



Wounds Australia 2018

ADVANCING HEALING HORIZONS:  
TOWARDS THE CUTTING EDGE IN WOUND CARE



## 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.



The Prince Charles Hospital  
Metro North Hospital and Health Service

# Pressure Injury in Adults Presenting to the Emergency Department by Ambulance\*

**Professor Paul Fulbrook & Dr Sandra Miles,**

School of Nursing, Midwifery and Paramedicine, Australian Catholic University, Brisbane;

Nursing Research and Practice Development Centre, The Prince Charles Hospital, Brisbane, Australia.

**Professor Fiona Coyer**

School of Nursing, Queensland University of Technology, Brisbane

Intensive Care Services, Royal Brisbane and Women's Hospital, Brisbane, Australia

\*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



# 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 (numerator/denominator) x 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

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

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

Site	Pressure injury stage						TOTAL
	1	2	3	4	DTI	Unstageable	
Buttock	1	1	1				3
Coccyx		1					1
Ear	3						3
Malleolus			1				1
Penis	1						1
Sacrum					1	3	4
Trochanter	1						1
<b>TOTAL</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>14</b>



## Table 3. Risk categories of subjects with identified PI (n = 11)

Braden risk category	Waterlow risk category				
	Not at risk	At risk	High risk	Very high risk	TOTAL
Low	0	0	0	0	0
Medium	1	0	2	3	6
High	0	1	0	1	2
Very high	0	0	1	2	3
<b>TOTAL</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>11</b>



## 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

- Naing L, Winn T, Rusli BN. Practical issues in calculating the sample size for prevalence studies. Arch Orofac Sci, 2006;1:9-14.
- National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and treatment of pressure ulcers: Clinical practice guideline. Osborne Park, Australia: Cambridge Media; 2014.