Declaration of Financial Interests or Relationships

Speaker Name: Sandra Miles

I have the following financial interest or relationship to disclose with regard to the subject matter of this presentation:

- This project was a researcher initiated project partly funded by a Faculty of Health Sciences, Australian Catholic University - Faculty Research Grant – single school, multisite – Awarded $13,000 April, 2014 (ref: D3238).
- Funding used to pay for data collection by two research nurse assistants.
Pressure Injury in Adults Presenting to the Emergency Department by Ambulance*

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*Accepted for publication for Australian Critical Care
Background

• Pressure Injuries (PI):
  • painful, harmful, potentially preventable,
  • increase hospital length of stay and health care costs
  • can develop within two hours

• Skin inspection and PI risk assessment
  • should be done within 8 hours - International Guidelines
    (NPUAP, EPUAP, & PPIA, 2014)

• Some PI are inadvertently classified as hospital-acquired

• Any delay in recognition delays prevention / treatment
The Prince Charles Hospital
Metro North Hospital and Health Service

Literature Review

• PI prevalence greatly over the last ten years
• Maintaining low prevalence is a challenge and economic burden
  • despite evidence that prevention is effective.
• Focus attention on areas where PI may be generated
  • e.g. during transfer to hospital, within ED
    • Journey pressures, types of mattress/stretchers
  • → early intervention
• Little specific research in this area.
Research Questions

- Do some clients already have an existing PI?
- Can PI be generated in the ED?
- Can PI be generated on the way to the ED via ambulance?

→ What is the prevalence of pressure injuries on admission to the ED by ambulance?

→ Aim:

→ To investigate the prevalence of pressure injury in adults transferred by ambulance to the emergency department.
Methods

- Observational, cross-sectional descriptive study design
- Patients (n=212) recruited from ED of two Australian tertiary hospitals.
- Full skin inspection and PI risk assessment
  - undertaken within one hour of presentation
  - using Braden and Waterlow tools and scoring.
- Analysis:
  - Data entered into SPSS™ (version 23)
  - PI prevalence expressed as a percentage using the formula 
    \((\text{numerator}/\text{denominator}) \times 100\%\)
    where:
    - numerator = number of consenting patients with one or more PI (all stages),
    - denominator = total number of consenting patients inspected.
  - Data abnormally distributed
  - Non-parametric tests
Results

- PI identified in 11 of 212 patients
  - prevalence of 5.2% at presentation
- Nearly all were admitted to hospital
  - prevalence of 7.8% at this entry point.
- Patients with PI and those at high risk
  - found to have spent longer in ambulance and ED
- During ambulance transport and first hour in ED
  - rare for pressure-relieving interventions to be implemented
  - even for those with PI or at high-risk.
### Sample Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
<th>Sample size n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender male: female (%)</td>
<td>50.5: 49.5</td>
<td>107: 105</td>
</tr>
<tr>
<td>Median age: years (IQR)</td>
<td>56.5 (36 - 75)</td>
<td>212</td>
</tr>
<tr>
<td>Median ATS category (n, %)</td>
<td>3 (127, 59.9)</td>
<td>212</td>
</tr>
<tr>
<td>Median Waterlow score (IQR)</td>
<td>7 (4 - 12.25)</td>
<td>210</td>
</tr>
<tr>
<td>Median Waterlow risk category (%)</td>
<td>Not at risk (62.9)</td>
<td>132/210</td>
</tr>
<tr>
<td>Median Braden score (IQR)</td>
<td>23 (20.5 - 23)</td>
<td>209</td>
</tr>
<tr>
<td>Median Braden risk category (IQR)</td>
<td>Low (78.9)</td>
<td>165/209</td>
</tr>
<tr>
<td>Median time in ambulance mins (IQR)</td>
<td>59.5 (48.75 - 72.25)</td>
<td>210</td>
</tr>
<tr>
<td>Median time on stretcher mins (IQR)</td>
<td>38 (28.5 - 47.5)</td>
<td>209</td>
</tr>
<tr>
<td>Median POST mins (IQR)</td>
<td>14.5 (8 - 19)</td>
<td>209</td>
</tr>
<tr>
<td>Median triage to skin assessment time mins (IQR)</td>
<td>42 (30 - 51)</td>
<td>212</td>
</tr>
<tr>
<td>Median EDLOS mins (IQR)</td>
<td>241 (168 - 372)</td>
<td>212</td>
</tr>
<tr>
<td>NEAT met %</td>
<td>49.5</td>
<td>105/212</td>
</tr>
<tr>
<td>Access blocked %</td>
<td>11.8</td>
<td>25/212</td>
</tr>
<tr>
<td>Admitted to hospital %</td>
<td>60.4</td>
<td>128/212</td>
</tr>
</tbody>
</table>

ATS, Australasian Triage Scale; EDLOS, Emergency department length of stay; IQR, interquartile range; NEAT, National Emergency Access Target (met = ED discharge within four hours); POST, Patient Off Stretcher Time; SD, standard deviation
### Table 2. Stage and site of pressure injuries

DTI = deep tissue injury

<table>
<thead>
<tr>
<th>Site</th>
<th>Pressure injury stage</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Buttock</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Coccyx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malleolus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penis</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sacrum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trochanter</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 3. Risk categories of subjects with identified PI (n = 11)

<table>
<thead>
<tr>
<th>Braden risk category</th>
<th>Waterlow risk category</th>
<th>Not at risk</th>
<th>At risk</th>
<th>High risk</th>
<th>Very high risk</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Very high</td>
<td></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>11</td>
</tr>
</tbody>
</table>
Discussion

• Patients at higher risk of PI
  • have longer on-stretcher times and ED LOS.
  • → Further increase their susceptibility to PI

• Early skin inspection and risk assessment
  • needed to identify these patients
  • merited at point of presentation to ED
    • → Implement prevention and treatment at earliest possible opportunity.

• Use of specific pressure-relieving devices
  • recommended for those at greatest risk.

• These measures can reduce patient harm and ongoing health care costs.
Limitations

- Relatively small sample size
- Data collection from only two ED in an Australian public health setting
- Only one data collection period
- Limited characteristic variables collected
- Future Research:
  - Post hoc sample size calculation indicates
    - future studies would require a sample size of n= 280
    - using formula (Naing et al., 2006) and
    - the 5.2% prevalence reported in our study
  - Collection of further demographic characteristics to enable logistic regression
  - Further data collection period (after first hour of ED presentation)
    - to capture any subsequent PI interventions implemented
References
