1

Admission Information	
Arrival Date/Time:	09/08/2019 1122
Admission Type:	Emergency
Means of Arrival:	Hospital Transport
Transfer Source:	

Acute treatment at Piedmont Columbus

12. Columbus, Georgia is on Eastern time.

Eastern Daylight Time
Time zone in Columbus, GA (GMT-4)

13. At approximately 1120 hrs (Eastern), Nurse Jeremy Brand records an NIH Stroke Scale assessment. Nurse Brand documents a total score of 8, with right-side deficits.

- PCe 819

Stroke Non-Alteplase - Sun September 08, 2019 (continued)		
Row Name	1130	1120

...

NIH Stroke Scale		
Interval	—	Baseline -JBA
Level of Consciousness (1a.)	—	0 -JBA
LOC Questions (1b.)	—	0 -JBA
LOC Commands (1c.)	—	0 -JBA
Best Gaze (2.)	—	0 -JBA
Visual (3.)	—	1 -JBA
Facial Palsy (4.)	—	0 -JBA
Motor Arm, Left (5a.)	—	0 -JBA
Motor Arm, Right (5b.)	—	2 -JBA
Motor Leg, Left (6a.)	—	0 -JBA
Motor Leg, Right (6b.)	—	2 -JBA
Limb Ataxia (7.)	—	1 -JBA
Sensory (8.)	—	1 -JBA
Best Language (9.)	—	1 -JBA
Dysarthria (10.)	—	0 -JBA
Extinction and Inattention (formerly Neglect) (11.)	—	0 -JBA
Total	—	8 -JBA

14. At 1123 hrs, Nurse Kayla Fountain calls a stroke alert.

- PCe 813

Patient to CT - Sun September 08, 2019	
Row Name	1127
Patient to CT	
Accompanied By:	Registered Nurse -KF
Decision Time - Sun September 08, 2019	
Row Name	1200
Alteplase Decision Time	
Alteplase	No -JBA
Stroke Alert Called - Sun September 08, 2019	
Row Name	1123
Stroke Alert Called At	
Method	EMS -KF

- PCe 825

ID	Ivee L. Davis
DD	Deborah Dawson, RN
KF	Kayla J. Fountain, RN
MM	Matannah Muhammed
DDA	Dana M Dannunzio

15. Also at 1123 hrs, ER physician James Sirleaf examines Jeremy and implements the CTA stroke protocol.

- PCe 4

ED Notes

ED Notes by Justine A Brewer, RN at 9/8/2019 11:22 AM

Author: Justine A Brewer, RN	Service: Emergency Medicine	Author Type: Registered Nurse
Filed: 9/8/2019 11:43 AM	Date of Service: 9/8/2019 11:22 AM	Status: Signed
Editor: Justine A Brewer, RN (Registered Nurse)		

Dr. Sirleaf evaluating patient

Electronically signed by Justine A Brewer, RN on 9/8/2019 11:43 AM

ED Provider Notes by James Adamah Sirleaf, MD at 9/8/2019 11:23 AM

Author: James Adamah Sirleaf, MD	Service: Emergency Medicine	Author Type: Physician
Filed: 9/9/2019 10:31 AM	Date of Service: 9/8/2019 11:23 AM	Status: Addendum
Editor: James Adamah Sirleaf, MD (Physician)		
Related Notes: Original Note by James Adamah Sirleaf, MD (Physician) filed at 9/8/2019 3:13 PM		

The history is provided by the patient and the spouse. The history is limited by the condition of the patient. No language interpreter was used.

Time Seen By Physician(s): 11:23 (MSE), (James Adamah Sirleaf, MD)

Treatment PTA: none (see EMS report)

33 y.o. male with PMHx of DM and HTN presents to ED via ambulance with c/o right-sided weakness and aphasia since 9:10 am first noted by wife upon waking. Per EMS, patient works as an EMT at Auburn football games. They report that patient worked as an EMT last night and went to bed between 10pm and 11pm at his mental and physical baseline.

- PCe 8

ED Progress Notes

11:23, Pt transported emergently to CT after evaluation by Dr. Sirleaf.

Initial Evaluation Note:

11:23, Pt c/o of stroke since this AM with associated right sided weakness. On exam, pt has weakness in upper and lower right extremities. Ordered CBC, CTA head, CTA stroke protocol.

16. At 1124 hrs, Dr. Sirleaf orders a CT head without contrast and a CTA head and neck.

- PCe 271

CT head without contrast stroke protocol [392830918]

Resulted: 09/08/19 1214,

Ordering provider: James Adamah Sirleaf, MD 09/08/19 1124

Performed: 09/08/19 1128 - 09/08/19 1134

Resulting lab: EMC RAD

Narrative:

EXAM: Head CT without contrast.

CLINICAL INDICATION: Right-sided weakness, aphasia

COMPARISON: None pertinent at dictation.

Resulted by: William Todd Lewis, DO
Accession number: PCM6315111

- PCe 272

CTA head neck stroke protocol [392830922]

Resulted: 09/27/19 0949,

Ordering provider: James Adamah Sirleaf, MD 09/08/19 1124
 Performed: 09/08/19 1138 - 09/08/19 1150
 Resulting lab: EMC RAD
 Addenda signed by William Todd Lewis, DO on 09/27/19 0949

Resulted by: William Todd Lewis, DO
 Accession number: PCM6315112

17. At 1134 hrs, the CT is performed.

- PCe 271

CT head without contrast stroke protocol [392830918]

Resulted: 09/08/19 1214,

Ordering provider: James Adamah Sirleaf, MD 09/08/19 1124
 Performed: 09/08/19 1128 - 09/08/19 1134
 Resulting lab: EMC RAD
 Narrative:
 EXAM: Head CT without contrast.
 CLINICAL INDICATION: Right-sided weakness, aphasia
 COMPARISON: None pertinent at dictation.

Resulted by: William Todd Lewis, DO
 Accession number: PCM6315111

18. At 1145 hrs, Dr. Sirleaf consults with neurologist Dr. Nojan Valadi. Dr. Valadi recommends an Interventional Radiology consult.

- PCe 8

Consultations:

11:45 Discussed case with Dr. Valadi (Neurology) who is aware of the case. He will review pt's imaging and call back with recommendations. Dr. Valadi recommends IR consult.

19. At 1150 hrs, the CTA is performed.

- PCe 272

CTA head neck stroke protocol [392830922]

Resulted: 09/27/19 0949,

Ordering provider: James Adamah Sirleaf, MD 09/08/19 1124
 Performed: 09/08/19 1138 - 09/08/19 1150
 Resulting lab: EMC RAD
 Addenda signed by William Todd Lewis, DO on 09/27/19 0949
 ***** ADDENDUM #1 *****

Resulted by: William Todd Lewis, DO
 Accession number: PCM6315112

20. At 1155 hrs, Interventional Radiology is called.

- PCe 275

Radiology Results (continued)

IR Called: 11:55
 Patient to IR: 12:45
 Procedure started: 12:58
 Procedure completed with complete recanalization: 13:16

21. At approximately 1200 hrs, radiologist Dr. William Lewis calls Dr. Sirleaf to discuss CT findings. Dr. Lewis' impression is "Possibly slightly asymmetrically hyperdense left MCA trifurcation, which could represent sequela of very early ischemia/infarction."

- PCE 271

Impression:
CONCLUSION: Possibly slightly asymmetrically hyperdense left MCA trifurcation, which could represent sequela of very early ischemia/infarction. Please see report for additional findings and details.
Findings discussed with Dr. Sirleaf of ER at approximately 1200 hours by telephone.
Electronically signed by: William Lewis DO 9/8/2019 11:14 AM CDT Workstation: 109-1187

22. At approximately 1214 hrs, Dr. Lewis calls Dr. Sirleaf to discuss CTA findings. Dr. Lewis' conclusion includes "Essentially complete occlusion/severe stenosis of involving the cervical and petrous portions of the left internal carotid artery, beginning just distal to the carotid bifurcation."

- PCE 272-73

CONCLUSION:

1. Essentially complete occlusion/severe stenosis of involving the cervical and petrous portions of the left internal carotid artery, beginning just distal to the carotid bifurcation. In addition, there is some hypodensity along the margin of the carotid bulb which could represent partial thrombus, ulceration or dissection.

2. Opacification but slight narrowing of supraclinoid/ophthalmic portions of left internal carotid artery.

3. Remaining visualized vessels are normal in appearance and widely patent.

Findings discussed with Dr. Sirleaf of ER at approximately 1214 hours by telephone.

Electronically signed by: William Lewis DO 9/8/2019 11:14 AM CDT

23. At 1217 hrs, Dr. Valadi requests that Jeremy be placed in the ICU.

- PCE 8

Consultations:

11:45 Discussed case with Dr. Valadi (Neurology) who is aware of the case. He will review pt's imaging and call back with recommendations. Dr. Valadi recommends IR consult.

11:55, Case discussed with Dr. Osei-Bonsu (Interventional Radiology) will review scans and call back with recommendations.

12:05, Dr. Osei-Bonsu (Interventional Radiology) will admit this patient for thrombectomy.

12:17, Dr. Valadi (Neurology) requests patient placed in Neuro ICU bed.

13:38, Discussed case with Dr. Shirvanian Namagerdi (Medicine) who will admit this patient to the ICU.

24. At approximately 1245 hrs, Jeremy is taken to Interventional Radiology.

- PCe 275

Radiology Results (continued)

IR Called: 11:55

Patient to IR: 12:45

Procedure started: 12:58

Procedure completed with complete recanalization: 13:16

25. At 1308 hrs, Dr. Valadi enters a consult note. He records a physical examination showing motor strength of 0/5 for Jeremy's right lower extremity proximally, 2/5 knee extension, and 4/5 foot dorsiflexion plantarflexion.

- PCe 21, 23

Consults by Nojan Valadi, MD at 9/8/2019 12:45 PM

Author: Nojan Valadi, MD

Service: Neurology

Author Type: Physician

Filed: 9/8/2019 1:08 PM

Date of Service: 9/8/2019 12:45 PM

Status: Addendum

Editor: Nojan Valadi, MD (Physician)

Related Notes: Original Note by Nojan Valadi, MD (Physician) filed at 9/8/2019 1:08 PM

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minimal right oral mucosal tori maturing, tongue firm, palate elevated symmetrically
Motor: Strength: Patient with mildly increased tone distally in the right hand, 2/5 proximal strength in the right upper extremity, 4/5 distally, 0/5 right lower extremity proximally, 2/5 knee extension, 4/5 foot dorsiflexion plantarflexion.

Deep tendon reflexes: 3+ on the right, 1+ in the left. Toes upgoing on the right, downgoing on the left.

Coordination: Finger-to-nose intact on the left.

Gait and Romberg not tested.

26. From 1258 hrs to 1316 hrs, Dr. Osei-Bonsu performs a thrombectomy.

- PCe 275

IR Called: 11:55
Patient to IR: 12:45
Procedure started: 12:58
Procedure completed with complete recanalization: 13:16

TICI Procedural Rating: Grade 3

COMPLICATIONS: None

SPECIMENS: None

ESTIMATE OF BLOOD LOSS: Minimal

CONCLUSION:

Successful mechanical thrombectomy of the left internal carotid artery with complete recanalization achieved

Electronically signed by: Samuel Osei-Bonsu MD 9/8/2019 1:16 PM CDT
Workstation: 109-1099

Narrative:

EXAMINATIONS:

1. Ultrasound-guided vascular access
2. Selective left internal carotid arteriogram
3. Intra-arterial aspiration thrombectomy of the left internal carotid artery using Penumbra
4. Post intervention selective left internal carotid arteriogram

HISTORY: Acute onset right-sided weakness

OPERATORS: Dr. Samuel Osei-Bonsu, VIR staff

27. Dr. Osei-Bonsu punctured Jeremy's right femoral artery, to perform a thrombectomy in Jeremy's left internal carotid artery.

- PCe 274

Through an anesthetized skin approach, under continuous ultrasound guidance, the patent right common femoral artery was accessed using a 21-gauge micropuncture needle in retrograde fashion. A copy of the sonographic image was stored. The access needle was then replaced over serial dilators for a 0.035" Glide Advantage wire and a 6 French Neuron Max vascular sheath. The sheath was maintained to a continuous heparinized saline infusion. A 5 French Berenstein catheter was then directed through the sheath over a 0.035 inch Glidewire and used to select the right internal carotid artery and arteriogram was performed.

FINDINGS:

Thrombotic occlusion of the left internal carotid artery just distal to the bifurcation

28. At the conclusion of the procedure, Dr. Osei-Bonsu closed the femoral-artery puncture site with a 6 French Angio-Seal device.

- PCe 274

All catheters and wires were removed. A 6 French Angio Seal device was then deployed in the standard fashion, and hemostasis was achieved. A dry sterile dressing was applied. There were no immediate complications. Following the procedure the patient was transferred to the ICU in stable condition.

29. Dr. Osei-Bonsu does not document an arteriogram of the access site to confirm proper placement of the Angio-Seal device.

- PCe 274

EXAMINATIONS:

1. Ultrasound-guided vascular access
2. Selective left internal carotid arteriogram
3. Intra-arterial aspiration thrombectomy of the left internal carotid artery using Penumbra
4. Post intervention selective left internal carotid arteriogram

...

All catheters and wires were removed. A 6 French Angio Seal device was then deployed in the standard fashion, and hemostasis was achieved. A dry sterile dressing was applied. There were no immediate complications. Following the procedure the patient was transferred to the ICU in stable condition.

30. The radiology images from Piedmont Columbus do not include an arteriogram of Jeremy's femoral artery at the end of the stroke thrombectomy on September 8.

- DICOM metadata

Patient name	Age	Accession Number	Study Description	Modality	Date Acquired	^
▶ Jones Jeremy Blake	35/33 y	PCM6315112	Cta Head Neck Stroke Protocol	CT	9/8/19, 11:27 AM	
▶ Jones Jeremy Blake	35/33 y	PCM6315111	Ct Head Wo Contrast Stroke Protocol	CT	9/8/19, 11:27 AM	
▶ Jones Jeremy Blake	35/33 y	PCM6315297	Ir Stroke Thrombectomy	XA\US	9/8/19, 1:06 PM	
▶ Jones Jeremy Blake	35/33 y	PCM6316880	Cta Lower Extremity Right W Wo Contrast	CT	9/9/19, 3:11 AM	
▶ Jones Jeremy Blake	35/33 y	PCM6316996	Ir Angiogram Lower Extremity Right	US\XA	9/9/19, 5:38 AM	

31. At 1309 hrs, Dr. Valadi orders a 300 mg tablet of clopidogrel (Plavix) for Jeremy.

- PCe 157

clopidogrel (PlavIX) tablet 300 mg [392844923]	
Electronically signed by: Nojan Valadi, MD on 09/08/19 1309	Status: Completed
Ordering user: Nojan Valadi, MD 09/08/19 1309	Ordering provider: Nojan Valadi, MD
Authorized by: Maura E Gonzalez, MD	Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
Frequency: STAT Once 09/08/19 1310 - 1 occurrence	Package: 0904-6467-07

32. At 1316 hrs, Dr. Valadi enters a set of orders for Jeremy's post-thrombectomy care.

- PCe 184-192

Vital signs/neuro checks/MEND exam every 4 hours. Perform NIHSS with any decline in neurological function/increase in MEND score by greater than or equal to 1 [392844926]	
Electronically signed by: Nojan Valadi, MD on 09/08/19 1316	Status: Discontinued
Ordering user: Nojan Valadi, MD 09/08/19 1316	Ordering provider: Nojan Valadi, MD
Authorized by: Ronson Hughes, MD	Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]
Frequency: Routine Q4H 09/08/19 1600 - Until Specified	Vital signs/neuro checks/MEND exam every 4 hours. Perform NIHSS with any decline in neurological function/increase in MEND score by greater than or equal to 1 [392844952]

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MRI brain without contrast [392844951]	
Electronically signed by: Nojan Valadi, MD on 09/08/19 1316	Status: Completed
Ordering user: Nojan Valadi, MD 09/08/19 1316	Ordering provider: Nojan Valadi, MD
Authorized by: Bruce H Brenneman, MD	Indications of use: Stroke, follow up
Frequency: Routine Once 09/09/19 0600 - 1 occurrence	

33. At 1316 hrs, Dr. Valadi's orders include an order for ICU vital signs/neuro checks/MEND exam every hour for 48 hours, then per ICU routine while in ICU.

- PCe 191

ICU vital signs/neuro checks/MEND exam every hour for 48 hours, then per ICU routine while in ICU. Perform NIHSS with any decline in neurological function/increase in MEND score by greater than or equal to 1 [392844948]		
Electronically signed by: Nojan Valadi, MD on 09/08/19 1316	Ordering provider: Nojan Valadi, MD	Status: Discontinued
Ordering user: Nojan Valadi, MD 09/08/19 1316		
Authorized by: Ronson Hughes, MD		
Frequency: Routine Every 2 hours 09/08/19 1400 - Until Specified	Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]	
ICU vital signs/neuro checks/MEND exam every hour for 48 hours, then per ICU routine while in ICU. Perform NIHSS with any decline in neurological function/increase in MEND score by greater than or equal to 1 [392847751]		

34. At 1330 hrs, Nurse Sarah Hartsell notes that the thrombectomy is ended.

- PCe 890

13:28:48	Imaging Exam Started	IR stroke thrombectomy	Lindsay Hood
13:29:35	Medication Ordered and Given	iohexol (OMNIPAQUE) 300 mg iodine/mL injection - Dose: 40 mL ; Route: Intravenous ; Line: Peripheral IV 09/08/19 Right Antecubital Ordered by: Samuel A. Osei-Bonsu, MD	Samuel A. Osei-Bonsu, MD
13:30:53	Imaging Exam Ended	IR stroke thrombectomy	Lindsay Hood
13:31	Vitals Reassessment	Vitals Timer Automatic Restart Vitals Timer: Yes	Sarah E Hartsell, RN

35. At 1338 hrs, Dr. Sirleaf discusses the case with Dr. Shirvanian Namagerdi, who agrees to admit Jeremy to the ICU.

- PCe 8

Consultations:	
11:45	Discussed case with Dr. Valadi (Neurology) who is aware of the case. He will review pt's imaging and call back with recommendations. Dr. Valadi recommends IR consult.
11:55,	Case discussed with Dr. Osei-Bonsu (Interventional Radiology) will review scans and call back with recommendations.
12:05,	Dr. Osei-Bonsu (Interventional Radiology) will admit this patient for thrombectomy.
12:17,	Dr. Valadi (Neurology) requests patient placed in Neuro ICU bed.
13:38,	Discussed case with Dr. Shirvanian Namagerdi (Medicine) who will admit this patient to the ICU.

36. At 1354 hrs, Nurse Sarah Hartsell notes, "pt constantly moving legs, continuously reminded to keep right leg straight and down, but forgets easily. no hematoma noted at this time."

- PCe 892

13:51	Custom Formula Data	Vital Signs MAP (mmHg) (calculated): 107 Vitals Change in Systolic BP since last reading: -4 mmHg	Sarah E Hartsell, RN
13:54:28	Other Event	PT CONSTANTLY MOVING LEGS, CONTINUOUSLY REMINDED TO KEEP RIGHT LEG STRAIGHT AND DOWN, BUT FORGETS EASILY. NO HEMATOMA NOTED AT THIS TIME.	Sarah E Hartsell, RN
13:57:53	Lab Ordered	LIPID PANEL, HEMOGLOBIN A1C	Maura E Gonzalez, MD

37. At 1357 hrs, Dr. Maura Gonzalez orders an inpatient neurology consult for a stroke admission.

- PCe 197

Inpatient consult to Neurology [392847770]	
Electronically signed by: Maura E Gonzalez, MD on 09/08/19 1357 Ordering user: Maura E Gonzalez, MD 09/08/19 1357 Authorized by: Ronson Hughes, MD Frequency: Routine Once 09/08/19 1400 - 1 occurrence	Ordering provider: Maura E Gonzalez, MD Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]
Status: Discontinued	
Questionnaire	
Question	Answer
Reason for Consult?	stroke admission

38. At 1401 hrs, Dr. Gonzalez becomes Jeremy’s attending physician.

- PCe 892

14:00	Readmission Risk Score	Other flowsheet entries 30-Day Readmission Risk Score: 0	Batch Job Adt
14:01	Remove Attending	James Adamah Sirleaf, MD removed as Attending	Maura E Gonzalez, MD
14:01	Assign Attending	Maura E Gonzalez, MD assigned as Attending	Maura E Gonzalez, MD

39. At 1401 hrs, Dr. Gonzalez enters a set of orders for Jeremy’s post-thrombectomy care.

- PCe 200-202

Vital signs every 12 hours/shift [392847799]	
Electronically signed by: Maura E Gonzalez, MD on 09/08/19 1401 Ordering user: Maura E Gonzalez, MD 09/08/19 1401 Authorized by: Ronson Hughes, MD Frequency: Routine Q 12 hrs/shift 09/08/19 1405 - Until Specified	Ordering provider: Maura E Gonzalez, MD Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]
Status: Discontinued	

...

Pharmacological Contraindications [392853131]		
Electronically signed by: Maura E Gonzalez, MD on 09/08/19 1401		Status: Completed
Ordering user: Maura E Gonzalez, MD 09/08/19 1401	Ordering provider: Maura E Gonzalez, MD	
Authorized by: Maura E Gonzalez, MD		
Frequency: Routine Once 09/08/19 1405 - 1 occurrence		
Questionnaire		
Question	Answer	
Pharmacological Contraindications	Bleeding risk	

40. At 1401 hrs, Dr. Gonzalez identifies Jeremy as at low risk for a VTE.

- PCe 201

VTE: Low Risk [392853130]		
Electronically signed by: Maura E Gonzalez, MD on 09/08/19 1401		Status: Completed
Ordering user: Maura E Gonzalez, MD 09/08/19 1401	Ordering provider: Maura E Gonzalez, MD	
Authorized by: Maura E Gonzalez, MD		
Frequency: Routine Once 09/08/19 1405 - 1 occurrence		
Questionnaire		
Question	Answer	
VTE Low Risk?	Yes	

41. At 1401 hrs, Dr. Gonzalez enters an order for an intermittent pneumatic compression device for Jeremy.

- PCe 200

Intermittent pneumatic compression (IPC) [392853125]		
Electronically signed by: Maura E Gonzalez, MD on 09/08/19 1401		Status: Discontinued
Ordering user: Maura E Gonzalez, MD 09/08/19 1401	Ordering provider: Maura E Gonzalez, MD	
Authorized by: Ronson Hughes, MD		
Frequency: Routine Until Discontinued 09/08/19 1400 - Until Specified		Discontinued by: Automatic Discharge Provider 09/15/19 2124 [Patient Discharge]
Intermittent pneumatic compression (IPC) [392853136]		
Electronically signed by: Maura E Gonzalez, MD on 09/08/19 1401		Status: Discontinued
Ordering user: Maura E Gonzalez, MD 09/08/19 1401		
Ordering provider: Maura E Gonzalez, MD		

42. At 1401 hrs, Dr. Gonzalez requests a bed for Jeremy in the Neuro ICU.

- PCe 893

14:01:13	ED Admit Order Placed	Admit to Inpatient - [392853137]	Maura E Gonzalez, MD
14:01:13	Orders Completed	Admit to Inpatient ; VTE: Low Risk ; Pharmacological Contraindications	Maura E Gonzalez, MD
14:01:14	ED IP Bed Requested	Requested: Neuro ICU	Maura E Gonzalez, MD
14:01:14	Bed Request Ready to Plan	Ready to Plan: Neuro ICU	Maura E Gonzalez, MD
14:01:46	Assign Provider		Maura E Gonzalez, MD

In the ICU after the thrombectomy

43. At 1451 hrs, Jeremy is admitted to the ICU.

- PCe 894

14:47:47	Other Ordered	Referral to post acute care - [392853158]	Maura E Gonzalez, MD
14:50:25	Orders Placed	Advance diet if passed bedside swallowing test, if not passed keep npo until speech and swallow evaluates	Maura E Gonzalez, MD
14:51	Patient admitted	To department PCM 7 ICU	Jerrie Allen
14:51:43	Patient admitted		Jerrie Allen

44. At 1500 hrs, Nurse Charles Brand notes Jeremy's "peripheral vascular" as "WDL" — within defined limits.

- PCe 789

Flowsheet (all recorded) (continued)					
Complex Assessment - Sun September 08, 2019 (continued)					
Row Name	1800	1700	1600	1500	1406
VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	—	—	In Use -CB	—
Intermittent Pneumatic Compression Device	—	—	—	IPC- Bilateral knee high -CB	—
Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	—	WDL -CB	—

- PCe 825

User Key (continued)	
Initials	Name
CJ	Candies S Jackson
MU	Marissa N Upshaw
LN	Leslie B Nettles, RN
IB	Ivey Brogden
JBA	Justine A Brewer, RN
EP	Erica K Pearson
KH	Kandy R Hayes
SI	Simone S Ivey
CB	Charles W Brand, RN
DG	Daulton J Gaddis

45. At 1500 hrs, Nurse Brand notes Jeremy has no pain.

- PCe 796

Row Name	1600	1500	1406	1351	1346
Pain Assessment					
Pain Assessment Scale Used	—	0-10 -CB	—	—	—
Pain Score	—	Zero -CB	—	—	—
Sedation Level	—	Dozing Intermittently -CB	—	—	—

46. At 1500 hrs, Nurse Brand notes Jeremy's skin is intact.

- PCe 798

Assessment - Sun September 08, 2019 (continued)					
Row Name	1600	1500	1406	1351	1346

...

Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	WDL -CB	—	—	—
Musculoskeletal	—	—	—	—	—
Musculoskeletal (WDL)	—	WDL -CB	—	—	—

47. At 1552 hrs, Dr. Vincent Nicolais writes an Initial Critical Care Report. He documents intact distal pulses, persistent right-sided weakness, a Babinski sign on the right, and that Jeremy's skin is warm and dry.

- PCe 42

Progress Notes by Vincent M Nicolais, MD at 9/8/2019 3:52 PM		
Author: Vincent M Nicolais, MD	Service: Intensivists	Author Type: Physician
Filed: 9/8/2019 4:04 PM	Date of Service: 9/8/2019 3:52 PM	Status: Signed
Editor: Vincent M Nicolais, MD (Physician)		
CRITICAL CARE TEACHING CONSULT SERVICE,		
INITIAL CRITICAL CARE REPORT		
Vincent M. Nicolais MD, FCCM, MACP		
9/8/2019		

- PCe 43-44

<p>Physical Exam</p> <p>Constitutional: He appears well-developed and well-nourished.</p> <p>Increased body mass index</p> <p>HENT:</p> <p>Head: Normocephalic and atraumatic.</p> <p>Eyes: Pupils are equal, round, and reactive to light. Conjunctivae are normal.</p> <p>Neck: Neck supple.</p> <p>Cardiovascular: Normal rate, regular rhythm, normal heart sounds and intact distal pulses. Exam reveals no gallop and no friction rub.</p>
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Progress Notes by Vincent M Nicolais, MD at 9/8/2019 3:52 PM (continued)

No murmur heard.
 Pulmonary/Chest: Breath sounds normal.
 Abdominal: Soft. Bowel sounds are normal.
Increased adiposity noted
 Musculoskeletal: He exhibits no edema, tenderness or deformity.
 Neurological: He is alert.
This patient does have some right-sided weakness with expressive aphasia and a Babinski on the right
 Skin: Skin is warm and dry.
 Nursing note and vitals reviewed.

48. At 1552 hrs, Dr. Nicolais writes instructions to observe Jeremy 4-5 more hours in the ICU and then, if stable, to transfer Jeremy to the neurosciences unit.

- PCe 48

ASSESSMENT RECOMMENDATIONS AND MANAGEMENT

This patient has had an acute CVA with evidence of this on imaging. The patient has required a thrombectomy. He did not receive TPA. He is to be observed for a number of hours that is 4-5 more hours in the intensive care unit and if the patient remains stable he can then be transferred to the neurosciences unit. At this point our goal is to prevent any further deterioration in his condition. He has required insulin supplementation for diabetes mellitus. We discussed his care at the bedside with his wife as well as his mother. They understand the importance of care once discharged to prevent a recurrence of stroke or other ischemic event.

- PCe 204-05

Transfer patient [392853164]

Electronically signed by: Vincent M Nicolais, MD on 09/08/19 1609
 Ordering user: Vincent M Nicolais, MD 09/08/19 1609
 Authorized by: Vincent M Nicolais, MD
 Frequency: Routine Once 09/08/19 1607 - 1 occurrence
 Ordering provider: Vincent M Nicolais, MD
 Status: Completed

Questionnaire

Transfer patient [392853164] (continued)

Question	Answer
Level of Care	Acute Care
Unit	PCM 10 MAIN
Bed request comments	May be transferred if stable neurologically, hemodynamically, and from a respiratory perspective for 4 hours.

49. At 1600 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status.

- PCe 798

Assessment - Sun September 08, 2019 (continued)

Row Name	1600	1500	1406	1351	1346
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VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	In Use -CB	—	—	—
Intermittent Pneumatic Compression Device	—	IPC- Bilateral knee high -CB	—	—	—
Peripheral Vascular					
Peripheral Vascular (WDL)	—	WDL -CB	—	—	—
Braden Scale					
Sensory Perceptions	—	3 -CB	—	—	—
Moisture	—	4 -CB	—	—	—
Activity	—	1 -CB	—	—	—
Mobility	—	3 -CB	—	—	—
Nutrition	—	3 -CB	—	—	—
Friction and Shear	—	3 -CB	—	—	—
Braden Scale Score	—	17 -CB	—	—	—
Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	WDL -CB	—	—	—

- PCe 821

Row Name	1800	1700	1600	1500	1406
Vitals					
Temp	—	—	97.4 °F (36.3 °C) -CB	—	—
Temp Source	—	—	Axillary -CB	—	—
Heart Rate	112 -CB	94 -CB	100 -CB	108 -CB	107 -SH
Resp	19 -CB	18 -CB	18 -CB	(!) 31 -CB	30 -SH
BP	151/88 -CB	120/64 -CB	(!) 157/94 -CB	—	147/82 -SH
SpO2	—	98 % -CB	96 % -CB	94 % -CB	97 % -SH
Pain Score	—	—	—	Zero -CB	—

50. At 1700 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status.

- PCe 795

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700
. . .					

VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	—	In Use -TM	—	—
Intermittent Pneumatic Compression Device	—	—	IPC - Left knee high R calf muscle cramping -TM	—	—
Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	WDL -TM	WDL -TM	—
Cyanosis	—	—	None -TM	—	—
Capillary Refill	—	—	Less than 3 seconds (All extremities) -TM	—	—
Pulses	—	—	R radial;L radial;R pedal;L pedal -TM	—	—
PVS Additional Assessments	—	—	No -TM	—	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	+2 -TM	—	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	+2 -TM	—	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	+2 -TM	+2 -TM	—
LLE Peripheral Vascular Assessment					
L Pedal Pulse	—	—	+2 -TM	—	—
Braden Scale					
Sensory Perceptions	—	—	3 -TM	—	—

- PCe 796

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700
...					
Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	—	WDL -TM	—	—
Skin Color	—	—	Appropriate for ethnicity -TM	—	—
Skin Condition/Temp	—	—	Clammy;Diaphoretic -TM	—	—

- PCe 821

Row Name	1800	1700	1600	1500	1406
Vitals					
Temp	—	—	97.4 °F (36.3 °C) -CB	—	—
Temp Source	—	—	Axillary -CB	—	—
Heart Rate	112 -CB	94 -CB	100 -CB	108 -CB	107 -SH
Resp	19 -CB	18 -CB	18 -CB	(!) 31 -CB	30 -SH
BP	151/88 -CB	120/64 -CB	(!) 157/94 -CB	—	147/82 -SH
SpO2	—	98 % -CB	96 % -CB	94 % -CB	97 % -SH
Pain Score	—	—	—	Zero -CB	—

51. At 1800 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status.

- PCe 795

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700

...

VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	—	In Use -TM	—	—
Intermittent Pneumatic Compression Device	—	—	IPC - Left knee high R calf muscle cramping -TM	—	—
Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	WDL -TM	WDL -TM	—
Cyanosis	—	—	None -TM	—	—
Capillary Refill	—	—	Less than 3 seconds (All extremities) -TM	—	—
Pulses	—	—	R radial;L radial;R pedal;L pedal -TM	—	—
PVS Additional Assessments	—	—	No -TM	—	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	+2 -TM	—	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	+2 -TM	—	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	+2 -TM	+2 -TM	—
LLE Peripheral Vascular Assessment					
L Pedal Pulse	—	—	+2 -TM	—	—
Braden Scale					
Sensory Perceptions	—	—	3 -TM	—	—

- PCe 796

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700

...

Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	—	WDL -TM	—	—
Skin Color	—	—	Appropriate for ethnicity -TM	—	—
Skin Condition/Temp	—	—	Clammy;Diaphoretic -TM	—	—

- PCe 821

Row Name	1800	1700	1600	1500	1406
Vitals					
Temp	—	—	97.4 °F (36.3 °C) -CB	—	—
Temp Source	—	—	Axillary -CB	—	—
Heart Rate	112 -CB	94 -CB	100 -CB	108 -CB	107 -SH
Resp	19 -CB	18 -CB	18 -CB	(!) 31 -CB	30 -SH
BP	151/88 -CB	120/64 -CB	(!) 157/94 -CB	—	147/82 -SH
SpO2	—	98 % -CB	96 % -CB	94 % -CB	97 % -SH
Pain Score	—	—	—	Zero -CB	—

52. At 1900 hrs, Nurse Tabitha Miller documents an NIH Stroke Scale assessment. She notes a total score of 10, with right-side deficits. She notes a sensory deficit score of 1.

- PCe 814

Stroke Non-Alteplase - Sun September 08, 2019					
Row Name	2255	2200	2100	2000	1900

...

NIH Stroke Scale					
Level of Consciousness (1a.)	—	—	—	0 -TM	0 -TM
LOC Questions (1b.)	—	—	—	0 -TM	0 -TM
LOC Commands (1c.)	—	—	—	0 -TM	0 -TM
Best Gaze (2.)	—	—	—	0 -TM	0 -TM
Visual (3.)	—	—	—	0 -TM	0 -TM
Facial Palsy (4.)	—	—	—	0 -TM	0 -TM
Motor Arm, Left (5a.)	—	—	—	0 -TM	0 -TM
Motor Arm, Right (5b.)	—	—	—	3 -TM	3 -TM
Motor Leg, Left (6a.)	—	—	—	0 -TM	0 -TM
Motor Leg, Right (6b.)	—	—	—	3 -TM	3 -TM
Limb Ataxia (7.)	—	—	—	2 -TM	2 -TM
Sensory (8.)	—	—	—	1 -TM	1 -TM
Best Language (9.)	—	—	—	1 -TM	1 -TM
Dysarthria (10.)	—	—	—	0 -TM	0 -TM
Extinction and Inattention (formerly Neglect) (11.)	—	—	—	0 -TM	0 -TM
Total	—	—	—	10 -TM	10 -TM

53. At 1900 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg but that Jeremy shows a flicker of muscle on his right leg.

- PCe 793

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700

...

RLE Motor Response	Responds to commands -TM	Responds to commands -TM	Responds to commands -TM	Responds to commands will flicker toes -TM	—
RLE Sensation	No sensation -TM	No sensation -TM	No sensation -TM	No sensation -TM	—
RLE Motor Strength	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	—

54. At 1900 hrs, Nurse Miller documents that Jeremy’s peripheral vascular status is WDL, within defined limits, and that his right leg pedal pulse was “+2.”

- PCe 795

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700

...

Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	WDL -TM	WDL -TM	—
Cyanosis	—	—	None -TM	—	—
Capillary Refill	—	—	Less than 3 seconds (All extremities) -TM	—	—
Pulses	—	—	R radial;L radial;R pedal;L pedal -TM	—	—
PVS Additional Assessments	—	—	No -TM	—	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	+2 -TM	—	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	+2 -TM	—	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	+2 -TM	+2 -TM	—
LLE Peripheral Vascular Assessment					
L Pedal Pulse	—	—	+2 -TM	—	—

- PCe 825

SM	Shannon McIlrath, RN
LWA	Latonya Warren, RN
KS	Kailey M Scott, RN
TM	Tabitha C Miller, RN
SBA	Samantha Rose Brewer, RN
JA	Jacquelyne E Adams

55. At 2000 hrs, Nurse Tabitha Miller documents an NIH Stroke Scale assessment. She notes a total score of 10, with right-side deficits. She notes a sensory deficit score of 1.

- PCe 814

Stroke Non-Alteplase - Sun September 08, 2019					
Row Name	2255	2200	2100	2000	1900

...

NIH Stroke Scale					
Level of Consciousness (1a.)	—	—	—	0 -TM	0 -TM
LOC Questions (1b.)	—	—	—	0 -TM	0 -TM
LOC Commands (1c.)	—	—	—	0 -TM	0 -TM
Best Gaze (2.)	—	—	—	0 -TM	0 -TM
Visual (3.)	—	—	—	0 -TM	0 -TM
Facial Palsy (4.)	—	—	—	0 -TM	0 -TM
Motor Arm, Left (5a.)	—	—	—	0 -TM	0 -TM
Motor Arm, Right (5b.)	—	—	—	3 -TM	3 -TM
Motor Leg, Left (6a.)	—	—	—	0 -TM	0 -TM
Motor Leg, Right (6b.)	—	—	—	3 -TM	3 -TM
Limb Ataxia (7.)	—	—	—	2 -TM	2 -TM
Sensory (8.)	—	—	—	1 -TM	1 -TM
Best Language (9.)	—	—	—	1 -TM	1 -TM
Dysarthria (10.)	—	—	—	0 -TM	0 -TM
Extinction and Inattention (formerly Neglect) (11.)	—	—	—	0 -TM	0 -TM
Total	—	—	—	10 -TM	10 -TM

56. At 2000 hrs, Nurse Miller documents that Jeremy has sudden, cramping pain at a level of 6/10, that Jeremy’s right calf muscle is cramping, and that as a pain intervention Jeremy received massage and emotional support. Nurse Miller also documents that Jeremy’s skin is clammy and diaphoretic (*i.e.*, sweating heavily).

- PCE 806

Daily Cares/Safety - Sun September 08, 2019 (continued)					
Row Name	2300	2200	2100	2000	1900

...

VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	—	—	In Use -TM	—
Intermittent Pneumatic Compression Device	—	—	—	IPC - Left knee high R calf muscle cramping -TM	—

- PCE 823

Pain - Sun September 08, 2019		
Row Name	2000	1500
Pain Assessment		
Pain Score	Six -TM	Zero -CB
Pain Location	Leg calf muscle -TM	—
Pain Orientation	Right -TM	—
Pain Intervention(s)	Massage:Emotional support -TM	—
Pain Goal		
Patient's Stated Pain Goal	No pain -TM	No pain -CB

- PCE 796

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700

...

Integumentary / Describe Intact Skin					
Integumentary (WDL)	—	—	WDL -TM	—	—
Skin Color	—	—	Appropriate for ethnicity -TM	—	—
Skin Condition/Temp	—	—	Clammy:Diaphoretic -TM	—	—

57. At 2000 hrs, Nurse Miller documents that Jeremy’s peripheral vascular status is Within Defined Limits, that he has no cyanosis, that his capillary refill is less than three seconds, and that his right leg pedal pulse is +2.

- PCE 795

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700

...

Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	WDL -TM	WDL -TM	—
Cyanosis	—	—	None -TM	—	—
Capillary Refill	—	—	Less than 3 seconds (All extremities) -TM	—	—
Pulses	—	—	R radial;L radial;R pedal;L pedal -TM	—	—
PVS Additional Assessments	—	—	No -TM	—	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	+2 -TM	—	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	+2 -TM	—	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	+2 -TM	+2 -TM	—

58. At 2000 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg but that Jeremy shows a flicker of muscle on his right leg.

- PCe 793

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700

...

RLE Motor Response	Responds to commands -TM	Responds to commands -TM	Responds to commands -TM	Responds to commands will flicker toes -TM	—
RLE Sensation	No sensation -TM	No sensation -TM	No sensation -TM	No sensation -TM	—
RLE Motor Strength	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	—

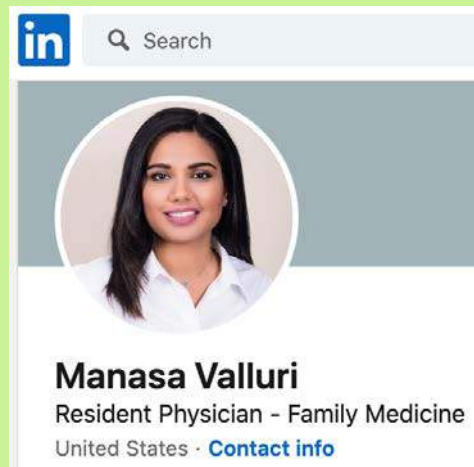
59. At approximately 2031 hrs, Nurse Miller notifies Dr. Manasa Valluri of “pt’s constant pain/knot in R calf muscle.” Nurse Miller notes that Jeremy’s pedal pulse is present and “no drainage/hematoma present on R groin incision.” Nurse Miller notes, “will closely monitor pt.”

- PCe 145

Nursing Note by Tabitha C Miller, RN at 9/8/2019 8:31 PM		
Author: Tabitha C Miller, RN Filed: 9/8/2019 8:35 PM Editor: Tabitha C Miller, RN (Registered Nurse)	Service: — Date of Service: 9/8/2019 8:31 PM	Author Type: Registered Nurse Status: Signed
<p>Dr Valluri notified about pt's constant pain/knot in R calf muscle, no redness/warmth present, +2 pedal pulse present, pain worsens when leg is straightened. No drainage/hematome present on R groin incision. Will closely monitor pt.</p>		

60. In September 2019, Dr. Valluri is a Family Medicine resident. She is two or three months into the first year of her residency.

- Manasa Valluri, MD, LinkedIn page



...

Experience



Resident Physician

Piedmont Columbus Regional
Jul 2019 – Present · 2 yrs 1 mo


Education



Univeristy of Medicine and Health Sciences

Doctor of Medicine - MD, Medicine
2013 – 2017

- Piedmont Columbus Resident Biographies:
<https://www.piedmont.org/locations/piedmont-columbus/residency/ContentPage.aspx?nd=14850>



Manasa Valluri, M.D., University of Medicine and Health Sciences
 Manasa Valluri is from Cumming, Georgia. She was drawn to family medicine because under one umbrella of practice she feels she can provide OB/GYN care, pediatric care, and primary care. She didn't see any other specialty outside family medicine that was this inclusive of its patient population. Family Medicine is very open to integrative medicine also. As a meditation and yoga teacher, she is very excited about this aspect of family medicine. She chose the family medicine program at Piedmont Columbus Regional because she loved the fact that many of the exceptional physicians that work at Piedmont Columbus are Piedmont family medicine residency graduates. She was attracted to the unopposed aspect of family medicine residency and wanted to be part of the Piedmont family. She enjoys yoga, meditation, meditation retreats, hiking, movies, playing sitar, and spending time with friends and family in her spare time. If she weren't a physician, she'd be a professional and full time yoga and meditation teacher.

61. At 2100 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg and shows a flicker of muscle in his right leg.

- PCe 793

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
...					
RLE Motor Response	Responds to commands -TM	Responds to commands -TM	Responds to commands -TM	Responds to commands will flicker toes -TM	—
RLE Sensation	No sensation -TM	No sensation -TM	No sensation -TM	No sensation -TM	—
RLE Motor Strength	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	—

62. At 2100 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature.

- PCe 795

Assessment - Sun September 08, 2019 (continued)

Row Name	2200	2100	2000	1900	1700
...					

Peripheral Vascular					-TM
Peripheral Vascular (WDL)	—	—	—	WDL -TM	WDL -TM
Cyanosis	—	—	—	None -TM	—
Capillary Refill	—	—	—	Less than 3 seconds (All extremities) -TM	—
Pulses	—	—	—	R radial;L radial;R pedal;L pedal -TM	—
PVS Additional Assessments	—	—	—	No -TM	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	—	+2 -TM	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	—	+2 -TM	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	—	+2 -TM	+2 -TM
LLE Peripheral Vascular Assessment					

- PCE 787

Complex Assessment - Sun September 08, 2019 (continued)						
Row Name	2255	2200	2100	2000	1900	
Silicone Border Dressing	—	—	—	—	—	Not due,Underlying skin assessed -TM
Integumentary / Describe Intact Skin						
Integumentary (WDL)	—	—	—	—	—	WDL -TM
Skin Color	—	—	—	—	—	Appropriate for ethnicity -TM
Skin Condition/Temp	—	—	—	—	—	Clammy,Diaphoretic -TM

63. At 2105 hrs, Dr. Manasa Valluri orders 5 mg of Flexeril (a muscle relaxer) for Jeremy.

- PCE 159

cyclobenzaprine (FLEXERIL) tablet 5 mg [392901348]

Electronically signed by: **Manasa Valluri, MD on 09/08/19 2105** Status: **Completed**
 Ordering user: Manasa Valluri, MD 09/08/19 2105
 Authorized by: Manasa Valluri, MD
 Frequency: Routine Once 09/08/19 2115 - 1 occurrence

Ordering provider: Manasa Valluri, MD
 Ordered during: ED to Hosp Admission (Discharged) on 09/08/2019
 Package: 63739-531-10

64. Dr. Valluri did not write a note concerning Jeremy’s leg pain.


- See search of records for “Author: Manasa”

Looking For:

Author: Manasa in the current document

Results:


0 document(s) with 0 instance(s)



- See search of records for “Author: Valluri”

Looking For:
Author: Valluri in the current document


Results:
0 document(s) with 0 instance(s)



- See search of records for “Note by Manasa”

Looking For:
Note by Manasa in the current document


Results:
0 document(s) with 0 instance(s)



- See search of records for “Note by Valluri”

Looking For:
Note by Valluri in the current document

Results:
0 document(s) with 0 instance(s)



65. At 2200 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg and shows a flicker of muscle in his right leg.

- PCe 793

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700

...

RLE Motor Response	Responds to commands -TM	Responds to commands -TM	Responds to commands -TM	Responds to commands will flicker toes -TM	---
RLE Sensation	No sensation -TM	No sensation -TM	No sensation -TM	No sensation -TM	---
RLE Motor Strength	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	Flicker of muscle -TM	---

66. At 2200 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature.

- PCe 795

Assessment - Sun September 08, 2019 (continued)					
Row Name	2200	2100	2000	1900	1700

...

Peripheral Vascular -TM					
Row Name	2255	2200	2100	2000	1900
Peripheral Vascular (WDL)	---	---	---	WDL -TM	WDL -TM
Cyanosis	---	---	---	None -TM	---
Capillary Refill	---	---	---	Less than 3 seconds (All extremities) -TM	---
Pulses	---	---	---	R radial;L radial;R pedal;L pedal -TM	---
PVS Additional Assessments	---	---	---	No -TM	---
RUE Peripheralvascular Assessment					
R Radial Pulse	---	---	---	+2 -TM	---
LUE Peripheralvascular Assessment					
L Radial Pulse	---	---	---	+2 -TM	---
RLE Peripheral Vascular Assessment					
R Pedal Pulse	---	---	---	+2 -TM	+2 -TM
LLE Peripheral Vascular Assessment					

- PCe 787

Complex Assessment - Sun September 08, 2019 (continued)					
Row Name	2255	2200	2100	2000	1900
Silicone Border Dressing	---	---	---	---	Not due;Underlying skin assessed -TM
Integumentary / Describe Intact Skin					
Integumentary (WDL)	---	---	---	---	WDL -TM
Skin Color	---	---	---	---	Appropriate for ethnicity -TM
Skin Condition/Temp	---	---	---	---	Clammy;Diaphoretic -TM

Transfer to Neuro floor

67. At 2240 hrs, Nurse Miller calls Nurse Christina Orr to give a report on Jeremy, in preparation for transferring Jeremy to another floor, room 1001.

- PCe 145

Nursing Note by Tabitha C Miller, RN at 9/8/2019 10:40 PM		
Author: Tabitha C Miller, RN	Service: —	Author Type: Registered Nurse
Filed: 9/8/2019 10:53 PM	Date of Service: 9/8/2019 10:40 PM	Status: Signed
Editor: Tabitha C Miller, RN (Registered Nurse)		
Report called to Christina on 10 main.		
Nursing Note by Tabitha C Miller, RN at 9/8/2019 10:51 PM		
Author: Tabitha C Miller, RN	Service: —	Author Type: Registered Nurse
Filed: 9/8/2019 10:53 PM	Date of Service: 9/8/2019 10:51 PM	Status: Signed
Editor: Tabitha C Miller, RN (Registered Nurse)		
Pt transferred to 1001 via bed with telepack on with RN and MA. Bed locked, call light placed with pt, pt's wife and friend at bedside. RN notified of pt's arrival. Chart left at front desk.		

68. At approximately 2251 hrs, contrary to the wishes of neurologist Dr. Nojan Valadi, Jeremy is transferred to a Neuro floor, room 1001.

- PCe 145

Nursing Note by Tabitha C Miller, RN at 9/8/2019 10:51 PM		
Author: Tabitha C Miller, RN	Service: —	Author Type: Registered Nurse
Filed: 9/8/2019 10:53 PM	Date of Service: 9/8/2019 10:51 PM	Status: Signed
Editor: Tabitha C Miller, RN (Registered Nurse)		
Pt transferred to 1001 via bed with telepack on with RN and MA. Bed locked, call light placed with pt, pt's wife and friend at bedside. RN notified of pt's arrival. Chart left at front desk.		

- PCe 61

Progress Notes by Nojan Valadi, MD at 9/9/2019 9:30 PM		
Author: Nojan Valadi, MD	Service: Neurology	Author Type: Physician
Filed: 9/9/2019 11:29 PM	Date of Service: 9/9/2019 9:30 PM	Status: Signed
Editor: Nojan Valadi, MD (Physician)		
Neurology Progress Note		
Subjective:		
Interval History: Interval history since yesterday evening/early morning hours reviewed. I was contacted earlier in the day regarding the patient going to a floor bed from the ICU by stroke coordinator Jessica, and advised her to pass along to staff that I would like the patient to remain in the ICU. However shortly after midnight at 12:36 AM, I was contacted by nurse Christina informing me that the patient had arrived on the floor/neurology unit and inquired regarding order clarification for CT angiography of the neck and head. I gave the verbal order to the nurse Christina to kindly move the patient by the back to the ICU or to the neuro ICU with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower		

69. At 2255 hrs, Matannah Muhammed records some flowsheet assessments, including vital signs.

- PCe 821

Code Vitals - Sun September 08, 2019	
Row Name	2255
Vitals	
Temp	96 °F (35.6 °C) -MM
Temp Source	Oral -MM
Heart Rate	111 -MM
Heart Rate Source	—
Resp	20 -MM
BP	154/85 -MM
SpO2	95 % -MM
Pain Score	—

- PCe 825

DD	Deborah Dawson, RN
KF	Kayla J. Fountain, RN
MM	Matannah Muhammed
DDA	Dana M Dannunzio
LA	Lda Discharge Automatic

70. At 2255 hrs and 2300 hrs, no assessment is documented for Jeremy’s peripheral vascular status. No assessment is documented for cyanosis, capillary refill, pulses, or skin color and temperature.

- PCe 772

PACU - Sun September 08, 2019 (continued)					
Row Name	2255	2200	2100	2000	1900

...

Peripheral Vascular					
Peripheral Vascular (WDL)	—	—	—	WDL -TM	WDL -TM
Cyanosis	—	—	—	None -TM	—
Capillary Refill	—	—	—	Less than 3 seconds (All extremities) -TM	—
Pulses	—	—	—	R radial;L radial;R pedal;L pedal -TM	—
PVS Additional Assessments	—	—	—	No -TM	—
RUE Peripheralvascular Assessment					
R Radial Pulse	—	—	—	+2 -TM	—
LUE Peripheralvascular Assessment					
L Radial Pulse	—	—	—	+2 -TM	—
RLE Peripheral Vascular Assessment					
R Pedal Pulse	—	—	—	+2 -TM	+2 -TM
LLE Peripheral Vascular Assessment					
L Pedal Pulse	—	—	—	+2 -TM	—
Integumentary					

- PCE 773

PACU - Sun September 08, 2019 (continued)					
Row Name	2255	2200	2100	2000	1900
Skin Color	—	—	—	Appropriate for ethnicity -TM	—
Skin Condition/Temp	—	—	—	Clammy;Diaphoretic -TM	—
Musculoskeletal					

- Note: All Sept 8, 2300 hrs flowsheet records copied below

Looking For:
2300 in the current document

Results:
1 document(s) with 8 instance(s)

Results:

- JONES, JEREMY BLAKE - 6/9/2021
- Name **2300** 2200 2000 1500 Precautions Precautions -- -- As
- Name **2300** 2200 2000 1500 VTE Mechanical Prophylaxis VTE
- Name **2300** 2200 2100 2000 1900 OTHER 30-Day Readmissio
- 2300** 2240 2220 2200 Generated by Troy Pickens [C106542] at
- 2300** 2240 2220 2200 OTHER Sepsis Predictive Analytics Scor
- Name **2300** 2200 2100 2000 1900 Precautions Precautions --
- Name **2300** 2200 2100 2000 1900 Telemetry Details Telemetry
- Name **2300** 2200 2100 2000 1900 Comfort and Environment I

Flowsheet (al

Custom Formula Data - Sun September 08, 2019 (continued)

Row Name	1251	12:46:07
BMI = 25		
Percent Weight Change Since Birth	---	---
IBW/kg (Calculated)	---	---
Low Range Vt 8cc/kg	---	---
Adult Moderate Range Vt 8cc/kg	---	---
Adult High Range Vt 10cc/kg	---	---
Neonatal Standard Range 4cc/kg	---	---
Low Range Vt 2.5cc/kg	---	---
Neonatal High Range Vt 6cc/kg	---	---
Row Name	1201	1134
Relevant Labs and Vitals		
Temp (in Celsius)	---	36.4 -KF
Vital Signs		
MAP (mmHg) (calculated)	116 -JBA	115 -KF
Vitals		
Change in Systolic BP since last reading	10 mmHg -JBA	---

PT Charges - Sun September 08, 2019
No documentation.

SLP Charges - Sun September 08, 2019
No documentation.

- PCE 767

Daily Cares/Safety - Sun September 08, 2019

Row Name	2300	2200	2000	1500
Precautions				
Precautions	---	---	Aspiration, Fall risk -TM	---
Safe Environment				
Arm Bands On	---	---	ID: Fall -TM	---
Call Light Within Reach	---	---	Yes -TM	---
Overbed Table Within Reach	---	---	Yes -TM	---
Bed In Lowest Position	---	---	Yes -TM	---
Bed Wheels Locked	---	---	Yes -TM	---
Side Rails/Bed Safety	---	---	3/4 -TM	---
NonSkid Footwear	---	---	Patient in bed; Off -TM	---
Telemetry Details				
Telemetry Monitor On	---	---	Yes -TM	Yes -CB
Telemetry Audible	---	---	Yes -TM	Yes -CB
Telemetry Alarms Set	---	---	Yes -TM	Yes -CB
Family/Significant Other Communication				
Family/Significant Other Update	---	---	Updated; Visiting wife -TM	---
Mobility				
Activity	---	---	Bedrest -TM	Bedrest -CB
Level of Assistance	---	---	Moderate assist, patient does 50-74% -TM	Moderate assist, patient does 50-74% -CB
Transfer Equipment	---	---	Hospital bed -TM	---
Head of Bed Elevated	---	---	HOB 30 -TM	Self regulated -CB
Range of Motion	---	---	Active; All extremities; Passive -TM	Active; Passive; All extremities -CB
Transport Method	---	---	Bed -TM	Bed -CB
Repositioned	---	---	Turns self -TM	Turns self -TM
Positioning Frequency	---	---	Able to turn self -TM	Able to turn self -TM

- PCe 768

Daily Cares/Safety - Sun September 08, 2019 (continued)					
Row Name	2300	2200	2000	1500	
VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	—	—	In Use -TM	In Use -CB	
Intermittent Pneumatic Compression Device	—	—	IPC - Left knee high R calf muscle cramping -TM	IPC: Bilateral knee high -CB	
Nutrition					
Feeding	—	—	Needs set up;Needs assist low carb -TM	—	
Swallow Signs/Symptoms	—	—	Swallows without difficulty -TM	—	
Tube Feeding					
Tube Feeding	—	—	No -TM	—	
Hygiene					
Hygiene	—	—	— face washed, bathed on day shift -TM	—	
Skin Prevention Interventions					
Sensory, Activity, Motor	—	—	Heels elevated off bed;Wedge;Pillows -TM	—	
Moisture, Friction, Shear	—	—	All tubes free or padded;Head of bed at 30 degrees -TM	—	
Frequent repositioning or weight shifts	—	—	Patient independent -TM	—	
Silicone Border Dressing	—	—	Not due;Underlying skin assessed -TM	—	
Comfort and Environment Interventions					
Comfort	Repositioned -MM	—	Repositioned;Linen changed -TM	—	
Safety Equipment at Bedside					
Safety Equipment at Bedside	—	—	Suction -TM	—	
Readmission Risk Score - Sun September 08, 2019					
Row Name	2300	2200	2100	2000	1900
OTHER					
30-Day Readmission Risk Score	8 -BA	8 -BA	8 -BA	7 -BA	7 -BA
Row Name	1800	1700	1600	1500	1400
OTHER					
30-Day Readmission Risk Score	7 -BA	7 -BA	7 -BA	0 -BA	0 -BA

- PCe 769

Sepsis Predictive Analytics - Sun September 08, 2019					
Row Name	2321	2300	2240	2220	2200
Generated by Troy Pickens [C106542] at 6/9/21 4:49 PM					
Page 769					

- PCe 770

Sepsis Predictive Analytics - Sun September 08, 2019 (continued)					
Row Name	2321	2300	2240	2220	2200
OTHER					
Sepsis Predictive Analytics Score	9.5 -NI	9.5 -NI	3.9 -NI	3.9 -NI	3.9 -NI
Row Name	2140	2120	2100	2040	2020

- PCe 805

Daily Cares/Safety - Sun September 08, 2019

Row Name	2300	2200	2100	2000	1900
Precautions					
Precautions	---	---	---	Aspiration;Fall risk -TM	---
Safe Environment					
Arm Bands On	---	---	---	ID;Fall -TM	---
Call Light Within Reach	---	---	---	Yes -TM	---
Overbed Table Within Reach	---	---	---	Yes -TM	---
Bed In Lowest Position	---	---	---	Yes -TM	---
Bed Wheels Locked	---	---	---	Yes -TM	---
Side Rails/Bed Safety	---	---	---	3/4 -TM	---
NonSkid Footwear	---	---	---	Patient in bed;Off -TM	---

- PCE 806

Daily Cares/Safety - Sun September 08, 2019 (continued)

Row Name	2300	2200	2100	2000	1900
Telemetry Details					
Telemetry Monitor On	---	---	---	Yes -TM	---
Telemetry Audible	---	---	---	Yes -TM	---
Telemetry Alarms Set	---	---	---	Yes -TM	---
Family/Significant Other Communication					
Family/Significant Other Update	---	---	---	Updated;Visiting wife -TM	---
Morse Fall Risk					
History of Falling	---	---	---	0 -TM	---
Secondary Diagnosis	---	---	---	15 -TM	---
Ambulatory Aids	---	---	---	0 -TM	---
IV Therapy/Heparin (saline) lock/equipment	---	---	---	0 -TM	---
Gait/Transferring	---	---	---	0 -TM	---
Mental Status	---	---	---	0 -TM	---
Score	---	---	---	15 -TM	---
Fall Prevention Interventions					
General Fall Risk Interventions (Score 0-35)	---	---	---	Yes -TM	---

Mobility					
Activity	---	---	---	Bedrest -TM	---
Level of Assistance	---	---	---	Moderate assist, patient does 50-74% -TM	---
Transfer Equipment	---	---	---	Hospital bed -TM	---
Head of Bed Elevated	---	---	---	HOB 30 -TM	---
Range of Motion	---	---	---	Active;All extremities;Passive -TM	---
Transport Method	---	---	---	Bed -TM	---
Repositioned	---	Turns self -TM	---	Turns self -TM	---
Positioning Frequency	---	Able to turn self -TM	---	Able to turn self -TM	---
Progressive Mobility Assessment (ICU/Shepherd Patients Only)					
Richmond Agitation Sedation Scale (RASS)	---	0 -TM	0 -TM	+1 -TM	+1 -TM
VTE Mechanical Prophylaxis					
VTE Mechanical Prophylaxis	---	---	---	In Use -TM	---
Intermittent Pneumatic Compression Device	---	---	---	IPC - Left knee high R calf muscle cramping -TM	---
Infection Screening					
Signs and Symptoms of New or Worsening Infection?	---	---	---	No -TM	---

Nutrition					
Feeding	—	—	—	Needs set up;Needs assist low carb -TM	—
Swallow Signs/Symptoms	—	—	—	Swallows without difficulty -TM	—
Tube Feeding	—	—	—	No -TM	—
Hygiene					
Hygiene	—	—	—	— face washed, bathed on day shift -TM	—
Skin Prevention Interventions					
Sensory, Activity, Motor	—	—	—	Heels elevated off bed;Wedge;Pillows -TM	—
Moisture, Friction, Shear	—	—	—	All tubes free or padded;Head of bed at 30 degrees -TM	—
Frequent repositioning or weight shifts	—	—	—	Patient independent -TM	—
Silicone Border Dressing	—	—	—	Not due;Underlying skin assessed -TM	—

- PCe 807

Daily Cares/Safety - Sun September 08, 2019 (continued)					
Row Name	2300	2200	2100	2000	1900
Comfort and Environment Interventions					
Comfort	Repositioned -MM	—	—	Repositioned;Linen changed -TM	—
Safety Equipment at Bedside					
Safety Equipment at Bedside	—	—	—	Suction -TM	—
Row Name	1500	1211			

Telemetry Details

71. At 2304 hrs, Nurse Christina Orr writes that Jeremy had arrived in Room 1001.

- PCe 145

Nursing Note by Christina N Orr, RN at 9/8/2019 11:04 PM

Author: Christina N Orr, RN Service: — Author Type: Registered Nurse
 Filed: 9/8/2019 11:05 PM Date of Service: 9/8/2019 11:04 PM Status: Signed
 Editor: Christina N Orr, RN (Registered Nurse)

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. Assessment complete. C/o RLE cramping after receiving Flexeril 5mg at 21:17. Physician paged at this time regarding patient request for medication to alleviate discomfort. Will continue to monitor patient closely. Call light in reach.

72. At 2304 hrs, Nurse Christina Orr writes, “assessment complete.” (As indicated above, Nurse Orr records no assessment at or around 2300 hrs.)

- PCe 145

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. Assessment complete. C/o RLE cramping after receiving Flexeril 5mg at 21:17. Physician paged at this time regarding patient request for medication to alleviate discomfort. Will continue to monitor patient closely. Call light in reach.

73. At 2304 hrs, Nurse Christina Orr notes that Jeremy complains of right leg cramping despite receiving Flexeril at 2117 hrs.

- PCe 145

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. Assessment complete. C/o RLE cramping after receiving Flexeril 5mg at 21:17. Physician paged at this time regarding patient request for medication to alleviate discomfort. Will continue to monitor patient closely. Call light in reach.

74. At 2304 hrs, Nurse Christina Orr writes that a physician was paged concerning Jeremy's leg cramping.

- PCe 145

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. Assessment complete. C/o RLE cramping after receiving Flexeril 5mg at 21:17. Physician paged at this time regarding patient request for medication to alleviate discomfort. Will continue to monitor patient closely. Call light in reach.

75. At 2304 hrs, Nurse Christina Orr writes that she will continue to monitor Jeremy closely.

- PCe 145

Patient arrived to Room 1001 from ICU in stable condition. Report received from Tabatha, RN. Wife at bedside. Assessment complete. C/o RLE cramping after receiving Flexeril 5mg at 21:17. Physician paged at this time regarding patient request for medication to alleviate discomfort. Will continue to monitor patient closely. Call light in reach.

76. At 2314 hrs, Dr. Valluri ordered 10 mg of Flexeril for Jeremy.

- PCe 159

cyclobenzaprine (FLEXERIL) tablet 10 mg [392901349]

Electronically signed by: **Manasa Valluri, MD** on 09/08/19 2314
 Ordering user: **Manasa Valluri, MD** 09/08/19 2314
 Authorized by: **Bruce H Brennaman, MD**
 PRN reasons: Muscle spasms
 Frequency: Routine TID PRN 09/08/19 2314 - 09/11/19 1454
 Package: 63739-531-10

Ordering provider: **Manasa Valluri, MD**
 Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
 Discontinued by: **Ronson Hughes, MD** 09/11/19 1454

Status: **Discontinued**

77. The order for 10 mg of Flexeril states that it was authorized by Dr. Bruce Brennaman, a vascular surgeon.

- PCe 159

cyclobenzaprine (FLEXERIL) tablet 10 mg [392901349]	
Electronically signed by: Manasa Valluri, MD on 09/08/19 2314	Status: Discontinued
Ordering user: Manasa Valluri, MD 09/08/19 2314	Ordering provider: Manasa Valluri, MD
Authorized by: Bruce H Brennaman, MD	Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
PRN reasons: Muscle spasms	Discontinued by: Ronson Hughes, MD 09/11/19 1454
Frequency: Routine TID PRN 09/08/19 2314 - 09/11/19 1454	
Package: 63739-531-10	

78. The authorization attributed to Dr. Brennaman is not specifically time-stamped.

- PCe 159

cyclobenzaprine (FLEXERIL) tablet 10 mg [392901349]	
Electronically signed by: Manasa Valluri, MD on 09/08/19 2314	Status: Discontinued
Ordering user: Manasa Valluri, MD 09/08/19 2314	Ordering provider: Manasa Valluri, MD
Authorized by: Bruce H Brennaman, MD	Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
PRN reasons: Muscle spasms	Discontinued by: Ronson Hughes, MD 09/11/19 1454
Frequency: Routine TID PRN 09/08/19 2314 - 09/11/19 1454	
Package: 63739-531-10	

79. Apart from non-time-stamped references to Dr. Brennaman having authorized certain medication orders, the medical records contain no reference to Dr. Brennaman having been involved in Jeremy's case until September 9 at 0852 hrs, when he entered an order for cefazolin.

- PCe 160

ceFAZolin (ANCEF) injection 2 g [393006641]	
Electronically signed by: Bruce H Brennaman, MD on 09/09/19 0852	Status: Discontinued
Ordering user: Bruce H Brennaman, MD 09/09/19 0852	Ordering provider: Bruce H Brennaman, MD
Authorized by: Bruce H Brennaman, MD	Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
Frequency: Routine +1HR 09/09/19 0851 - 09/09/19 0904	Indications of use: Surgical Prophylaxis
Discontinued by: Jillian Davis, PharmD 09/09/19 0904 [Order Clean up]	
Diagnoses	
Ischemia of right lower extremity [I89.8] (Added automatically from request for surgery 779506)	

- See search of records for "author: Bruce"

Looking For:
author: Bruce in the current document

Results:
1 document(s) with 7 instance(s)

New Search

Results:
JONES, JEREMY BLAKE - 6/9/2021

- Author: Bruce H Brennaman, MD Service: Vascular Surgery
- Author: Bruce H Brennaman, MD Service: Vascular Surgery
- Author: Bruce H Brennaman, MD Service: Vascular Surgery
- Author: Bruce H Brennaman, MD Service: Vascular Surgery
- Author: Bruce H Brennaman, MD Service: Vascular Surgery
- Author: Bruce H Brennaman, MD Service: Vascular Surgery
- Author: Bruce H Brennaman, MD Service: Vascular Surgery

Electronically signed by Marcel W Coleman, PT on 9/9/2019 4:17 PM

Brief Op Note by Bruce H Brennaman, MD at 9/9/2019 1:00 PM

Author: Bruce H Brennaman, MD Service: Vascular Surgery
 Filed: 9/9/2019 1:21 PM Date of Service: 9/9/2019 1:00 PM
 Editor: Bruce H Brennaman, MD (Physician)

Brief OpNote
Surgeon(s) and Role:
 * Bruce H Brennaman, MD - Primary

Staff and Assistants: Circulator: Patricia Gilbreath, RN
Relief Circulator: Desiree Barksdale, RN; Mattie A. Dickerson, RN
Scrub Person: Sarah Hersh

Pre-op Diagnosis: Ischemia of right lower extremity [I99.8]

Post-op Diagnosis: Ischemia of right lower extremity [I99.8]

Anesthesia Type: General

Generated by Troy Pickens [C106542] at 6/9/21 4:48 PM

- PCE 140 — earliest note authored by Dr. Brennaman, time-stamped Sept 9 at 1300 hrs

Brief Op Note by Bruce H Brennaman, MD at 9/9/2019 1:00 PM

Author: Bruce H Brennaman, MD Service: Vascular Surgery Author Type: Physician
 Filed: 9/9/2019 1:21 PM Date of Service: 9/9/2019 1:00 PM Status: Signed
 Editor: Bruce H Brennaman, MD (Physician)

80. Dr. Brennaman’s own records indicate that he was not involved until after Dr. Osei-Bonsu attempted a thrombectomy in Jeremy’s leg on the morning of September 9.

- PCE 26 — consult note by Dr. Brennaman, indicating he was called on Sept 9, after CTA & thrombectomy attempt by Dr. Osei-Bonsu

Consults by Bruce H Brennaman, MD at 9/9/2019 9:38 PM

Author: Bruce H Brennaman, MD Service: Vascular Surgery Author Type: Physician
 Filed: 9/9/2019 10:21 PM Date of Service: 9/9/2019 9:38 PM Status: Signed
 Editor: Bruce H Brennaman, MD (Physician)

...

Referring Physician: Dr. Samuel Osei-Bonsu

Date of Consultation:

9/9/2019

Reason for Consultation: Jeremy Blake Jones is a 33 y.o. male, seen in consultation at the request of Dr. Samuel Osei-Bonsu, for the evaluation of acute right lower extremity ischemia. Current symptoms are positive for cold, pulseless foot. Patient denies complaints of none as he is sedated. Onset of symptoms was between 2030 hours and 2230 hours 9/8/2019 based on history. Symptoms are currently worsening. Aggravating factors include unknown. Alleviating factors include unknown. This history is provided by spouse/SO, relative(s) and Dr. Osei-Bonsu. Patient seen yesterday for acute stroke with right side weakness and slurred speech. Outside of window for TPA. Cerebral angio and thrombectomy done with closure device placed right groin. Last noted palpable pulses 2030 hours with wife/sister seeing and reporting change in LLE BK with pale cool skin and discoloration of calf. Told by nurse patient pulses palpable and area of calf was a "charlie horse" per wife. Report of loss of RLE pulses at 0130 hours and caring physicians called. CTA ordered and findings suggestive of "flap" seen in right CFA. Dr. Osei-Bonsu called around 4 AM and patient taken to IR with CFA stent for suspected dissection CFA and flow restored to level of knee. Unable to show contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. NO movement or sensation RLE. Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

- PCE 35 — amputation op note by Dr. Brannaman, saying he first saw Jeremy about 10 hours after the initial finding of limb ischemia

Op Note signed by Bruce H Brennaman, MD at 9/11/2019 5:20 AM

Author: Bruce H Brennaman, MD	Service: Vascular Surgery	Author Type: Physician
Filed: 9/11/2019 5:20 AM	Date of Service: 9/9/2019 12:00 AM	Status: Signed
Editor: Bruce H Brennaman, MD (Physician)		Trans ID: 11270578
Dictation Time: 9/9/2019 1:19 PM	Trans Time: 9/9/2019 11:08 PM	Trans Doc Type: Operative Note
		Trans Status: Available

...

INDICATIONS: This gentleman was brought to the hospital yesterday after suffering a stroke which left him with right hemiparesis. He underwent a right transfemoral angiogram to evaluate for thrombectomy, which was not done for a stroke. During the night, the patient's right lower extremity became pulseless and attempts to restore flow below the knee were unsuccessful. At the time that I saw the patient, he was approximately 10 hours from the initial finding of acute ischemia. He was taken to the operating room emergently for exploration and revascularization if

81. However, the records identify Dr. Brennaman as having authorized medications ordered by other physicians on September 8, at 1309 hrs, 1445 hrs, 1446 hrs, and 2314 hrs.

- PCE 157

aspirin EC tablet 81 mg [392844925] Status: **Discontinued**

Electronically signed by: **Nojan Valadi, MD on 09/08/19 1309**
 Ordering user: **Nojan Valadi, MD 09/08/19 1309**
 Authorized by: **Bruce H Brennaman, MD**
 Frequency: **STAT Daily 09/08/19 1310 - 09/09/19 2333**
 Package: **63739-522-01**

Ordering provider: **Nojan Valadi, MD**
 Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
 Discontinued by: **Nojan Valadi, MD 09/09/19 2333**

- PCe 158

atorvaSTATin (LIPITOR) tablet 40 mg [392853145] Status: **Discontinued**

Electronically signed by: **Maura E Gonzalez, MD on 09/08/19 1445**
 Ordering user: **Maura E Gonzalez, MD 09/08/19 1445**
 Authorized by: **Bruce H Brennaman, MD**
 Frequency: **Routine Nightly 09/08/19 2100 - 09/09/19 2333**
 Package: **0904-6292-61**

Ordering provider: **Maura E Gonzalez, MD**
 Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
 Discontinued by: **Nojan Valadi, MD 09/09/19 2333**

...

pantoprazole (PROTONIX) EC tablet 40 mg [392853155] Status: **Discontinued**

Electronically signed by: **Maura E Gonzalez, MD on 09/08/19 1445**
 Ordering user: **Maura E Gonzalez, MD 09/08/19 1445**
 Authorized by: **Bruce H Brennaman, MD**
 Frequency: **Routine Daily 09/08/19 1450 - 09/09/19 1454**
 Package: **66993-068-51**

Ordering provider: **Maura E Gonzalez, MD**
 Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
 Discontinued by: **Lynn Doan, PharmD 09/09/19 1454 [Duplicate Order]**

metoclopramide HCl (REGLAN) solution 10 mg [392853156] Status: **Discontinued**

Electronically signed by: **Maura E Gonzalez, MD on 09/08/19 1446**
 Ordering user: **Maura E Gonzalez, MD 09/08/19 1446**
 Authorized by: **Bruce H Brennaman, MD**
 Frequency: **Routine QAM AC 09/09/19 0730 - 09/10/19 1257**
 Package: **0121-1576-10**

Ordering provider: **Maura E Gonzalez, MD**
 Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
 Discontinued by: **Ronson Hughes, MD 09/10/19 1257**

- PCe 159

cyclobenzaprine (FLEXERIL) tablet 10 mg [392901349] Status: **Discontinued**

Electronically signed by: **Manasa Valluri, MD on 09/08/19 2314**
 Ordering user: **Manasa Valluri, MD 09/08/19 2314**
 Authorized by: **Bruce H Brennaman, MD**
 PRN reasons: **Muscle spasms**
 Frequency: **Routine TID PRN 09/08/19 2314 - 09/11/19 1454**
 Package: **63739-531-10**

Ordering provider: **Manasa Valluri, MD**
 Ordered during: **ED to Hosp-Admission (Discharged) on 09/08/2019**
 Discontinued by: **Ronson Hughes, MD 09/11/19 1454**

82. At midnight, no assessments of Jeremy are recorded in the flowsheets.

- PCe 765 — last flowsheet times for Sept 8

Data - Sun September 08, 2019

Row Name	2255	2200	2100	2000	1900
Vitals					
BP	154/85 -MM	155/79 -TM	153/89 -TM	164/85 -TM	159/79 -TM
Temp	96 °F (35.6 °C) -MM	—	—	98.2 °F (36.8 °C) -TM	—
Temp Source	Oral -MM	—	—	Axillary -TM	—
Heart Rate	111 -MM	114 -TM	112 -TM	110 -TM	110 -TM
Resp	20 -MM	26 -TM	(!) 33 -TM	25 -TM	22 -TM
SpO2	95 % -MM	97 % -TM	96 % -TM	97 % -TM	97 % -TM
OTHER					
Pain Score	—	—	—	Six -TM	—

- PCe 674 — first flowsheet times for Sept 9

Data - Mon September 09, 2019 (continued)					
Row Name	0633	06:28:08	06:23:03	0618	06:13:01
Vitals					
BP	169/75 -SH	173/76 -SH	167/77 -SH	177/80 -SH	172/82 -SH
Heart Rate	95 -SH	97 -SH	97 -SH	98 -SH	105 -SH
Resp	23 -SH	24 -SH	23 -SH	22 -SH	20 -SH
SpO2	93 % -SH	96 % -SH	97 % -SH	97 % -SH	98 % -SH
Row Name	0608	0603	0558	0553	0548
Vitals					
BP	159/74 -SH	162/74 -SH	163/73 -SH	162/77 -SH	158/78 -SH
Heart Rate	102 -SH	103 -SH	107 -SH	105 -SH	105 -SH
Resp	27 -SH	27 -SH	24 -SH	24 -SH	22 -SH
SpO2	97 % -SH	98 % -SH	98 % -SH	97 % -SH	95 % -SH
Row Name	0543	05:38:29	0525	0400	0300
Vitals					
BP	158/79 -SH	169/80 -SH	(!) 180/91 -SH	(!) 156/92 -EW	156/80 -EW
Temp	—	—	—	99.6 °F (37.6 °C) -EW	—
Temp Source	—	—	—	Oral -EW	—
Heart Rate	103 -SH	107 -SH	107 -SH	113 -EW	114 -EW
Resp	24 -SH	21 -SH	24 -SH	27 -EW	30 -EW
SpO2	94 % -SH	95 % -SH	96 % -SH	94 % -EW	96 % -EW
Row Name	0230	0219	0200	0123	0120
Vitals					
BP	(!) 147/93 -EW	—	(!) 155/91 -EW	159/88 -EW	—
Temp	—	—	—	99.6 °F (37.6 °C) -EW	—
Temp Source	—	—	—	Oral -EW	—
Heart Rate	114 -EW	—	119 -EW	110 -EW	—
Resp	(!) 33 -EW	—	28 -EW	26 -EW	—
SpO2	93 % -EW	—	94 % -EW	92 % -EW	—
OTHER					
Pain Score	—	Zero -LWA	—	—	Zero -LWA
Custom Formula Data - Mon September 09, 2019					
Row Name	2300	2200	2100	2000	1921

Monday, September 9

Calendar for Year 2019 (United States)

September						
Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Early morning hours: On neuro floor

83. On Sept 9 at 0036 hrs, Nurse Christina Orr calls neurologist Dr. Nojan Valadi, to inform him that Jeremy has been moved from the ICU to the Neuro floor, and to seek clarification of orders.

- PCe 145

Nursing Note by Christina N Orr, RN at 9/9/2019 12:36 AM		
Author: Christina N Orr, RN	Service: —	Author Type: Registered Nurse
Filed: 9/9/2019 12:39 AM	Date of Service: 9/9/2019 12:36 AM	Status: Signed
Editor: Christina N Orr, RN (Registered Nurse)		
Spoke with Dr. Valadi for order clarification. Ordered for CTA to be repeated 9/9/2019 at 12:00 and for patient to be transferred to neuro ICU with Q1 hour neuro checks. Patient is stable at this time.		

- PCe 61

Progress Notes by Nojan Valadi, MD at 9/9/2019 9:30 PM		
Author: Nojan Valadi, MD	Service: Neurology	Author Type: Physician
Filed: 9/9/2019 11:29 PM	Date of Service: 9/9/2019 9:30 PM	Status: Signed
Editor: Nojan Valadi, MD (Physician)		
Neurology Progress Note		
Subjective:		
Interval History: Interval history since yesterday evening/early morning hours reviewed. I was contacted earlier in the day regarding the patient going to a floor bed from the ICU by stroke coordinator Jessica, and advised her to pass along to staff that I would like the patient to remain in the ICU. However shortly after midnight at 12:36 AM, I was contacted by nurse Christina informing me that the patient had arrived on the floor/neurology unit and inquired regarding order clarification for CT angiography of the neck and head. I gave the verbal order to the nurse Christina to kindly move the patient by the back to the ICU or to the neuro ICU with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower extremity symptoms, and advised and recommended CT angiography, notification of Dr.Osui-Bensu, and consideration for vascular surgery consultation. I asked that I kindly be notified if there are any plans to start the patient on anticoagulants. I spoke with Dr. Koerner after that and made the same recommendations above.		

84. At 0036 hrs, Dr. Valadi orders that Jeremy be returned to the ICU or moved to the Neuro ICU.

- PCe 145

Nursing Note by Christina N Orr, RN at 9/9/2019 12:36 AM		
Author: Christina N Orr, RN	Service: —	Author Type: Registered Nurse
Filed: 9/9/2019 12:39 AM	Date of Service: 9/9/2019 12:36 AM	Status: Signed
Editor: Christina N Orr, RN (Registered Nurse)		
Spoke with Dr. Valadi for order clarification. Ordered for CTA to be repeated 9/9/2019 at 12:00 and for patient to be transferred to neuro ICU with Q1 hour neuro checks. Patient is stable at this time.		

- PCe 61

Interval History: Interval history since yesterday evening/early morning hours reviewed. I was contacted earlier in the day regarding the patient going to a floor bed from the ICU by stroke coordinator Jessica, and advised her to pass along to staff that I would like the patient to remain in the ICU. However shortly after midnight at 12:36 AM, I was contacted by nurse Christina informing me that the patient had arrived on the floor/neurology unit and inquired regarding order clarification for CT angiography of the neck and head. I gave the verbal order to the nurse Christina to kindly move the patient by the back to the ICU or to the neuro ICU with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower extremity symptoms, and advised and recommended CT angiography, notification of Dr.Osui-Bensu, and

85. At 0100 hrs, Nurse Christina Orr does not record assessments of Jeremy.

- PCe 765 — last flowsheet times for Sept 8

Data - Sun September 08, 2019					
Row Name	2255	2200	2100	2000	1900
Vitals					
BP	154/85 -MM	155/79 -TM	153/89 -TM	164/85 -TM	159/79 -TM
Temp	96 °F (35.6 °C) -MM	—	—	98.2 °F (36.8 °C) -TM	—
Temp Source	Oral -MM	—	—	Axillary -TM	—
Heart Rate	111 -MM	114 -TM	112 -TM	110 -TM	110 -TM
Resp	20 -MM	26 -TM	(!) 33 -TM	25 -TM	22 -TM
SpO2	95 % -MM	97 % -TM	96 % -TM	97 % -TM	97 % -TM
OTHER					
Pain Score	—	—	—	Six -TM	—

- PCe 674 — first flowsheet times for Sept 9

Data - Mon September 09, 2019 (continued)					
Row Name	0633	06:28:08	06:23:03	0618	06:13:01
Vitals					
BP	169/75 -SH	173/76 -SH	167/77 -SH	177/80 -SH	172/82 -SH
Heart Rate	95 -SH	97 -SH	97 -SH	98 -SH	105 -SH
Resp	23 -SH	24 -SH	23 -SH	22 -SH	20 -SH
SpO2	93 % -SH	96 % -SH	97 % -SH	97 % -SH	98 % -SH
Row Name	0608	0603	0558	0553	0548
Vitals					
BP	159/74 -SH	162/74 -SH	163/73 -SH	162/77 -SH	158/78 -SH
Heart Rate	102 -SH	103 -SH	107 -SH	105 -SH	105 -SH
Resp	27 -SH	27 -SH	24 -SH	24 -SH	22 -SH
SpO2	97 % -SH	98 % -SH	98 % -SH	97 % -SH	95 % -SH
Row Name	0543	05:38:29	0525	0400	0300
Vitals					
BP	158/79 -SH	169/80 -SH	(!) 180/91 -SH	(!) 156/92 -EW	156/80 -EW
Temp	—	—	—	99.6 °F (37.6 °C) -EW	—
Temp Source	—	—	—	Oral -EW	—
Heart Rate	103 -SH	107 -SH	107 -SH	113 -EW	114 -EW
Resp	24 -SH	21 -SH	24 -SH	27 -EW	30 -EW
SpO2	94 % -SH	95 % -SH	96 % -SH	94 % -EW	96 % -EW
Row Name	0230	0219	0200	0123	0120
Vitals					
BP	(!) 147/93 -EW	—	(!) 155/91 -EW	159/88 -EW	—
Temp	—	—	—	99.6 °F (37.6 °C) -EW	—
Temp Source	—	—	—	Oral -EW	—
Heart Rate	114 -EW	—	119 -EW	110 -EW	—
Resp	(!) 33 -EW	—	28 -EW	26 -EW	—
SpO2	93 % -EW	—	94 % -EW	92 % -EW	—
OTHER					
Pain Score	—	Zero -LWA	—	—	Zero -LWA
Custom Formula Data - Mon September 09, 2019					
Row Name	2300	2200	2100	2000	1921

Transfer to Neuro ICU (presumed)

86. At 0104 hrs, Nurse Orr enters an order authorized by Dr. Valadi, to transfer Jeremy to the ICU.

- PCe 206

Transfer patient [392901357]	
Electronically signed by: Nojan Valadi, MD on 09/09/19 23:59	Status: Completed
Mode: Ordering in Telephone with readback mode	Communicated by: Christina N Orr, RN
Ordering user: Christina N Orr, RN 09/09/19 01:04	Ordering provider: Nojan Valadi, MD
Authorized by: Nojan Valadi, MD	
Frequency: Routine Once 09/09/19 01:04 - 1 occurrence	
Questionnaire	
Question	Answer
Level of Care	Intensive Care
Bed request comments	Transfer to Neuro ICU with q 1 hour neuro checks. Continue all orders

87. At approximately 0118 hrs, Nurse Orr transfers Jeremy to another nurse (presumably to the Neuro ICU, although Plaintiffs' counsel sees no explicit statement to that effect in the medical records).

- PCe 145

Nursing Note by Latonya Warren, RN at 9/9/2019 1:18 AM		
Author: Latonya Warren, RN	Service: —	Author Type: Registered Nurse
Filed: 9/9/2019 1:17 AM	Date of Service: 9/9/2019 1:18 AM	Status: Signed
Editor: Latonya Warren, RN (Registered Nurse)		
Pt. Arrived to unit via bed with RN christina. Pt is complaining of being hot. Temp is 99.6.		

88. At the time of the 0118 hrs handoff, Jeremy has been in the care of Nurse Christina Orr since approximately 2300 hrs — about 2 hours and 20 minutes. In that time, Nurse Orr does not record any assessment of Jeremy's right leg.

- See above.

89. At 0118 hrs, Nurse Latonya Warren notes that Jeremy was complaining of being hot, and that his temperature was 99.6.

- PCe 145

Pt. Arrived to unit via bed with RN christina. Pt is complaining of being hot. Temp is 99.6.

90. At 0120 hrs, within minutes of Jeremy being transferred to her care, Nurse Warren performs an assessment of Jeremy — including the vascular status of Jeremy’s right leg.

- PCE 729

Assessment - Mon September 09, 2019 (continued)				
Row Name	0219	0200	0123	0120
L Foot Plantar Flexion	—	—	—	Weak -LWA
RUE Motor Response	—	—	—	Flaccid;Movement to painful stimulus -LWA
RUE Sensation	—	—	—	Pain;Other (Comment);No sensation real painful stimuli arm will jerk. -LWA

- PCE 825

VD	Veronica F Dipippo, SLP
SM	Shannon McIlrath, RN
LWA	Latonya Warren, RN
KS	Kailey M Scott, RN
TM	Tabitha C Miller, RN
SBA	Samantha Rose Brewer, RN
JA	Jacquelyne E Adams

Recognition of Right Leg Ischemia

91. At 0120 hrs, Nurse Warren notes that Jeremy’s right leg has no pedal pulses, and that the skin was cool and cyanotic.

- PCE 731

Assessment - Mon September 09, 2019 (continued)				
Row Name	0219	0200	0123	0120
LUE Peripheralvascular Assessment				
L Radial Pulse	—	—	—	+3 -LWA
RLE Peripheral Vascular Assessment				
R Pedal Pulse	—	—	—	Absent -LWA
LLE Peripheral Vascular Assessment				
L Pedal Pulse	—	—	—	+3 -LWA
Braden Scale				

...

Integumentary / Describe Intact Skin			
Integumentary (WDL)	—	—	WDL -LWA
Skin Color	—	—	Circumoral cyanosis RLE -LWA
Skin Condition/Temp	—	—	Cool;Other (Comment) RLE -LWA
Skin Integrity	—	—	Intact -LWA
Musculoskeletal			

92. At 0138 hrs, Nurse Warren pages Dr. Valluri to notify her that Jeremy had no pedal pulse in his right leg.

- PCe 144

Nursing Note by Latonya Warren, RN at 9/9/2019 1:38 AM		
Author: Latonya Warren, RN	Service: —	Author Type: Registered Nurse
Filed: 9/9/2019 5:39 AM	Date of Service: 9/9/2019 1:38 AM	Status: Signed
Editor: Latonya Warren, RN (Registered Nurse)		
0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.		

93. At 0142 hrs, Dr. Valluri is at Jeremy's bedside.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.
0142: dr. Valluri at bedside.

94. At 0152 hrs, Dr. Cheryl Stephens is at Jeremy's bedside — according to Nurse Warren's note. However, according to Dr. Stephens' note, she is not paged until 0220 hrs (two minutes after she entered her first order for a CT angiogram of Jeremy's leg).

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.
0142: dr. Valluri at bedside.
0152: Dr. Stephens at bedside. Plan to do angiogram.

- PCe 49

Progress Notes by Joshua Koerner, DO at 9/9/2019 2:41 AM

Author: Joshua Koerner, DO

Service: Hospitalist

Author Type: Physician

Filed: 9/9/2019 5:01 AM

Date of Service: 9/9/2019 2:41 AM

Status: Signed

Editor: Joshua Koerner, DO (Physician)

Related Notes: [Original Note by Cheryl Stephens, MD \(Resident\) filed at 9/9/2019 4:11 AM](#)

Paged at 2:20 for absent DP pulses of RLE. Spoke with neurologist Dr. Valadi and IR Dr. Osei Bonsu over the telephone. Ordered stat CTA-RLE for possible occlusion/complications post procedure. On physical examination, patient is alert and oriented, unable to extend RLE, cold to touch below the knee, doppler absent DP pulse to RLE. Spoke with wife over the telephone, updated on condition and received written consent. STAT CTA leg showed occlusion per comment by technologist contrast did not penetrate. Called Dr. Bonsu back to reevaluate.

- PCe 206

CT angiogram lower extremity right [392901359]Electronically signed by: **Cheryl Stephens, MD on 09/09/19 0218**Status: **Discontinued**Ordering user: **Cheryl Stephens, MD 09/09/19 0218**

Ordering provider: Cheryl Stephens, MD

Authorized by: Maura E Gonzalez, MD

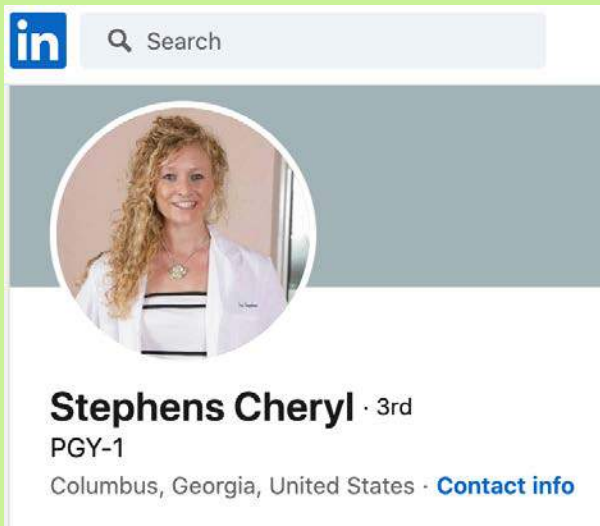
Frequency: Routine Once 09/09/19 0219 - 1 occurrence

Indications of use: Lower leg trauma, neurovasc/lig/tendon injury suspected

Discontinued by: Cheryl Stephens, MD 09/09/19 0219

95. In September 2019, Dr. Cheryl Stephens is in her second year as a Family Medicine resident.

- Cheryl Stephens, MD, LinkedIn page



Stephens Cheryl · 3rd
PGY-1
Columbus, Georgia, United States · [Contact info](#)

Experience



Resident Doctor

Piedmont Columbus Regional
2018 – Present · 3 yrs
Columbus, Georgia Area

Education

**American University of Antigua**

Doctor of Medicine (MD)
2012 – 2017

**Kennesaw State University**

Post-Bach Courses, Biology
2009 – 2010

Courses taken: Virology, Medical Microbiology, Clinical Endocrinology

- Piedmont Columbus Resident Biographies:
<https://www.piedmont.org/locations/piedmont-columbus/residency/resident-profiles>

**Cheryl Stephens, M.D., American University of Antigua**

Cheryl Stephens is from Canton, Georgia. She chose to become a family physician because she wants to be in a practicing medical environment that is an active part of the community. She chose the family medicine program at Piedmont Columbus Regional because it's an unopposed residency program that allows one to jump in and receive in-depth time in each specialty. In her spare time, she enjoys running, biking, swimming, spending time outdoors and with her family. If she weren't a physician, she would have been a southern baker.

96. On the morning of September 9, Dr. Stephens is supervised by Joshua Koerner, DO.

- PCe 49

Progress Notes by Joshua Koerner, DO at 9/9/2019 2:41 AM

Author: Joshua Koerner, DO

Service: Hospitalist

Author Type: Physician

Filed: 9/9/2019 5:01 AM

Date of Service: 9/9/2019 2:41 AM

Status: Signed

Editor: Joshua Koerner, DO (Physician)

Related Notes: Original Note by Cheryl Stephens, MD (Resident) filed at 9/9/2019 4:11 AM

97. In September 2019, Dr. Koerner is a Family Medicine physician less than 1-1/2 years into his career as a licensed physician.


- Georgia Composite Medical Board licensee information

Name: Joshua Nolen Koerner, DO		Designation: DO	
Lic #: 80124	Profession: Physician	Subtype: Full	
Status: Active	Issued: 4/4/2018	Expires: 2/28/2022	
Specialties			
Specialty/Subspecialty	Certifying Board		Primary Specialty?
Family Medicine	ABFM		Y
			N


- US News biography page for Dr. Koerner (accessed 7/1/2021):
<https://health.usnews.com/doctors/joshua-koerner-1157346>

Dr. Joshua N. Koerner DO

Family Medicine
General Family Medicine + 1 more subspecialties

 **Columbus, GA**
Piedmont Columbus Regional Midtown + 1 affiliated hospitals

Male • 0 - 2 Yrs Experience • English



Diagnostic CTA

98. At 0152 hrs, according to Nurse Warren, Dr. Stephens is at bedside and a plan is made to order a CT angiogram of Jeremy's right leg.

- PCe 144

0152: Dr. Stephens at bedside. Plan to do angiogram.

99. According to a later note by Dr. Stephens, she speaks to neurologist Dr. Valadi and interventional radiologist Dr. Osei-Bonsu. (This note is time-stamped 0411 hrs.)

- PCe 49

Progress Notes by Joshua Koerner, DO at 9/9/2019 2:41 AM

Author: Joshua Koerner, DO

Service: Hospitalist

Author Type: Physician

Filed: 9/9/2019 5:01 AM

Date of Service: 9/9/2019 2:41 AM

Status: Signed

Editor: Joshua Koerner, DO (Physician)

Related Notes: Original Note by Cheryl Stephens, MD (Resident) filed at 9/9/2019 4:11 AM

Paged at 2:20 for absent DP pulses of RLE. Spoke with neurologist Dr. Valadi and IR Dr. Osei Bonsu over the telephone. Ordered stat CTA-RLE for possible occlusion/complications post procedure. On physical examination, patient is alert and oriented, unable to extend RLE, cold to touch below the knee, doppler absent DP pulse to RLE. Spoke with wife over the telephone, updated on condition and received written consent. STAT CTA leg showed occlusion per comment by technologist contrast did not penetrate. Called Dr. Bonsu back to reevaluate.

100. According to a later note by Dr. Valadi, he advises "CT angiography, notification of Dr. Osui-Bensu, and consideration for vascular surgery consultation." (Note filed 9/9/2019 at 2329 hrs.)

- PCe 61

Progress Notes by Nojan Valadi, MD at 9/9/2019 9:30 PM

Author: Nojan Valadi, MD

Service: Neurology

Author Type: Physician

Filed: 9/9/2019 11:29 PM

Date of Service: 9/9/2019 9:30 PM

Status: Signed

Editor: Nojan Valadi, MD (Physician)

Neurology Progress Note**Subjective:**

Interval History: Interval history since yesterday evening/early morning hours reviewed. I was contacted earlier in the day regarding the patient going to a floor bed from the ICU by stroke coordinator Jessica, and advised her to pass along to staff that I would like the patient to remain in the ICU. However shortly after midnight at 12:36 AM, I was contacted by nurse Christina informing me that the patient had arrived on the floor/neurology unit and inquired regarding order clarification for CT angiography of the neck and head. I gave the verbal order to the nurse Christina to kindly move the patient by the back to the ICU or to the neuro ICU with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower extremity symptoms, and advised and recommended CT angiography, notification of Dr. Osui-Bensu, and consideration for vascular surgery consultation. I asked that I kindly be notified if there are any plans to start the patient on anticoagulants. I spoke with Dr. Koerner after that and made the same recommendations above. When I contacted nursing staff in ICU today, I was informed that the patient unfortunately had undergone an above-the-knee amputation due to right lower extremity ischemia, myonecrosis, and compartment syndrome

101. According to the same note by Dr. Valadi, he then calls Dr. Koerner and makes the same recommendations.

- PCe 61

with every hour neurochecks. I was contacted at some point after that regarding the patient's right lower extremity symptoms, and advised and recommended CT angiography, notification of Dr. Osui-Bensu, and consideration for vascular surgery consultation. I asked that I kindly be notified if there are any plans to start the patient on anticoagulants. I spoke with Dr. Koerner after that and made the same recommendations above. When I contacted nursing staff in ICU today, I was informed that the patient unfortunately had undergone an above-the-knee amputation due to right lower extremity ischemia, myonecrosis, and compartment syndrome

102. At 0218 hrs, Dr. Stephens enters an order for a CT angiogram of Jeremy's right leg. Dr. Stephens noted, as indications for the CTA, "Lower leg trauma, neurovasc/lig/tendon injury suspected." Dr. Stephens enters this order routine.

- PCe 206

CT angiogram lower extremity right [392901359]		
Electronically signed by: Cheryl Stephens, MD on 09/09/19 0218	Ordering provider: Cheryl Stephens, MD	Status: Discontinued
Ordering user: Cheryl Stephens, MD 09/09/19 0218		
Authorized by: Maura E Gonzalez, MD		
Frequency: Routine Once 09/09/19 0219 - 1 occurrence	Indications of use: Lower leg trauma, neurovasc/lig/tendon injury suspected	
Discontinued by: Cheryl Stephens, MD 09/09/19 0219		

103. At 0219 hrs, a minute later, Dr. Stephens cancels this order.

- PCe 206

CT angiogram lower extremity right [392901359]		
Electronically signed by: Cheryl Stephens, MD on 09/09/19 0218	Ordering provider: Cheryl Stephens, MD	Status: Discontinued
Ordering user: Cheryl Stephens, MD 09/09/19 0218		
Authorized by: Maura E Gonzalez, MD		
Frequency: Routine Once 09/09/19 0219 - 1 occurrence	Indications of use: Lower leg trauma, neurovasc/lig/tendon injury suspected	
Discontinued by: Cheryl Stephens, MD 09/09/19 0219		

104. At 0220 hrs, another minute later, Dr. Stephens re-enters the order for a CT angiogram — ordering it stat, and adding comments, "Post op day 1, thrombectomy, right groin insertion surgical site, absent RLE DP pulse."

- PCe 206

CT angiogram lower extremity right [392901363]		
Electronically signed by: Cheryl Stephens, MD on 09/09/19 0220	Ordering provider: Cheryl Stephens, MD	Status: Completed
Ordering user: Cheryl Stephens, MD 09/09/19 0220		
Authorized by: Maura E Gonzalez, MD		
Frequency: STAT Once 09/09/19 0220 - 1 occurrence	Indications of use: Lower leg trauma, neurovasc/lig/tendon injury suspected	
Order comments: Post op day 1, thrombectomy, right groin insertion surgical site, absent RLE DP pulse		

105. At 0233 hrs, Nurse Warren calls neurologist Dr. Valadi. She writes that Dr. Valadi agrees with the plan for an angiogram.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

106. At 0243 hrs, Nurse Warren calls Jeremy's wife, Beth, to gain consent for a diagnostic CT angiogram.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

107. At 0311 hrs, the diagnostic CT angiogram of Jeremy's right leg is performed.

- PCe 277

CT angiogram lower extremity right [392901364]	Resulted: 09/09/19 0554, Result status: Edited Result - FINAL
Ordering provider: Cheryl Stephens, MD 09/09/19 0220	Resulted by: Erik Richter, MD
Performed: 09/09/19 0311 - 09/09/19 0354	Accession number: PCM6316880
Resulting lab: EMC RAD	
Addenda signed by Erik Richter, MD on 09/09/19 0554	

108. At 0425 hrs Eastern (0325 hrs Central), radiologist Dr. Erik Richter calls Nurse Warren to report his interpretation of the CTA — an “extensive nearly completely occlusive thrombus throughout the right leg arterial vasculature.”

- PCe 277

CT angiogram lower extremity right [392901364]	Resulted: 09/09/19 0554, Result status: Edited Result - FINAL
Ordering provider: Cheryl Stephens, MD 09/09/19 0220	Resulted by: Erik Richter, MD
Performed: 09/09/19 0311 - 09/09/19 0354	Accession number: PCM6316880
Resulting lab: EMC RAD	
Addenda signed by Erik Richter, MD on 09/09/19 0554	
***** ADDENDUM #1 *****	
Clinical findings were discussed with and acknowledged by nurse Tonya Warren on 9/9/2019 3:25 AM CDT.	
Electronically signed by: Erik Richter MD 9/9/2019 4:54 AM CDT Workstation: 103-1191	

- PCe 278

Impression:

Extensive nearly completely occlusive thrombus throughout the right leg arterial vasculature.

Electronically signed by: Erik Richter MD 9/9/2019 3:23 AM CDT Workstation: 103-1191

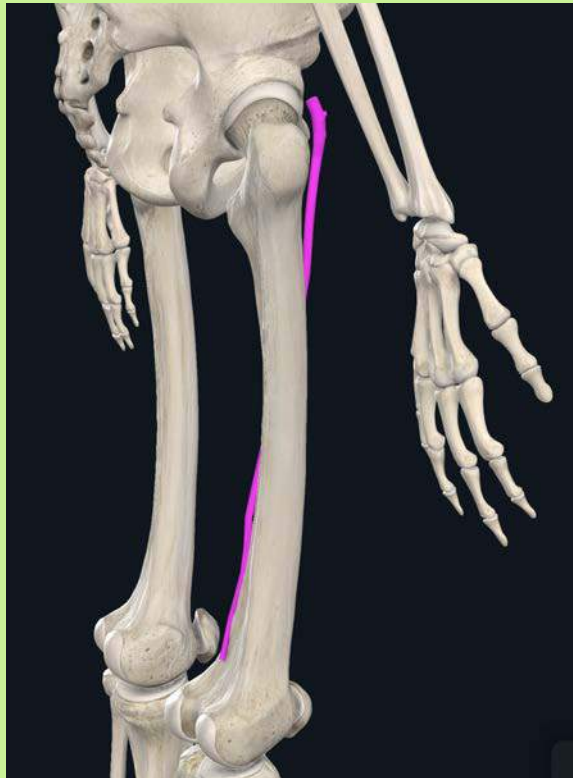
109. Dr. Richter finds, “Right common femoral, femoral, popliteal artery as well as runoff vessels are essentially nearly completely occluded with trace peripheral flow. The profunda branch of the femoral artery is patent.”

- PCE 278

FINDINGS:

There is no acute fracture. Soft tissues are unremarkable. The bilateral common iliac and external iliac arteries are patent. Right common femoral, femoral, popliteal artery as well as runoff vessels are essentially nearly completely occluded with trace peripheral flow. The profunda branch of the femoral artery is patent.

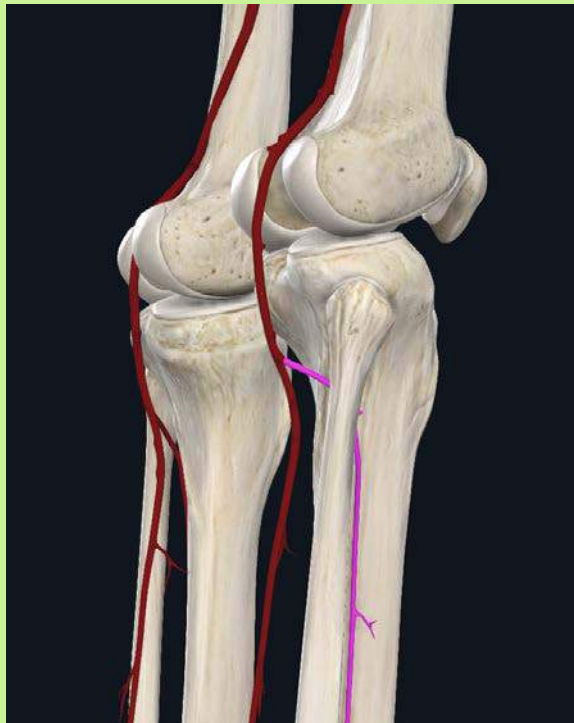
110. The common femoral artery runs through the upper leg, from the groin to the knee.



111. The popliteal artery runs behind the knee.



112. The downstream arteries include the anterior and posterior tibial arteries.



113. At 0425 hrs, Nurse Warren writes a note to record her conversation with Dr. Richter.

- PCE 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

114. At 0428 hrs, Nurse Warren calls Dr. Stephens to convey what Dr. Richter reported.

- PCE 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

0428-spoke with Dr. Stephens about plans for IR intervention plans and reported Dr. Richter's report.

115. By 0428 hrs, it has been over three hours since Jeremy was found (at 0120 hrs) to have no pedal pulse in his right leg.

- See above

Thrombectomy Attempt

116. At 0428 hrs, Nurse Warren and Dr. Stephens discuss a plan for a therapeutic (not solely diagnostic) interventional radiology procedure.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

0428-spoke with Dr. Stephens about plans for IR intervention plans and reported Dr. Richter's report.

117. After learning of the CTA findings, Dr. Stephens calls interventional radiologist Dr. Osei-Bonsu to reevaluate.

- PCe 49

Paged at 2:20 for absent DP pulses of RLE. Spoke with neurologist Dr. Valadi and IR Dr. Osei Bonsu over the telephone. Ordered stat CTA-RLE for possible occlusion/complications post procedure. On physical examination, patient is alert and oriented, unable to extend RLE, cold to touch below the knee, doppler absent DP pulse to RLE. Spoke with wife over the telephone, updated on condition and received written consent. STAT CTA leg showed occlusion per comment by technologist contrast did not penetrate. Called Dr. Bonsu back to reevaluate.

118. At 0438 hrs, Nurse Warren calls Jeremy's wife, Beth, to obtain consent for an interventional radiology procedure. Beth consents.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

0428-spoke with Dr. Stephens about plans for IR intervention plans and reported Dr. Richter's report.

0438- called Beth Jones (wife) to gain consent for IR procedure. Consent was obtained.

119. At 0455 hrs, interventional radiologist Dr. Samuel Osei-Bonsu is at Jeremy's bedside.

- PCe 144

0138: paged Dr. Valluri to notify her that I cannot find pedal or any other lower leg pulses.

0142: dr. Valluri at bedside.

0152: Dr. Stephens at bedside. Plan to do angiogram.

0233: spoke with Dr. Valadi regarding angiogram plans. He agrees with plan. He would like to be notified if there are any plans to place pt on blood thinners.

0243: called wife to gain consent for diagnostic procedure. Obtained consent.

0425: Dr. Richter called to report results of angiogram. Reported right common femoral, femoral, popliteal artery as well as all other vessels are nearly completely occluded.

0428-spoke with Dr. Stephens about plans for IR intervention plans and reported Dr. Richter's report.

0438- called Beth Jones (wife) to gain consent for IR procedure. Consent was obtained.

0455 dr. Onsei- Bonsu At bedside.

120. At 0500 hrs, Nurse Warren calls Beth to notify her of the planned procedure.

- PCe 145

Nursing Note by Latonya Warren, RN at 9/9/2019 1:38 AM (continued)

0500- Called wife to notify her of stat procedure.

121. At 0512 hrs, Nurse Warren takes Jeremy to the interventional radiology suite.

- PCe 145

0500- Called wife to notify her of stat procedure.

0512- Patient taken to IR via Bed with Tonya Warren, RN. Handoff was done with Sarah, RN.

122. Dr. Osei-Bonsu writes that “Written and oral informed consent [for an IR angiogram of Jeremy’s left leg] was obtained after discussing the risks, benefits, and alternatives.”

- PCe 278

PROCEDURE:

Written and oral informed consent was obtained after discussing the risks, benefits, and alternatives. The patient was prepped and draped in the usual sterile fashion adhering to maximum sterile barrier techniques. Cap, mask, sterile gown and gloves, hand hygiene, large sterile sheet and 2% chlorhexidine (or acceptable alternative antiseptics per current guidelines) for cutaneous antiseptics, sterile ultrasound probe and sterile ultrasound gel were used. 1% lidocaine was used for local anesthetic.

123. At 0530 hrs, Dr. Osei-Bonsu begins an IR angiogram of Jeremy’s right leg.

- IR angiogram Exam Protocol summary (from DICOM image files)

Exam Protocol											

Patient Info:											
Name: JONES, JEREMY						Sex: M ID: 907614844					

Patient Position: HFS						09-Sep-19 05:30:08					

2	DSA	FIXED	CARE RT	Extremity	6s	2F/s	09-Sep-19	05:59:07			
A	70kV	304mA	157.5ms	0.1CL small 0.1Cu 48cm	667.72µGym ²	34.3mGy	0LAO	1CAU	12F		
4	DSA	FIXED	CARE RT	Extremity	7s	2F/s	09-Sep-19	06:06:29			
A	71kV	298mA	160.7ms	0.1CL small 0.1Cu 48cm	1356.5µGym ²	37.8mGy	0LAO	1CAU	13F		
6	DSA	FIXED	CARE RT	Extremity	8s	2F/s	09-Sep-19	06:36:23			
A	70kV	305mA	151.7ms	0.3CL small 0.1Cu 48cm	1425.9µGym ²	39.7mGy	0LAO	1CAU	15F		
11	DSA	FIXED	CARE RT	Extremity	5s	2F/s	09-Sep-19	07:25:22			
A	70kV	307mA	137.3ms	0.4CL small 0.1Cu 48cm	548.47µGym ²	24.6mGy	1LAO	0CRA	10F		
12	PERI	(4)	PERIMAN	Rt Leq PERI	*****	2F/s	09-Sep-19	07:47:33			
A	67kV	303mA	67.0ms	0.4CL small 0.1Cu 48cm	30.34µGym ²	1.0mGy	0LAO	0CRA	1F		
12	PERI	(3)	PERIMAN	Rt Leq PERI	3s	2F/s	09-Sep-19	07:47:35			
A	65kV	312mA	86.1ms	0.4CL small 0.2Cu 48cm	158.68µGym ²	5.3mGy	0LAO	0CRA	8F		
12	PERI	(2)	PERIMAN	Rt Leq PERI	7s	3F/s	09-Sep-19	07:47:40			
A	70kV	295mA	79.5ms	0.4CL small 0.0Cu 48cm	957.96µGym ²	32.3mGy	0LAO	0CRA	22F		
12	PERI	(1)	PERIMAN	Rt Leq PERI	3s	3F/s	09-Sep-19	07:47:43			
A	80kV	253mA	90.7ms	0.4CL small 0.0Cu 48cm	939.87µGym ²	31.7mGy	0LAO	0CRA	10F		

124. Dr. Osei-Bonsu finds intimal injury of the right common femoral artery with thrombosis of the SFA. The intima is the innermost part of the artery.

- PCE 278

Under ultrasound guidance, the patent left common femoral artery was accessed with a 21-gauge needle in a retrograde fashion. A copy of the sonographic image was stored. An Omni flush catheter was advanced over a wire into the abdominal aorta to the level of the bifurcation. Using an 035 glide wire up and over access was achieved into the right external iliac artery. The Omni flush catheter was exchanged over a wire for a 4 French glide catheter. The Glidewire was exchanged for a long Amplatz wire. The glide catheter was then exchanged for a 7 French 35 cm vascular sheath. The wire was removed and a right lower extremity runoff was performed. There was intimal injury of the right common femoral artery with thrombosis of the SFA. The occlusion was crossed with a Glidewire and assistance of a 4 French glide catheter. Access into the distal popliteal artery was obtained. Over the wire,

- Springer Encyclopedia of Intensive Care Medicine, <https://shorturl.at/lvS05>

Definition

The wall of an artery is composed of a tunica intima, tunica media, and a tunica adventitia. The intima is the innermost layer of an artery (or vein) and is composed of endothelium (the cells lining the lumen), a subendothelial layer of connective tissue, and an elastica interna. Either blunt or penetrating trauma can lead to a tear in the endothelium and other layers of the intima. A piece of intima still attached to the media may result and will project into the lumen of the artery as an intimal flap.

125. Dr. Osei-Bonsu performs a partial thrombectomy using an AngioJet device.

- PCE 278

The glide catheter was then exchanged for a 7 French 35 cm vascular sheath. The wire was removed and a right lower extremity runoff was performed. There was intimal injury of the right common femoral artery with thrombosis of the SFA. The occlusion was crossed with a Glidewire and assistance of a 4 French glide catheter. Access into the distal popliteal artery was obtained. Over the wire, aspiration thrombectomy was performed with a 6 French solent catheter via the AngioJet device.

126. An AngioJet is a catheter-based device to break up a blood clot using high pressure saline and pulsing action to break apart and remove the blood clot.

- MercyHealth website, <https://shorturl.at/fhoES>

What is Angiojet?

An AngioJet™ thrombectomy is a catheter-based procedure used to treat thrombolysis. Thrombus is another word for a blood clot and lysis means to break apart. An Angiojet thrombectomy is used to break up a blood clot that is causing an obstruction of blood flow in an artery. Jet-pump mechanics are used to inject high pressure saline to break apart and remove the blood clot.

Why is this procedure done?

An AngioJet™ thrombectomy is performed to break up dangerous or obstructive blood clots in the coronary and peripheral arteries.

127. In the upper part of the femoral artery, Dr. Osei-Bonsu performs an angioplasty — using a catheter and balloon to widen the area of the artery in which blood can flow.

- PCE 278

aspiration thrombectomy was performed with a 6 French solent catheter via the AngioJet device. Angioplasty with an 8mm balloon was performed of the right common femoral and superficial femoral artery. A 10 mm x 38 cm atrium vascular stent was deployed at the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts

128. Dr. Osei-Bonsu places a 38-centimeter (15 inch) long stent in the upper part of the femoral artery.

- PCE 278

aspiration thrombectomy was performed with a 6 French solent catheter via the AngioJet device. Angioplasty with an 8mm balloon was performed of the right common femoral and superficial femoral artery. A 10 mm x 38 cm atrium vascular stent was deployed at the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts

129. These procedures improve blood flow in the upper femoral artery, where the stent was placed.

- PCE 278

Angioplasty with an 8mm balloon was performed of the right common femoral and superficial femoral artery. A 10 mm x 38 cm atrium vascular stent was deployed at the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed.

130. The clot remained in the lower femoral artery and popliteal artery.

- PCE 278

the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed. Despite multiple attempts there was still persistent thrombosis of the distal SFA and popliteal artery. Decision was then made to abort procedure and seek vascular surgical consultation.

131. Despite multiple attempts to remove the clot in the lower femoral artery and popliteal artery, the clot remains.

- PCE 278

flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed. Despite multiple attempts there was still persistent thrombosis of the distal SFA and popliteal artery. Decision was then made to abort procedure and seek vascular surgical consultation.

132. Dr. Osei-Bonsu finally aborts the thrombectomy and consults a vascular surgeon.

- PCE 278

flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed. Despite multiple attempts there was still persistent thrombosis of the distal SFA and popliteal artery. Decision was then made to abort procedure and seek vascular surgical consultation.

133. At the end of the procedure, Jeremy has no discernible blood flow below his right knee.

- PCE 278

FINDINGS:
A. Right lower extremity runoff: Significant intimal injury seen at the level of the right common femoral artery with thrombosis of the superficial femoral artery and the popliteal artery. No flow was visualized below the knee.
B. Status post stent placement within the right common femoral artery with improved antegrade flow into the proximal superficial femoral artery. Following multiple attempts at mechanical thrombectomy, there was improved flow in the superficial femoral artery with persistent thrombosis of the distal SFA and popliteal artery. Again no vascular flow seen below the knee.

134. The IR angiogram procedure lasts through 0816 hrs. The procedure took approximately 2 hours and 45 minutes (having begun at 0530 hrs).

- Exam Protocol summary (from DICOM file)

Exam Protocol											

Patient Info:											
Name: JONES, JEREMY						Sex: M ID: 907614844					

14	DSA	FIXED	RT Extremity			15s	2F/s	09-Sep-19 08:05:22			
A	60kV	353mA	142.4ms	0.4CL	small	0.6Cu	48cm	235.54µGym²	6.4mGy	0LAO	0CRA 28F
15	DSA	FIXED	RT Extremity			16s	2F/s	09-Sep-19 08:16:39			
A	60kV	354mA	140.5ms	0.4CL	small	0.6Cu	48cm	257.88µGym²	7.0mGy	0LAO	0CRA 31F
Accumulated exposure data											
Performing Physician:								09-Sep-19 09:03:48			
Total Fluoro: 23.9min								Exposures: 10			
A Fluoro: 23.9min								Total: 26978µGym² 881.9mGy			
20227µGym² 655.9mGy								Total: 26978µGym² 881.9mGy			
=====											

- Radiology image metadata (from DICOM file)

▼ Jones Jeremy Blake	9/9/19, 5:38 AM
FL Enh. Con.	9/9/19, 5:45 AM
IR ANGIOGRAM LOWER EXTREMITY RIGHT	9/9/19, 5:38 AM
CARE RT Extremity	9/9/19, 5:59 AM
CARE RT Extremity	9/9/19, 5:59 AM
FL Enh. Con.	9/9/19, 6:03 AM
CARE RT Extremity	9/9/19, 6:06 AM
CARE RT Extremity	9/9/19, 6:06 AM
FL Enh. Con.	9/9/19, 6:19 AM
CARE RT Extremity	9/9/19, 6:36 AM
CARE RT Extremity	9/9/19, 6:36 AM
FL Enh. Con.	9/9/19, 6:54 AM
FL Enh. Con.	9/9/19, 6:54 AM
FL Enh. Con.	9/9/19, 7:12 AM
FL Enh. Con.	9/9/19, 7:12 AM
FL Enh. Con.	9/9/19, 7:14 AM
FL Enh. Con.	9/9/19, 7:24 AM
CARE RT Extremity	9/9/19, 7:25 AM
Rt Leg PERI	9/9/19, 7:47 AM
Rt Leg PERI	9/9/19, 7:47 AM
Rt Leg PERI	9/9/19, 7:47 AM
Rt Leg PERI	9/9/19, 7:47 AM
FL Angio	9/9/19, 8:01 AM
RT Extremity	9/9/19, 8:05 AM
RT Extremity	9/9/19, 8:16 AM
Exam Protocol SR	9/9/19, 9:04 AM

135. Around 0816 hrs, Dr. Osei-Bonsu seeks a vascular surgery consultation from Dr. Bruce Brennaman.

- PCE 278

IR angiogram lower extremity right [392901368]	Resulted:
Ordering provider: Cheryl Stephens, MD 09/09/19 0430	Resulted by: Samuel A. Osei-Bonsu, MD
Performed: 09/09/19 0913 - 09/09/19 0914	Accession number: PCM6316996
Resulting lab: EMC RAD	
Narrative:	
EXAMINATION:	
1. Ultrasound-guided vascular access	
2. Right lower extremity angiogram	
3. Mechanical thrombectomy of the right superficial and popliteal artery	
4. Angioplasty of the right common, superficial femoral and popliteal artery	
5. Conscious sedation	
COMPARISON: None	
HISTORY: Acute right limb ischemia	

...

Under ultrasound guidance, the patent left common femoral artery was accessed with a 21-gauge needle in a retrograde fashion. A copy of the sonographic image was stored. An Omni flush catheter was advanced over a wire into the abdominal aorta to the level of the bifurcation. Using an 035 glide wire up and over access was achieved into the right external iliac artery. The Omni flush catheter was exchanged over a wire for a 4 French glide catheter. The Glidewire was exchanged for a long Amplatz wire. The glide catheter was then exchanged for a 7 French 35 cm vascular sheath. The wire was removed and a right lower extremity runoff was performed. There was intimal injury of the right common femoral artery with thrombosis of the SFA. The occlusion was crossed with a Glidewire and assistance of a 4 French glide catheter. Access into the distal popliteal artery was obtained. Over the wire, aspiration thrombectomy was performed with a 6 French solvent catheter via the AngioJet device. Angioplasty with an 8mm balloon was performed of the right common femoral and superficial femoral artery. A 10 mm x 38 cm atrium vascular stent was deployed at the site of intimal injury in the right common femoral artery. There was improved antegrade flow on post stent deployment angiograms. However there was still persistent thrombosis of the distal superficial femoral artery and popliteal artery. Further attempts at aspiration mechanical thrombectomy of the distal SFA and popliteal artery as well as angioplasty with a 8 and 6mm balloon was performed. Despite multiple attempts there was still persistent thrombosis of the distal SFA and popliteal artery. Decision was then made to abort procedure and seek vascular surgical consultation.

All catheters, wires and sheaths were removed. Hemostasis was achieved with manual compression. A clean dressing was applied to the access site.

FINDINGS:

A. Right lower extremity runoff: Significant intimal injury seen at the level of the right common femoral artery with thrombosis of the superficial femoral artery and the popliteal artery. No flow was visualized below the knee.

B. Status post stent placement within the right common femoral artery with improved antegrade flow into the proximal superficial femoral artery. Following multiple attempts at mechanical thrombectomy, there was improved flow in the superficial femoral artery with persistent thrombosis of the distal SFA and popliteal artery. Again no vascular flow seen below the knee.

- PCE 26

Vascular Surgery Consultation
Jeremy Blake Jones
907614844
Surgeon: Bruce H. Brennaman, MD
Referring Physician: Dr. Samuel Osei-Bonsu
Date of Consultation: 9/9/2019

Reason for Consultation: Jeremy Blake Jones is a 33 y.o. male, seen in consultation at the request of Dr. Samuel Osei-Bonsu, for the evaluation of acute right lower extremity ischemia. Current symptoms are positive for cold, pulseless foot. Patient denies complaints of none as he is sedated. Onset of symptoms was between 2030 hours and 2230 hours 9/8/2019 based on history. Symptoms are currently worsening. Aggravating factors include unknown. Alleviating factors include unknown. This history is provided by spouse/SO, relative(s) and Dr. Osei-Bonsu. Patient seen yesterday for acute stroke with right side weakness and slurred speech. Outside of window for TPA. Cerebral angio and thrombectomy done with closure device placed right groin. Last noted palpable pulses 2030 hours with wife/sister seeing and reporting change in LLE BK with pale cool skin and discoloration of calf. Told by nurse patient pulses palpable and area of calf was a "charlie horse" per wife. Report of loss of RLE pulses at 0130 hours and caring physicians called. CTA ordered and findings suggestive of "flap" seen in right CFA. Dr. Osei-Bonsu called around 4 AM and patient taken to IR with CFA stent for suspected dissection CFA and flow restored to level of knee. Unable to show contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. NO movement or sensation RLE. Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

136. At some point after the IR procedure, Jeremy is taken to the operating room.

- PCe 278-79

The patient was transferred to the OR in stable condition.

ESTIMATED BLOOD LOSS: Minimal

SPECIMENS: None

Vascular Surgery Consult & Amputation

137. After the IR procedure, vascular surgeon Bruce H. Brennaman, MD comes to examine Jeremy.

- PCe 26

"charlie horse" per wife. Report of loss of RLE pulses at 0130 hours and caring physicians called. CTA ordered and findings suggestive of "flap" seen in right CFA. Dr. Osei-Bonsu called around 4 AM and patient taken to IR with CFA stent for suspected dissection CFA and flow restored to level of knee. Unable to show contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. NO movement or sensation RLE. Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

138. Dr. Brennaman concludes that Jeremy's leg symptoms began between 2030 hrs and 2230 hrs.

- PCe 26

Reason for Consultation: Jeremy Blake Jones is a 33 y.o. male, seen in consultation at the request of Dr. Samuel Osei-Bonsu, for the evaluation of acute right lower extremity ischemia . Current symptoms are positive for cold, pulseless foot. Patient denies complaints of none as he is sedated. Onset of symptoms was between 2030 hours and 2230 hours 9/8/2019 based on history. Symptoms are currently worsening. Aggravating factors include unknown. Alleviating factors include unknown. This history is provided by spouse/SO, relative(s) and Dr. Osei-Bonsu. Pateint seen yesterday for acute stroke with right side weakness and slurred speech. Outside of window for TPA. Cerebral angio and thrombectomy done with closure device placed right groin. Last noted palpable pulses 2030 hours with wife/sister seeing and reporting change in LLE BK with pale cool skin and discoloration of calf. Told by nurse patient pulses palpable and area of calf was a "charlie horse" per wife. Report of loss of RLE pulses at 0130 hours and caring physicians called. CTA

139. When Dr. Brennaman examines him, Jeremy's foot is cold and pulseless, and Jeremy's symptoms are worsening.

- PCe 26

Reason for Consultation: Jeremy Blake Jones is a 33 y.o. male, seen in consultation at the request of Dr. Samuel Osei-Bonsu, for the evaluation of acute right lower extremity ischemia . Current symptoms are positive for cold, pulseless foot. Patient denies complaints of none as he is sedated. Onset of symptoms was between 2030 hours and 2230 hours 9/8/2019 based on history. Symptoms are currently worsening. Aggravating factors include unknown. Alleviating factors include unknown. This history is provided by

- PCe 28

Physical Examination:

General- appears stated age and sedated

Eyes – lids and lashes normal, conjunctivae and sclerae normal, corneas clear and pupils equal, round, reactive to light and accomodation

Mouth- mucous membranes moist, pharynx normal without lesions

Neck – nontender, no masses, no stridor, no JVD, thyroid nonenlarged, carotid bruit left

Lymph/Heme - no lymphadenopathy

Lungs- normal air entry, lungs clear to auscultation, air entry: good and no rales, rhonchi or wheezing

Cardiac – regular rate and rhythm, S1, S2 normal, no murmur, click, rub or gallop and normal apical impulse

Chest- Normal

Abdomen – abdomen soft, normal active bowel sounds, no abnormal masses, no hepatosplenomegaly, no bruits and no hernias

Extremities – Cold, pulseless right leg with changes of myonecrosis and compartment syndrome seen. No motor or sensation right BK lower extremity. Diminished strength right upper extremity from stroke. Left side without issue.

Skin/Nails– RLE BK consistent with compartment syndrome and myonecrosis.

Musculoskeletal- no joint tenderness, deformity or swelling, abnormal exam of right U/LE, abnormal active range of motion of reduced right U/LE, abnormal muscle strength and tone of right U/L extremities

Nervous/ Sensory– Unable to obtain

Psych- sedated

140. On Dr. Brennaman's examination, Jeremy has no movement or sensation in his right foot.

- PCe 26

taken to IR with CFA stent for suspected dissection CFA and flow restored to level of knee. Unable to show contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. NO movement or sensation RLE. Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

141. Earlier, neurologist Dr. Valadi's examination showed Jeremy had 4/5 motor strength in his right foot.

- PCe 26

contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. NO movement or sensation RLE. Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

- PCe 23

Consults by Nojan Valadi, MD at 9/8/2019 12:45 PM (continued)

Mental Status: Alert, a phasic, oriented to self, hospital, but not hospital name, March 2013, Speech: No dysarthria. N Language: Is able to name 3 out of 5 objects, unable to repeat, is able to follow some simple commands, perseverates, and is unable to follow more complex commands. Attention: No neglect or inattention.

Cranial Nerves II-XII: PERRL, EOMI, right homonymous hemianopsia, facial sensation diminished on the right, minimal right-sided nasolabial fold flattening, tongue midline, palate elevates symmetrically

Motor: Strength: Patient with mildly increased tone distally in the right hand, 2/5 proximal strength in the right upper extremity, 4/5 distally, 0/5 right lower extremity proximally, 2/5 knee extension, 4/5 foot dorsiflexion plantarflexion.

Deep tendon reflexes: 3+ on the right, 1+ in the left. Toes upgoing on the right, downgoing on the left.

Coordination: Finger-to-nose intact on the left.

Gait and Romberg not tested.

142. On examining Jeremy, Dr. Brennaman concludes that Jeremy's lower right leg is probably not viable.

- PCe 26

contrast below TPT and I was called to evaluate. Patient sedated but arousable and moves toes LLE. NO movement or sensation RLE. Report of Neurologist showed right foot 4/5 on exam at ankle and foot. Now no motor or sensory. Initial appearance of RLE consistent with nonviable RLE with compartment syndrome and likely myonecrosis.

- PCe 29

Impression:

Patient with likely non-salvageable RLE from prolonged acute ischemia. See above for details. Patient with normal flow to RLE prior to events. Remainder of extremities with normal resting arterial flow.

Plan:

To OR emergently for RLE exploration and, if viable fasciotomy and revascularization and if non-salvageable RLE will perform AKA. Discussed at length with patient's wife and family with attendant risks, benefits of surgery and nonop treatment with risks and benefits. Wife us nurse and understands strong likelihood of non-salvageable RLE agreeing to AKA. All questions answered. Will proceed to OR.

143. Dr. Brennaman proceeds to the operating room for an emergency exploratory surgery with the hope of saving Jeremy's leg, but anticipating that amputation is likely necessary.

- PCe 29

Plan:

To OR emergently for RLE exploration and, if viable fasciotomy and revascularization and if non-salvageable RLE will perform AKA. Discussed at length with patient's wife and family with attendant risks, benefits of surgery and nonop treatment with risks and benefits. Wife us nurse and understands strong likelihood of non-salvageable RLE agreeing to AKA. All questions answered. Will proceed to OR.

144. At 0852 hrs, Dr. Brennaman enters an order for cefazolin (an antibiotic) as part of pre-surgery procedures.

- PCe 160

ceFAZolin (ANCEF) injection 2 g [393006641]

Electronically signed by: Bruce H Brennaman, MD on 09/09/19 0852	Status: Discontinued
Ordering user: Bruce H Brennaman, MD 09/09/19 0852	Ordering provider: Bruce H Brennaman, MD
Authorized by: Bruce H Brennaman, MD	Ordered during: ED to Hosp-Admission (Discharged) on 09/08/2019
Frequency: Routine +1HR 09/09/19 0851 - 09/09/19 0904	Indications of use: Surgical Prophylaxis
Discontinued by: Jillian Davis, PharmD 09/09/19 0904 [Order Clean up]	
Diagnoses	
Ischemia of right lower extremity [I99.8] (Added automatically from request for surgery 779506)	

WebMD: <https://www.webmd.com/drugs/2/drug-17325/cefazolin-intravenous/details>

Cefazolin is an antibiotic used to treat a wide variety of **bacterial infections**. It may also be used before and during certain surgeries to help prevent infection. This **medication** is known as a cephalosporin antibiotic. It works by stopping the growth of bacteria.

145. At 0916 hrs, Jeremy is taken to a holding room from interventional radiology.

- PCe 144

Nursing Note by Tracy C. Frailey, RN at 9/9/2019 10:47 AM

Author: Tracy C. Frailey, RN Service: Other Author Type: Registered Nurse
 Filed: 9/9/2019 10:50 AM Date of Service: 9/9/2019 10:47 AM Status: Signed
 Editor: Tracy C. Frailey, RN (Registered Nurse)

Received to holding room at 0916 from ir on hospital bed. Lethargic, awakens to verbal stimuli, opens eyes. Speech clear but does not answer questions appropriately, follows most simple commands. Unable to lift right arm but has weak grip right hand. Right calf is hardened, rle very pale with no palpable pulse, unable to move right leg.. Moving left side ext well.. No c/o at this time. Spouse at bedside. Consents signed per spouse. sr up x 3. Cont to assess closely. Anesthesia at bedside..

146. At 0953 hrs, the anesthesia pre-procedure is complete.

- PCe 149

Events		
Date	Time	Event
9/9/2019	0953	Anesthesia Pre Procedure Complete
	1027	Anesthesia Start
	1027	Patient in Room
	1027	Start Data Collection
	1044	Induction
	1045	Intubation
	1117	Patient Ready for Procedure
	1124	Procedure Start
	1312	Begin Emergence
	1312	Extubation
	1312	Stop Data Collection

147. At 1027 hrs, anesthesiologist Paige H. King, MD, and anesthesiologist PA Jeb Bridges begin anesthesia for Jeremy.

- PCe 149

Responsible Staff				09/09/19
Name	Role	Begin	End	
Jeb Bridges, PA-AA	Anesthetist	1027	1136	
Paige H King, MD	AnesthesiaMD	1027	1325	
Macy Andrews, CRNA	Anesthetist	1136	1206	
Jeb Bridges, PA-AA	Anesthetist	1206	1325	

Events		
Date	Time	Event
9/9/2019	0953	Anesthesia Pre Procedure Complete
	1027	Anesthesia Start
	1027	Patient in Room
	1027	Start Data Collection

148. At 1124 hrs, Dr. Brennaman begins the operation.

- PCe 149

	1045	Intubation
	1117	Patient Ready for Procedure
	1124	Procedure Start
	1312	Begin Emergence
	1312	Extubation
	1312	Stop Data Collection

149. At 1312 hrs, the surgery is over and the anesthesia team begins bringing Jeremy out of anesthesia.

- PCe 149

1117	Patient Ready for Procedure
1124	Procedure Start
1312	Begin Emergence
1312	Extubation
1312	Stop Data Collection

150. When Jeremy regains consciousness, his right leg has been amputated above the knee.

- PCe 141

Brief Op Note by Bruce H Brennaman, MD at 9/9/2019 1:00 PM (continued)							
Procedure(s) (LRB):							
EXPLORATION, ARTERY, FEMORAL, WITH REPAIR OR EMBOLECTOMY (Right)							
AMPUTATION, ABOVE KNEE (Right)							
Specimen(s): Right leg AKA							
Specimens							
ID	Source	Type	Tests	Collected By	Collected At	Frozen?	
1	Leg, Right	Tissue	<ul style="list-style-type: none"> SURGICAL PATHOLOGY EXAM 	Bruce H Brennaman, MD	9/9/19 1239	No	
Description: Above Knee amputation							

151. During the exploratory surgery, Dr. Brennaman had found that the right lower leg had no viable muscle. “The entire 4 compartments of the right lower extremity showed no viable muscle whatsoever. There was no movement to electric current. The muscle was dark red and all 4 compartments were tightly encumbered resulting in a dead leg.”

- PCe 35

Op Note signed by Bruce H Brennaman, MD at 9/11/2019 5:20 AM					
Author: Bruce H Brennaman, MD	Service: Vascular Surgery	Author Type: Physician		Status: Signed	
Filed: 9/11/2019 5:20 AM	Date of Service: 9/9/2019 12:00 AM	Trans ID: 11270578			
Editor: Bruce H Brennaman, MD (Physician)	Trans Doc Type: Operative Note	Trans Status: Available			
Dictation Time: 9/9/2019 1:19 PM	Trans Time: 9/9/2019 11:08 PM				

...

FINDINGS: The entire 4 compartments of the right lower extremity showed no viable muscle whatsoever. There was no movement to electric current. The muscle was dark red and all 4 compartments were tightly encumbered resulting in a dead leg.

152. In preparation for the surgery, hospital staff had placed a Foley catheter in Jeremy's bladder. Dr. Brennaman noted that Jeremy's urine had a dark color similar to Coca-Cola. The color indicated myoglobinuria (an excess amount of myoglobin in the urine, mostly caused by muscle breakdown).

- PCe 36

left thigh and abdomen were prepped and draped in sterile fashion by Ancef solution. A Foley catheter had been placed at the beginning of the case and the patient had changes that were most consistent with myoglobinuria with very dark Coco Cola appearing urine. His IV fluids were continued with bicarbonate in addition. The patient's mid posterior compartment was

153. During the surgery, Dr. Brennaman found the muscle very dark, cold, and unresponsive to stimulation.

- PCe 36

with very dark Coco Cola appearing urine. His IV fluids were continued with bicarbonate in addition. The patient's mid posterior compartment was then exposed through a longitudinal incision. The muscle was very dark, cold, and did not respond to any stimulation. I checked in several places and pulled the muscle down to completely expose the area of the popliteal artery and again there was no muscle function noted. I then opened the anterior compartment and extended that down into the lateral compartment, finding the same finding with all muscle appearing to be nonviable and nonreactive. At this point, I elected to proceed to an above-knee amputation. With that in mind, instruments were swapped and a 2-0 silk tie

154. Dr. Brennaman proceeded to amputate Jeremy's right leg above the knee.

- PCe 36

artery and again there was no muscle function noted. I then opened the anterior compartment and extended that down into the lateral compartment, finding the same finding with all muscle appearing to be nonviable and nonreactive. At this point, I elected to proceed to an above-knee amputation. With that in mind, instruments were swapped and a 2-0 silk tie was used to create a fish mouth type marking for amputation. The entire area of exposure was incised sharply and cautery used to get through the

**AFFIDAVIT OF PAUL COLLIER, MD FACS REGARDING
TREATMENT OF JEREMY JONES AT PIEDMONT COLUMBUS
REGIONAL MIDTOWN HOSPITAL**

PERSONALLY APPEARS before the undersigned authority, duly authorized to administer oaths, comes PAUL COLLIER, MD FACS, who after first being duly sworn, states as follows:

Introduction

1. This affidavit addresses medical negligence that occurred during Jeremy Jones' admission at Piedmont Columbus Regional Midtown Hospital that began on September 8, 2019.
2. This is a preliminary affidavit for a limited purpose. I understand the limited purpose of this affidavit is to satisfy the requirements of Georgia statute OCGA § 9-11-9.1.
3. This affidavit addresses specific matters that Plaintiff's counsel have asked me to address. I have not attempted to identify all standard-of-care violations. I have not attempted to state every causation opinion I have.
4. I use the term "standard of care" to refer to that degree of care and skill ordinarily exercised by members of the medical profession generally under the same or similar circumstances and like surrounding conditions as pertained to the medical providers I discuss here.
5. Plaintiff's counsel drafted this affidavit after consulting with me, and I reviewed the draft and edited it to make sure it correctly states my views. I have not, however, edited this affidavit for style, so it does not necessarily "sound" like me.
6. I would not expect my substantive opinions to be unique to me. The matters addressed here are well-known, and I would expect many other physicians to hold the same opinions I express below.
7. I hold all the opinions expressed below to a reasonable degree of medical certainty — that is, more likely than not.

8. If additional information becomes available later, my views may change.

9. I understand that Plaintiff's counsel will provide this affidavit to the Defendants, and that their insurance company will hire lawyers and medical experts to review this case and to review this affidavit. I invite the Defense to communicate with me by letter, copied to Plaintiff's counsel, if the Defense believes I have not been given, or have overlooked or misconstrued, any relevant information — for example, data points the Defense believes I have overlooked in the medical records.

10. The Defense need not wait to take my deposition to communicate with me. I will consider any information the Defense wishes to bring to my attention by letter. If appropriate, I will then provide a supplemental affidavit.

Qualifications

11. I am more than 18 years old, suffer from no legal disabilities, and give this affidavit based upon my own personal knowledge and belief.

12. I do not recite my full qualifications here. I recite them only to the extent necessary to establish my qualifications for purposes of expert testimony under OCGA 24-7-702. However, my Curriculum Vitae is attached hereto as Exhibit "A." My CV provides further detail about my qualifications. I incorporate and rely on that additional information here.

13. The events at issue here occurred in September 2019.

14. I am qualified to provide expert testimony pursuant to OCGA 24-7-702. That is:

- a. In September 2019, I was licensed by an appropriate regulatory agency to practice my profession in the state in which I was practicing or teaching in the profession.

Specifically, I was licensed by the State of Pennsylvania to practice as a physician.

- b. In September 2019, I had actual professional knowledge and experience in the areas of practice on which I offer licensed-professional standard-of-care opinions.

I had this knowledge and experience as the result of having been regularly engaged in the active practice of the foregoing areas of specialty of my profession for at least three of the five years prior to September 2019, with sufficient frequency to establish an appropriate level of knowledge of the matter my opinions address.

Specifically, I am a vascular surgeon, and I am familiar with the evaluation and management of patients with limb ischemia.

Evidence Considered

15. I have reviewed medical records from Piedmont Columbus Regional Midtown Hospital pertaining to Jeremy Jones.
16. I invite the Defense to send me any evidentiary materials or commentary they believe may help to exonerate any Defendant.

Reference Materials

17. The Jones' counsel have shared with me various materials prepared by counsel and which I understand they intend to share with the Defense. These materials include:
- a Factual Summary stamped: **"Last printed 8/24/21 5:43:00 PM,"**
 - a Medical Principles document stamped: **"Last printed 8/3/21 4:21:00 PM,"** and
 - screenshots from a visual timeline.
18. I have not relied on these documents in forming my opinions. Nor have I edited those documents.
19. However, the factual summary and visual timeline provide useful references for many of the facts concerning the treatment of Jeremy Jones. In particular, the

screenshots from the medical records in the factual summary provide a useful reference to pinpoint specific facts.

20. The “medical principles” document correctly recites basic medical facts or principles that apply to this case and that should be well known to physicians responsible for assessing and managing a patient who may be suffering limb ischemia.

Opinions

21. In deposition or trial testimony I may elaborate on the opinions stated below, and in doing so I may offer related, subsidiary, or incidental opinions.

i. **Task:** Supervision and support for residents

Requirement

Hospital management and attending physicians are responsible for ensuring that residents are properly supervised and supported. Failure to do so endangers patients.

The overall responsibility lies with hospital management, who need not be licensed physicians or nurses. The managers must recruit the efforts of the hospital’s medical and nursing staff.

Violation

The clinical failings discussed below indicate that the hospital management and attending physicians likely failed to act reasonably to ensure proper supervision and support for the resident physicians involved in the treatment of Jeremy Jones.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy’s leg ischemia.

This violation contributed to Jeremy’s suffering an unnecessary leg above-the-knee amputation.

ii. **Task:** Patient safety systems

Requirement

Hospital management, working through clinical staff, is responsible for developing and implementing patient safety systems. This includes, among other things, leading efforts to create protocols to avoid or mitigate known risks, efforts to promulgate and train staff concerning such protocols, efforts to monitor compliance, and efforts to remediate deficiencies.

Violation

The clinical failings discussed below indicate that the hospital management likely failed to act reasonably to develop and implement patient safety systems pertaining to risks of acute limb ischemia in patients who have recently undergone endovascular procedures.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia.

This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

- iii. **Task: Sept 8, approx. 1400 hrs** — Provide for peripheral vascular monitoring for patients who have recently undergone an endovascular procedure (such as a stroke thrombectomy).

Requirement

Provision must be made for frequent (e.g., hourly) monitoring of the peripheral vascular status of patients in the 12-24 hours after undergoing an endovascular procedure such as a thrombectomy for stroke.

This responsibility ultimately lies with hospital management. Additionally, the interventionalist bears responsibility for ensuring adequate post-procedure assessment. Depending on the structure of responsibility at the hospital, responsibility for general responsibility may also lie with the ICU or other unit management, with the ICU physicians responsible for the patient, and with the nursing management.

Key Facts & Violation

- From 1258 hrs to 1316 hrs, Dr. Osei-Bonsu performs a thrombectomy. (Factual Summary, ¶ 26.)
- At 1401 hrs, Dr. Maura Gonzalez enters a set of orders for Jeremy's post-thrombectomy care. (Factual Summary, ¶ 39.)
- At 1451 hrs, Jeremy is admitted to the ICU. (Factual Summary, ¶ 43.)
- At 1552 hrs, Dr. Vincent Nicolais writes an Initial Critical Care Report. (Factual Summary, ¶ 47.)
- At 1600 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 49.)
- At 1700 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 50.)
- At 1800 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 51.)
- At 1900 hrs, Nurse Miller documents that Jeremy's peripheral vascular status is WDL, within defined limits, and that his right leg pedal pulse was "+2." (Factual Summary, ¶ 54.)
- At 2000 hrs, Nurse Miller documents that Jeremy has sudden, cramping pain at a level of 6/10, that Jeremy's right calf muscle is cramping, and that as a pain intervention Jeremy received massage and emotional support. Nurse Miller also documents that Jeremy's skin is clammy and diaphoretic (i.e., sweating heavily). (Factual Summary, ¶ 56.)
- At approximately 2031 hrs, Nurse Miller notifies Dr. Manasa Valluri of "pt's constant pain/knot in R calf muscle." Nurse Miller notes that Jeremy's pedal pulse is present and "no drainage/hematoma present on R groin incision." Nurse Miller notes, "will closely monitor pt." (Factual Summary, ¶ 59.)
- At 2100 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 62.)
- At 2200 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of

cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 66.)

- At 2255 hrs and 2300 hrs, no assessment is documented for Jeremy's peripheral vascular status. No assessment is documented for cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 70.)
- At midnight, no assessments of Jeremy are recorded in the flowsheets. (Factual Summary, ¶ 82.)
- At 0100 hrs, Nurse Christina Orr does not record assessments of Jeremy. (Factual Summary, ¶ 85.)
- At approximately 0118 hrs, Nurse Orr transfers Jeremy to another nurse (presumably to the Neuro ICU). (Factual Summary, ¶ 87.)
- At the time of the 0118 hrs handoff, Jeremy has been in the care of Nurse Christina Orr since approximately 2300 hrs — about 2 hours and 20 minutes. In that time, Nurse Orr does not record any assessment of Jeremy's right leg. (Factual Summary, ¶ 88.)
- At 0120 hrs, within minutes of Jeremy being transferred to her care, Nurse Warren performs an assessment of Jeremy — including the vascular status of Jeremy's right leg. (Factual Summary, ¶ 90.) Nurse Warren notes that Jeremy's right leg has no pedal pulses, and that the skin was cool and cyanotic. (Factual Summary, ¶ 91.)

I find no orders for routine peripheral vascular checks. And from the pattern of infrequent checks, I conclude the hospital and ICU likely had no policies or protocols requiring frequent peripheral vascular checks.

In this respect, the hospital management and the interventionalist who performed the thrombectomy (Dr. Samuel Osei-Bonsu) violated their standards of care. Depending on the division of responsibility at the hospital, the ICU management, the responsible ICU physicians, and/or the nursing leadership may have violated their standards of care.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia. The thrombosis ultimately identified in Jeremy's right leg likely was the cause of Jeremy's leg pain identified —

despite sensory deficits in that leg — at 2000 hrs on Sept 8. If the hospital's ICU management, the critical care physicians, or the interventionalist had performed their duties in this respect, the thrombus likely would have been identified and treated before the thrombus caused any long-term harm to Jeremy.

This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

- iv. **Task: Sept 8, 1552 hrs — Order ICU care for a post-stroke-thrombectomy patient.**

Requirement

A physician admitting a patient to an ICU after thrombectomy for a stroke should admit the patient for 24 hours, unless exigent circumstances require a shorter time. Twenty-four hour observation is routinely ordered for post-stroke thrombectomy patients, and 24-hour observation facilitates close monitoring and prompt response to complications such patients are at risk for (including acute limb ischemia).

Key facts & violation

- On Sept 8 at 1217 hrs, Dr. Valadi requests that Jeremy be placed in the ICU after a planned thrombectomy for an ischemic stroke. (Factual Summary, ¶ 23.)
- From 1258 hrs to 1316 hrs, Dr. Osei-Bonsu performs a thrombectomy. (Factual Summary, ¶ 26.)
- At 1451 hrs, Jeremy is admitted to the ICU. (Factual Summary, ¶ 43.)
- At 1552 hrs, Dr. Nicolais writes instructions to observe Jeremy 4-5 more hours in the ICU and then, if stable, to transfer Jeremy to the neurosciences unit. (Factual Summary, ¶ 48.)
- At approximately 2251 hrs, contrary to the wishes of neurologist Dr. Nojan Valadi, Jeremy is transferred to a Neuro floor, room 1001. (Factual Summary, ¶ 68.)

- On Sept 9 at 0036 hrs, Nurse Christina Orr calls neurologist Dr. Nojan Valadi, to inform him that Jeremy has been moved from the ICU to the Neuro floor, and to seek clarification of orders. (Factual Summary, ¶ 83.)
- At 0036 hrs, Dr. Valadi orders that Jeremy be returned to the ICU or moved to the Neuro ICU. (Factual Summary, ¶ 84.)
- At 0100 hrs, Nurse Christina Orr does not record assessments of Jeremy. (Factual Summary, ¶ 85.)
- At 0104 hrs, Nurse Orr enters an order authorized by Dr. Valadi, to transfer Jeremy to the ICU. (Factual Summary, ¶ 86.)
- At approximately 0118 hrs, Nurse Orr transfers Jeremy to another nurse. (Factual Summary, ¶ 87.)

Dr. Nicolais violated the standard of care by ordering that Jeremy be discharged from the ICU prematurely.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia. The premature transfer of Jeremy from one nurse (Tabitha Miller) to another (Christina Orr) likely contributed to the failure of hourly monitoring of Jeremy's vascular status — and thus in turn to the delayed diagnosis and treatment of Jeremy's right leg acute ischemia.

This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

- v. **Task: Sept 8, 2000 hrs** — Manage a post-thrombectomy patient with sudden, serious pain in the leg used for the puncture/access site for the thrombectomy.

Requirement

On being informed of this situation, the responsible physician must perform a physical examination of the leg and, unless vascular injury can be ruled out, order stat diagnostic imaging and/or consult vascular surgery.

Key facts & violation

- At 1900 hrs, Nurse Miller documents that Jeremy's peripheral vascular status is WDL, within defined limits, and that his right leg pedal pulse was "+2." (Factual Summary, ¶ 54.)
- At 2000 hrs, Nurse Tabitha Miller documents an NIH Stroke Scale assessment. She notes a total score of 10, with right-side deficits. She notes a sensory deficit score of 1. (Factual Summary, ¶ 55.)
- At 2000 hrs, Nurse Miller documents that Jeremy has sudden, cramping pain at a level of 6/10, that Jeremy's right calf muscle is cramping, and that as a pain intervention Jeremy received massage and emotional support. Nurse Miller also documents that Jeremy's skin is clammy and diaphoretic (i.e., sweating heavily). (Factual Summary, ¶ 56.)
- At 2000 hrs, Nurse Miller documents that Jeremy's peripheral vascular status is Within Defined Limits, that he has no cyanosis, that his capillary refill is less than three seconds, and that his right leg pedal pulse is +2. (Factual Summary, ¶ 57.)
- At 2000 hrs, Nurse Miller documents that Jeremy has no sensation in his right leg but that Jeremy shows a flicker of muscle on his right leg. (Factual Summary, ¶ 58.)
- At approximately 2031 hrs, Nurse Miller notifies Dr. Manasa Valluri of "pt's constant pain/knot in R calf muscle." Nurse Miller notes that Jeremy's pedal pulse is present and "no drainage/hematoma present on R groin incision." Nurse Miller notes, "will closely monitor pt." (Factual Summary, ¶ 59.)

Dr. Valluri did not document (and likely did not perform) any bedside physical examination of Jeremy's leg. Nor did Dr. Valluri consult vascular surgery. Dr. Valluri violated the standard of care in this respect.

Causation & Damages

This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia. The thrombosis ultimately identified in Jeremy's right leg likely was the cause of Jeremy's leg pain identified — despite sensory deficits in that leg — at 2000 hrs on Sept 8. If Dr. Valluri had complied with the standard of care, the thrombus likely would have been

identified and treated before the thrombus caused any long-term harm to Jeremy.

This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

- vi. **Task: Sept 8, 2300 hrs** — Again, manage a post-thrombectomy patient with sudden, serious pain in the leg used for the puncture/access site for the thrombectomy.

Requirement

A nurse identifying the patient in this situation must perform and document a physical assessment of the leg and request the responsible physician to examine the leg.

On being informed of this situation, the responsible physician must perform a physical examination of the leg and, unless vascular injury can be ruled out, order stat diagnostic imaging and/or consult vascular surgery.

Key facts & violation

- At 2255 hrs and 2300 hrs, no assessment is documented for Jeremy's peripheral vascular status. No assessment is documented for cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 70.)
- At 2304 hrs, Nurse Christina Orr writes that Jeremy had arrived in Room 1001. (Factual Summary, ¶ 71.)
- At 2304 hrs, Nurse Christina Orr writes, "assessment complete." (As indicated above, Nurse Orr records no assessment at or around 2300 hrs.) (Factual Summary, ¶ 72.)
- At 2304 hrs, Nurse Christina Orr notes that Jeremy complains of right leg cramping despite receiving Flexeril at 2117 hrs. (Factual Summary, ¶ 73.)
- At 2304 hrs, Nurse Christina Orr writes that a physician was paged concerning Jeremy's leg cramping. (Factual Summary, ¶ 74.)
- At 2304 hrs, Nurse Christina Orr writes that she will continue to monitor Jeremy closely. (Factual Summary, ¶ 75.)

- At 2314 hrs, Dr. Valluri ordered 10 mg of Flexeril for Jeremy. (Factual Summary, ¶ 76.)
- At midnight, no assessments of Jeremy are recorded in the flowsheets. (Factual Summary, ¶ 82.)

Nurse Christina Orr failed to perform and document an assessment of Jeremy's leg. Nurse Orr violated the standard of care in this respect. And again Dr. Valluri failed to examine Jeremy's leg and order proper followup.

Causation & Damages

These violations caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia. The thrombosis ultimately identified in Jeremy's right leg likely was the cause of Jeremy's leg pain identified (again) at 2304 hrs on Sept 8. If Nurse Orr and Dr. Valluri had complied with their standards of care, the thrombus likely would have been identified and treated before the thrombus caused any long-term harm to Jeremy.

This violation contributed to Jeremy's suffering an unnecessary leg above-the-knee amputation.

- vii. **Task: After Sept 8, 2000 hrs until Sept 9, 0120 hrs — Ongoing monitoring to assess the leg of a post-thrombectomy patient with sudden, serious pain in the leg used for the puncture/access site for the thrombectomy.**

Requirement

In addition to notifying the responsible physician(s), a nurse responsible for a patient in this circumstance must perform frequent (at least hourly) assessments of the patient's leg for deteriorating vascular status.

Key facts & violation

- At 1600 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 49.)
- At 1700 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 50.)
- At 1800 hrs, Jeremy is not assessed for skin, pain, or peripheral vascular status. (Factual Summary, ¶ 51.)

- At 2000 hrs, Nurse Miller documents that Jeremy has sudden, cramping pain at a level of 6/10, that Jeremy's right calf muscle is cramping. Nurse Miller also documents that Jeremy's skin is clammy and diaphoretic (i.e., sweating heavily). (Factual Summary, ¶ 56.)
- At approximately 2031 hrs, Nurse Miller notes "will closely monitor pt." (Factual Summary, ¶ 59.)
- At 2100 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 62.)
- At 2200 hrs, Nurse Miller does not document a peripheral vascular assessment of Jeremy. Nurse Miller does not document an assessment of cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 66.)
- At 2255 hrs and 2300 hrs, no assessment is documented for Jeremy's peripheral vascular status. No assessment is documented for cyanosis, capillary refill, pulses, or skin color and temperature. (Factual Summary, ¶ 70.)
- At 2304 hrs, Nurse Christina Orr notes that Jeremy complains of right leg cramping despite receiving Flexeril at 2117 hrs. (Factual Summary, ¶ 73.)
- At 2304 hrs, Nurse Christina Orr writes that she will continue to monitor Jeremy closely. (Factual Summary, ¶ 75.)
- At midnight, no assessments of Jeremy are recorded in the flowsheets. (Factual Summary, ¶ 82.)
- At 0100 hrs, Nurse Christina Orr does not record assessments of Jeremy. (Factual Summary, ¶ 85.)

Despite Jeremy's post-thrombectomy risk for leg ischemia, despite significant pain being noted both at 2000 hrs and 2304 hrs, and despite recognizing that they must "closely monitor" Jeremy's leg, the nursing staff failed to perform even hourly assessments of Jeremy's leg. In this respect, the nursing staff (Nurse Miller and Nurse Orr) violated the standard of care.

Causation & Damages

These violations caused harm to Jeremy, by contributing to the delay in treating Jeremy's leg ischemia.

This violation caused Jeremy to suffer an unnecessary leg above-the-knee amputation.

- viii. **Task: Sept 9, 0130 hrs** — Manage (or supervise residents managing) the leg of the same patient hours later, when the leg is found without pedal pulses, and where evaluation of sensory and motor function is limited by deficits from a stroke.

Requirement

Physicians assessing a patient in these circumstances leg must inform themselves of the relevant medical history — including the leg pain beginning hours earlier. The physicians must act on the possibility that acute limb ischemia had begun 5-1/2 hours earlier, meaning that the time window for saving the leg might be quickly closing.

Accordingly, the physicians must treat the case as a limb-threatening emergency, requiring emergent diagnosis and treatment by a vascular surgeon.

Key facts & violation

- At 0120 hrs, Nurse Warren notes that Jeremy's right leg has no pedal pulses, and that the skin was cool and cyanotic. (Factual Summary, ¶ 91.)
- At 0138 hrs, Nurse Warren pages Dr. Valluri to notify her that Jeremy had no pedal pulse in his right leg. (Factual Summary, ¶ 92.)
- At 0142 hrs, Dr. Valluri is at Jeremy's bedside. (Factual Summary, ¶ 93.)
- At 0152 hrs, Dr. Cheryl Stephens is at Jeremy's bedside — according to Nurse Warren's note. (Factual Summary, ¶ 94.)
- In September 2019, Dr. Cheryl Stephens is in her second year as a Family Medicine resident. (Factual Summary, ¶ 95.)
- On the morning of September 9, Dr. Stephens is supervised by Joshua Koerner, DO. (Factual Summary, ¶ 96.)

- In September 2019, Dr. Koerner is a Family Medicine physician less than 1-1/2 years into his career as a licensed physician. (Factual Summary, ¶ 97.)
- According to a later note by Dr. Stephens, she speaks to neurologist Dr. Valadi and interventional radiologist Dr. Osei-Bonsu. (This note is timestamped 0411 hrs.) (Factual Summary, ¶ 99.)
- According to a later note by Dr. Valadi, he advises “CT angiography, notification of Dr. Osei-Bonsu, and consideration for vascular surgery consultation.” (Note filed 9/9/2019 at 2329 hrs.) (Factual Summary, ¶ 100.)
- According to the same note by Dr. Valadi, he then calls Dr. Koerner and makes the same recommendations. (Factual Summary, ¶ 101.)
- At 0152 hrs, according to Nurse Warren, Dr. Stephens is at bedside and a plan is made to order a CT angiogram of Jeremy’s right leg. (Factual Summary, ¶ 98.)
- At 0218 hrs, Dr. Stephens enters an order for a CT angiogram of Jeremy’s right leg. Dr. Stephens noted, as indications for the CTA, “Lower leg trauma, neurovasc/lig/tendon injury suspected.” (Factual Summary, ¶ 102.)
- At 0220 hrs, another minute later, Dr. Stephens re-enters the order for a CT angiogram — ordering it stat, and adding comments, “Post op day 1, thrombectomy, right groin insertion surgical site, absent RLE DP pulse.” (Factual Summary, ¶ 104.)
- At 0233 hrs, Nurse Warren calls neurologist Dr. Valadi. She writes that Dr. Valadi agrees with the plan for an angiogram. (Factual Summary, ¶ 105.)
- At 0243 hrs, Nurse Warren calls Jeremy’s wife, Beth, to gain consent for a diagnostic CT angiogram. (Factual Summary, ¶ 106.)
- At 0311 hrs, the diagnostic CT angiogram of Jeremy’s right leg is performed. (Factual Summary, ¶ 107.)
- At 0425 hrs Eastern (0325 hrs Central), radiologist Dr. Erik Richter calls Nurse Warren to report his interpretation of the CTA — an “extensive

nearly completely occlusive thrombus throughout the right leg arterial vasculature.” (Factual Summary, ¶ 108.)

- By 0428 hrs, it has been over three hours since Jeremy was found (at 0120 hrs) to have no pedal pulse in his right leg. (Factual Summary, ¶ 115.)
- After learning of the CTA findings, Dr. Stephens calls interventional radiologist Dr. Osei-Bonsu to reevaluate. (Factual Summary, ¶ 117.)
- At 0455 hrs, interventional radiologist Dr. Samuel Osei-Bonsu is at Jeremy’s bedside. (Factual Summary, ¶ 119.)
- At 0530 hrs, Dr. Osei-Bonsu begins an IR angiogram of Jeremy’s right leg. (Factual Summary, ¶ 123.)
- Dr. Osei-Bonsu finds intimal injury of the right common femoral artery with thrombosis of the SFA. (Factual Summary, ¶ 124.)
- Dr. Osei-Bonsu performs a partial thrombectomy using an AngioJet device. (Factual Summary, ¶ 125.)
- In the upper part of the femoral artery, Dr. Osei-Bonsu performs an angioplasty — using a catheter and balloon to widen the area of the artery in which blood can flow. (Factual Summary, ¶ 127.)
- Dr. Osei-Bonsu places a 38-centimeter (15 inch) long stent in the upper part of the femoral artery. (Factual Summary, ¶ 128.)
- These procedures improve blood flow in the upper femoral artery, where the stent was placed. (Factual Summary, ¶ 129.)
- Despite multiple attempts to remove the clot in the lower femoral artery and popliteal artery, the clot remains. (Factual Summary, ¶ 131.)
- Dr. Osei-Bonsu finally aborts the thrombectomy and consults a vascular surgeon. (Factual Summary, ¶ 132.)
- At the end of the procedure, Jeremy has no discernible blood flow below his right knee. (Factual Summary, ¶ 133.)
- The IR angiogram procedure lasts through 0816 hrs. The procedure takes approximately 2 hours and 45 minutes (having begun at 0530 hrs). (Factual Summary, ¶ 134.)
- Around 0816 hrs, Dr. Osei-Bonsu seeks a vascular surgery consultation from Dr. Bruce Brennaman. (Factual Summary, ¶ 135.)

- Dr. Brennaman concludes that Jeremy's leg symptoms began between 2030 hrs and 2230 hrs. (Factual Summary, ¶ 138.)
- Dr. Brennaman proceeds to the operating room for an emergency exploratory surgery with the hope of saving Jeremy's leg, but anticipating that amputation is likely necessary. (Factual Summary, ¶ 143.)
- During the exploratory surgery, Dr. Brennaman finds that the right lower leg has no viable muscle. "The entire 4 compartments of the right lower extremity showed no viable muscle whatsoever. There was no movement to electric current. The muscle was dark red and all 4 compartments were tightly encumbered resulting in a dead leg." (Factual Summary, ¶ 151.)
- Dr. Brennaman proceeded to amputate Jeremy's right leg above the knee. (Factual Summary, ¶ 154.)

The residents did not treat Jeremy's pulseless leg as an emergency. They did not document (and likely did not perform) a bedside diagnostic examination by Doppler device, to assess the degree of weakness of arterial and venous flow in the leg — important to understand the severity of ischemia. Nor did the residents consult vascular surgery (the most important action) despite being advised to do so by Dr. Valadi. The physicians did order stat diagnostic imaging (though it was not performed quickly). The residents did not, however, order any treatment for Jeremy's ischemic leg. In these respects, the physicians violated the standard of care.

Additionally, it appears from the records that the supervising physician, Dr. Koerner, failed to provide the residents any supervision or support as they dealt with a surgical emergency — despite being alerted and advised by Dr. Valadi. In this respect Dr. Koerner violated the standard of care.

Causation & Damages

These violations caused harm to Jeremy. They further delayed the treatment of Jeremy's ischemic leg and contributed to the death of Jeremy's lower right leg.

These violations caused Jeremy to undergo an otherwise unnecessary above-the-knee leg amputation.

- ix. **Task:** Consult on the same patient shortly after the leg was found to be pulseless.

Requirement

Any physician consulting on a patient in Jeremy's condition as of 0130 hours on Sept 9 was required to ask about the history of the patient's leg issues — which in this case went back to the sudden pain noted at 2000 hrs the night before. Accordingly, the consulting physician must advise or provide emergent diagnosis and treatment — preferably by a vascular surgeon (if available) but at least by an interventional radiologist with a vascular surgeon standing by.

The requirement to act to ensure emergent treatment applies to any physician involved, regardless of specialty. While the physician's particular practice area dictate the specific assistance the physician can offer (e.g., recommendations vs. hands-on treatment), the general duty to ensure emergent treatment applies across specialties.

Key facts & violation

The facts recited above indicate that the interventional radiologist, Dr. Samuel Osei-Bonsu, did not recommend an immediate vascular surgery consult when first notified of Jeremy's pulseless leg. Nor did Dr. Osei-Bonsu immediately come in to treat Jeremy. Instead, Dr. Osei-Bonsu advised purely diagnostic imaging that caused a delay of approximately three hours (from approximately 0200 hrs when Dr. Osei-Bonsu was consulted until approximately 0500 hrs when Dr. Osei-Bonsu was bedside.) In failing to act to ensure emergent treatment, Dr. Osei-Bonsu violated the standard of care.

Causation & Damages

This violation further delayed treatment of Jeremy's ischemic leg and contributed to the death of Jeremy's lower right leg.

This violation caused Jeremy to undergo an otherwise unnecessary above-the-knee leg amputation.

CONCLUSION

22. These are not necessarily all my opinions pertaining to this case.


Paul Collier, MD. FACS

SWORN TO AND SUBSCRIBED before me

August 26, 2021


NOTARY PUBLIC

My Commission Expires: June 4, 2031



Stephanie Pratt
Notary Public
Expires June 4, 2031

CURRICULUM VITAE

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EDUCATION

St. Joseph Regional High School Montvale, New Jersey	High School Diploma 1967 – 1971
University of Pennsylvania Philadelphia, Pennsylvania	B.S. Biology 1971 – 1975
Yale University School of Medicine New Haven, Connecticut	M.D. 1975 – 1979

TRAINING AND RESEARCH EXPERIENCE

Resident in General Surgery Allegheny General Hospital Pittsburgh, Pennsylvania	1979 – 1982
Chief Resident in General Surgery Allegheny General Hospital Pittsburgh, Pennsylvania	1982 – 1984
Fellow in Vascular Surgery Montefiore Medical Center Bronx, New York	1984 – 1986

CURRENT STATUS

Board Certified in General Surgery	1985
Medical Director, Non-Invasive Vascular Laboratory, Sewickley Valley Hospital	1986 – Present
Added Qualification in Vascular Surgery	1987
Fellow of the American College of Surgeons	1987
Recertified in General Surgery	1995, 2004
Recertified in Vascular Surgery	1996, 2006
Chief of Surgery, Sewickley Valley Hospital	1997 – 2001
Director, The Sewickley Vein Center	2006 – Present

LICENSED

Pennsylvania

MD 025094E

Exhibit A

ORGANIZATIONS

Allegheny Vascular Society
Peripheral Vascular Surgical Society
Society for Clinical Vascular Surgery
Eastern Vascular Surgery Society
American College of Surgeons
Society for Vascular Surgery

BOARD POSITIONS

Board of Directors, Pittsburgh Zoological Society 1996 – 2003
Exam Consultant, American Board of Surgery 1997 – 2003
Chairman, Department of Surgery,
Sewickley Valley Hospital 1997 – 2001

OFFICERS POSITIONS

Secretary, Allegheny Vascular Society 1991 – 1994
President, Allegheny Vascular Society 1994 – 1996

SEWICKLEY VALLEY HOSPITAL COMMITTEES

Critical Care Committee 1986 – 1996
Chairman, Utilization Review Committee 1990 – 2000
Clinical-Management Committee 1992 – 1998
Chairman, Distinguished Service Award Committee 1992 – 1995
Surgical Committee 1992 – Present
Value Analysis Committee 1993 – Present
CME Committee 1993 – Present

EXTERNAL COMMITTEES

Society for Vascular Surgery Membership Committee 1997 – 2001
Chairman 2000 – 2001

EDITORIAL REVIEWER

Journal of Vascular Surgery <http://journals.elsevierhealth.com/periodicals/ymva>
Pediatrics <http://pediatrics.aappublications.org/>
American Journal of Kidney Diseases <http://journals.elsevierhealth.com/periodicals/yajkd>

AWARDS

Salutatorian, St. Joseph Regional High School 1971
Alpha Epsilon Delta, Premedical Honor Society 1974
Phi Beta Kappa, University of Pennsylvania 1975
Summa Cum Laude, University of Pennsylvania 1975
Merck Award for Clinical Excellence,

Yale University School of Medicine	1979
First Place, Resident's Presentation, Southwestern Pennsylvania Chapter of the American College of Surgeon's "Axillary Vein Thrombosis"	1983
First Place, Original Paper by a Resident, Contemporary Surgery, "Streptokinase and Percutaneous Angioplasty for Salvage of Hemodialysis Fistula"	1984

PRESENTATIONS

1. Collier PE. Streptokinase and percutaneous transluminal angioplasty for reclamation of subcutaneous hemodialysis fistulas. Presented to the *National Kidney Foundation's Interdisciplinary Strategies in Renal Care*. September, 1983.
2. Collier PE. Axillary vein thrombosis. Presented to the *Southwestern Pennsylvania Chapter of The American College of Surgeons*. November, 1983.
3. Collier PE. Is percutaneous insertion of the intra-aortic balloon pump via the femoral artery the safest technique? Presented to the *Pennsylvania Association for Thoracic Surgery*. September, 1984.
4. Collier PE. Re-operations on failed anatomic and extra-anatomic prosthetic reconstruction. Presented to the *Joint Annual Meeting of The New York Society for Cardiovascular Surgery and The New York Regional Vascular Society*. May, 1985.
5. Collier PE. Re-operations on failed infrainguinal prosthetic reconstructions: Factors influencing long-term, graft patency. Presented to the *Peripheral Vascular Surgery Society*. June, 1985.
6. Gupta SC, Veith FJ, Samson RH, Scher LA, Ascer E, White-Flores SA, Collier PE, Nunez A. Application of microcomputers in surgical education and research. Presented as a scientific exhibit at the *American College of Surgeons, 71st Annual Clinical Congress Meeting*. Chicago, IL. October, 1985.
7. Ascer E, Collier PE, Veith FJ. The influence of dextran 40 and graft diameter on low flow bypass graft patency. Presented to the *Society for Clinical Vascular Surgery, 14th Annual Symposium on Vascular Surgery*. Orlando, FL. April, 1986.
8. Collier PE, Ascer E, Gupta SK, Veith FJ. Re-operation on failed PTFE bypasses: The importance of proper technique and outflow site. Presented to the *Society for Clinical Vascular Surgery, 14th Annual Symposium on Vascular Surgery*. Orlando, FL. April, 1986.
9. Gupta SK, Veith FJ, Ascer E, Scher LA, White-Flores SA, Collier PE, Nunez A, Wengerter K, Samson RH. Use of microcomputers in peripheral vascular laboratory research. Presented at the *Symposium on Noninvasive Diagnosis of Vascular Disorders: Review and Update*. Orlando, FL. April, 1986.
10. Collier PE. Role of duplex scanning in distal bypass evaluation: Detection of failed grafts. Presented at the *2nd Annual Vascular Fellows Abstract Presentation*. New York, NY. May, 1986.
11. Collier PE, Ascer E, Gupta SK, Veith FJ. Reoperation for PTFE bypass failure: The importance of distal outflow site and operative technique in determining outcome. Presented at the *34th Annual Meeting of the North American Chapter of the International Society for Cardiovascular Surgery*. New Orleans, LA. June, 1986.
12. Nunez A, Collier PE, Veith FJ. Duplex scanning of bypass grafts and anastomoses related to infrapopliteal arterial reconstructions. Presented to the *Peripheral Vascular Surgery Society*. New Orleans, LA. June, 1986.
13. Nunez A, Collier PE, Ascer E, Veith FJ. Use of middle and distal thirds of the deep femoral artery for origin of insertion of limb salvage bypasses. Presented at the *2nd International Vascular Symposium*. London, England. September, 1986.
14. Collier PE, Ascer A, Veith FJ. Reoperations on failed anatomic and extra-anatomic prosthetic bypasses. Presented at the *2nd International Vascular Symposium*. London, England. September, 1986.

15. Collier PE, Laffey S, Dalton T, Wilcox G, Brooks DH. Angioplasty for claudication: Improved patient selection with color doppler imaging. Presented to the *Society for Clinical Vascular Surgery*. Palm Desert, CA. March, 1990.
16. Collier PE, Laffey S, Dalton T, Wilcox G, Brooks DH. Limb salvage surgery without arteriography, is it possible? Presented to the *Eastern Vascular Society*. Boston, MA. May, 1990.
17. Collier PE. Use of the non-invasive vascular laboratory. Presented at the *Update on Vascular Disorders of Lower Extremities*. Pittsburgh, PA. February, 1991.
18. Collier, PE. Atraumatic vascular anastomoses using a tourniquet. Presented to the *Peripheral Vascular Surgery Society*. Boston, MA. June, 1991.
19. Collier, PE. Surgery for chronic venous disease. Presented at the *2nd Annual Allegheny General Hospital Vascular Symposium: Venous Duplex Imaging and Treatment of Venous Disease*. Pittsburgh, PA. June, 1991.
20. Collier PE. Non-invasive evaluation of the carotid artery. Presented at the *Advances in Diagnosis and Treatment of Carotid Artery Disease*. Pittsburgh, PA. February, 1992.
21. Collier PE. Carotid endarterectomy: A safe, cost-effective approach. Presented to the *Eastern Vascular Society*. New York, NY. May, 1992.
22. Collier PE. Improving efficiency for carotid endarterectomy. Presented to the *Southwest Pennsylvania Chapter of American College of Surgeons*. Pittsburgh, PA. May, 1992.
23. Collier PE. Surgery for chronic venous insufficiency. Presented at the *Advances in Diagnosis and Treatment of Venous Diseases Symposium*. Pittsburgh, PA. March, 1993.
24. Collier PE. Follow-up examination of lower extremity bypasses. Presented at the *New Modalities in Vascular Technology Symposium*. Pittsburgh, PA. March, 1994.
25. Collier PE. Are one day admissions for carotid endarterectomy feasible? Presented to the *Society of Clinical Vascular Surgery*. Ft. Lauderdale, FL. March, 1995.
26. Collier PE. How the non-invasive vascular laboratory can help in the diagnosis of peripheral vascular disease. Presented at the *Advances in Diagnosis and Treatment of Arterial Disease*. Pittsburgh, PA. April, 1995.
27. Collier PE. One-day admission for carotid endarterectomy. Presented to the *Southwestern PA Chapter of the American College of Surgeons*. Pittsburgh, PA. April, 1995.
28. Mantia A and Collier PE. Does cervical plexus block for carotid endarterectomy affect hospital length of stay? Presented to the *Society of Cardiovascular Anesthesiologists*. Philadelphia, PA. May, 1995.
29. Collier PE. Surgical options for lower limb salvage. Presented at the *2nd Annual Symposium on Peripheral Vascular Disease: New Horizons in Patient Management*. Pittsburgh, PA. December, 1995.
30. Collier PE. Changing trends in the use of preoperative carotid arteriography: The community experience. Presented to the *Southwestern PA Chapter of American College of Surgeons*. Pittsburgh, PA. April, 1996.
31. Collier PE. Cost efficient carotid surgery: A clinical pathway. Presented at the *Symposium on Advances and Treatment of Carotid Artery Disease*. Pittsburgh, PA. April, 1996.
32. Collier PE. Carotid angioplasty or endarterectomy: A cost analysis. Presented at the *10th Annual Eastern Vascular Society Symposium*. Washington, DC. May, 1996.
33. Collier PE. Changing trends in the use of preoperative carotid arteriography: The community experience. Presented at the *1996 Joint Annual Meeting of the N.A. Chapter of the ISCVS and the Society for Vascular Surgery*. Chicago, IL. June, 1996.
34. Mantia AM, Collier PE, O'Day TL. Does anesthetic choice following a defined clinical pathway for carotid endarterectomy affect length of stay? Presented at the *American Society of Anesthesiologists Annual Meeting*. New Orleans, LA. October 1996.
35. Collier PE. Carotid endarterectomy: What's new in 1996? Columbus, OH. July, 1996.
36. Collier PE. The nursing aspects of carotid endarterectomy. Presented to the *Western Pennsylvania Perioperative Nurses Society*. Pittsburgh, PA. February, 1997.

37. Collier PE. How essential is the intensive care unit after carotid endarterectomy? Presented at the *Symposium on Vascular Surgery*. Naples, FL. March, 1997.
38. Collier PE. Do clinical pathways for major vascular surgery improve outcomes and reduce cost? Presented at the *Symposium on Vascular Surgery*. Naples, FL. March, 1997.
39. Collier PE. Office removal of silastic catheters and ports is safe and cost effective. Presented at the *Symposium on Vascular Surgery*. Naples, FL. March, 1997.
40. Collier PE. Are preoperative antibiotics administered preoperatively? Presented at the *Symposium on Vascular Surgery*. Naples, FL. March, 1997.
41. Collier PE. Do clinical pathways for major vascular surgery improve outcome and reduce cost? Presented at the *American College of Surgeons 43rd Annual Meeting*. Pittsburgh, PA. April, 1997.
42. Collier PE. Venous complications of central venous catheters and their treatment. Presented at the *7th Annual Vascular Conference* at Sewickley Valley Hospital. Pittsburgh, PA. April, 1997.
43. Collier PE. Cardiac tamponade from central venous catheters: A totally preventable complication. Presented to the *Society for Clinical Vascular Surgery*. San Diego, CA. March, 1998.
44. Collier PE. Current results for aortic surgery-the results of a clinical pathway. Presented at the *8th Annual Vascular Conference*. Pittsburgh, PA. April, 1998.
45. Collier PE. Efficiency in the OR: Developing critical pathways for vascular surgery. Presented at the *Symposium for Controlling Costs in Surgery: Strategies for Cost Reduction and Outcomes Improvement*. Washington, DC. September, 1998.
46. Collier PE. Update on carotid artery surgery. Presented at the *14th Annual P.O.M.A. Seminar*. Hidden Valley, PA. January, 2001.
47. Collier PE. To drain or not to drain. Presented at the *29th Annual Symposium on Vascular Surgery of the SCVS*. Boca Raton, FL. April, 2001.
48. Collier PE. Peripheral vascular disease. Presented to *P.O.M.A.* Hidden Valley, PA. January, 2002.
49. Collier PE. Counter incisions improve primary healing of inframalleolar bypass wounds. Presented to the *16th Annual Eastern Vascular Society Meeting*. Boston, MA. May, 2002.
50. Collier PE. Carotid endarterectomy under siege. Presented to the *2nd Annual Pittsburgh Vascular Symposium*. Pittsburgh, PA. September, 2003.
51. Collier PE. Bypass strategies in the absence of saphenous vein. Presented to the *3rd Annual Pittsburgh Vascular Symposium*. Pittsburgh, PA. September, 2004.
52. Collier PE. The carotid endarterectomy: The venerable standard or outdated surgery. Presented at the *Pittsburgh Vascular Symposium*. Pittsburgh, PA. September, 2005.
53. Collier PE. Carotid endarterectomy vs. stenting: Where do we stand? Presented to *P.O.M.A.* Farmington, PA. January, 2006.
54. Collier PE. Modern results of distal bypass surgery: Do patients really still need this operation? Presented at the *Pittsburgh Vascular Symposium*. Pittsburgh, PA. September, 2006.
55. Collier PE. Limb salvage surgery. *P.O.M.A.* Farmington, PA. January, 2007.
56. Collier PE. New advances in chronic venous disease. Presented to *P.O.M.A.* January, 2008.

PROGRAM DIRECTOR:

1. Update on Vascular Disorders of Lower Extremities. Pittsburgh, PA. February, 1991. *Program Director and Organizer*.
2. Advances in Diagnosis and Treatment of Carotid Artery Disease. Pittsburgh, PA. February, 1992. *Program Director and Organizer*.
3. Advances in Diagnosis and Treatment of Venous Diseases. Pittsburgh, PA. March, 1993. *Program Director and Organizer*.
4. Advances in Diagnosis and treatment of renal, aortic and mesenteric vascular disorders. Pittsburgh, PA. March, 1994. *Program Director and Organizer*.

5. Symposium on New Modalities in Vascular Technology. Pittsburgh, PA. March, 1994. *Program Co-Director and Organizer.*
6. Advances in Diagnosis and Treatment of Arterial Disease. Pittsburgh, PA. April, 1995. *Program Director and Organizer.*
7. Symposium on Advances and Treatment of Carotid Artery Disease. Pittsburgh, PA. April, 1996. *Program Director and Organizer.*
8. Symposium on advances in diagnosis and treatment of venous disease. Pittsburgh, PA. April, 1997. *Program Director and Organizer.*
9. New approaches to intraabdominal vascular problems. Pittsburgh, PA. April, 1998. *Program Director and Organizer.*
10. Advances in diagnosis and treatment of lower extremity arterial disease. Pittsburgh, PA. April, 1998. *Program Director and Organizer.*
11. Advances in diagnosis and treatment of lower extremity arterial disease. Pittsburgh, PA. October, 1999. *Program Director and Organizer.*
12. Advances in diagnosis and treatment of cerebrovascular diseases. Pittsburgh, PA. April, 2001. *Program Director and Organizer.*
13. Vascular surgery in the 21st century. Pittsburgh, PA. May, 2002. *Program Director and Organizer.*
14. 2nd Annual Pittsburgh Vascular Symposium. Pittsburgh, PA. September, 2003. *Program Director.*
15. 3rd Annual Pittsburgh Vascular Symposium. Pittsburgh, PA. September, 2004. *Program Director.*
16. 4th Annual Pittsburgh Vascular Symposium. Pittsburgh, PA. September, 2005. *Program Director.*
17. 5th Annual Pittsburgh Vascular Symposium. Pittsburgh, PA. September, 2006. *Program Director.*

PUBLICATIONS

1. Curtis AM, Ravin CE, Collier PE, Putman CE, McLoud T, Greenspan RH. Detection of metastatic disease from carcinoma of the breast: Limited value of full lung tomography. *American Journal of Roentgenology.* 134:253-255, 1980.
2. Curtis AM, Ravin CE, Collier PE, Putman CE, McLoud T, Greenspan RH. Detection of metastatic disease from carcinoma of the breast: limited value of full lung tomography. *American Journal of Roentgenology.* 134:253-255, 1980.
3. Collier PE, Diamond DL, Young JC. Nontraumatic clostridium septicum gangrenous myonecrosis Disease of the Colon & Rectum. 26:703-704, 1983.
4. Collier PE, Diamond DL, Young JC. Axillary vein thrombosis. *Journal of Vascular Surgery.* 18:174-178, 1984.
5. Collier PE, Ryan JJ, Diamond DL. Cardiac tamponade from central venous catheters. Report of a case and review of the English literature. *Angiology.* 35:595-600, 1984.
6. Collier PE, Saracco GM, Diamond DL. Streptokinase and transluminal angioplasty in reclamation of AV fistula. *What is Cont. Surg.* 24:69-71, 1984.
7. Collier PE, Turowski P, Diamond DL. Small intestinal adenocarcinoma complicating regional enteritis. *Cancer.* 55:516-521, 1985.
8. Collier PE, Saracco GM, Young JC, Fragola JA, Contractor EM, Diamond DL. Non-operative salvage of subcutaneous hemodialysis fistulae. *The American Journal of Nephrology.* 5:333-337, 1985.
9. Collier PE, Liebler GA, Park SB, Burkholder JA, Maher TD, Magovern GJ. Is percutaneous insertion of the intra-aortic balloon pump through the femoral artery the safest technique? *Journal of Vascular Surgery.* 3:629-634, 1986.
10. Collier PE, Ryan JJ, Fazi B, Diamond DL. Can aortography precipitate mesenteric infarction in patients with chronic intestinal ischemia? *Vascular and Endovascular Surgery.* 20:262-268, 1986.
11. Collier PE. Small bowel lymphoma associated with AIDS. *Journal of Surgical Oncology.* 32:131-133, 1986.

12. Ascer E, Collier PE, Gupta SK, Veith FJ. Reoperation for polytetrafluoroethylene bypass failure: The importance of distal outflow site and operative technique in determining outcome. *Journal of Vascular Surgery*. 5:298-310, 1987.
13. Nunez AA, Veith FJ, Collier P, Ascer E, Flores SW, Gupta SK. Direct approaches to the distal portions of the deep femoral artery for limb salvage bypasses. *Journal of Vascular Surgery*. 8:576-581, 1988.
14. Collier PE, Wilcox G, Brooks D, Laffey S, Dalton T. Improved patient selection for angioplasty utilizing color doppler imaging. *The American Journal of Surgery*. 160:171-174, 1990.
15. Collier PE. Atraumatic vascular anastomoses using a tourniquet. *Annals of Vascular Surgery*. 6:34-37, 1992.
16. Collier PE. Carotid endarterectomy: A safe cost-efficient approach. *Journal of Vascular Surgery*. 16:926-933, 1992.
17. Collier PE. Are one-day admissions for carotid endarterectomy feasible? *The American Journal of Surgery*. 170:140-143, 1995.
18. Collier PE. Are one-day admissions for carotid endarterectomy feasible? *The American Journal of Surgery*. 170:140-143, 1995.
19. Collier PE, Goodman GB. Cardiac tamponade caused by central venous catheter perforation of the heart: A preventable complication. *The Journal of the American College of Surgeons (JACS)*: 181:459-463, 1995.
20. Collier PE, Friend SZ, Gentile C, Ruckert D, Vescio L, Collier NA. Carotid endarterectomy clinical pathway: An innovative approach. *American Journal of Medical Quality*. 10:38-47, 1995.
21. Mantia AM, Collier PE, O'Day TL. Does anesthetic choice following a defined clinical pathway for carotid endarterectomy affect hospital length of stay. *Anesthesia and Analgesia*. 1996.
22. Collier PE. Do clinical pathways for major vascular surgery improve outcomes and reduce cost? *Journal of Vascular Surgery*. 26:179-185, 1997.
23. Collier PE. How essential is the intensive care unit after carotid endarterectomy? *Vascular and Endovascular Surgery*. 31:563-566, 1997.
24. Collier PE. Office removal of silastic catheters and ports is safe and cost effective. *Vascular and Endovascular Surgery*. 31:567-569, 1997.
25. Collier PE, Rudolph M, Ruckert D, Osella T, Collier NA, Ferrero M. Are preoperative antibiotics administered preoperatively? *American Journal of Medical Quality*. 13:94-97, 1998.
26. Collier PE, Blocker SH, Graff DM, Doyle P. Cardiac tamponade from central venous catheters. *The American Journal of Surgery*. 176:212-214, 1998.
27. Collier PE. Fast tracking carotid endarterectomy: practical considerations. *Seminars in Vascular Surgery*. 11:41-45, 1998.
28. Collier PE. Changing trends in the use of preoperative carotid arteriography: The community experience. *Cardiovascular Surgery*. 6:485-489, 1998.
29. Scott W, Collier PE. The vessel dilator for central venous catheter placement - forerunner for success or vascular misadventure?. *Journal of Intensive Care Medicine*. 16:263-269, 2001.
30. Race FK, Collier PE. The hidden risk of deep vein thrombosis-the need for risk factor assessment: Case-reviews. *Critical Care Nursing*. 30:245-254, 2007.

BOOK CHAPTERS

1. Veith FJ, Gupta SK, Ascer E, Sprayregen S, Collier PE. Reoperations and other reintervention for thrombosed and failing polytetrafluoroethylene grafts. *Reoperative Arterial Surgery*, 377-392, 1986. J.J. Bergan and J.S.T. Yao. Grune & Stratton. New York, NY.
2. Collier PE, Ascer E, Veith FJ, Gupta SK, Nunez A. Acute thrombosis of arterial grafts. *Vascular Surgery Emergencies*, 517-528, 1987. J.J. Bergan and J.S.T. Yao. Grune & Stratton. New York, NY.

3. Collier PE, Ascer E, Nunez A, Gupta SK, Veith FJ. Arterial reconstruction after previous femorotibial bypass. *Reoperative Vascular Surgery*, 211-224, 1987. H.H. Trout. Marcel Dekker, Inc. New York, NY.
4. Collier PE. How can I balance patient safety and cost-effectiveness in planning early postoperative care and hospital discharge? *Carotid Artery Surgery, A Problem Based Approach*, 354-357, 2000. A.R. Naylor and W.C. Mackey. W.B. Saunders. London.

ABSTRACTS

1. Veith FJ, Samson RH, Ascer E, Gupta SK, White-Flores S, Sprayregen S, Collier PE, Scher LA. Tibiotibial vein bypass grafts: A new operation for limb salvage. *The Journal of Cardiovascular Surgery*. 26:29, 1985.
2. Mantia AM, Collier PE, O'Day TL. Does anesthetic choice following a defined clinical pathway for carotid endarterectomy affect length of stay? *Anesthesiology*. 85:A938, 1986.

**AFFIDAVIT OF JUDITH CLIMENSON RN, CCRN-CMC, CNRN-
SCRN REGARDING TREATMENT OF JEREMY JONES AT
PIEDMONT COLUMBUS REGIONAL MIDTOWN HOSPITAL**

PERSONALLY APPEARS before the undersigned authority, duly authorized to administer oaths, comes Judith Climenson RN, CCRN-CMC, CNRN-SCRN, who after first being duly sworn, states as follows:

Introduction

1. This affidavit addresses medical negligence that occurred during Jeremy Jones' admission at Piedmont Columbus Regional Midtown Hospital that began on September 8, 2019.
2. This is a preliminary affidavit for a limited purpose — to identify a single standard-of-care violation, for purposes of Georgia statute OCGA § 9-11-9.1.
3. This affidavit addresses specific matters that Plaintiff's counsel have asked me to address. I have not attempted to identify all standard-of-care violations. I have not attempted to state every causation opinion I have.
4. I use the term "standard of care" to refer to that degree of care and skill ordinarily exercised by members of the nursing profession generally under the same or similar circumstances and like surrounding conditions as pertained to the nursing providers I discuss here.
5. Plaintiff's counsel drafted this affidavit after consulting with me, and I reviewed the draft and edited it to make sure it correctly states my views. I have not, however, edited this affidavit for style, so it does not necessarily "sound" like me.
6. I hold all the opinions expressed below to a reasonable degree of nursing certainty — that is, more likely than not.
7. If additional information becomes available later, my views may change.
8. I understand that Plaintiff's counsel will provide this affidavit to the Defendants, and that their insurance company will hire lawyers and medical

experts to review this case and to review this affidavit. If anyone on the Defense team believes I have not been given, or have overlooked or misconstrued, any relevant information, I invite the Defense to communicate with me by letter, copied to Plaintiff's counsel.

9. The Defense need not wait to take my deposition to communicate with me. I will consider any information the Defense wishes to bring to my attention by letter. If appropriate, I will then provide a supplemental affidavit.

Qualifications

10. I am more than 18 years old, suffer from no legal disabilities, and give this affidavit based upon my own personal knowledge and belief.

11. I do not recite my full qualifications here. I recite them only to the extent necessary to establish my qualifications for purposes of expert testimony under OCGA 24-7-702. However, my Curriculum Vitae is attached hereto as Exhibit "A." My CV provides further detail about my qualifications. I incorporate and rely on that additional information here.

12. The events at issue here occurred in September 2019.

13. I am qualified to provide expert testimony pursuant to OCGA 24-7-702. That is:

- a. In September 2019, I was licensed by an appropriate regulatory agency to practice my profession in the state in which I was practicing or teaching in the profession.

Specifically, I was licensed by the States of Arizona, California, and Georgia to practice as a registered nurse. I was practicing in Arizona in September 2019.

- b. In September 2019, I had actual professional knowledge and experience in the area of practice or specialty which my opinions relate to — specifically, the tasks identified above on which I offer standard-of-care opinions.

I had this knowledge and experience as the result of having been regularly engaged in the active practice of the foregoing areas of specialty of my profession for at least three of the five years prior to September 2019, with sufficient frequency to establish an appropriate level of knowledge of the matter my opinions address.

Specifically, I am an ICU nurse, and for many years I have had great familiarity with the task on which I offer standard-of-care opinions.

Evidence Considered

14. I have reviewed medical records from Piedmont Columbus Regional Midtown Hospital pertaining to Jeremy Jones.
15. I invite the Defense to send me any evidentiary materials or commentary they believe may help to exonerate any Defendant.

Opinions

16. In deposition or trial testimony I may elaborate on the opinions stated below, and in doing so I may offer related, subsidiary, or incidental opinions.
 - i. **Task:** Assess the leg of a hospital patient who, hours earlier, had a thrombectomy for a stroke, where the access site for the thrombectomy was the femoral artery in the right leg, and the patient now has sudden, serious pain in the right leg.

Requirement: A nurse assessing the patient must assess the puncture site, examine the leg physically for changes in color, temperature abnormalities, capillary refill, sensation, ability to plantar flex and dorsiflex, as well as strength of pulse, and inform the attending physician and the interventional radiologist who performed the stroke thrombectomy. The nurse must act to ensure that the attending physician comes to the patient's room to personally examine the leg due to acute changes.

Violation: The ICU nurse who noted Jeremy's acute right leg pain starting at 2000 hrs on Sept 8, 2019, did not document (and likely did not perform) a physical examination of Jeremy's leg for changes in color, capillary refill, distal muscle strength, sensation and temperature abnormalities. Nor did the

ICU nurse inform the interventional radiologist. Nor did the nurse ensure the attending physician came to the patient's room to examine the leg. The ICU nurse violated the standard of care in these respects.

Causation: This violation caused harm to Jeremy, by contributing to the delay in treating Jeremy's right leg ischemia.

Damages: This violation caused Jeremy to suffer an unnecessary above-the-knee amputation.

CONCLUSION

17. These are not all my opinions pertaining to this case.


Judith Climenson, RN, CCRN-CMC,
CNRN-SCRN

SWORN TO AND SUBSCRIBED before me

11th of August, 2021


NOTARY PUBLIC

My Commission Expires: 09-23-2022



Judith Climenson RN, CCRN-CMC, CNRN-SCRN

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Scottsdale, AZ 85254
Phone: 805 448-5835

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Summary of Qualifications

38 YEARS EXPERIENCE IN ACUTE AND CRITICAL CARE. 18 YEARS EXPERIENCE AS AN INDEPENDENT LEGAL NURSE CONSULTANT FOR CHART REVIEW FOR MERIT FOR MEDICAL MALPRACTICE, AND EXPERT WITNESSING FOR NURSING STANDARD OF CARE.

Professional Membership

AMERICAN ASSOCIATION OF CRITICAL CARE NURSES; AMERICAN ASSOCIATION OF LEGAL NURSE CONSULTANTS; AMERICAN NURSING ASSOCIATION; AMERICAN ASSOCIATION OF NEUROSCIENCE NURSES

Education

ASSOCIATE DEGREE IN NURSING, COLLEGE OF MARIN, 1980, KENTFIELD, CA.; CCRN CERTIFIED SINCE 1982; CARDIAC MEDICINE CERTIFIED SINCE 2006; NEURO CERTIFIED 2012; STROKE CERTIFIED 2016; ACLS/BLS CERTIFIED; IABP CERTIFIED
REGISTERED NURSE LICENSE: ARIZONA, CALIFORNIA AND GEORGIA

Work experience

STAFF RN AT SCOTTSDALE MEDICAL CENTER OSBORN IN THE SCU [SPECIAL CARE UNIT] JULY 2014- PRESENT

RN III , SAVANNAH MEMORIAL HEALTH UNIVERSITY MEDICAL CENTER, NEURO & CARDIOVASCULAR INTENSIVE CARE UNIT, APRIL 2009 TO JUNE 2014

STAFF RN, SANTA BARBARA COTTAGE HOSPITAL, CLINICAL RESOURCE NURSE FOR ICU AND CCU, AUGUST 2003-APRIL 2009

CONTRACTED CRITICAL CARE RN, MEDITECH HEALTH SERVICES, VENTURA, CA, ASSIGNMENTS IN ICU, CCU, ER AND TELEMETRY, 2000-2003

STAFF RN- CHARGE NURSE FOR CVICU AND TELEMETRY, SCOTTSDALE HEALTHCARE SHEA, SCOTTSDALE, AZ, 1991-2000

STAFF RN- CHARGE NURSE FOR CVICU AND TELEMETRY, PHOENIX, John C. Lincoln Hospital, AZ, 1985-1998

CHARGE NURSE, SONOMA VALLEY HOSPITAL, CRITICAL CARE UNIT, SONOMA, CA, 1980-1985