

Real-Time Pressure Assessment and Monitoring with a Fluid Immersion Simulation Support Surface Shows Clinical and Financial Benefit for Flap Management

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Purpose/Problem

Patients undergoing flap procedures for pressure ulcers experience a 10%-49% dehiscence rate post procedure. The most common support surface utilized post-flap is an air-fluidized bed in attempts to minimize interface pressure on the surgical area, however there are many drawbacks to using this surface including dehydration and patient care and handling. The air-fluidized surface is also the most costly surface to rent and therefore a drain on healthcare resources. An alternative solution to maintain or improve clinical outcomes and decrease associated costs is needed.

Methods

Real-time pressure monitoring (RTPM) systems* with Fluid Immersion Simulation (FIS) Support Surfaces^o were utilized to manage 10 flap patients. The RTPM systems gave HCPs the ability to see a visual image of pressures under patients and monitor that pressure continuously. HCPs used the pressure images on the monitors to effectively reposition patients and manage appropriate air settings on the FIS support surface.

*M.A.P™ by Wellsense USA, Inc, Nashville, Tennessee

^oOnCare™ Dolphin Fluid Immersion Simulation^o by Universal Hospital Services, Inc.

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Clinical Outcomes

Number of Patients	10
Total Patient Days	98
Range of Length of Stay	5 to 20 days
Average Length of Stay	10 days
Dehiscence	9 of 10 patients fully intact 1 small area on 1 patient (Physician reported due to tight contractures and tight closure, no pressure)

Financial Savings

Total Patient Days	98
Cost Savings of using RTPM with FIS vs Air Fluidized	\$33 / day a 63% cost reduction
Cost savings of these 10 patients over 98 days	\$3,234
Annual Flap Patients	23 (in 2014)
Annual Total Days @ avg 10 day stay	230
Annual Cost Savings	\$7,590

Outcomes

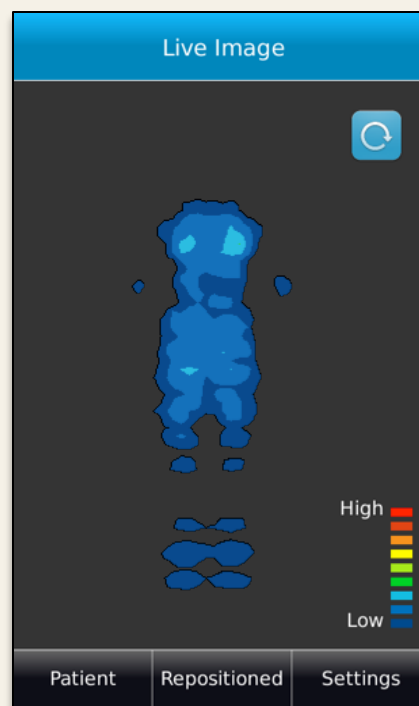
Patients were placed on the RTPM and FIS for an average of 10 days, a range of 5 to 20 days individually. Only one of the 10 flap patients had a small area of dehiscence. A cost savings of \$33 per day per patient was realized using the RTPM with the FIS instead of the air-fluidized support surface. Over the total of 98 days the 10 patients were on the RTPM and FIS instead of the air-fluidized, a savings of \$3,234 was gained.

Conclusions

Pressure monitoring assists HCPs to employ effective pressure redistributing interventions and monitor support surface performance of the FIS for flap success. Utilizing the RTPM with the FIS support surface is a cost effective and clinically effective alternative to the air-fluidized surface.

References

1. 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. Emily Haesler (Ed.). Cambridge Media: Osborne Park, Western Australia; 2014.
2. Fleck C, et al. Use of Alternatives to Air-Fluidized Support Surfaces in the Care of Complex Wounds in Postflap and Postgraft Patients J Am Col Certif Wound Spec. 2010; 2(1): 4-8.
3. Yaguang L; Melendez J. Optimizing the Post-Operative Care of Spinal Cord Injured Patients Undergoing Flap Surgery for the Treatment of Pressure Ulcers with Fluid Immersion Simulation Technology and Continuous Bedside Pressure Mapping: A Pilot Study. Poster presented at Symposium for Advances in Skin & Wound Care, October 20-23, 2012, Las Vegas, NV.
4. Behrendt R, et al. Continuous Bedside Pressure Mapping and Rates of Hospital Associated Pressure Ulcers in a Medical Intensive Care Unit. Am J Crit Care. 2014;23(2): 127-133.
5. Scott RG and Thurman KM. Visual Feedback of Continuous Bedside Pressure Mapping to Optimize Effective Patient Repositioning. ADVANCES IN WOUND CARE. 2014; 3(5): 376-382.



Pressure Managed through Visualization and Monitoring

- Visual image showing real-time pressures
- Continuous pressure monitoring allows clinicians/physicians to see actual pressures patients are exposed to on their support surface
- If any higher pressure areas would be seen, clinicians can immediately intervene to lower these pressures through micro-shifting, repositioning, air adjustments on the support surface
- If support surface would malfunction and cause higher pressures, this would also be caught by the pressure monitor in real-time so that the support surface changed

