A Quality Improvement Initiative Focusing on High Risk Left Ventricular Device Patients; A Combination of People, Process, and Technology

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The average patient was 67 years of age. 72% of the patients were male.

Cardiac Status
- End Stage Cardiac Disease 100%
- EF < 25% 100%
- Destination/Permanent Therapy 94%
- As Bridge to Transplant 6%
- CABG 28%
- AAA repair 11%

Comorbidities
- History of Smoking 78%
- Diabetes 39%
- Acute Kidney Disease and Chronic Kidney Disease (AKD/CKD) 39%
- BMI > 25 55%
- BMI > 30 33%
- COPD 28%

Hospital Stay
- Average OR procedure times 4.25 hours
- Average Length of Hospital Stay 17 days
- Morbidity not related to LVAD 28%
- Ventilator Dependent Respiratory Failure (VDRF) post op
- Vasopressors post op
- Intra-aortic balloon pump post op

LVAD protocol interventions
- Placement of soft silicone 5-layer bordered foam dressing to the sacrum on admission.²,³
- Placement on a low airloss support surface
- Consult with WOCN
- Follow up assessment by wound team M-W-F
- Nutrition consult
- Rehab consult

Team Approach
- WOCN
- Nutrition
- Rehab
- Cardiac
- OR

Background
The Heart Center began implanting a ventricular assist device (VAD) in January 2012 upon receiving certification from the Joint Commission. The VAD’s are used for very high risk end stage heart failure patients. They can be used either short or long term depending on the heart condition to improve blood flow and organ function. An intra-aortic balloon pump is used temporarily to maintain heart function. These two procedures along with the patient’s hemodynamic status and co-morbidities place them at unprecedented risk for sacral pressure ulcers due to combined forces of pressure, shear and moisture despite preventative measures.

Purpose
The clinical aspects of VAD studies have not included skin impairment in patient outcomes. Current recommended prevention strategies did not prevent pressure ulcers in this subset of end stage heart failure patients with complex co-morbidities.¹ A multidisciplinary approach for prevention was sought to reduce pressure ulcers for this specific patient population, the VAD patient.

Methods
In addition to our present prevention protocol, a multidisciplinary team consisting of the cardiac team, nurses, nutrition, rehab, surgery, and the CWOCN was implemented to reduce pressure ulcers in this specific high risk population:

1. Placement of a soft silicone 5-layer bordered foam dressing to the sacrum*,²,³
2. Placement on a low airloss support surface
3. Consult with WOCN
4. Follow up assessment by wound team M-W-F
5. Nutrition consult
6. Rehab consult

LVAD protocol

Sacral Prevention
- Placement of soft silicone 5-layer bordered foam dressing to the sacrum on admission.²,³

Support Surface
- Placed on low air-loss support surface

Conclusion:
Data was collected on our 18 VAD patients from January 2012 until February 2014. A sacral pressure ulcer developed on two of the of the first four VAD patients for a nosocomial rate of 50%. Once we identified the risk, we developed the VAD protocol. This resulted in no further pressure ulcers to the sacral area on the last 14 VAD patients, decreasing the overall nosocomial rate to 11%.

References: