



US DEPARTMENT OF VETERANS AFFAIRS OFFICE OF INSPECTOR GENERAL

Office of Healthcare Inspections

VETERANS HEALTH ADMINISTRATION

Deficiencies in Communication for a Patient with a Spinal Cord Injury at the Charlie Norwood VA Medical Center in Augusta, Georgia

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Executive Summary

The VA Office of Inspector General (OIG) conducted a healthcare inspection to assess allegations that a spinal cord injury (SCI) patient was inappropriately admitted to the SCI unit following surgical treatment of [femur](#) and [tibia](#) bone [fractures](#) at the Charlie Norwood VA Medical Center (facility) in Augusta, Georgia.¹ Allegations also included that the patient was not consistently monitored for blood pressure or laboratory results; specifically, [complete blood count](#) (CBC) to measure [hemoglobin](#); had significant postoperative bleeding and required transfer to the critical care unit (CCU); and received multiple blood transfusions.

After reviewing the patient’s electronic health record (EHR), the OIG identified an additional concern related to a lack of communication between an [orthopedic](#) surgeon (surgeon) and the SCI interdisciplinary team during the patient’s outpatient fracture management.

An SCI is described as damage to the spinal cord, caused by trauma or disease, that affects nerve communication between the brain and the body.² SCI can result in the loss of sensation and movement.³ Additionally, patients with an SCI are at increased risk for leg fractures due, in part, to an inability to bear weight, which leads to significant bone and muscle loss.⁴

The patient was in their 30’s with a medical condition that led to an SCI, resulting in the loss of sensation and voluntary movement and the need for a motorized wheelchair.⁵ The patient had multiple comorbidities including [end-stage renal disease](#) that required [dialysis](#), [high blood](#)

¹ “VA’s Spinal Cord Injuries and Disorders System of Care,” (web page), VA Spinal Cord Injuries and Disorders System of Care, accessed August 8, 2022, https://www.sci.va.gov/VAs_SCID_System_of_Care.asp#:~:text=VA%27s%20Spinal%20Cord%20Injuries%20and%20Disorders%20System%20of,Spokes.%22%20The%2025%20SCI%20FD%20Centers%20are%20the%20Hubs; The facility is an SCI hub. VA’s SCI system of care is composed of hub centers and spoke facilities. The 25 national SCI Centers are hubs that house a multidisciplinary team who are trained to treat SCI patients and their unique needs. The spokes are designated facilities that work closely with hub teams to allow SCI patients to remain close to home for their care. VHA Directive 1176 (2), *Spinal Cord Injuries and Disorders System of Care*, September 30, 2019, amended February 7, 2020; The underlined terms are hyperlinks to a glossary. To return from the glossary, press and hold the “alt” and “left arrow” keys together.

² “What is a spinal cord injury or disorder (SCI/D)?” (web page), VA Spinal Cord Injuries and Disorders System of Care, accessed August 29, 2022, https://www.sci.va.gov/Veterans/What_is_SCID.asp; Paralyzed Veterans of America, “Yes, You Can! A Guide to Self-Care for Persons with Spinal Cord Injury Fourth Edition,” accessed August 25, 2022, https://pva.org/wp-content/uploads/2021/09/yes-you-can_digital.pdf.

³ “What is a spinal cord injury or disorder (SCI/D)?” (web page), VA Spinal Cord Injuries and Disorders System of Care.

⁴ Leah M. Schulte, Ryan D. Scully, Jason E. Kappa, “Management of Lower Extremity Long-bone Fractures in Spinal Cord Injury Patients,” *Journal of the American Academy of Orthopaedic Surgeons* 25, (September 2017): 204-13, https://journals.lww.com/jaaos/Fulltext/2017/09000/Management_of_Lower_Extremity_Long_bone_Fractures.13.aspx.

⁵ The OIG uses the singular form of they, “their” in this instance, for privacy purposes.

[pressure](#), and [anemia](#). The patient also had a history of requiring multiple blood transfusions after prior procedures. In early 2022, the patient sustained fractures of the left tibia and [fibula](#) bones just below the knee joint. Seven days later, the patient sought treatment at the facility's Emergency Department. The patient's first appointment with the orthopedic clinic was two days after being seen at the Emergency Department. The surgeon treated the patient's leg fractures over the course of the next months on an outpatient basis.

Approximately two months later, the patient sustained a new fracture in the left femur bone near the knee. Surgery was scheduled and admission to the SCI unit was requested. Surgery occurred, and was uncomplicated. The patient was admitted to the SCI unit postoperatively. Upon the patient's arrival to the SCI unit, an SCI unit physician assistant (SCI provider) and the admitting SCI nurse (afternoon SCI nurse) assessed the patient and noted some postoperative bleeding. SCI nurses continued to monitor the patient's postoperative bleeding throughout the afternoon, evening, and night, taking actions when further bleeding and changes in blood pressure occurred. In the early morning of the day following surgery, the patient was found to have [hypotension](#), [tachycardia](#), and continued postoperative bleeding from the surgical site. The patient was transferred to the CCU for higher level of care, and required blood transfusions before stabilizing.

Admission to and Postoperative Care on the SCI Unit

The OIG did not substantiate that the patient's postoperative admission to the SCI unit was inappropriate. SCI interdisciplinary teams are trained to treat the complexities associated with the SCI population. Both the surgeon and the anesthesiologist told the OIG that the patient's leg fracture surgery was uncomplicated. The chief of SCI informed the OIG that postoperative SCI patients are sent to the SCI unit unless there are complications during surgery, or the surgeon has concerns. Additionally, the OIG was informed the patient met post-[anesthesia](#) care unit discharge criteria and several facility SCI staff were familiar with the patient's care from previous hospitalizations.

Monitoring of Vital Signs and Labs, and Postoperative Bleeding

The OIG determined that the patient's [vital signs](#) (including blood pressure) and CBC were being monitored while the patient was on the SCI unit.

The SCI provider admitted the patient to the SCI unit and entered orders, including directions for nurses to assess the patient's vital signs every eight hours and for labs (including a CBC) to be drawn the next morning. According to the EHR documentation and OIG interviews, upon arrival at the SCI unit, the patient was medically stable and the surgical site was bandaged in a surgical dressing with a [knee immobilizer](#). The SCI provider and the afternoon SCI nurse assessed the patient and noted some postoperative bleeding. An orthopedic surgery resident came to examine the patient and reinforced the surgical dressing. Throughout the afternoon, evening, and night,

SCI nurses continued to monitor the patient's postoperative bleeding by visually assessing the dressing. The SCI nurses monitored the patient's blood pressure more frequently than every eight hours.

In the early morning of the day after surgery, a night shift SCI nurse (night SCI nurse) noted the patient's blood pressure continued to decrease and called the SCI provider. The SCI provider ordered [intravenous fluids](#); however, after receiving the fluids, the patient continued to have low blood pressure. The night SCI nurse collected a blood sample for labs, which included a CBC. The night SCI nurse completed the blood draw and the patient reported feeling lightheaded. The night SCI nurse noted "a moderate amount of blood that had come through [the surgical site dressing]," as well as a further decrease in the patient's blood pressure. The night SCI nurse called the rapid response team and the patient was transferred to a higher level of care where the patient received three units of blood.⁶

The OIG substantiated that the patient experienced significant postoperative bleeding, which resulted in the patient's transfer to a higher level of care and multiple blood transfusions. However, the OIG determined this event was not a result of the patient's admission to the SCI unit or the postoperative care that was provided. SCI nurses' close monitoring of the patient and timely initiation of the rapid response contributed to the patient's successful recovery.

Communication Deficiencies in Outpatient Fracture Management

The OIG identified a lack of communication between the surgeon and SCI staff related to the outpatient management of the patient's leg fractures.

The Veterans Health Administration (VHA) requires SCI patients with complex problems, such as fractures, be offered interdisciplinary team-based care at a VA SCI hub.⁷ Through interviews and an EHR review, the OIG found no evidence of communication between the surgeon and the SCI interdisciplinary team related to the outpatient care management or treatment of the patient's fractures.

A team-based discussion between the surgeon and SCI interdisciplinary team related to the comprehensive management of the patient, including the possible need for adaptive wheelchair devices or additional patient skills training, as well as discussion of options for fracture management and timing of such management, may have enhanced the patient's care.

⁶ The rapid response team "is a team of clinicians who bring advanced expertise to the patient bedside in a non-intensive care setting." Facility Policy 6006.509, *Rapid Response Team*, October 29, 2021; On postoperative day 2, the patient received a fourth unit of blood and continued to improve.

⁷ VHA Directive 1176 (2).

The OIG determined that establishing a process to ensure improved communication and coordination between the Surgery Service and the SCI Service may benefit SCI patients with surgical needs.

The OIG made one recommendation to the Facility Director related to establishing a process to optimize communication.

VA Comments and OIG Response

The Veterans Integrated Service Network and Facility Directors concurred with the findings and recommendation and provided an acceptable action plan (see appendixes A and B). The OIG will follow up on the planned action until it is completed.



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Abbreviations

CBC	complete blood count
CCU	critical care unit
EHR	electronic health record
OIG	Office of Inspector General
PACU	post-anesthesia care unit
POD	postoperative day
SCI	spinal cord injury
VHA	Veterans Health Administration
VISN	Veterans Integrated Service Network



Introduction

The VA Office of Inspector General (OIG) conducted a healthcare inspection at the Charlie Norwood VA Medical Center (facility) in Augusta, Georgia, to assess the care of a spinal cord injury (SCI) patient with lower extremity [fractures](#).¹

Background

The facility, part of Veterans Integrated Service Network (VISN) 7, offers inpatient and outpatient services, including [orthopedic](#) surgery, and is an SCI hub center.² The Veterans Health Administration (VHA) classifies the facility as complexity level 1b, high complexity.³ From October 1, 2020, through September 30, 2021, the facility served 48,578 patients and performed 278 orthopedic surgeries. From July 1, 2020, through June 30, 2021, the facility trained 24 orthopedic surgery residents.⁴

Spinal Cord Injury

SCI is described as damage to the spinal cord, caused by trauma or disease, that affects nerve communication between the brain and the body.⁵ SCI can result in the loss of sensation and movement.⁶ Patients with SCIs have a risk of skin breakdown and [pressure sores](#) that are often

¹ The underlined terms are hyperlinks to a glossary. To return from the glossary, press and hold the “alt” and “left arrow” keys together.

² “VA’s Spinal Cord Injuries and Disorders System of Care” (web page), VA Spinal Cord Injuries and Disorders System of Care, accessed August 8, 2022, [https://www.sci.va.gov/VAs_SCID_System_of_Care.asp#:~:text=VA%27s%20Spinal%20Cord%20Injuries%20and%20Disorders%20System%20of,Spokes.%22%20The%2025%20SCI%2FD%20Centers%20are%20the%20Hubs](https://www.sci.va.gov/VAs_SCID_System_of_Care.asp#:~:text=VA%27s%20Spinal%20Cord%20Injuries%20and%20Disorders%20System%20of,Spokes.%22%20The%2025%20SCI%2FD%20Centers%20are%20the%20Hubs;); The facility is an SCI hub. VA’s SCI system of care is composed of hub centers and spoke facilities. The 25 national SCI Centers are hubs that house a multidisciplinary team who are trained to treat SCI patients and their unique needs. The spokes are designated facilities that work closely with hub teams to allow SCI patients to remain close to home for their care. VHA Directive 1176 (2), *Spinal Cord Injuries and Disorders System of Care*, September 30, 2019, amended February 7, 2020.

³ VHA Office of Productivity, Efficiency, and Staffing, “Facility Complexity Model Fact Sheet,” January 28, 2021. The VHA Facility Complexity Model categorizes medical facilities as levels 1a, 1b, 1c, 2, or 3, with level 1a being the most complex and level 3 being the least complex. A level 1b facility has “medium-high volume, high-risk patients, many complex clinical programs, and medium-large research and teaching programs.”

⁴ “Health Services Training Facility Summary Report” (website), VA Office of Academic Affiliations, <https://vaww.oaa.med.va.gov/>. (This website is not publicly accessible.); The OIG did not independently verify VHA data for accuracy or completeness.

⁵ “What is a spinal cord injury or disorder (SCI/D)?” (web page), VA Spinal Cord Injuries and Disorders System of Care, accessed August 29, 2022, https://www.sci.va.gov/Veterans/What_is_SCID.asp. Paralyzed Veterans of America (PVA), “Yes, You Can! A Guide to Self-Care for Persons with Spinal Cord Injury Fourth Edition,” accessed August 25, 2022, https://pva.org/wp-content/uploads/2021/09/yes-you-can_digital.pdf.

⁶ “What is a spinal cord injury or disorder (SCI/D)?” (web page), VA Spinal Cord Injuries and Disorders System of Care.

caused by excessive moisture or prolonged pressure.⁷ Additionally, patients with an SCI are at increased risk for leg bone fractures due, in part, to an inability to bear weight, which leads to significant bone and muscle loss.⁸ Treatments to manage fractures may include braces, splints, casts, or surgery. When a fracture occurs, the goal of treatment is to restore a patient to the previous level of activity and function.⁹

Allegations and Related Concerns

On April 12, 2022, the OIG received an allegation that following surgical treatment of [femur](#) and [tibia](#) bone fractures, the patient was inappropriately admitted to the SCI unit. The complainant also alleged the patient was not consistently monitored for blood pressure or laboratory (lab) results; specifically, a [complete blood count](#) (CBC) to measure [hemoglobin](#); had significant postoperative bleeding and required a transfer to the critical care unit (CCU); and received multiple blood transfusions.

After reviewing the patient's electronic health record (EHR), the OIG identified additional concerns related to a lack of communication between an orthopedic surgeon (surgeon) and the SCI interdisciplinary team during the patient's outpatient fracture management.

Scope and Methodology

The OIG initiated the inspection on May 11, 2022, and conducted a site visit June 28–30, 2022. The OIG interviewed facility leaders and staff familiar with the patient's care and relevant processes. Interviewees included the Chief of Staff, multiple service chiefs, providers, and nurses. The OIG also interviewed national VA leaders (national leaders) for subject-matter expertise.¹⁰

The OIG reviewed relevant VHA and facility policies and procedures, nurse training records, provider credentialing and privileging documents, and evidence-based medical journals. The OIG reviewed the patient's EHR entries, relevant to this inspection, from October 2016 through early April 2022.

⁷ PVA, "Yes, You Can! A Guide to Self-Care for Persons with Spinal Cord Injury Fourth Edition."

⁸ Leah M. Schulte, Ryan D. Scully, Jason E. Kappa, "Management of Lower Extremity Long-bone Fractures in Spinal Cord Injury Patients," *Journal of the American Academy of Orthopaedic Surgeons* 25, (September 2017): e204-13, https://journals.lww.com/jaaos/Fulltext/2017/09000/Management_of_Lower_Extremity_Long_bone_Fractures.13.aspx.

⁹ A. Frotzler, B. Cheikh-Sarraf, M. Pourtehrani, J. Krebs, K. Lippuner, "Long-bone fractures in persons with spinal cord injury," *Spinal Cord* 53, (Epub May 19, 2015): 701-704, <https://www.nature.com/articles/sc201574.pdf>.

¹⁰ The OIG interviewed VA national leaders including the Deputy Executive Director of the Spinal Cord Injuries and Disorders National Office and the Orthopedic Surgery Chair of the National Surgery Office's Surgical Advisory Boards.

In the absence of current VA or VHA policy, the OIG considered previous guidance to be in effect until superseded by an updated or recertified directive, handbook, or other policy document on the same or similar issue(s).

The OIG substantiates an allegation when the available evidence indicates that the alleged event or action more likely than not took place. The OIG does not substantiate an allegation when the available evidence indicates that the alleged event or action more likely than not did not take place. The OIG is unable to determine whether an alleged event or action took place when there is insufficient evidence.

Oversight authority to review the programs and operations of VA medical facilities is authorized by the Inspector General (IG) Act of 1978, as amended, 5 U.S.C. §§ 401–424. The OIG reviews available evidence to determine whether reported concerns or allegations are valid within a specified scope and methodology of a healthcare inspection and, if so, to make recommendations to VA leaders on patient care issues. Findings and recommendations do not define a standard of care or establish legal liability.

The OIG conducted the inspection in accordance with *Quality Standards for Inspection and Evaluation* published by the Council of the Inspectors General on Integrity and Efficiency.

Patient Case Summary

The patient was in their 30's with a medical condition that led to a high SCI, resulting in the loss of sensation and voluntary movement and the need for a motorized wheelchair.¹¹ The patient's other relevant medical conditions were [end-stage renal disease](#) requiring [dialysis](#), [high blood pressure](#), [insulin dependent diabetes](#), [anemia](#), [seizures](#), and a cognitive disorder. Starting in 2017, the patient had several surgeries for open pressure sores infection. In 2020, the patient sustained a fracture, had multiple surgeries to treat an infection, and had a right [below knee amputation](#). Since 2020, the patient required multiple blood transfusions after five of several most recent past procedures. Prior to 2022, the patient was regularly followed by the facility SCI Service and was seen multiple times by other facility specialty services, including [Plastic Surgery](#), Orthopedics, and [Urology](#).

In early 2022, the patient fell out of a motorized wheelchair and sustained fractures of the left tibia and [fibula](#) bones, just below the knee joint. Seven days later, the patient presented to the facility's Emergency Department where x-rays confirmed the fractures, and Orthopedic Surgery Service was consulted. The patient was placed in a [knee immobilizer](#) and discharged home until an appointment was available in the orthopedic clinic two days later. During the appointment, the patient was placed in a padded [long leg splint](#).

¹¹ The OIG uses the singular form of they, "their" in this instance, for privacy purposes.

At a follow-up appointment approximately one week later, the surgeon evaluated the left leg and x-rays, found no skin or splint issues, and requested that the patient return in three weeks for reevaluation x-rays and a follow-up appointment. The patient returned for the appointment and the surgeon documented the patient did not have any skin breakdown, and noted the x-rays showed little healing of the tibia and fibula bone fractures. The surgeon replaced the long leg splint with a [long leg cast](#) that ended just above the patient's knee, and instructed the patient to return in six weeks for another follow-up appointment.

Eighteen days later, the patient sustained a twisting injury to the casted left leg. Three days later, the patient returned to the orthopedic clinic and x-rays revealed a new fracture of the left femur bone near the knee. The surgeon planned to operate on both the femur and tibia bone fractures and surgery was scheduled for two days later. A provider working with the surgeon consulted the SCI Service to request preoperative admission to the SCI unit. The chief of SCI completed the consult the same day, indicating the SCI unit did not have a bed that day, but would admit the patient postoperatively. Among the laboratory studies (labs) analyzed the day of the orthopedic clinic visit were the hemoglobin at 10.6 g/dL (normal range 12.5–16.5) and [hematocrit](#) at 33.4 percent (normal range 38–46).¹²

On the day of surgery, postoperative day (POD) 0, preoperative labs showed the patient's hemoglobin was 10.2 g/dL and hematocrit at 30 percent. During surgery, the surgeon and two orthopedic surgery residents placed a nail in the patient's left femur bone and another nail in the left tibia bone. Each of the nails had screws placed at the top and bottom of the broken bones. Images during surgery confirmed the placement of the nails and screws in the bones, and the left leg was placed in a knee immobilizer over the surgical dressing.

EHR documentation noted the surgery was uncomplicated, with expected blood loss, and the [anesthesia](#) record showed no major changes in blood pressure or heart rate during the procedure. After surgery, the patient was taken to the post-anesthesia care unit (PACU), was assessed as stable with a normal blood pressure, and approximately 30 minutes later, transferred to the SCI unit.

EHR documentation reflects that an SCI unit physician assistant (SCI provider) completed the admission history and physical and noted postoperative bleeding. The admitting SCI nurse (afternoon SCI nurse) also noted "some bleeding" at the surgical site and documented that a "surgeon came to [the] bedside to redress [the] area with [an] ace bandage."¹³ Nurses took [vital signs](#) at least seven times in 12 hours and assessed the patient for further bleeding throughout the afternoon, evening, and through the night. Shortly after midnight, a night shift SCI nurse (night SCI nurse) called the SCI provider, who was on-call, with concerns about the patient's lower

¹² The OIG reviewed the patient's hemoglobin lab results from April 2021 through March 2022 and found the patient's baseline results were below the normal range, approximately 10 g/dL.

¹³ The OIG later identified that the individual was an orthopedic surgery resident, not a surgeon.

blood pressure. The SCI provider ordered [intravenous fluids](#). The night SCI nurse administered the fluids but there was minimal effect on the blood pressure.

In the early morning of the day following surgery (POD 1), the night SCI nurse completed a blood draw for labs. During the blood draw, the night SCI nurse found the patient had [hypotension](#), [tachycardia](#), and continued bleeding from the surgical site. The night SCI nurse notified the rapid response team.¹⁴ During the rapid response, blood was redrawn for labs as the previous sample sent by the night SCI nurse had coagulated. The patient's lab results showed a hemoglobin of 5.8 g/dL and a hematocrit of 18.4 percent. The patient was transferred to the CCU for a higher level of care. Upon admittance to the CCU, the patient's labs were repeated, and results were a hemoglobin of 4.9 g/dL and hematocrit of 15.3 percent. The patient required blood transfusions.

On POD 1, after the patient's transfer to the CCU, an orthopedic surgery resident entered a note that included a summary of care section called *interval*.¹⁵ The interval summary outlined an orthopedic surgery resident taking down the surgical dressing and observing a "slow bloody ooze" from the left knee and ankle at the surgical incision sites. The orthopedic surgery resident placed a stitch in the left leg; however, the exact site was not noted.

Later that day, after receiving three units of blood, the patient's hemoglobin improved to 8.4 g/dL and hematocrit to 24.3 percent; however, the surgeon was concerned about possible internal bleeding in the left leg. An ultrasound of the leg was completed and showed a small hematoma (collection of blood) at the outer aspect of the left knee. On POD 2, the patient received a fourth unit of blood and continued to improve.

On POD 3, the patient remained in stable condition in the CCU. On POD 4, after receiving dialysis, the patient was transferred back to the SCI unit. The patient remained stable and was discharged home on POD 9.

Inspection Results

1. Postoperative Care on the SCI Unit

The OIG did not substantiate that the patient's postoperative admission to the SCI unit was inappropriate. The OIG determined that the patient's blood pressure and CBC were being monitored while the patient was on the SCI unit. The OIG substantiated that the patient experienced significant postoperative bleeding, which resulted in the patient's transfer to the

¹⁴ The rapid response team "is a team of clinicians who bring advanced expertise to the patient bedside in a non-intensive care setting." Facility Policy 6006.509, *Rapid Response Team*, October 29, 2021.

¹⁵ The OIG was unable to determine if this was the same orthopedic surgery resident who evaluated the patient on the SCI unit the afternoon of the surgery.

CCU and multiple blood transfusions. However, the OIG determined this event was not related to the patient's admission to the SCI unit or the postoperative care that was provided.

Admission to the SCI Unit

VHA recommends that patients with SCIs be admitted to SCI units “whenever possible and safe to ensure the best possible care.”¹⁶ SCI interdisciplinary teams are trained to treat the complexities associated with the SCI population.¹⁷ Through review of the patient's EHR and interviews with the surgeon and the anesthesiologist, the OIG learned the surgery was uncomplicated, the patient met PACU discharge criteria, and was then transferred to the SCI unit. The surgeon told the OIG the other option for postoperative admission was the surgery unit, but it did not have staff that specialized in SCI care. The chief of SCI informed the OIG that postoperative SCI patients are sent to the SCI unit unless there are surgical complications or the surgeon has concerns. Additionally, the OIG was informed that several facility SCI staff were familiar with the patient's care from previous hospitalizations.

Based on VHA recommendation and the patient's condition at the time of admission to the SCI unit, the OIG concluded that admission to the SCI unit was appropriate.

Timeline of Notable Events related to Postoperative Care

After reviewing the patient's postoperative care, the OIG outlined the sequence of events to better understand the trajectory of care the patient received while admitted to the SCI unit. Figure 1 provides a timeline of notable events.

¹⁶ VHA Directive 1176 (2).

¹⁷ VHA Directive 1176 (2).

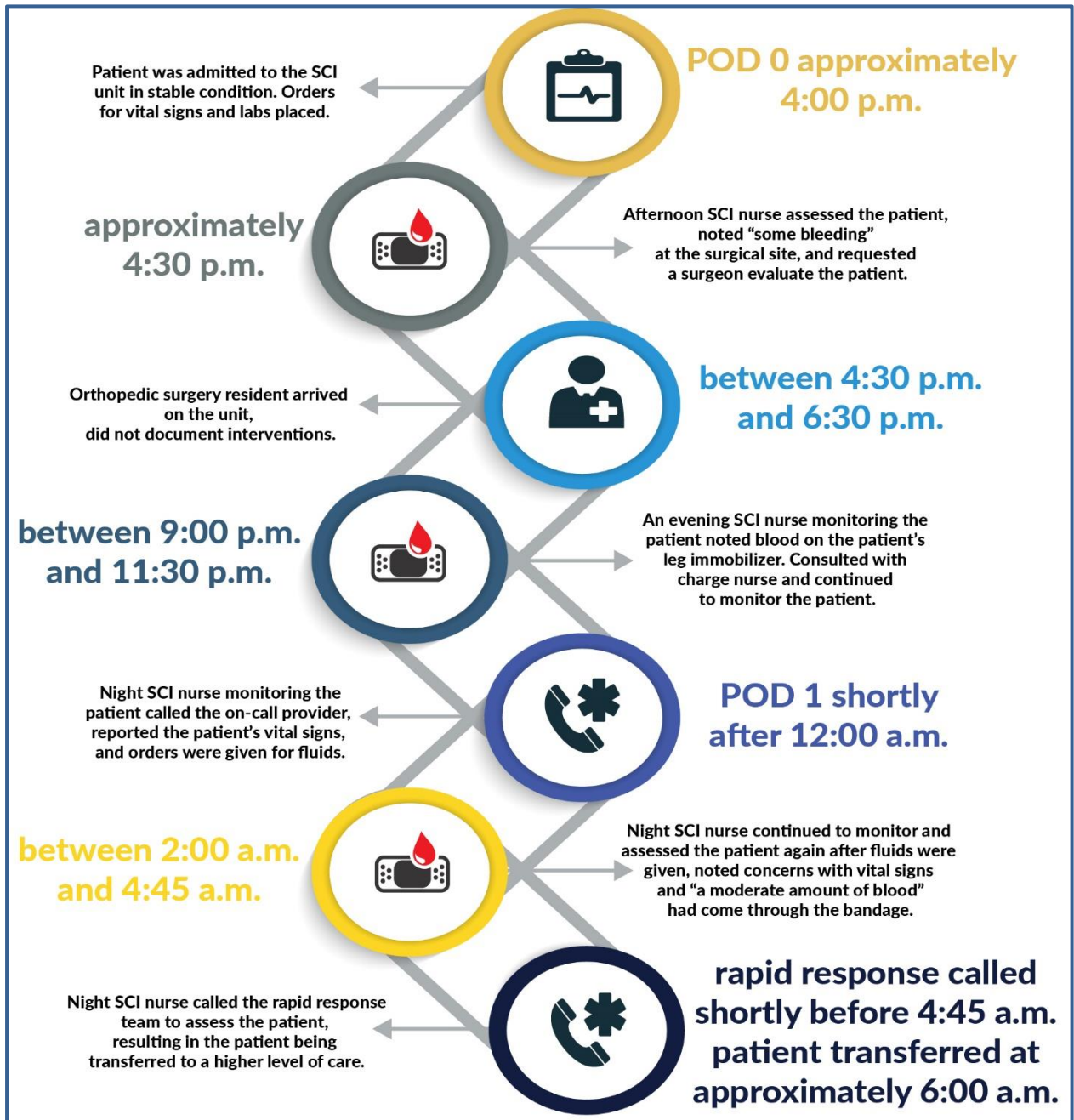


Figure 1. Selected events from the patient's admission to the SCI unit until transfer to a higher level of care approximately 14 hours later.

Source: Information obtained from the patient's EHR, facility documents, and through OIG interviews.

Monitoring of Vital Signs and Labs, and Postoperative Bleeding

Facility policy requires provider orders be entered into the EHR.¹⁸ Nurses are to monitor patients based on orders entered by providers.¹⁹ Nursing staff monitoring of a surgical site wound is particularly important in the hours following surgery due to the risk of bleeding.²⁰ Hypovolemia occurs when a person has a decreased amount of blood in the body.²¹ Symptoms of hypovolemic shock include hypotension, tachycardia, and an increased breathing rate.²² Delayed treatment of hypovolemic shock can lead to tissue injury and organ damage.²³

On POD 0, the SCI provider admitted the patient for postoperative observation and an annual SCI evaluation. The SCI provider placed an order for the annual evaluation and orders for nurses to assess the patient's blood pressure every eight hours, and for labs (including a CBC) to be drawn the next morning.

According to EHR documentation and OIG interviews, upon arrival at the SCI unit, the patient was stable, the surgical site was bandaged in a surgical dressing, and the patient's left leg was in a black, padded knee immobilizer. The SCI provider and the afternoon SCI nurse assessed the patient and noted some postoperative bleeding; however, the extent of the bleeding was not documented.

In interviews, the OIG heard differing accounts of the extent of bleeding. One staff member recalled seeing blood on the surgical site dressing only, and two staff recalled seeing blood on the sheets covering the stretcher used to transport the patient to the SCI unit. Nurses reported varying understanding as to whether the knee immobilizer should be removed to assess the dressing. However, in response to seeing postoperative bleeding upon the patient's arrival to the SCI unit, the afternoon SCI nurse told the OIG about requesting an orthopedic surgeon assess the patient.

SCI staff told the OIG that in the late afternoon of POD 0, an orthopedic surgery resident came to the SCI unit to assess the patient. The orthopedic surgery resident did not document this assessment in the EHR; however, in interviews, nursing staff agreed the orthopedic surgery resident reinforced the patient's dressing.

¹⁸ Facility Policy, *Bylaws and Rules of the Medical Staff*, October 30, 2020.

¹⁹ Jan Odom-Forren, "Postoperative Patient Care and Pain Management," chap 10 in *Alexander's Care of the Patient in Surgery*, 16th ed., eds. Jane. C. Rothrock (St. Louis: Elsevier, 2019), 261-86.

²⁰ Jan Odom-Forren, "Postoperative Patient Care and Pain Management," 261-86.

²¹ Jason D. Napolitano, "The Physical Examination to Assess for Anemia and Hypovolemia," *Medical Clinics of North America* 106, (2022): 509-18, <https://www.clinicalkey.com/#!/content/playContent/1-s2.0-S0025712521001784?scrollTo=%23h10000306>.

²² Myrna Eileen. Mamaril, "Care of the Shock Trauma Patient," chap. 54 in *Drain's PeriAnesthesia Nursing: A Critical Care Approach*, 7th ed., eds. Jan Odom-Forren (St. Louis: Elsevier, 2018), 774-97; Napolitano, "The Physical Examination to Assess for Anemia and Hypovolemia."

²³ Napolitano, "The Physical Examination to Assess for Anemia and Hypovolemia," 509-18.

Throughout the afternoon, evening, and night, SCI nurses continued to monitor the patient’s postoperative bleeding by visually assessing the dressing and documenting any changes. An OIG review of the patient’s EHR showed that SCI nurses monitored the patient’s blood pressure more frequently than every eight hours (see table 1).²⁴ SCI nurses told the OIG about consulting with charge nurses and calling the SCI provider when there were changes in the patient’s blood pressure and when further bleeding was noted.

Table 1. Nursing Staff Monitoring of Patient’s Vital Signs

Vital Signs Assessed on SCI unit	Systolic Blood Pressure *	Pulse†
POD 0, ~4:00 p.m. (Hour 0)	105	102
POD 0, 9:00 p.m. (Hour ~5)	99	118
POD 0, 9:50 p.m. (Hour ~6)	109	120
POD 0, 10:47 p.m. (Hour ~7)	97	123
POD 1, ~2:00 a.m. (Hour ~10) ‡	105	127
POD 1, ~4:00 a.m. (Hour ~12) ‡	95	-
POD 1, 5:00 a.m. (Hour ~13) §	80	130

Source: Patient’s EHR Vitals

*Although the normal systolic blood pressure for an SCI patient is 90, this patient had a history of high blood pressure with a baseline average systolic of 129. Hypotension could be a symptom of hypovolemic shock.

†For adults, a resting heart rate normally ranges from 60 to 100 beats per minute. Tachycardia (rapid heart rate) could be a symptom of hypovolemic shock.

‡The OIG estimated time of vital signs based on nursing documentation of two separate instances of taking the patient’s vital signs on POD 1 between approximately 1:00 a.m. and when the rapid response team was called shortly before at 4:45 a.m. These vital signs were found within the patient’s progress notes in the EHR.

§Vital signs taken during the rapid response.

In the early morning on POD 1, the night SCI nurse called the SCI provider, who was on-call, after the patient’s blood pressure continued to drop. In interviews, the night SCI nurse reported knowing the patient from a previous admission, and took action when recognizing the patient was not acting normally. The night SCI nurse explained that after discussion with the SCI provider, intravenous fluids were ordered and administered to help increase the blood pressure. The intravenous fluids were infused over the course of an hour; however, the patient continued to have low blood pressure. The night SCI nurse attempted to collect a blood sample for labs (including a CBC) that the SCI provider had ordered. In an OIG interview, the night SCI nurse reported initially having difficulty collecting the blood sample but eventually obtained the blood for labs. However, the patient reported feeling lightheaded during the collection of blood. The

²⁴ PVA, “Yes, You Can! A Guide to Self-Care for Persons with Spinal Cord Injury Fourth Edition”; Mayo Clinic, “What’s a normal resting heart rate?,” accessed February 7, 2023, <https://www.mayoclinic.org/healthy-lifestyle/fitness/expert-answers/heart-rate/faq-20057979>; Myrna Eileen. Mamaril, “Care of the Shock Trauma Patient,”774-97; Napolitano, “The Physical Examination to Assess for Anemia and Hypovolemia.”

night SCI nurse assessed the patient, noted “a moderate amount of blood that had come through [the dressing],” and observed the patient’s blood pressure had dropped further.

The night SCI nurse called the rapid response team upon patient assessment showing multiple symptoms of hypovolemic shock. The rapid response team came to the SCI unit and examined the patient, noting the patient had recent acute changes in blood pressure, breathing, and heart rate. During the rapid response, it was noted that the CBC previously sent by the night SCI nurse had coagulated so the lab was reordered and drawn. The newly obtained CBC results indicated the patient’s hemoglobin was critically low. The patient was transferred to the CCU for a higher level of care. While in the CCU, the patient required multiple blood transfusions before the patient’s hemoglobin and hematocrit improved.

The OIG determined SCI nurses exceeded the SCI provider’s orders for monitoring blood pressure and followed the orders for obtaining the CBC. The OIG concluded the patient experienced a surgical complication that resulted in a transfer to the CCU and need for multiple blood transfusions. SCI nurses’ close monitoring of the patient and timely initiation of the rapid response contributed to the patient’s successful recovery.

2. Communication Deficiencies in Outpatient Fracture Management

The OIG determined there was a lack of communication between the surgeon and SCI staff related to the management of the patient’s initial and subsequent leg fractures. Effective communication is necessary to ensure services work together to provide support and individualized team-based care to complex SCI patients. The patient may have benefited from a team-based reevaluation of the patient’s ability to navigate the home setting given the casted leg. The reevaluation may have included a need for a different wheelchair and additional patient skills training.

VHA requires SCI patients with complex problems be offered comprehensive, coordinated, patient centered, interdisciplinary team-based care at an SCI hub.²⁵ Examples of care that should be discussed with the SCI interdisciplinary team include surgical procedures and lower leg fractures. According to VHA policy, the chief of SCI is responsible for maintaining communication to ensure that patients with SCI receive interdisciplinary team-based care.²⁶

Through interviews and an EHR review, the OIG found no evidence of communication between the surgeon and the SCI interdisciplinary team related to the outpatient care management or treatment of the patient’s fractures. Although the patient was receiving care at an SCI hub, the SCI interdisciplinary team was not involved in the patient’s care until after surgery.

²⁵ VHA Directive 1176 (2).

²⁶ VHA Directive 1176 (2).

Through the EHR documentation review and during an interview, the OIG learned the patient's long leg cast used to treat the first fractures positioned the leg so that it extended straight out while sitting in the wheelchair; this made the leg susceptible to impact when maneuvering in the wheelchair and through doors. The surgeon reported not consulting with the SCI interdisciplinary team about the initial fracture due to belief the SCI interdisciplinary team had no experience with casting a fracture. The OIG deemed that if the SCI interdisciplinary team had been involved at the onset of management and treatment of the patient's tibia and fibula bone fractures, evaluation for an adaptive wheelchair device and additional skills training for navigating through doorways could have been completed and may have enhanced the patient's care.

The OIG concluded that given the lack of communication between the surgeon and the SCI interdisciplinary team, the patient was not provided the SCI interdisciplinary team-based approach to care as required by VHA. The OIG determined that establishing a process to ensure improved communication between the Surgery Service and the SCI Service may benefit SCI patients with surgical needs.

Conclusion

The OIG did not substantiate the patient's postoperative admission to the SCI unit was inappropriate. The surgeon and the anesthesiologist reported, and documented in an EHR note, that the surgery was uncomplicated. Additionally, the patient met PACU discharge criteria. The chief of SCI confirmed that most postoperative SCI patients are sent to the SCI unit, and several facility SCI staff were familiar with the patient from previous hospitalizations.

The patient's blood pressure and CBC were being monitored while the patient was on the SCI unit. When the SCI provider admitted the patient postoperatively, orders were placed for the patient's blood pressure to be monitored every eight hours and to obtain a blood sample for labs (including a CBC) in the morning after surgery. SCI nurses monitored the patient with more frequent blood pressures than the provider ordered, and a blood sample for CBC was completed as ordered.

Upon the patient's arrival to the SCI unit, the SCI provider and the afternoon SCI nurse assessed the patient and noted some postoperative bleeding. In response, an orthopedic surgery resident came to the SCI unit and reinforced the patient's dressing. SCI nurses continued to monitor the patient's postoperative bleeding throughout their shifts, taking action when further bleeding was noted. The night SCI nurse called the rapid response team when the patient showed symptoms of hypovolemic shock, resulting in the patient transferring to a higher level of care where the patient required multiple transfusions. The OIG substantiated that the patient experienced significant postoperative bleeding; however, the OIG determined this event was not a result of the patient's admission to the SCI unit for postoperative care.

The SCI interdisciplinary team was not involved in the patient's care until after surgery. VHA requires SCI patients with complex problems be offered interdisciplinary team-based care at an SCI hub. There was no communication between the surgeon and SCI Service related to the outpatient care management or treatment of the patient's fractures. The OIG deemed that if the SCI interdisciplinary team had been involved in the initial management of the patient's tibia and fibula bone fractures, the patient's care may have been enhanced.

The OIG determined establishing a process to optimize communication between the Surgery Service and the SCI Service may benefit SCI patients with surgical needs.

Recommendation

The Charlie Norwood VA Medical Center Director establishes a process to optimize communication between the Surgery Service and the Spinal Cord Injury Service when providing care to spinal cord injury patients.

Appendix A: VISN Director Memorandum

Department of Veterans Affairs Memorandum

Date: July 9, 2023

From: Director, VA Southeast Network (10N7)

Subj: Healthcare Inspection—Deficiencies in Communication for a Patient with a Spinal Cord Injury at the Charlie Norwood VA Medical Center in Augusta, Georgia

To: Director, Office of Healthcare Inspections (54HL10)
Director, GAO/OIG Accountability Liaison Office (VHA 10BGOAL Action)

1. I have completed a full review of the Healthcare Inspection - Deficiencies in Communication for a Patient with a Spinal Cord Injury at the Charlie Norwood VA Medical Center in Augusta, Georgia.
2. I concur with the response and action plan submitted by the Charlie Norwood VA Medical Center in Augusta, Georgia for recommendation 1. The Chief of Surgery and the Acting Chief of Spinal Cord Injury established a service agreement between Surgery Services and Spinal Cord Injury Services on 14 June 2023. This service agreement will improve communication and effective working relationships for the coordination of surgical care for our Veterans. The VA Southeast Network is committed to ensuring Veterans we serve receive exceptional service at our medical centers.
3. If you have any questions or require further information, please contact the VISN 7 Quality Management Officer.

(Original signed by:)

David M. Walker, MD, MBA, FACHE
Network Director

Appendix B: Facility Director Memorandum

Department of Veterans Affairs Memorandum

Date: June 20, 2023

From: Director, Charlie Norwood VA Medical Center (509)

Subj: Healthcare Inspection—Deficiencies in Communication for a Patient with a Spinal Cord Injury at the Charlie Norwood VA Medical Center in Augusta, Georgia

To: Director, VA Southeast Network (10N7)

1. VA Augusta Health Care System is committed to honoring our Veterans by ensuring they receive high-quality healthcare services. I have reviewed the draft report and concur with the Office of the Inspector General's recommendation. We have completed the action for this recommendation and request closure.
2. I appreciate the opportunity to improve the care of Veterans at the Charlie Norwood VAMC. The Chief of Surgery and the Acting Chief of Spinal Cord Injury established a service agreement between Surgery Services and Spinal Cord Injury Services on 14 June 2023. This service agreement will improve communication and effective working relationships for the coordination of surgical care for our Veterans.

(Original signed by:)

Robin E. Jackson, Ph.D.
Medical Center Director

Facility Director Response

Recommendation

The Charlie Norwood VA Medical Center Director establishes a process to optimize communication between the Surgery Service and the Spinal Cord Injury Service when providing care to spinal cord injury patients.

Concur.

Target date for completion: June 14, 2023

Director Comments

The Surgery Service and the Spinal Cord Injury Service established a service agreement on June 14, 2023, which will optimize communication and coordination of care of SCI patients from the time of admission to the time of discharge.

OIG Comments

The OIG considers this recommendation open to allow time for the submission of documentation to support closure.

Glossary

To go back, press “alt” and “left arrow” keys.

anemia. A condition where a person’s blood is deficient in red blood cells.¹

anesthesia. The loss of sensation prior to surgery and during a procedure, with or without consciousness.²

below knee amputation. Removal of a lower limb cut below the knee.³

complete blood count (CBC). A blood test used to evaluate multiple parts of blood including hemoglobin, hematocrit, red blood cells, white blood cells, and platelets.⁴

dialysis. A treatment for a patient affected with kidney failure, it is the process of removing blood from an artery, adding vital substances, and returning it to a vein.⁵

end-stage renal disease. A complete or near complete irreversible loss of renal (kidney) function.⁶

femur. The proximal bone of the lower limb that extends from the hip to the knee.⁷

fibula. The outer and usually smaller of the two bones between the knee and ankle in lower limbs.⁸

fracture. To break hard tissue, such as a bone.⁹

hematocrit. The percentage of red blood cells, which carry oxygen throughout the body, in blood.¹⁰

¹ Merriam-Webster, “anemia,” accessed August 1, 2022, <https://www.merriam-webster.com/dictionary/anemia>.

² Merriam-Webster, “anesthesia,” accessed August 1, 2022, <https://www.merriam-webster.com/dictionary/anesthesia>.

³ Merriam-Webster, “amputate,” accessed August 1, 2022, <https://www.merriam-webster.com/dictionary/amputate>.

⁴ Mayo Clinic, "Patient Care & Health Information, Complete blood count (CBC)," accessed October 17, 2019, <https://www.mayoclinic.org/tests-procedures/complete-blood-count/about/pac-20384919>.

⁵ Merriam-Webster, “dialysis,” accessed August 1, 2022, <https://www.merriam-webster.com/dictionary/dialysis>.

⁶ Merriam-Webster, “end stage renal disease,” accessed August 1, 2022, <https://www.merriam-webster.com/medical/end-stage%20renal%20disease>.

⁷ Merriam-Webster, “femur,” accessed March 9, 2023, <https://www.merriam-webster.com/dictionary/femur>.

⁸ Merriam-Webster, “fibula,” accessed March 9, 2023, <https://www.merriam-webster.com/dictionary/fibula>.

⁹ Merriam-Webster, “fracture,” accessed August 1, 2022, <https://www.merriam-webster.com/dictionary/fracture>.

¹⁰ Cleveland Clinic, “Hematocrit,” accessed March 16, 2023, <https://my.clevelandclinic.org/health/diagnostics/17683-hematocrit>.

hemoglobin. A component of red blood cells. Low hemoglobin may be a sign of an iron deficiency, kidney disease, or blood loss resulting from surgery.¹¹

high blood pressure. A condition in which the force of the blood against an artery wall is high enough to eventually cause health problems such as heart disease.¹²

hypotension. Another name for low blood pressure; “a blood pressure reading lower than 90 millimeters of mercury for the top number (systolic) or 60 [millimeters of mercury] for the bottom number (diastolic).”¹³

insulin dependent diabetes. A chronic disease where the pancreas makes little or no insulin.¹⁴

intravenous fluids. “Specially formulated liquids that are injected into a vein to prevent or treat dehydration.” Intravenous fluids can be used to treat people who are sick, injured, dehydrated, or undergoing surgery.¹⁵

knee immobilizer. A device used to support and protect an injured or painful knee and the surrounding structures which may be worn after knee surgery to keep the knee from moving or bending.

long leg cast. A rigid casing used to immobilize a broken part of the leg bone(s) that extends from mid-thigh or higher to just above the toes. The cast material is placed around the leg and is removed with a cast saw.

long leg splint. A device used to protect and immobilize an injured or broken leg that extends from the mid-thigh to just above the toes. The splint is made of padding and a stiff material, often plaster or fiberglass. The padding goes around the leg, the stiff material does not. The splint may be removed by unwrapping it.

orthopedic. A branch of medicine focused on deformities, or injuries involving the musculoskeletal system including bones, ligaments, and tendons.¹⁶

¹¹ Cleveland Clinic, “Hemoglobin Test,” accessed May 16, 2023, <https://my.clevelandclinic.org/health/diagnostics/17790-hemoglobin-test>.

¹² Mayo Clinic, “High blood pressure (hypertension),” accessed August 1, 2022, <https://www.mayoclinic.org/diseases-conditions/high-blood-pressure/symptoms-causes/syc-20373410>.

¹³ Mayo Clinic, “Low blood pressure (hypotension),” accessed April 26, 2023, <https://www.mayoclinic.org/diseases-conditions/low-blood-pressure/symptoms-causes/syc-20355465>.

¹⁴ Mayo Clinic, “Type 1 diabetes,” accessed November 23, 2022, <https://www.mayoclinic.org/diseases-conditions/type-1-diabetes/symptoms-causes/syc-20353011?p=1>.

¹⁵ Cleveland Clinic, “IV Fluids,” accessed January 23, 2023, <https://my.clevelandclinic.org/health/treatments/21635-iv-fluids>.

¹⁶ Merriam-Webster, “orthopedics,” accessed July 24, 2023, <https://www.merriam-webster.com/dictionary/orthopedics#:~:text=%3A%20a%20branch%20of%20medicine%20concerned,such%20as%20tendons%20and%20ligaments>.

plastic surgery. Surgery to improve the function or appearance of parts of the body through reconstructive surgery.¹⁷

pressure sores. Damage to the skin caused by constant pressure on the area for an extended time frame resulting in lessened blood flow to the affected area.¹⁸

seizures. Convulsions, sensory disturbances, or loss of consciousness resulting from abnormal electrical discharges in the brain.¹⁹

tachycardia. The heart beats faster than normal (60 to 100 beats a minute) while at rest.²⁰

tibia. The inner and usually larger of the two bones of the leg between the knee and ankle.²¹

urology. The practice for diagnosing and treating problems involving the urinary tract and the male reproductive organs.²²

vital signs. Signs of life, specifically a person's pulse rate, respiratory rate, body temperature, and blood pressure.²³

¹⁷ Merriam-Webster, "plastic surgery," accessed August 1, 2022, <https://www.merriam-webster.com/dictionary/plastic%20surgery>.

¹⁸ National Cancer Institute, "pressure ulcer," accessed February 28, 2023, <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/pressure-ulcer>.

¹⁹ Merriam-Webster, "seizure," accessed August 1, 2022, <https://www.merriam-webster.com/dictionary/seizure>.

²⁰ Mayo Clinic, "Tachycardia, Symptoms & Causes", accessed February 28, 2019, <https://www.mayoclinic.org/diseases-conditions/tachycardia/symptoms-causes/syc-20355127>.

²¹ Merriam-Webster, "tibia," accessed March 9, 2023, <https://www.merriam-webster.com/dictionary/tibia>.

²² Mayo Clinic, "urology," accessed August 1, 2022, <https://www.mayoclinic.org/departments-centers/urology/sections/overview/ovc-20336015>.

²³ Merriam-Webster, "vital signs," accessed September 15, 2022, <https://www.merriam-webster.com/dictionary/vital%20signs>.

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