

The continuity of one NPWT care plan through inpatient and outpatient care improves outcomes in challenging wounds: a case study in three patients

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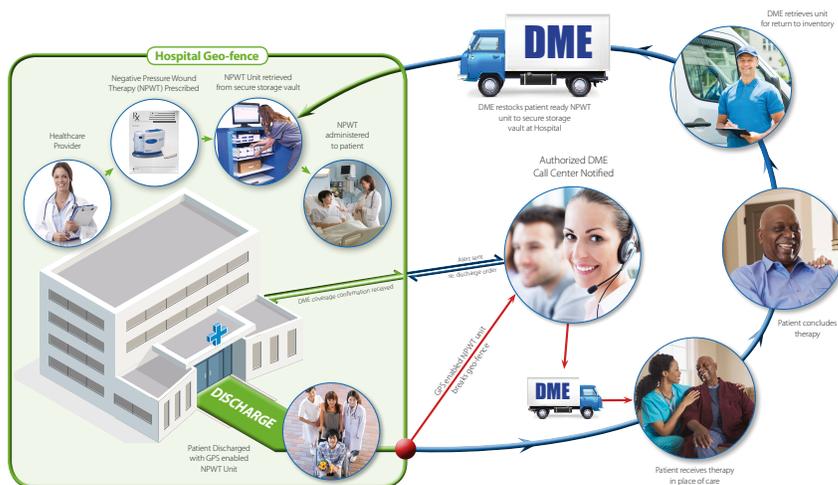
Background

- **Negative Pressure Wound Therapy (NPWT) is effective for treatment of large complex wounds¹⁻⁴**
- **Treatment typically involves inpatient and outpatient care**
- **Success is dependent on comprehensive treatment plan that involves coordination between different entities**
 - Advanced wound care team
 - Case manager to coordinate transition to outpatient care
 - Home healthcare or outpatient therapy provider
 - Insurance company
 - Durable Medical Equipment (DME) provider
- **Standard NPWT management system creates obstacles that disrupt care plans at transition to outpatient care**
 - Approval for discharge requires significant time to obtain necessary clearance to facilitate discharge
 - Multiple units required to allow patient to transition to outpatient care
 - Hospitals must coordinate with multiple DMEs to provide NPWT units for outpatient care
 - Patient must undergo dressing change to allow transition to outpatient device
 - DME companies work with different outpatient care providers making it difficult to ensure quality of care due to limited experiences with NPWT
 - Delays in process force transition to moist wound care or use of unnecessary transition device to allow discharge to outpatient care
- **Huntsville Hospital recently adopted a new NPWT management system that ensures continuity of treatment plan⁵**
 - Automates transfer of information required to obtain approval for outpatient care at onset of inpatient therapy
 - System ensures device availability and automates device transition from inpatient to outpatient care
 - Patients are treated with one device throughout inpatient and outpatient care
 - Allows for one DME to manage outpatient care
 - Education of one device used across inpatient and outpatient areas improves patient experience and quality of care
 - Improves ability to discharge patients home with NPWT reducing hospitalization time and unnecessary dressing changes or removals

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Case 1

Palliative Abdominal Dehisced Surgical Wound

Patient History:

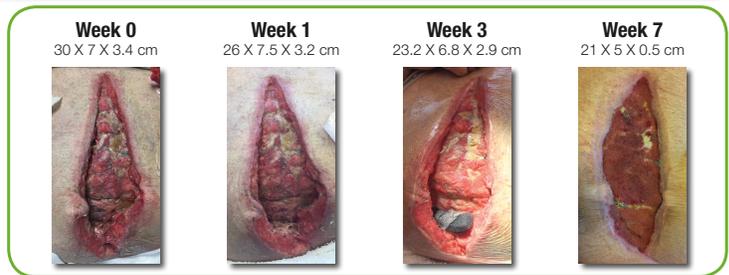
- Male, 61 years old
- Cardiac Arrest, COPD, CHF, morbid obesity, hypothyroidism, HTN, diabetes, acute kidney injury, heavy nicotine abuse, and palliative care transitioned to hospice

Wound History:

- Complex palliative patient displaced out of state due to hurricane limiting access to medical care. Patient admitted to hospital due to CHF complications and then discovered diverticulitis with need for surgery including ostomy formation.
- Initially placed on disposable NPWT system post op. Wound dehiscence occurred 3 days later. Placed then on prior hospital NPWT unit. **Patient complained of pain with prior system related to pull down and dressing drape removal.** Due to insurance status, the prior system could not be continued in outpatient setting. Transitioned to new NPWT system (Week 0) to allow therapy for palliative care in the home setting.

Case Summary:

- At placement of new device, **patient reported improved comfort and tolerance of therapy and dressing changes.** New techniques adapted as protocol to improve seal and patient comfort as old dressing caused damage to peripheral wound. Patient tolerated dressing changes after technique change. Patient able to discharge to home (Week 1) with care due to new device program. Home care followed patient with improved wound assessments upon each visit. During therapy, the patient required readmission and subsequent discharge during week 5 and week 6 related to non-wound complications. Program allowed ease of transition from outpatient to inpatient and back to outpatient care without disruption of therapy. Patient ultimately transitioned to hospice care with use of NPWT device under new program. **Experienced 50% reduction in wound area and 85% reduction in wound depth in 8 weeks of use.** Patient passed away 1 week after last measurements in hospice.
- **New program allowed hospital to provide optimal wound care to palliative patient despite insurance difficulties maximizing quality of life**



Case 2

Pelvic Hematoma Evacuation complication due to Blood Thinner Injection

Patient History:

- Female, 69 years old
- Hypertension, COPD, Atrial Fibrillation, Stroke, Bariatric Surgery

Wound History:

- Blood thinner injections for atrial fibrillation given for bridge of anticoagulation therapy caused hematoma requiring surgical evacuation leaving pelvic open wound. **Failed conservative treatment of wound for 6 months.** Presented at hospital with non-hospital NPWT device and inappropriate dressing placement. Patient transitioned to new NPWT program (week 0) to allow for comprehensive treatment plan for inpatient and outpatient setting.

Case Summary:

- Initial assessment discovered superficially packed foam to deep (6cm) cavity wound. Deep cleansing performed prior to new NPWT device placement. Dressing techniques changed to provide deep foam packing to cavity as well as bridge away from abdominal fold. Treatment pressure reduced to -80mmHg continuous due to risk of bleeding related to anticoagulant usage. 80% wound volume reduction observed during inpatient stay. Patient transitioned to outpatient care (Week 3) on same device used in hospital and continued treatment with improved wound healing for following 2.5 weeks. **Final measurements of 0.5 X 0.7 X 0.4 cm representing a 99.8% wound volume reduction at removal of NPWT.**
- **Patient experienced resolution of wound with six month history in 6.5 weeks utilizing one NPWT device during inpatient and outpatient care.**



Case 3

Facility acquired Stage 4 Sacral Pressure Injury

Patient History:

- Female, 57 years old
- Sepsis, Hypertension, Respiratory failure, dysphagia with g-tube feeding, Hyponatremia, Nephrectomy, Renal calculi, MRSA, VRE, former nicotine user, Stroke with L sided paralysis, non-ambulating, incontinence of bowel and bladder
- Patient resides long term in a nursing home facility

Wound History:

- Facility acquired sacral pressure injury for multiple years. **Patient was sent to hospital from Long Term Care (LTC) facility due to inadequate staff education and lack of training** when dressing wounds (incontinence issues) requiring negative pressure devices.

Case Summary:

- Pressure injury non-healing with conservative treatments at nursing facility and inability of NPWT placement. Patient initial assessment showed extremely friable wound base with exposed bone and undermining present at a depth of 4.2 cm circumferentially. Wound dressing technique for bridging and offloading as well as lower pressure of -80mmHg continuous completed. **Wound appearance improved significantly in 4 days on new program NPWT device while inpatient with 29% wound volume reduction. Undermining decreased by 76% in these 4 days.** Inpatient device removed due to discharge to outpatient facility with limited knowledge of NPWT preventing continued best care.
- **Wound care team able to improve wound in 4 days and case demonstrates need for additional education at long term nursing facilities.**



Discussion

New NPWT single device program adopted by Huntsville Hospital allowed quality of care to be improved

- Simplified transition process (*inpatient to outpatient and outpatient to inpatient*)
- Improved healing outcomes and patient satisfaction with dressing changes reported
- Eliminated delays in discharge process reducing hospital stay duration
- Used only one device allowing patients and caregivers the ability to familiarize with the device

Program improves access to NPWT for patients with limited resources

- Automation of discharge process improves obtaining difficult to match insurance approval
- Program allows indigent patients access to NPWT resources outpatient
- Provides the opportunity for LTC/Outpatient facilities to receive NPWT device and dressing training without disrupting care