

**Analysis of Patient Pressure Reduction
Using the Pink Pad Trendelenburg Positioning System**

4/25/2016

Date of Study

April 20, 2016 through April 22, 2016

Abstract:

For many years, Hospital Acquired Pressure Ulcers (HAPU) has presented a major challenge to healthcare providers. Pressure related complications from surgical procedures can have severely detrimental effects on a patient and lead to adverse complications for the healthcare provider. The prevention of Health care-associated pressure ulcers is an important quality measure because HAPU's are a never event.¹ An estimated 2.5 million patients in the US health care facilities develop pressure ulcers every year.² According to the National Pressure Ulcer Advisory Panel (NPUAP), pressure ulcers that originate in the OR may account for up to 45% of all HAPU's.³ As a result, efforts are needed to bring forth measures that can reduce, if not greatly, the percentage of HAPU.

A study was conducted to focus on the reduction of pressure on subjects using the Xodus Medical Pink Pad Trendelenburg Positioning System. The focus of this study was pressure mapping data collection and analysis to determine the amount of pressure reduction experienced by the subject when the Pink Pad is employed versus no pressure reduction device in place.

The equipment used in the conduction of the study was the XSensor PX100 Pressure Mapping Device and the Xodus Medical Pink Pad. The XSensor PX100 was chosen as the optimal test equipment due to its design for medical applications and being best known for its accuracy, durability, and repeatability in measuring interface pressures. With over 1600 sensing points, the XSensor PX100 provides high resolution data collection to fully quantify all readings from the device.

For the purposes of the study, there were fifteen (15) adult subjects used for data collection purposes. Each subject had a pressure map developed using the XSensor PX100 device in the supine position, as well as, with the Pink Pad for follow on pressure mapping. There were six (6) male subjects and nine (9) female subjects utilized for the purposes of this study.

The Body Mass Index (BMI) of each subject was calculated for purposes of presentation into the final data set. The average BMI for all fifteen subjects was 32.52lb/in². The BMI for all subjects was found to range from a minimum of 16.06lb/in² to 45.46lb/in². The BMI range was chosen specifically to present a wide variety of subjects to thoroughly define the effectiveness of the cross section for the study data analysis results. This wide cross section was required in order to properly represent the patient population as a whole, versus defining only a narrow window of BMI subjects that can lead to a skewed data set.

Pressure maps were developed for each subject and analyzed for peak magnitude of pressure (psi) associated with the scapular region and the sacrum region. The magnitude of each regions data was compared between the absence and presence of the Pink Pad. The difference was used to calculate the percentage change in the magnitudes of each regions maximum and minimum magnitude. The final percentage change was the outcome of the analysis for each subjects change in pressure magnitude for each region of study. An average for all subjects was calculated as a composite for scapular region and the sacrum region. The pressure reduction for the scapular region was -49.18%. The composite pressure reduction in the sacrum region was -36.70%.

Additionally, a composite percentage change in pressure was calculated for the scapular and sacrum regions combined and presented in the final data set for the study. The percentage change in pressure when the Pink Pad was employed was -42.94%.

Conclusion:

The data collected during the study showed definitively, for each subject, an independently significant pressure reduction on the subject scapular and sacrum regions when using the Pink Pad. Additionally, the overall composite reduction in pressure for the scapular and sacrum regions shows a similarly significant reduction in the pressure of 42.94%.

Data Set

1) Average Reductions in Pressure

SUBJECT ID	BMI	PERCENT CHANGE		Average Reductions per Subject
		SCAPULAR REGION	SACRUM REGION	
1	34.86	-48.21%	-48.64%	-48.43%
2	24.32	-49.60%	-41.73%	-45.67%
3	45.04	-46.21%	-37.45%	-41.83%
4	27.02	-37.85%	-45.95%	-41.90%
5	45.46	-63.40%	-11.11%	-37.26%
6	32.78	-36.76%	-25.31%	-31.04%
7	36.84	-74.87%	-29.32%	-52.09%
8	30.85	-67.25%	-57.31%	-62.28%
9	19.84	-49.03%	-48.96%	-49.00%
10	31.6	-43.84%	-22.62%	-33.23%
11	40.63	-20.11%	-25.53%	-22.82%
12	16.06	-49.01%	-59.80%	-54.40%
13	42.28	-44.30%	-28.74%	-36.52%
14	30.17	-51.11%	-30.51%	-40.81%
15	30.11	-56.11%	-37.45%	-46.78%
Avg BMI	32.52			
		AVG OVERALL REDUCTIONS	-49.18%	-36.70%
		TOTAL COMPOSITE REDUCTION	-42.94%	

References

- 1) "Pressure Ulcers: Factors Contributing to Their Development in the OR"; AORN Journal 2016
- 2) NPUAP, EPUAP and Pan Pacific Pressure Injury Alliance; Prevention and Treatment of pressure ulcers; quick reference guide; In Haesler E, ed. International NPUAP/EPuap Pressure Ulcer Classification System. Perth Australia: Cambridge Media; 2014.
- 3) Fred C, Ford S, Wagner D, Vanbrackle L. Intraoperatively acquired pressure ulcers and perioperative normothermia; a look at relationships. AORN J. 2012; 96(3):251-260.