The First Step to Prevention of Perioperative Pressure Injuries: RISK ASSESSMENT

Cassendra A. Munro

Sponsored by: Mizuho OSI
Cassendra A. Munro, PhDc, RN, CNOR
Magnet, Professional Practice, & Care Experience Manager
Saint John’s Health Center
Learning Objectives

• Describe the appraisal process for a perioperative pressure injury problem.
• Discuss how to evaluate the impact of unanticipated hospital acquired perioperative pressure injuries.
• Identify contributors to hospital acquired perioperative pressure injuries in the perioperative environment.
• Describe the application of the Munro Scale® perioperative pressure injury risk assessment.
Agenda

• Problem Statement
• Patient Impact
• Munro Scale©
• Risk Factors
Introduction

Key terms:

Perioperative Pressure Injury

Hospital Acquired Pressure Injury

- Avoiding pressure ulcers was a National Patient Safety Goal for 12 years - from 2006 - 2018
- 60,000 patients die annually related to complications from pressure injuries
Pressure Injury Development
Pressure Injury Stages

- **Stage 1**: Skin damage
- **Stage 2**: Skin damage with undermining tissue loss
- **Stage 3**: Skin damage with undermining tissue loss, exposed muscle
- **Stage 4**: Skin damage with undermining tissue loss, exposed muscle, and bone

Layers shown:
- Skin
- Fat
- Muscle
- Bone
## Nurses Attitudes/Training

<table>
<thead>
<tr>
<th>Papers on prevention</th>
<th>Read</th>
<th>66%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Partly</td>
<td>65.3%</td>
</tr>
<tr>
<td>Adequacy of practice Prevent/treatment</td>
<td>Adequate</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>Inadequate</td>
<td>3.8%</td>
</tr>
<tr>
<td>Info NPUAP quick ref. guide</td>
<td>Unknown</td>
<td>87.8%</td>
</tr>
<tr>
<td>Access</td>
<td>No Access</td>
<td>89.9%</td>
</tr>
<tr>
<td>Read</td>
<td>Not Read</td>
<td>91.3%</td>
</tr>
</tbody>
</table>

Polling Question 1

What is the number of perioperative pressure injuries for your hospital?

A: We don’t keep track
B: We keep track but I don’t know
C: < 10 perioperative pressure injuries per year
D: 11 or > perioperative pressure injuries per year
Despite attention and effort regarding pressure injury prevention

- 1.3 to 3 million pressure injuries in US
- Projected $2.2 to $3.6 billion annually
  - IHI reported $11 billion annually
28% decline from 2010 to 2014 in pressure injuries

- Estimated 42,716 deaths prevented
- Estimated cost savings over $10 billion

- Hospitals no longer receive Medicare and Medicaid reimbursement for the care of Stage 3 and 4 pressure injuries that developed within the hospital admission.

- Focus on patient safety and quality of care identified the need to seek preventative measures to solve the problem of hospital acquired pressure injuries.
National Patient Safety Goal

Elements of performance NPSG 14.01.01

- Written plan to identify and prevent
- Conduct systematic risk assessment
- Reassess defined intervals
- Take action to maintain, improve, and prevent
- Educate staff to identify and prevent
Institute for Healthcare Improvement

Recommends plans to reassess risks daily, with greater frequency and documentation of the percentage of patients receiving daily reassessments.
Agenda

• Problem Statement

• Patient Impact

• Munro Scale©

• Risk Factors
Clinical Impact

- Pressure injuries are preventable
- Impact of pressure injury:
  - Pain
  - Disfigurement and suffering
  - Poor quality of care
  - Lower quality of life
  - Increased length of hospitalization
  - Potential for unanticipated surgeries
  - Increased cost of care
  - Legal ramifications
  - Patient mortality
Case Study

A 55-year-old female arrives to the preoperative unit at 5:00 am in an acute care setting because she is scheduled for a 7:00 am exploratory laparotomy and lysis of adhesions. Upon arrival she is placed supine on a gurney. Her BMI is 33 and ASA 2. She undergoes a four-hour procedure. In the post-anesthesia care unit, she complains of sacral pain and upon inspection a Stage I pressure injury is identified.
Polling Question 2

Are all the contributing risk factors identified for the development of this pressure injury?

A: Yes  
B: No  
C: Unsure

Case Study

A 55-year-old female arrives to the preoperative unit at 5:00 am in an acute care setting because she is scheduled for a 7:00 am exploratory laparotomy and lysis of adhesions. Upon arrival she is placed supine on a gurney. Her BMI is 33 and ASA 2. She undergoes a four-hour procedure. In the post-anesthesia care unit, she complains of sacral pain and upon inspection a Stage I pressure injury is identified.
Perioperative Specific Risk Assessment

Baby boomer generation is aging and having more surgeries each year.

Risk factors specific for patients undergoing surgery.

Inpatient risk assessment scales do not include the unique surgical risk factors.
Prevention

- First step is to assess and identify those at risk
- Pressure injuries can surface 24-72 hours post-surgery

Prevention does not stop once the procedure ends.
Skin Assessment

- **Fundamentals taught in nursing school**
  - Visually inspect, document, and communicate outcomes
  - Prior patient knowledge is not required

- **Risk factors direct the risk assessment**
  - Comorbidities
  - Position
  - Anesthetic Type
Risk Assessment

• Appropriate interventions follow skin assessment
• Skills are refined by knowledge
• Intervention for prevention
• Problem identification when high risk
  ➢ Preventative
  ➢ Proactive
• Need for inpatient nurse education
Unique features of the operating room and risks introduced to the surgical patient may be familiar to perioperative nursing caregivers.
Operating Room
Agenda

• Problem Statement
• Patient Impact
• Munro Scale®
• Risk Factors
Perioperative Specific Risk Assessment

Munro Scale

ELPO

Trigger Tool
Polling Question 3

Which perioperative specific pressure injury risk assessment scale is in use at your hospital?

A: Munro Scale
B: ELPO
C: Trigger Tool
D: None
The Munro Scale

- There is no equal
- Patient risk factors in all three phases:
  - Preoperative
  - Intraoperative
  - Postoperative
- Standardized and collective risk assessment
## Munro Pressure Ulcer Risk Assessment Scale For Perioperative Patients — Adult

**Preoperative Risk Assessment** evaluates six risk factor categories to determine a score of 1, 2 or 3. The sum of the risk factors results in the Preoperative Munro Score Total to determine the Level of Risk.

### Preoperative Risk Factor Score

<table>
<thead>
<tr>
<th>Mobility</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not limited, or slightly limited, moves independently</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Very limited, requires transfer assistance</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Completely immobile, requires full assistance</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nutritional State</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 12&quot; or &lt;</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>&gt; 12&quot; but &lt; 24&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>&gt; 24&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMI</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 30kg/m²</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>30kg/m² - 35kg/m²</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>≥ 35kg/m²</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight Loss</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss in 30-180 days</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Up to 7.4% weight loss, no change or unknown</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Between 7.5% to 9.9% weight loss</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>≥ 10% weight loss</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>39 or less</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>40-59</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>60 or greater</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

### Co-morbidity

Each co-morbidity grouping equals a score of 1. A minimum score of 0 and a maximum score of 6 is possible.

- Smoking (current)
- Prehypertension or high BP levels (BP > 120/80)
- Vascular/Renal/Cardio-vascular/Peripheral-vascular Disease
- Asthma/Pulmonary/Respiratory Disease
- Prior History of Pressure Ulcer/Existing Pressure Ulcer
- Diabetes/IDDM

**Preoperative Munro Score Total:** 6

### Risk Assessment Performed By:

- **RN Signature:**
- **Date:**
- **Time:**

### Munro Score Level of Risk Communicated To:

- **By:**
- **RN Signature:**
- **Date:**
- **Time:**
## Munro Pressure Ulcer Risk Assessment Scale For Perioperative Patients — Adult

**Intraoperative Risk Assessment** evaluates seven risk factor categories to determine a score of 1, 2, or 3. The sum of the risk factors plus the Preoperative Munro Score Total results in the Intraoperative Munro Score Total to determine the Level of Risk.

<table>
<thead>
<tr>
<th>Physical Status / ASA Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>As per anesthesia provider</td>
<td>Healthy &amp; mild systemic disease, no functional limitations</td>
<td>Moderate to severe systemic disease, some function limitation</td>
<td>Moderate to severe systemic disease, constant threat to life and functionally incapacitating or ASA &gt;3</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Anesthesia</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC, Local</td>
<td>Regional</td>
<td>General</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Body Temperature</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate high/low change as per anesthesia provider</td>
<td>36.1°-37.8°C Body T° maintained</td>
<td>&lt;36.1° or &gt;37.8° (+ or - 2°)</td>
<td>T° fluctuated + or - 2°</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hypotension</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate SBP high/low percentage change as per anesthesia provider</td>
<td>Absent or &lt;10% change in BP</td>
<td>Fluctuating or 11% to 20% change in BP</td>
<td>Persistent or 21% to 50% change in BP</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moisture</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin under patient</td>
<td>Remains dry</td>
<td>Some moisture</td>
<td>Pooled or heavy fluid</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surface / Motion</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positioning aids, warming blanket, position change</td>
<td>None/use of blanket over/stationary</td>
<td>Use of aids/blanket under/stationary</td>
<td>Shearing force/added pressure/variable position</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>For procedure</td>
<td>Lithotomy</td>
<td>Lateral</td>
<td>Supine/Prone</td>
<td>1</td>
</tr>
</tbody>
</table>

**Intraoperative Score Subtotal:** 18

Add Preoperative Munro Score Total for a Cumulative Total: 6

**Intraoperative Munro Score Total:** 24

13 = Low Risk  
13 - 24 = Moderate Risk  
25 or greater = High Risk  

**LEVEL OF RISK:** Moderate Risk

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**RN Signature:**

**Date:**

**Time:**

**Munro Score Level of Risk Communicated To:**

**By:**

**Date:**

**Time:**
Munro Pressure Ulcer Risk Assessment Scale For Perioperative Patients — Adult

Postoperative Risk Assessment evaluates two risk factor categories to determine a score of 1, 2 or 3. The sum of the risk factors plus the Intraoperative Munro Score Total results in the Postoperative Munro Score Total to determine the Level of Risk.

<table>
<thead>
<tr>
<th>POSTOPERATIVE RISK FACTOR SCORE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length of perioperative duration</strong></td>
<td>1</td>
</tr>
<tr>
<td>Total time from arrival to preoperative and departure from postoperative units</td>
<td>Up to 2&quot;</td>
</tr>
<tr>
<td><strong>Blood Loss</strong></td>
<td>1</td>
</tr>
<tr>
<td>Intraop plus PACU sanguinous fluid via wound, orifice &amp;/or drain as per LIP</td>
<td>Up to 200cc</td>
</tr>
</tbody>
</table>

Postoperative Score Subtotal: 6
Add Intraoperative Munro Score Total for a Cumulative Total: 24
Postoperative Munro Score Total: 30

LEVEL OF RISK: High Risk

Final Cumulative Risk Assessment Performed By:

<table>
<thead>
<tr>
<th>RN Signature:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
</table>

Final Cumulative Munro Score Level of Risk Communicated To:

<table>
<thead>
<tr>
<th>By:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
</table>

RN Signature:

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The Munro Scale®
Agenda

• Problem Statement
• Patient Impact
• Munro Scale©
• Risk Factors
Polling Question 4

Would you be able to list from memory all of these perioperative pressure injury risk factors from the Munro Scale?

A: Yes, all (15)
B: Maybe half (7)
C: Fewer than half (1-6)
## Risk Factors in the Munro Scale

### Preoperative
- **C**omorbidities
- **M**obility
- **U**nder Age of 60
- **N**utrition
- **R**ecent Weight Loss
- **O**ver Weight (BMI)

### Intraoperative
- **S**ystolic BP
- **S**urface
- **C**ore Temperature
- **A**SA
- **A**nesthesia Type
- **L**ying Position
- **L**ying Moisture

### Postoperative
- Length of Stay (LOS) Periop
- Estimated Blood Loss (EBL)
Preoperative

Co-morbidities
• Compromise of skin integrity
• Insufficiency of defense mechanisms
• Failure to resist tissue breakdown
• Disease processes that affect tissue tolerance

Current Status
• Lifestyle
• Prior history of pressure injury contributes to future development
Preoperative

M – Represents evaluation of the patient’s mobility status

U – Poses the question of the patients’ age and if it is under 60

N – Evaluation of the nutritional condition of the patient

R – Question related to the right weight for the patient to recognize if there was a recent weight loss

O – Inquiry of the BMI to determine if the patient is over-weight
Intraoperative & Postoperative

**S** – Appraisal of systolic blood pressure baseline and fluctuation throughout surgery and the surface the patient has been placed on

**C** – Core body temperature signaling the impact of hypothermia

**A** – Anesthesia type and the ASA physical classification

**L** – Lying position of the patient during the surgery and lying on moisture
Postoperative

L – Total **length of stay** in the perioperative area

E – **Estimated blood loss** from both the intraoperative period combined with sanguineous fluid accounted for in the post anesthesia care unit
## CMUNRO SCALE®

### PREOPERATIVE
- Co-morbidities
- Current Status
- Mobility
- Under Age of 60
- Nutrition
- Recent Weight Loss
- Over Weight (BMI)

### INTRAOPERATIVE
- Systolic BP
- Surface
- Core Temperature
- ASA
- Anesthesia Type
- Lying Position
- Lying Moisture

### POSTOPERATIVE
- Length of Stay (LOS) Periop
- Estimated Blood Loss (EBL)

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### CMUNRO SCALE®

**Co-morbidities/Diseases**

- Smoking
- Hypertension
- Vascular/Renal
- Cardio-vascular
- Peripheral-vascular
- Asthma
- Pulmonary
- Respiratory
- History of or existing Pressure Injury
- Diabetes all types

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[www.cassendramunro.com](http://www.cassendramunro.com)
Munro Consulting Website & AORN Pressure Injury Toolkit

The resources include:

- Munro Scale© Risk Assessment
- Instructions for use
- Case scenarios
- Voice over slide deck
- CMUNRO SCALE© Education Sheet

[cassendramunro.com]
Perioperative nurses should perform and communicate risk assessments for all patients.

Defined intervals in the perioperative setting.

Prevention does not stop when the procedure ends.
References


Ask Cassendra Your Questions…