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Risk Factors for VTE in Orthopedic Surgery

Kellie Musick
Children's Mercy Hospital, klmusick@cmh.edu

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Risk Factors for VTE in Orthopedic Surgery

Kellie Musick, BS, BSN, RN
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QI Consultant
KT Scholar
RN Residency Program Manager
OR QI Coordinator
A3 for Problem Solving

Focus: Operating Room — Risk Factors for VTE in Orthopedic Surgery
Owner: Nurse Residency Program
Date: October 23, 2018
Date Approval: 
A3 Team: Nelle Maskik
Department Director Signature: Kcie Kaleb
A3 Scholar: Alex Herrold

**A3 Overview**

**A3 Summary**

- **Objective**: Reduce the risk of VTE in orthopedic surgery patients

**Process Overview**

- **Clarify the Problem**
  - VTE incidence: 300 per 100,000 cases
  - Risk factors: age, surgery type, anesthesia type

- **Break Down the Problem**
  - Risk factor: older age
  - Risk factor: sedating agents

- **Set a Target**
  - Reduce VTE incidence by 25%

**Develop and Implement Countermeasures**

- **Countermeasure 1**: Educational intervention
- **Countermeasure 2**: Process improvement

**Check Results and Process**

- **Data Analysis**: Improved outcomes with reduced VTE incidents

**Standardize and Follow Up**

- **Monitoring**: Regular reviews to ensure compliance
- **Continuous Improvement**: Feedback loop for ongoing improvements
- Children’s Mercy experienced a 92% increase in the Venous Thromboembolism (VTE) rate from FY17 to FY18 (0.38 to 0.73). FY19 data, shows a current rate of 1.35 (about 12 events).

- SCD stands for sequential compression device. It consists of sleeves that are placed around the calves of the patient that hook up to a machine. The machine pushes air in and out of the sleeves around the legs to perform a squeezing action. This action will help prevent blood clots from forming in the legs, which can lead to venous thromboembolism.

- Children’s Mercy practice in the operating room is to have surgical patients 10 years and older having spinal surgery and patients 12 years and older having a non-spinal surgery scheduled for greater than 60 minutes wear SCD’s. The SCD’s should be turned on prior to entering operating room.
Breakdown the Problem

- A chart audit was done on SCD compliance in the main operating room at Adele Hall for July-September 2018. Data showed that the orthopedic specialty had the lowest compliance. Next, a chart audit completed on SCD compliance in orthopedic surgery at Adele Hall, July-September 2018, reported that the compliance was 81%.

- Same day surgery and the operating rooms are impacted by SCD use. Same day surgery nurses are prompted to put the SCDs on the patients before the operating nurse takes the patient to surgery. The operating room nurses double check that they are on the patient and make sure that it is charted during the case.
A survey was sent out to SDS and OR staff nurses to help determine knowledge deficits regarding SCDs and the barriers of placing SCDs on perioperative patients. The top barriers for placing SCDs on perioperative patients stated by SDS nurses were the following:

- SDS nurse forgets or gets too busy
- Multiple time constraints can affect remembering
- Patient reluctance
- Surgeon preference not to use them if they state their case will not last up to the scheduled time of 60 minutes
- Feeling rushed
- Surgeon variability of preference
Set a Target

Increase SCD compliance in the orthopedic surgery specialty during surgical procedures at Adele Hall from 81% to 90% by February 28, 2019.
Identify Root Cause

Materials
- SCD machine
  - Constantly needs to be plugged in
  - Short battery life
- SCD sleeves
  - Numerous sizes
  - Nurses unclear what size is appropriate

Process/Methods
- Nurses unclear on why SCD’s are used in the OR
- Time constraints: patient late, high SDS volume, interruptions
- Lack of knowledge re: opting out of SCD’s

Healthcare Providers
- Staff reluctance due to patient frustration/refusal/behavioral issues that make it difficult to apply sleeves
- Unclear when machine and sleeve have been left out in the room by SDS
- Surgeon states surgery will not last more than 60 minutes

Machines
- Surgeon preference to opt-out of SCD’s
- Lack of access to proper SCD sizes
- Lack of knowledge on where to find SCD machines

Lack of coordination between SDS and OR staff
- Surgery last longer than expected and/or scheduled

The current SCD compliance in Orthopedic surgery specialty at Adele Hall from July – September is 81%
Identify Root Cause

- Top barriers identified from SDS and OR nurses (survey)
  
  O Lack of knowledge about SCD’s 
  O Surgery lasted longer than expected/scheduled 
  O SDS and OR staff forget to apply/too busy 
  O Surgeon preference not to use them
Develop and Implement Countermeasures

Develop and Implement Countermeasures: Driver Diagram

Aim Statement

To increase SCD compliance in the orthopedic surgery specialty during surgical procedures at above near from 83% to 90% by February 28, 2019.

Primary Drivers

- Lack of knowledge about SCD's
- Surgery lasted longer than expected/scheduled
- SOS and OR staff forgot to apply/too busy
- Surgeon preference not to use them

Secondary Drivers

- Teach SOS staff about current VTE rate
- Teach SOS staff about current SCD compliance in the operating room
- Teach SOS staff about SCD criteria
- Teach SOS staff about where to find SCD's
- Possibly having to go under the sterile field to place SCD on patient if surgery exceeds one hour
- Create a pop-up reminder that appears when the chart is opened
- Add a new icon to the tracking board
- Create a visual reminder and add to the computer stations in SOS
- Add to time-out to be performed before the patient is draped
- Have patient wear SCD band similar to name and allergy band
- OR nurse puts in an order stating that SCD's were not placed on patient due to the surgeon preference
- Long term: Continue to gather evidence-based research to improve practice standards

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### Develop and Implement Countermeasures

<table>
<thead>
<tr>
<th>Countermeasure</th>
<th>Ease of Change</th>
<th>Payoff/Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Possible</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff teaching for nurses to wear a band on their wrist with the name band and the allergy and reaction to NSG's during surgical field. Possibly having to go under the sterile field to place SDG on patient if surgery exceeds one hour</td>
<td>Easy</td>
<td>Low</td>
</tr>
<tr>
<td>Add an icon on the tracking board</td>
<td>Easy</td>
<td>Low</td>
</tr>
</tbody>
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<tbody>
<tr>
<td><strong>Implement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create visual reminder and add to computer station in SDG with an SDG education</td>
<td>Easy</td>
<td>High</td>
</tr>
</tbody>
</table>

**Investigating:**
- Kick-Out Challenge
- Pick Chart for Prioritization

**Challenge:**
- Continue to gather evidence based research to improve practice standards.
Develop and Implement Countermeasures

- An educational email was sent to SDS staff on November 21, 2018. This email included the following information:
  
  o Current VTE rate at Children’s Mercy Adele Hall
  o SCD sleeves and machines location in SDS and the OR
  o SCD criteria for perioperative patients

- A visual reminder was created and added to all of the computer stations in SDS on December 11, 2018.

- A new time-out form was created and put into orthopedic operating rooms on January 14, 2019.
Develop and Implement Countermeasures

Ortho Time Out Form

(Start by introducing all members of the perioperative team)

This is [2 patient identifiers]. They are here for (read procedure directly from consent), and the patient is marked on the [__________]. He/She has an allergy to [__________]. We will be giving [list antibiotic]. The patient’s weight is [______ kg] and we have [_______ mL] of [list local anesthetic/other medication] available. The wound class is [______] and the fire risk is [______]. Correct imaging is displayed.

If the patient meets the criteria for SCD’s: Does the patient have SCD’s on?

If SCD’s are not on and the patient meets the criteria for it, please place an order and describe why they were not used during procedure.

Does anyone have any special concerns regarding this procedure? Does everyone agree?
Data was collected by running weekly chart audits.

- These audits included all of the operating room cases that were scheduled for longer than 60 minutes and the patient was older than 12 years old.
- The audits were then separated by team specialty, which is how orthopedic SCD compliance was recorded.
- The percentage was then added to a run chart.

This is how the weekly SCD compliance was achieved.
Check Results and Process
• Post countermeasure surveys were sent out to SDS nurses on January 28, 2019 and to the OR orthopedic nurses on January 29, 2019.
• Results for the time-out form show that 100% of the Orthopedic OR nurses found the new time-out form to be helpful in remembering SCDs.
Standardize and Follow Up

- The orthopedic operating room nurses found the new time-out form as a helpful reminder to use SCDs. As a result, the time-out form will be implemented throughout the entire operating room for consistency and to improve the overall SCD compliance.

- SCD compliance audits will continued to be run by the OR QI Coordinator, and the data will continue to be shared with the OR staff at the end of every month.

- In the future, OR nursing staff should be educated on placing orders when SCDs are not in use for a patient who meets the criteria.

- Continue to monitor monthly SCD compliance rates to try and figure out why there is inconsistency.
References


