

Using Pressure Mapping Technology to Reduce Hospital Acquired Pressure Ulcers

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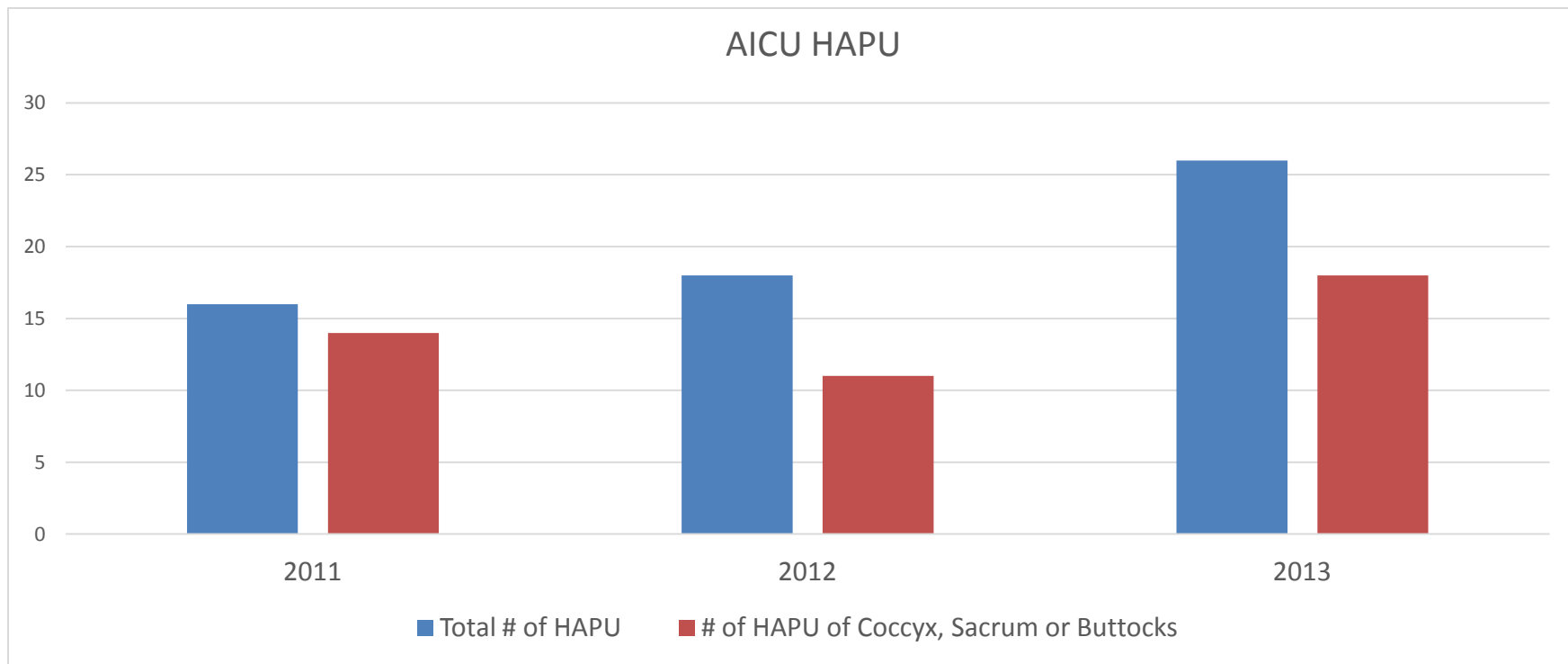
Objectives:

- Recognize pressure mapping technology as a means to detect pressure points on critically ill patients.
- Examine patients that would be appropriate candidates for the technology.

Significance of the Problem:

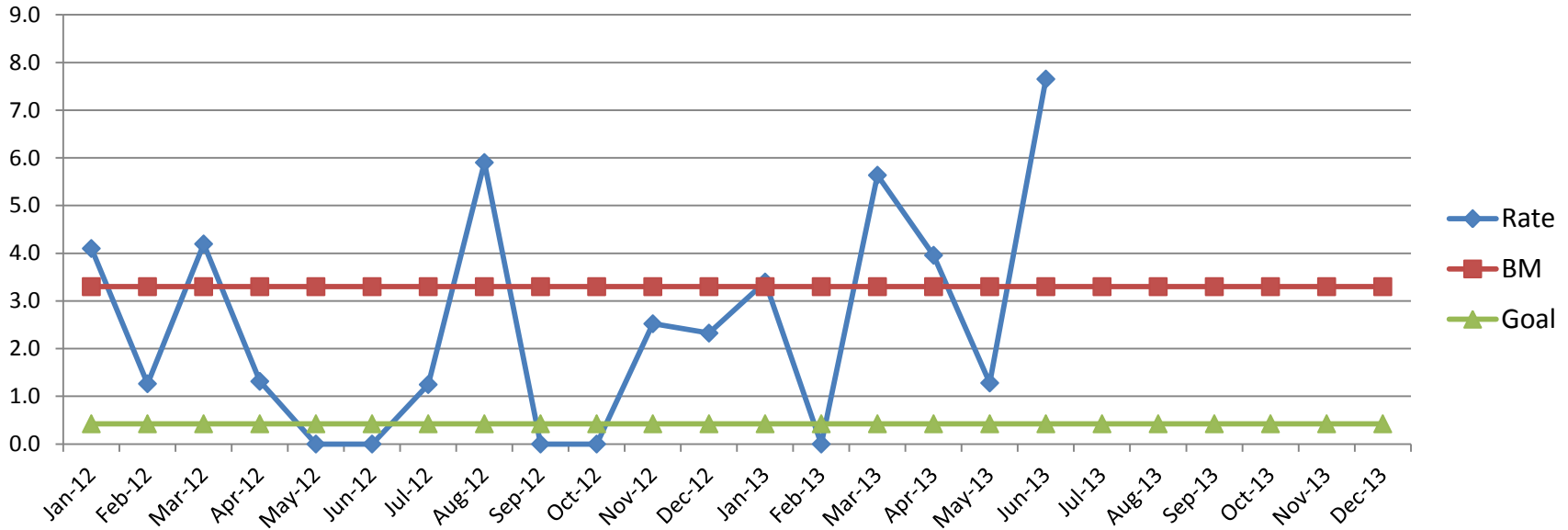
- Problem: Hospital Acquired Pressure Ulcers or HAPU's are costly to treat. HAPU treatments can range from \$2,000 to \$40,000. Surgical interventions for Stage III and Stage IV wounds can cost on average around \$25,000. HAPU also cause patients pain, increased hospital or rehab stay, and increase a patients chance of developing sepsis.
- The Adult Intensive Care Unit has struggled with HAPU rates, specifically HAPU involving the sacrum, coccyx, and buttocks.

AICU HAPU Numbers:



NDNQI:

AICU Incidence by Month with Goal and Benchmark



Graph courtesy of Stephanie Heckman CNS SAT Chair

The Project:

- Purpose:

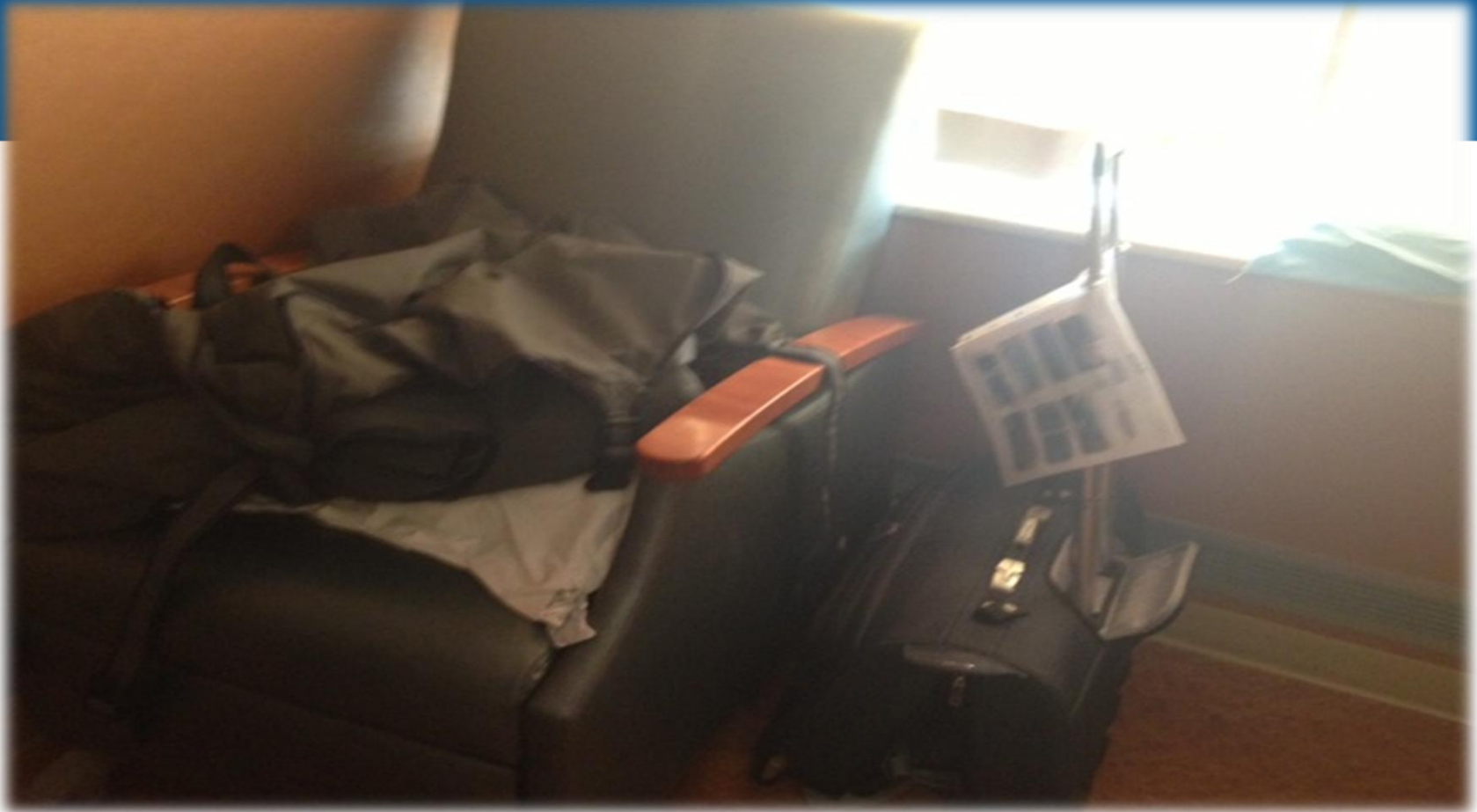
The purpose of this evidence based practice project was to see if implementing usage of the Pressure Mapping Mattress supplied to us by our Wound Ostomy Continence department could impact our HAPU rates.

- Inquiry:

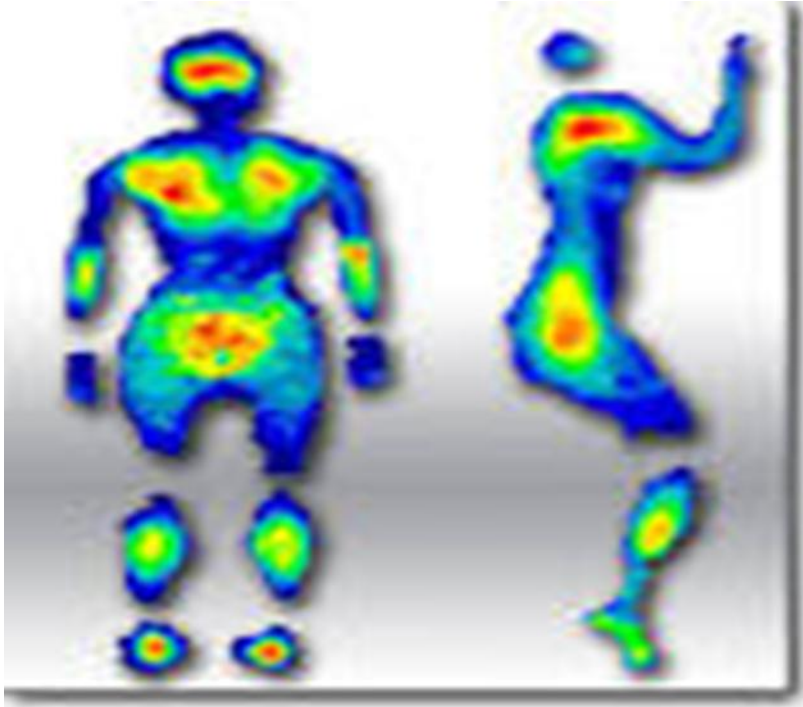
Will using the Pressure Mapping Mattress on high risk patients decrease our number of Sacral, Coccyx, and Buttocks HAPU's?

Pressure Mapping:

- Received the pressure mapping mattress in October 2013 due to a skin event that occurred in the hospital.
- 4 mattresses total were purchased for use. 3 went to the Critical Care Units and 1 to Med/Surg. (All at Indy Campus).
- Pressure mapping devices determine the actual pressure between the body surface and the bed.
- The mapping system consists of a thin sensor-filled mattress with monitoring capabilities between the patients and the surface they are lying on.



Pressure Images:



Initial Interventions:

AICU Skin Surveillance

- Initiation
- First 6 months was leadership lead
- The Day Shift Patient Care Coordinator (PCC) has been the champion for the Pressure Mapping Mattress. She has reviewed patients daily on the unit that are at highest risk for skin breakdown. The PCC would then take the Pressure Mapping Mattress to the room of the selected patient and assist the staff nurse with placing the mattress. The mattress would remain under the patient for a minimum of 24 hours.
- The last 6 months staff driven.....kink in this phase.

Criteria for Use:

- High Flow o2 greater than 50%
- BiPAP/Vent use
- Artic Sun Patients (Therapeutic Hypothermia)
- CVVH
- Limited Mobility
- Vasopressor Drips
- Neuro Muscular Blocking Agents (Paralytics)
- Braden Score < 12 and presence of skin breakdown

Patient Characteristics:

- “Sickest of the sick”
- Male or Female
- All Ethnic Groups
- All Ages
- A Range of Diagnosis’s
- All Range of Heights and Weights

Dx	Age	Sex	Wt/ Kg	Braden Score	Date Applied	Removed	Pre-Skin	Post Skin	Misc..
Resp FX	70	F	61.1	12	12/23/2013	12.26.13	none	none	Vent/Press
Resp FX	60	F	49.1	19	12/26/2013	12.28.13	NONE	NONE	Vent/Press
Resp FX	76	F	71.5	15	12/28/2013	12.29.13	NONE	none	Vent/Press
Pneumonia	80	M	94	15	12/29/2013	12.30.13	red buttock	no change	No vent
Resp FX	89	F	81.8	15	12/31/2013	01.02.14	none	none	Vent/Press
Hemoptysis	85	M	82.5	14	1/2/2014	01.03.14	purple left buttock	less purple	Vent only
Flu/ Pneumonia	74	F	68.4	14	1/3/2014	01.05.14	red bottom	slightly pink	Vent only
Sepsis	74	F	65.4	15	1/6/2014	01.07.14	none	none	No vent
COPD	72	M	91	10	1/7/2014	01.09.14	none	none	Vent only
Resp FX	79	F	60.1	14	1/9/2014	01.12.14	pink coccyx	no change	Vent/Press
Pancreatitis	73	M	129.9	13	1/13/2014	01.15.14	small purple coccyx	no change	Vent/Press
Resp/Renal Fx	69	F	133.7	12	1/15/2014	01.20.14	none	none	Vent/Press
Hip Fracture	68	M	99.9	13	1/20/2014	01.21.14	none	none	Vent only
ICH	72	M	114.7	13	1/21/2014	01.23.14	none	none	Vent only
Resp/Renal Fx	51	M	102.7	12	1/25/2014	01.26.14	left buttock pink	no change	Vent/Press
Bilateral Pneumonia	66	F	76.4	13	1/28/2014	01.29.14	none	none	Vent only
nec. Fasciitis	62	M	112.9	12	2/4/2014	2/6/2014	prev. wounds		vent/press
hyperkalemia	74	M	93.9	14	2/6/2014	2/7/2014	left buttock pink	lighter pk	vent only
nec. Fasciitis	62	M	114.5	12	2/10/2014	2/17/2014	left heel, coccyx	dk purp./purpl. Open	vent only
septic shock	83	F	86.4	12	2/18/2014	2/22/2014	bil ischium	slightly pink	vent only
acute resp fx	72	M	89.7	13	2/23/2014	2/25/2014	none	none	vent only
sepsis	70	F	92.2	13	3/4/2014	3/6/2014	reddened coccyx	no change	vent only
hyponatremia	51	F	74.9	10	3/11/2014	3/15/2014	sl pk blanchable	improved	vent
PNA, pl effus.	83	M	53.7	12	3/17/2014	3/18/2014	sl pk bottom	no change	Vent/Press
gi bld/liver fx	59	F	72.2	12	3/19/2014	3/22/2014	redness rectum	no change	Vent/Press
pna, chf	72	F	82	13	3/22/2014	3/24/2014	none	none	Vent/Press
Pancreatitis	56	F	56	12	3/25/2014	3/27/2014	none	none	vent
acute resp fx	59	F	90.7	14	3/31/2014	4/2/2014	none	none	vent
encephalopathy	71	F	126	10	4/2/2014	4/4/2014	excor bottom, red left heel		vent
saddle pe	49	F	57	14	4/9/2014	4/10/2014	none	none	Vent/Press
stat. epilepticus	61	F	62.2	8	4/10/2014	4/14/2014	stg 4 coccyx	no change	trach/vent

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Limitations of the mattress

- Challenges for application
- Difficult to clean/questionable cleaning process
- Difficult to store
- Frequently lost track of the mattress
- BioMed had to be called 2 times to replace parts (Early on with use)
- Resisters to using the pressure mattress technology



Outcomes:

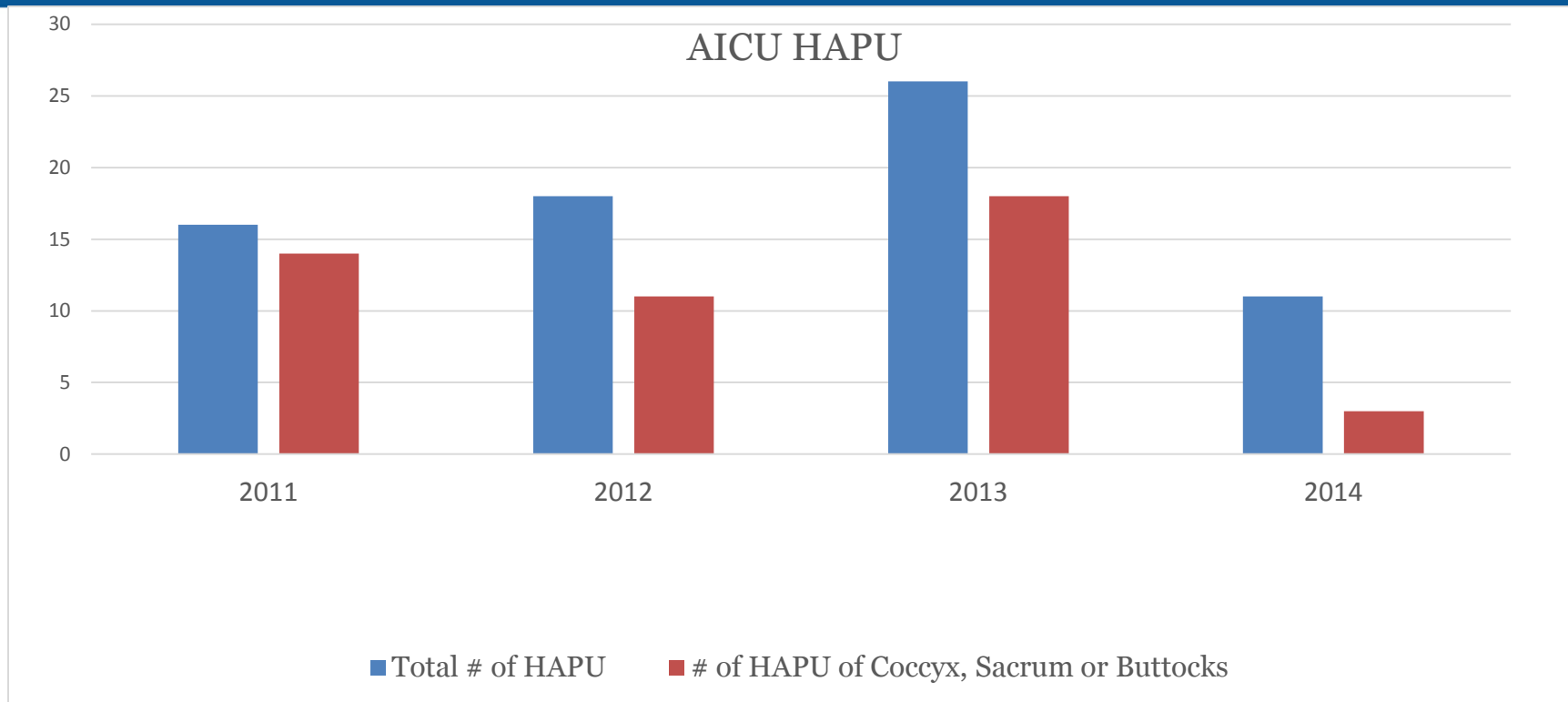
- Promotion of ICU Team work
- Brought to the staff's attention the importance of good skin assessment skills and provision of quality skin care
- Since the implementation of the Pressure Mapping Mattress and the PCC champion our unit has seen an decrease in HAPU involving the sacrum/coccyx/buttocks. From January 2013 to December 2013 the AICU had 18 HAPU in the sacrum/coccyx areas. The mattress was introduced in late November of 2013. This is the same time the hospital lost the Lift Team. From January of 2014 to September of 2014 AICU has only had 3 HAPU involving the sacrum/coccyx areas.
- We are currently in contact with the company regarding repair or replacement of the mattress due to continuous use over the last 6 month period.

“What you as a leadership team pay attention to your staff will pay attention to.”

-Jan Bingle

(Culture Eats Strategy for Lunch by Coffman & Sorensen)

AICU HAPU Numbers:



Thank you!!!!

Kim and I would like to thank the AICU Leadership Team and the AICU staff for all of their hard work to improve our skin outcomes.

Questions?