Hospital Acquired Pressure Ulcers/Injuries vs Community Acquired Pressure Ulcers/Injuries

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Sentimental Women Need Not Apply: A History of the American Nurse

A film by Diane Garey and Lawrence R. Hott. A production of Florentine Films.

Why?

Care Management Never Events	
Death/disability associated with medication error	
Death/disability associated with incompatible blood	Hospital-Acquired Condition
Maternal death/disability with low risk delivery	
Death/disability associated with hypoglycemia	Hospital-Acquired Condition
Death/disability associated with hyperbilirubinemia in neonates	
Stage 3 or 4 pressure ulcers after admission	Hospital-Acquired Condition
Death/disability due to spinal manipulative therapy	

Braden Risk Assessment Scale

(abridged version)

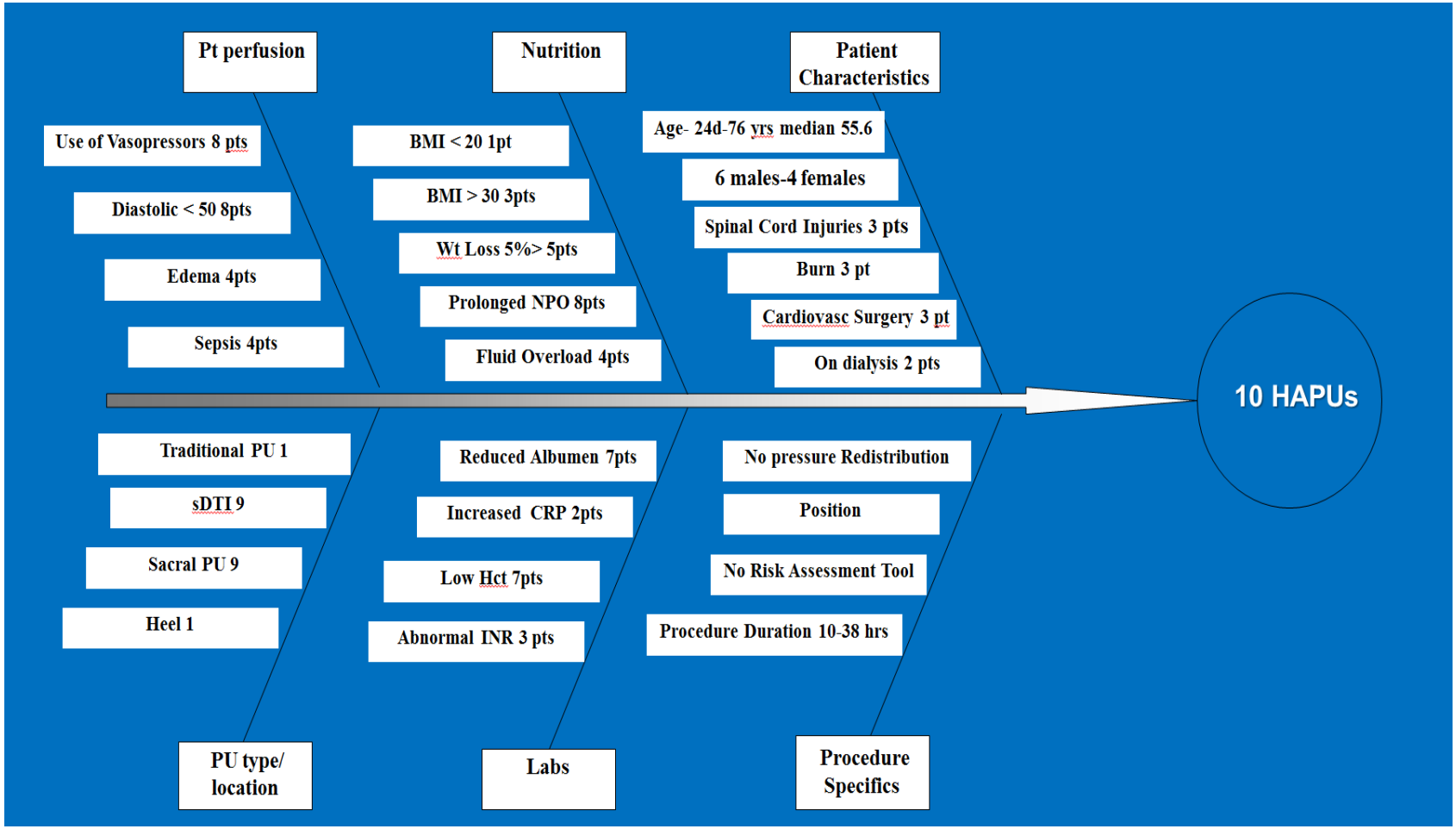
Sensory Perception	1 Completely limited	2 Very limited	3 Slightly limited	4 No impairment
Moisture	1 Constantly moist	2 Very moist	3 Occasionally moist	4 No impairment
Activity	1 Bedfast	2 Chairfast	3 Walks Occasionally	4 Walks frequently
Mobility	1 Completely immobile	2 Very limited	3 Slightly limited	4 No limitation
Nutrition	1 Very poor	2 Probably inadequate	3 Adequate	4 Excellent
Friction & Shear	1 Problem	2 Potential problem	3 No apparent problem	

Stage 1

Stage 2

Stage 3

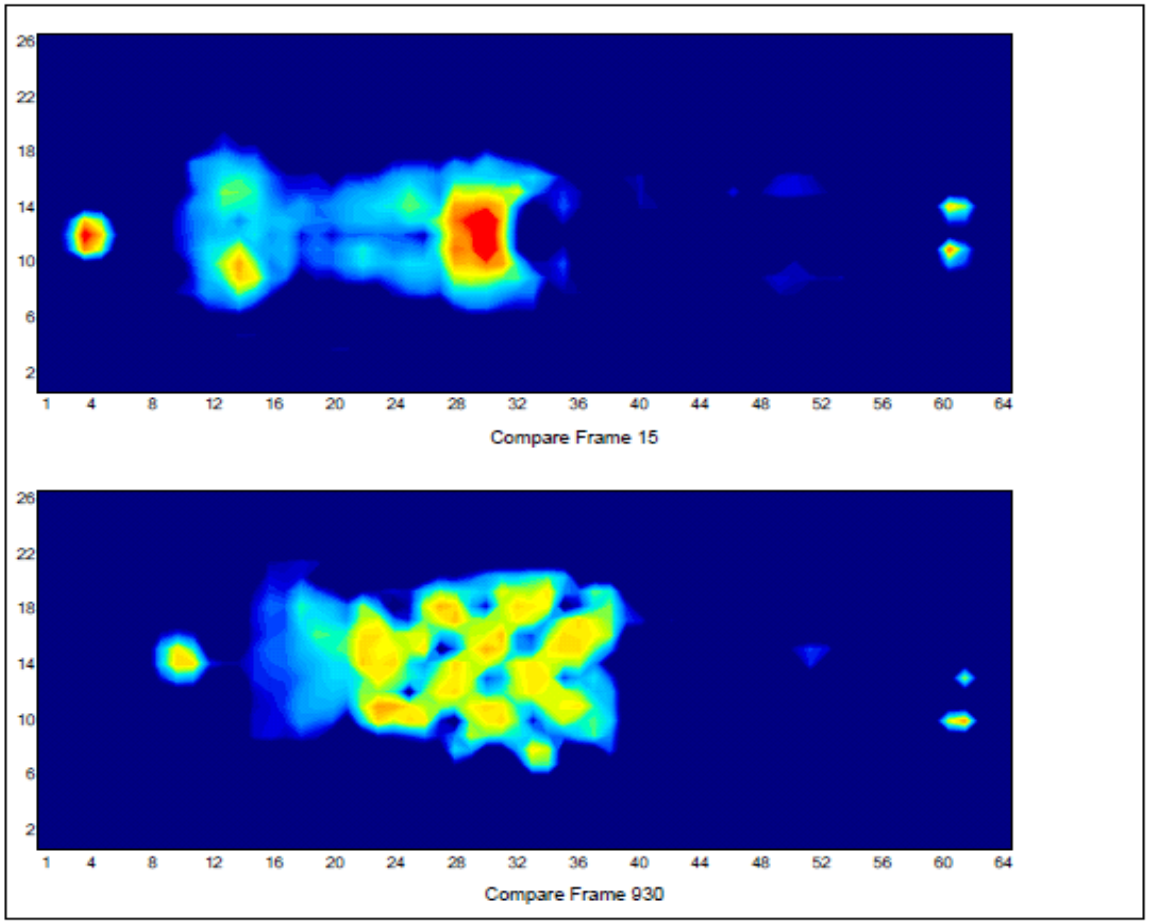
Stage 4


Pt perfusion
Nutrition
Patient Characteristics
Use of Vasopressors 8 pts
Diastolic < 50 8pts
Edema 4pts
Sepsis 4pts
BMI < 20 1pt
BMI > 30 3pts
Wt Loss 5%> 5pts
Prolonged NPO 8pts
Fluid Overload 4pts
Age- 24d-76 yrs median 55.6
6 males-4 females
Spinal Cord Injuries 3 pts
Burn 3 pt
Cardiovasc Surgery 3 pt
On dialysis 2 pts
10 HAPUs
Traditional PU 1
sDTI 9
Sacral PU 9
Heel 1
Reduced Albumen 7pts
Increased CRP 2pts
Low Hct 7pts
Abnormal INR 3 pts
No pressure Redistribution
Position
No Risk Assessment Tool
Procedure Duration 10-38 hrs
PU type/ location
Labs
Procedure Specifics

XSENSOR™ Technology Corporation

Innovators in Pressure Imaging

File: OR gel pad vs ehob seat cushion
Frame: Compare Mode
Range: 5.0 to 50.0 mmHg
Avg/Peak: 12.0 / 35.4 mmHg
Area: 456.25 in^2



mmHg	
27.4	5
26.6	0
25.9	0
25.2	4
24.5	4
23.8	3
23.0	3
22.3	6
21.6	2
20.9	1
20.1	1
19.4	3
18.7	3
18.0	5
17.3	6
16.5	5
15.8	7
15.1	7
14.4	12
13.7	12
12.9	18
12.2	16
11.5	17
10.8	8
10.0	17
9.3	18
8.6	7
7.9	15
7.2	17
6.4	20
5.7	22
5.0	28
0.0	1372
5.0 - 27.4	

Sensor/Group	Value
Frame: 15	
S0719	
Avg Pres.	12.0
Peak Pres.	35.4
Area (in^2)	456.25
Frame: 930	
S0719	
Avg Pres.	14.2
Peak Pres.	23.9
Area (in^2)	475.0

General Notes

Image

Comparison:
General ICU population vs HAPU patients

Group	N	Age	Sex	LOS	SBP	DBP	Braden	Hct	BMI	Shock	Dialysis	Surgery time	Pressor use
General ICU Pts	72	58	m=46 f=26	12.8	121	66	14	30.7	30	9.2%	14.5%	5.83	15.8%
HAPU Pts	47	55	m=28 f=19	24.9	89	46	13	25.4	31	60.5%	51.2%	13.2	60.5%

ICU=intensive care unit; HAPU=hospital-acquired pressure Ulcer; BMI=body mass index; LOS=length of stay

Odds ratio estimates

Effect (units)	Odds ratio	95% Wald confidence limits		P value
Dialysis (yes or no)	4.0	0.060	0.99	0.05
Shock (yes or no)	10.0	0.025	0.43	0.002
Diastolic blood pressure (mmHg)	0.93	0.88	0.99	0.02
Time in Surgery (hours)	1.20	1.07	1.33	0.001

A Retrospective, Descriptive, Comparative Study to Identify Patient Variables That Contribute to the Development of Deep Tissue Injury Among Patients in Intensive Care Units

Holly Kirkland-Kyhn, PhD, FNP-c, GNP-c, CWCN ; Oleg Teleten, MS, RN, CWCN; and Machelle Wilson, PhD

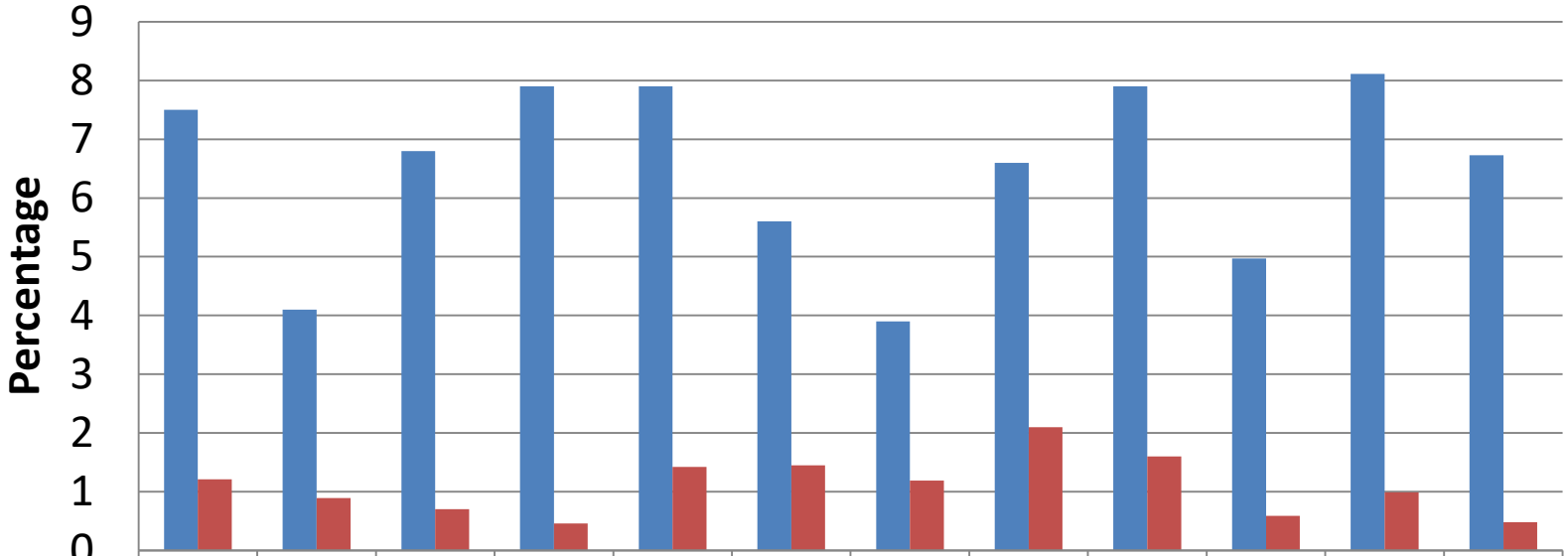
Abstract

Deep tissue injury (DTI) may develop in critically ill patients despite implementation of preventive interventions. A retrospective, descriptive study was conducted in a 620-bed, level 1 trauma, academic medical center with 7 adult intensive care units (ICUs: cardiac surgery, trauma surgery, burn surgery, med-surgery, neurosurgery, and medical) among patients treated from January 1, 2010 to January 1, 2015. All patients 18 years of age or older that developed a sacral DTI that evolved into a Stage 3, Stage 4, or unstageable HAPU in the ICU were included. Control group data was obtained from a sample of ICU patients who did not develop a DTI during 1 random day during that time period. Data were extracted from electronic medical records to compare ICU patients that developed a DTI (n = 47; age 55 [range 28–93] years, 28 men) to those who did not develop a DTI (n = 72; age 58.9 [range 18–94] years, 46 men). Twenty-five (25) potential sociodemographic and clinical risk factors were identified from root cause analysis and measured for significance. Systolic and diastolic blood pressure, length of surgery, hematocrit levels, international ratio, dialysis treatments, history of shock or vasopressor use, and total Braden score were significantly (P <.05) different between the general and HAPU population. Braden scores were low for general ICU (15.0 ± 0.4) and HAPU patients (12.9 ± 0.3) (P = 0.03). Multivariate, univariate, and regression analysis showed patients with poor perfusion (low blood pressure) (OR 0.93; 95% CI 0.88-0.99), prolonged surgical procedures (time in surgery OR 1.20; 95% CI 1.07-1.33), or a history of dialysis (OR 4.0; 95% CI 0.060-0.99) and shock (OR 10.0; 95% CI 0.025-0.43) were at greatest risk for the development of DTI evolving into a Stage 3, Stage 4, or unstageable HAPU. For every mm Hg decrease in DBP, the odds of a DTI increased by approximately 7.5% (1/0.93 = 1.075). For every hour increase in surgery, the odds of developing a DTI increased by 20%. These data suggest when all modifiable (Braden Scale-identified) risk factors are addressed, as was the case in this population, patient-related risk factors may be more important for HAPU development in ICU patients than quality of nursing care variables. Future research should focus on the role of and methods to increase perfusion to prevent DTI development, especially during dialysis and surgical procedures.

Keywords: outcome assessment, retrospective study, pressure ulcer, risk factors, critical care

Index: *Ostomy Wound Management* 2017;63(2):xx–xx

CAPU/I vs HAPU/I



	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4
CAPU %	7.5	4.1	6.8	7.9	7.9	5.6	3.9	6.6	7.9	4.97	8.11	6.73
HAPU %	1.21	0.89	0.7	0.46	1.42	1.45	1.19	2.1	1.6	0.59	0.99	0.48

Comparative Table on Community Acquired (POA) Pressure Ulcers

Hospital	Total PU Cases POA	% Cases	Total Discharge	Cases-Stg 2	Cases-Stg 3	Cases-Stg 4	Cases-Unstageable	Cases-Unspecified
UCDAVIS	823	2.4%	34,700	278	254	171	81	67 (8.1%)
UCIRVINE	502	2.2%	22,487	224	94	68	61	79 (15.7%)
UCLA-RR	295	1.2%	24,146	135	48	45	21	49 (16.6%)
UCSD	423	1.4%	29,918	117	51	89	41	126 (29.8%)
UCSF	431	1.2%	36,706	127	66	88	35	123 (28.5%)

Proposal of new etiology

Chronic:
Braden related

- Outside to inside
- Stage 1
- Stage 2
- Stage 3 or 4

Acute:
Perfusion related

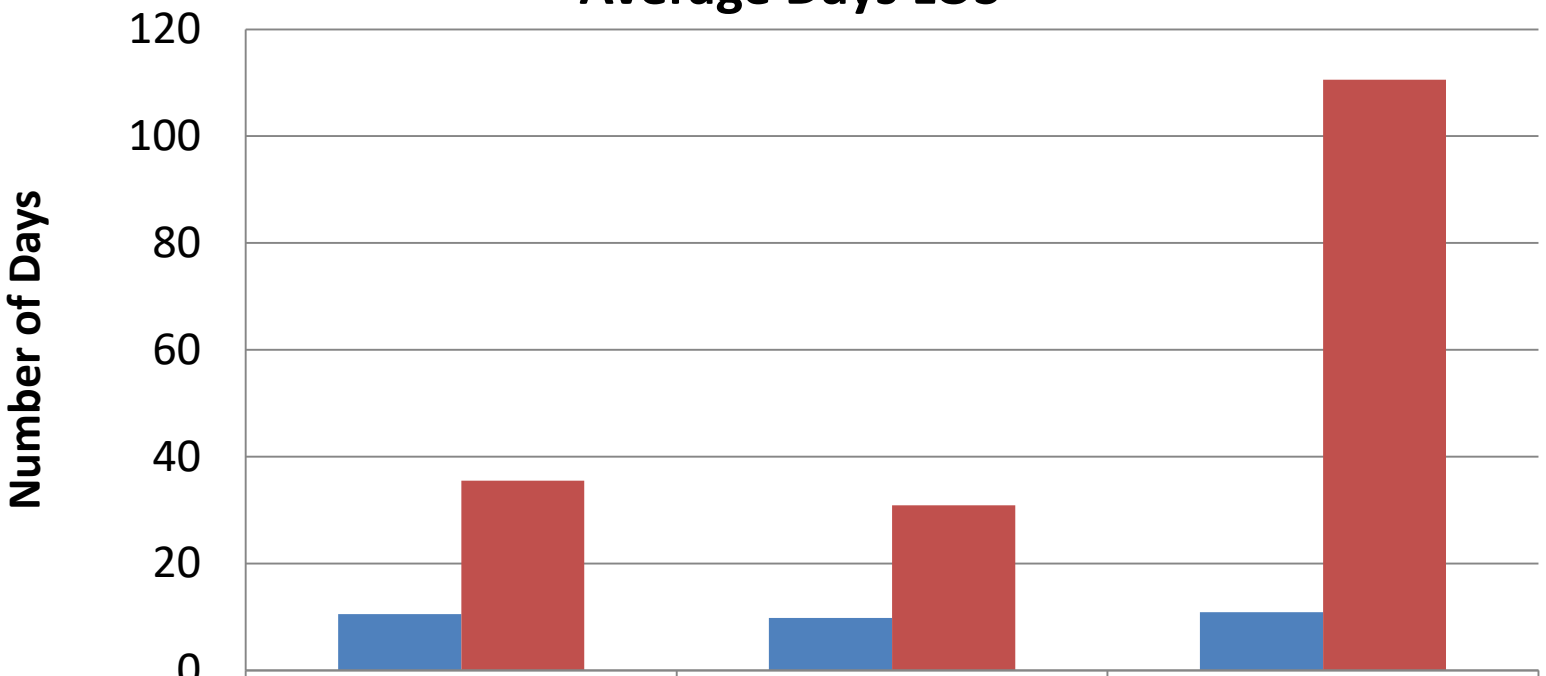
- DTI
- Epidermal loss
- Unstageable with eschar
- Stage 3 or 4

CAPU/I vs HAPU/I

- The HAPU/I point prevalence rate ranged from 0.46% to 2.1% with an average of 1.09%
- Patients in the hospital with CAPU/I point prevalence rate ranged between 3.9% to 8.11% with an average of 6.5% from the entire hospital population

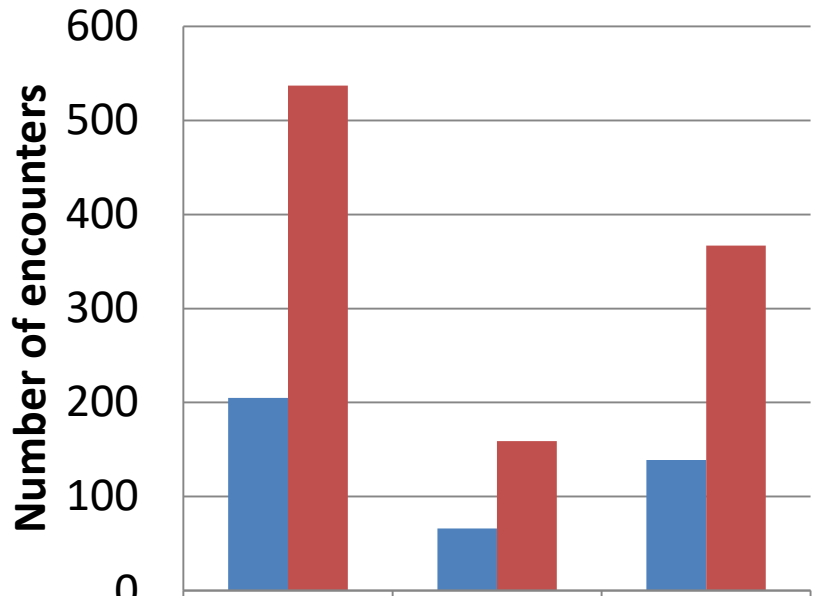
	Total Encounters for All Stages	Stage 1&2 Encounters	Stage 3 & above Encounters	LOS Days (range)for All stages	LOS Days (Range) for Stage 1&2	LOS Days (Range) for Stage 3 & above
CAPU	821	254	566	10.5 (1-373)	9.7 (1-76)	10.9 (1-373)
HAPU	45	39	6	38.9 (6-272)	30.9 (6-102)	87.4 (23-272)

Average Days LOS



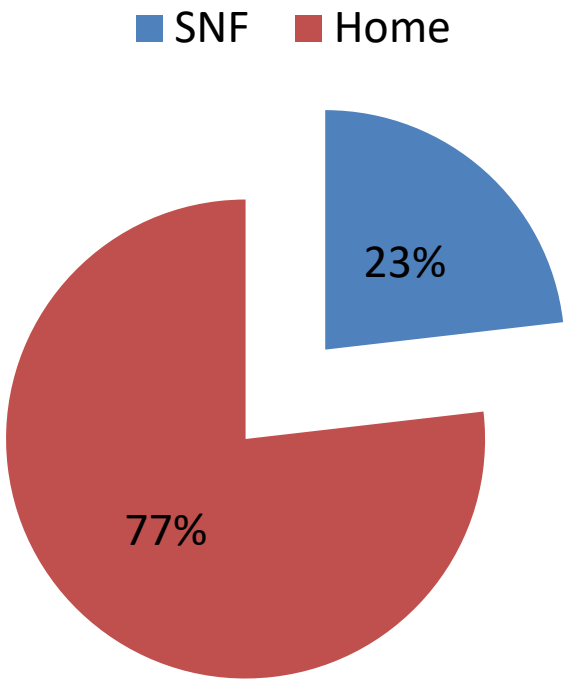
	All Stages	Stage 1&2	Stage 3&up
CAPU	10.5	9.8	10.9
HAPU	35.5	30.9	110.6

SNF vs Home



	all stages	Stage 1&2	Stages 3&up
SNF	205	66	139
Home	537	159	367

of patients with more than 2 admissions



Acute vs Chronic

HAPU vs CAPU

Use Silicone dressing & Waffle cushion for patients with:

-BP Below 100/55

-HCT below 30

-Shock: Sepsis, Neurogenic, Cardiac

-Dialysis

-Spinal Cord Injury/Spina Bifida

-Stroke

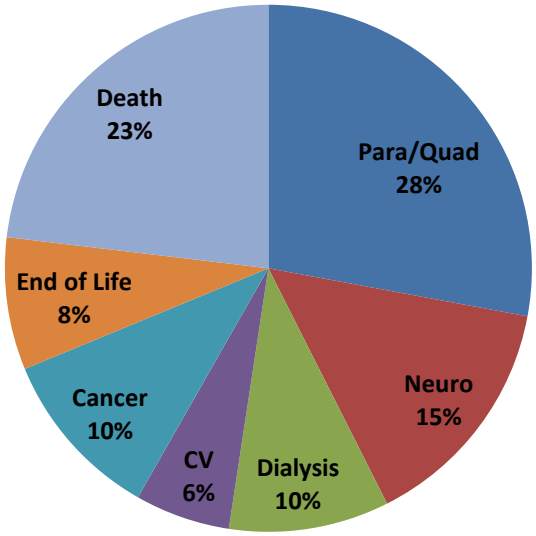
-Projected multiple surgeries

Prevention and treatment according to etiology

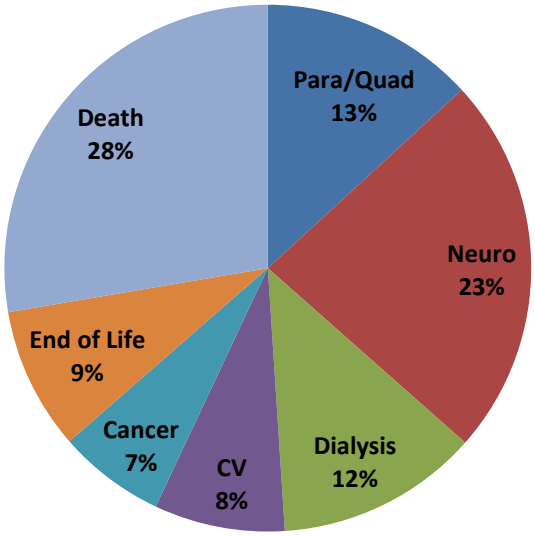
- Chronic: Braden Related interventions
  - S- surface
  - K- Keep Repositioning
  - I- incontinence control moisture
  - N- Nutrition
- Acute: in addition to Braden related interventions
  - Maintain Mean Arterial Pressure above 65
  - Slow dialysis or daily dialysis
  - Maintain pressure redistribution during surgery
- Document all

CAPU/I Comparison: Co-existing condition according to source of admission

Home N=336



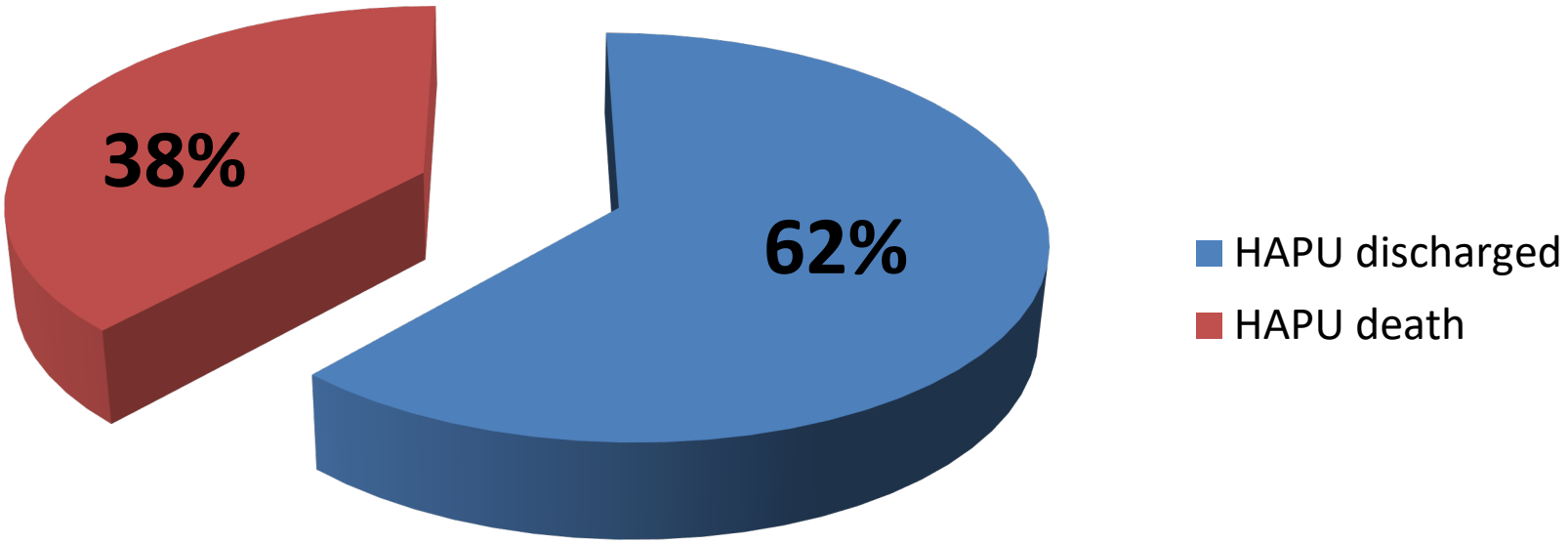
SNF N=141



Home N=336	
Average age (range)	62.9 (18-103)
Gender – M- F-	M- 191 F-145
LOS (range)	10.8 (1-165 days)

SNF N=141	
Average age (range)	71.5 (30-100)
Gender – M- F-	M- 76 F-65
LOS (range)	9.4 days (1-146 days)

Mortality rate for patients with HAPU stage 2, 3, 4, and unstagable



Skin Failure Definition

An event in which the skin and underlying tissue die due to hypoperfusion that occurs concurrent with severe dysfunction or failure of other organ systems

Langemo DK, Brown G. Skin fails too: acute, chronic, and end-stage skin failure. Adv Skin Wound Care 2006;19(4):206-11.

Skin Failure

- Acute – an event in which skin and underlying tissue die due to hypoperfusion concurrent with a critical illness
- Chronic - an event in which skin and underlying tissue die due to hypoperfusion concurrent with an ongoing, chronic disease state
- End-stage – or Skin Changes at Life's End (SCALE) an event in which skin and underlying tissue die due to hypoperfusion concurrent with the end of life

Langemo DK, Brown G. Skin fails too: acute, chronic, and end-stage skin failure. Adv Skin Wound Care 2006;19(4):206-211.

Kennedy Terminal Ulcer

- 1983 first described
- 1877 in literature
  - Decubitus Ominosus
  - Dr. Jean-Martin Charcot
- Dr. Charcot's research not known to Kennedy nor reported in modern literature

Kennedy KL. The prevalence of pressure ulcers in an intermediate care facility. *Decubitus.* 1989;2(2):44-45.
Levine, Jeffery M. Historical perspective on pressure ulcers: The Decubitus Ominosis of Jean-Martin Charcot. Journal of the American Geriatrics Society (JAGS) 53: 1248-1251, 2005
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Kennedy Terminal Ulcer

- End of life ulcer/End-stage
- Pressure ulcer/skin failure
- Skin failure
- AMDA - 2008
  - Unavoidable ulcer
  - Classify as a DTI

American Medical Directors Association. *Pressure Ulcers in the Long-Term Care Setting Clinical Practice Guideline*. Columbia, MD:AMDA;2008.
Setting Clinical Practice Guideline. Columbia, MD:AMDA;2008.

Kennedy Terminal Ulcer

May occur at end-of-life

- Usually on the sacrum, but not always
- Onset is sudden
- Pear-shaped with irregular borders
- Characteristic colors of red, yellow, and black

Courtesy of Karen Kennedy-Evans, FNP

Kennedy Terminal Ulcer

- Can progress rapidly
- Can come on within a few hours

Courtesy of Karen Kennedy-Evans, FNP

Elder Abuse/Neglect
OR
Skin Failure/KTU

Questions?

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