

ULTIMATE STANDARDIZATION OF FIRST-LINE WOUND DRESSINGS TO A SINGLE TYPE

A Texas-based wound clinic achieves significant cost reduction while improving outcomes, personnel productivity, and patient and clinician satisfaction by adopting a new method of standardization.

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Maintaining a varied inventory of dressings in the outpatient wound clinic is expensive and time-consuming. In keeping with the discovery that wound healing must take place in a moist environment,¹ wet-to-dry gauze has been gradually replaced by numerous specialty wound care dressings — including alginates, hydrofibers, foams, collagens, hydrocolloids, hydrogels, films, membranes, sachets, gels, powders, combinations, and negative pressure wound therapy — all of which are designed to address various healing stages and wound types. Today, well-trained clinicians make dressing decisions based on regular assessments of the wound and patient's needs. Because current wound care training dictates that a change in wound characteristics typically necessitates a switch to a new dressing, clinicians must have a detailed understanding of wound products, cost-effective treatment modalities, and the principles of optimal wound interventions. Given that hundreds of wound care dressings and devices have been developed or become obsolete as the science of wound care has progressed, even the most motivated, well-educated caregivers cannot keep up with the available options easily.

The sheer number of new, advanced dressings has driven up both inventory costs and the usage of adjunctive products such as gels, pastes, and wound contact layers — increasing inventory that is only partially used. As a result, overhead costs of logistics and inventory management are driven ever upward and overall operational efficiency of wound clinics is reduced.

EMPHASIS ON QUALITY

Two main goals of an outpatient wound clinic are helping to ensure excellent patient outcomes and minimizing the risk of complications, both of which highlight

the importance of functional quality of the dressing placed on the wound. In addition, newly imposed limits on reimbursement, as well as lifetime limits of wound care delivery per wound, also emphasize the importance of quality in wound care treatment and quicker healing.

However, due to the relatively high expenditures on wound care products, as a percentage of overall expenses, the overriding goal within wound clinics often is to reduce initial product expenses. Unfortunately, the primary focus on sticker price can lead to sacrifices in quality and patient satisfaction, and an increased overall cost of wound care.

This article will discuss the methodology and findings of a retrospective, observational study conducted at an outpatient wound clinic to determine the economic and clinical outcomes of standardization to a single type of advanced self-adaptive wound dressing as the first-line modality for most wounds.

POSITIVE EFFECTS OF STANDARDIZATION

Considering the widening range of wound care modalities, the concept of standardizing to a single type of dressing may seem counterintuitive. However, the investigators postulate that standardization to a self-adaptive category of wound dressings that are effectively utilized through all wound healing stages could save overall wound clinic costs, simplify care, improve clinical outcomes, and increase patient and caregiver satisfaction.

When quality becomes a primary focus in any setting, quality tends to increase and costs fall over time, according to Dr. W. Edwards Deming, a well-known author and business consultant who established successful quality business improvements during the 20th century. However, when people and organizations focus primarily

on costs, costs tend to rise and quality declines over time.² Many of Deming's basic tenets of good management remain applicable to managing a successful wound care clinic today.

In an effort to curb costs and enhance healing rates, one recent study describes a process of standardization undergone by a hospital to limit vendors and eliminate the use of multiple similar products being used to perform similar clinical functions.³ A thorough standardization of wound care products led to a reduction in the number of vendors from nine to three, as well as a significant annual reduction in supply expenses.

INTRODUCTION OF SELF-ADAPTIVE WOUND CARE TECHNOLOGY

New self-adaptive wound care technology is based on the science of dynamic wound dressing materials with variable on-demand functionality. Composed of "smart" synthetic polymers, the Self-Adaptive Wound Dressings (SAWD, OSNovative Systems Inc.) are produced as sterile, super-absorptive, and simultaneously hydrating, multilayered, pliable sheets with a breathable backing film impermeable to fluids and microorganisms. The dressing material is engineered to change its properties according to underlying wound and periwound tissue conditions. What sets SAWDs apart is their capability to accommodate the full spectrum of wound conditions, from dry to heavily draining, and from the simplest to the most complex.

SAWDs are designed to dynamically balance the moist wound microenvironment, such that hydration or absorption is provided depending on the evolving needs of the wound bed, wound edge, and periwound skin independently. That is, non-draining areas of the wound stay

properly hydrated through automatic regulation of moisture losses. At the same time, fluid from draining areas containing exudate, liquefied slough, and microorganisms is absorbed and locked inside the dressing material — protecting peri-wound skin from maceration.

USING SELF-ADAPTIVE DRESSING VS. DIFFERENT DRESSING TYPES

The ideal, effective wound dressing should effectively remove barriers to wound healing, including exudate, inflammatory mediators (cytokines, proteases), non-vital tissue, and infectious microorganisms. As well, the dressing should maintain an optimal moist wound healing microenvironment for each part of the wound bed and wound edge while supporting autolytic debridement. Additional attributes and capabilities include protection of the periwound skin; a microbial and fluid strikethrough barrier; painless, non-traumatic dressing changes; and a dynamic and adequate response to changing wound conditions and wound edge moving due to re-epithelialization while the dressing is worn.

SAWD is the first wound dressing category that facilitates all of these basic principles of wound healing throughout all healing stages. These dressings were ideal for an experiment in standardization because, unlike all current compositional advanced wound dressing types (eg, foams, alginates, hydrocolloids, hydrogels, etc.) that are applicable only to specific wounds or a narrow range of wound conditions, SAWDs are applicable to any wound, from those highly exuding to those non-exuding, in any healing stage.

STUDY PARAMETERS

An initial 30-day supply of SAWDs (sizes 2 in x 2 in; 4 in x 4 in; and 6 in x 6 in) was ordered for the clinic by the supply manager directly from the manufacturer based on historical quantities of consumed dressing supplies. The entire wound care staff was then informed of the plan to convert to a single dressing type during a formal meeting. An inservice for all staff was also conducted to detail the application of

SAWD and to answer questions.

During a three-month period (Dec. 5, 2012 to Mar. 8, 2013), indicated patients treated at the outpatient wound clinic received SAWD as the first-line dressing. Patients were excluded from use of SAWD if they had just received a one-month supply of a different dressing from the clinic; once these supplies were consumed, patients then received SAWD. There were no other exclusion criteria.

Dressing changes took place once weekly (at a minimum). Dressings were changed more often initially (2-3 times per week) in cases of slough, high bioburden, and excessive drainage, with the timing between changes gradually increased until a goal of once-weekly changes was achieved. Patient demographics, the number of patient visits, and wound type were all recorded at each clinic visit.

At the end of the study period, records of dressing-related expenditures were extracted from supply invoices by the month for the previous six months. Dressing expenditures and stock keeping units (SKUs) number during the preceding three-month period (September 2012 to November 2012) were used as a baseline for economic comparison. In addition, a caregiver satisfaction survey was issued to each caregiver at the clinic who treated patients during the study period. Its results were then recorded and tabulated.

SUMMARY OF RESULTS

Patient/Clinical Outcomes. SAWDs were used on 547 patients (250 female; 297 male) with 1,168 chronic and acute wounds during 2,583 clinic visits. Wound etiologies and occurrence frequency are shown in **Figure 1**.

Based on questionnaire responses, average patient and caregiver satisfaction were higher with SAWD compared to prior dressings, due to consistently faster wound improvements, decreased dressing change frequency, reduced pain and odor, painless dressing changes, superior drainage management, and prevention of skin maceration.

Standardization to the first-line usage

of SAWD improved the consistency of care for the same wounds and patients. This consistency of care is known to lead to better outcomes and reduce errors in documentation. Additionally, some products were observed to work well with, and even synergistically enhance the results of, self-adaptive technology, such as compounding gels prepared per patient-specific DNA culture analysis.

Workflow Improvement. Standardization to the first-line usage of SAWD increased overall caregiver satisfaction by dramatically simplifying care protocol and decision-making; eliminating the need for medical order changes during the course of treatment; and minimizing dressing-related retraining time, mistakes, and documentation; as well as reducing nursing workload while improving nurse productivity.

The reduction in dressing change frequency during the study period also allowed staff to devote more time to other patient care responsibilities and documentation while allowing clinicians to see more new patients. Similarly, the materials manager experienced drastic time-savings in terms of inventory management during the study period as compared to prior inventory management methods.

Product and Supplier Variety Reduction. Standardization to SAWD replaced the use of primary foam; alginate; hydrofiber; hydroconductive, super-absorbent collagen; hydrocolloid; hydrogel; and combination dressings including silver-containing products, wound contact non-adhering layers, skin preps and moisture barriers; and noticeably decreased the amount and variety of products entering treatment rooms. During the study, inventory of primary wound dressings was greatly reduced, with inventory utilization close to 100%. The variety of primary wound dressings and number of managed SKUs in everyday inventory was reduced by more than 60%, as shown in **Figure 2**.

The number of primary dressing supplies was reduced by 70%, with potential for future reduction (**Figure 3**).

Both primary wound dressing SKU and supplier number reduction resulted

in an ultimate standardization of wound dressing supply: One primary dressing type from one supplier represented 84% of the total dressing supply with an obvious potential of further increase to more than 90%, as shown in **Figure 4**.

Cost Reduction and Financial Results. SAWDs are in the midrange of current advanced wound dressing prices. They are generally more expensive than simple foam dressings, but significantly less costly than advanced foam dressings and silver-containing, collagen, hydroconductive, and other products.

The moderate price of SAWDs and their nearly 100% utilization led to reduction of total monthly spending on primary wound dressings upwards of 30% during the standardization study at the clinic compared to baseline spending before the study (**Figure 5**). This spending reduction is estimated to provide the clinic with more than \$40,000

annual savings on primary dressings.

Additional cost savings come from the elimination of many adjunctive products and the simplification of training, documentation, and inventory management. Quantification of these factors and expected financial gains due to higher personnel productivity were not the subject of this study.

ADDITIONAL BENEFITS

Cost Saving to Referring Long-Term Acute Care (LTAC) Facility. A referring LTAC facility that standardized to SAWD during the same study timeframe also benefited from significant cost savings. Patient outcomes met or exceeded facility expectations during this time. The managing pharmacist Dr. Abdel Bendamkila reported a reduction in topical pharmaceutical wound care product expenditures from an average of \$5,900 per month to \$1,900 per month (**Figure 6**). These

cost savings were due to a reduction in dressing change frequency from daily to 1-2 times weekly, as well as considerably reduced consumption of topical ointments, particularly autolytic debride-ment agents. □

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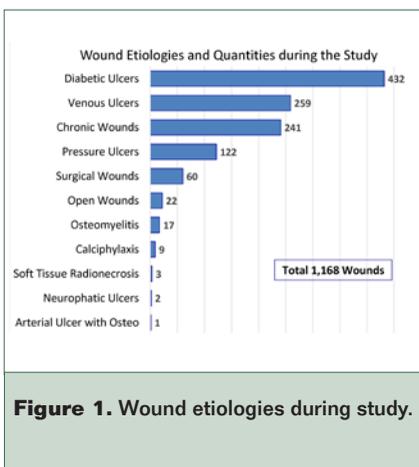


Figure 1. Wound etiologies during study.

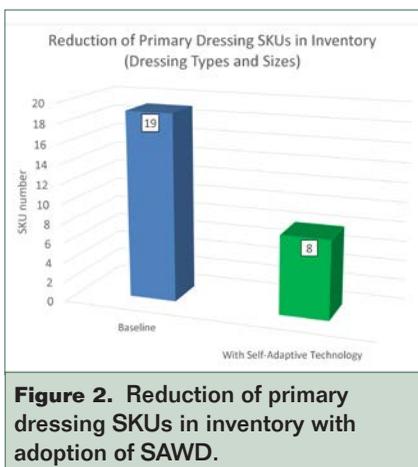


Figure 2. Reduction of primary dressing SKUs in inventory with adoption of SAWD.

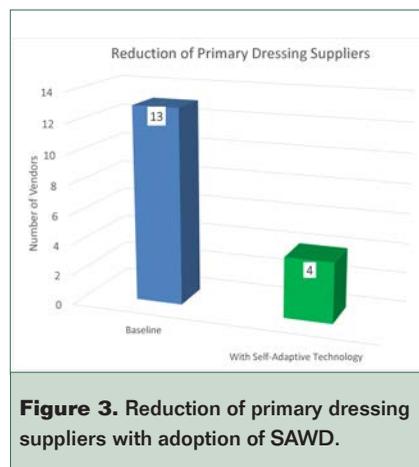


Figure 3. Reduction of primary dressing suppliers with adoption of SAWD.

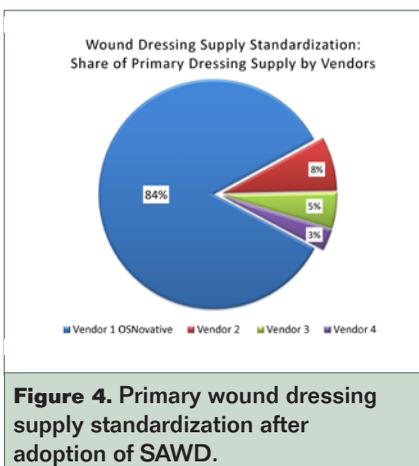


Figure 4. Primary wound dressing supply standardization after adoption of SAWD.

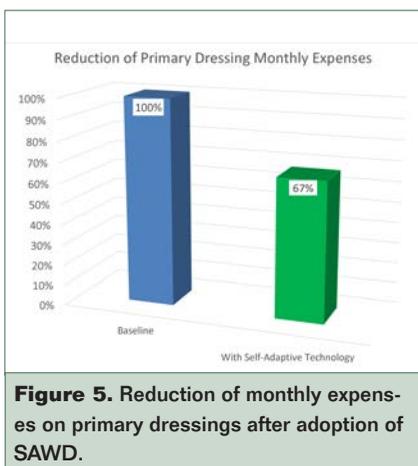


Figure 5. Reduction of monthly expenses on primary dressings after adoption of SAWD.

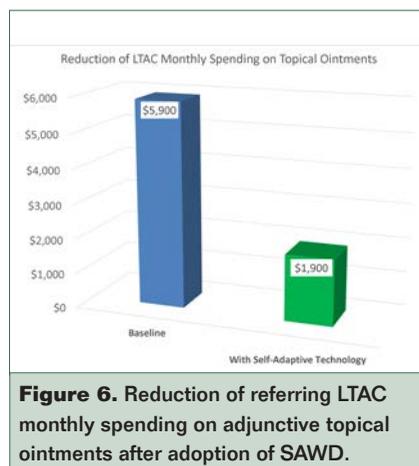


Figure 6. Reduction of referring LTAC monthly spending on adjunctive topical ointments after adoption of SAWD.