

# A collaborative project to enhance efficiency through dressing change practice

## Introduction

Health care providers are under increasing pressure at least to maintain, and wherever possible improve, their standards of care delivery. The achievement of this goal is challenging due to the growing inequality between the demand for services (as a result of demographic changes and increasing patient expectations) and the resources available to meet this demand. Overcoming this disparity requires that providers 'do more with less': under constrained resources, the way to improve care is to release resources by making practice more efficient.

Amongst the many resource issues faced by providers of wound care services, two of the most critical are as follows:

### (a) The frequency with which dressings are changed

In community wound care, the time spent by nurses providing care for their patients (including changing their dressings) is the largest component of resource.<sup>1</sup> Optimising dressing change frequency should, in principle, free up resource that can be used for other activities, thereby improving productivity. However achieving this requires products that are designed to overcome some of the issues for nurses, such as a clear indication of when the dressings requires changing, and for patients, such as the ability to mask exudate so that it is less unsightly.

### (b) The number and complexity of different products used

The number and complexity of dressings available to clinicians has increased, and multiple dressings are often used in combination.<sup>2</sup> Simplifying the range of dressings used has further potential benefits for streamlining the approach to wound care.<sup>3</sup>

The objective of this project was to measure the extent to which use of a new product could deliver practice benefits in a routine "real world" situation by extending the interval between dressing changes amongst suitable patients and simplifying the dressing selection process. Such benefits have been demonstrated previously in case series documenting the use of this product.<sup>4,5</sup> However the objective in this case was to explore whether similar results could be achieved when the product is used routinely across a community caseload rather than within the confines of a product appraisal.

## Method

The collaborative project was undertaken between Hull City Healthcare Partnership (HCHCP) and Smith & Nephew Wound Management. It included all relevant community staff within the 'East Locality', which represents one of the three localities that comprise Hull CHCP. The project involved the introduction of a new dressing (ALLEVYN Life) designed to manage wound exudate more effectively, to be more acceptable to patients by masking unsightly staining of the dressing surface with exudate, and to provide both the patient and clinical staff with an unequivocal indication for when the dressing requires changing.

The approach consisted of an initial training and education phase during which clinical staff were made aware of the project and received relevant information on the appropriate use of the product. This was followed by an implementation phase in which the staff adopted the new dressing where appropriate and adjusted their practice, specifically visit frequency and dressing change frequency, accordingly. A simple-to-follow dressing selection flow chart was distributed to all staff within the locality as part of the training phase. This aided staff in appropriate use of the new dressing and helped them to optimise dressing change practice. A patient information video message explaining the benefits of the approach was recorded and could be replayed to patients via a tablet device by nursing staff to support the process of switching to the new dressing. ALLEVYN Life was used on wounds staff deemed suitable based on their clinical opinion, in conjunction the product's indications for use. Routinely collected anonymised data on wound characteristics, use of dressing products, and the frequency of dressing changes and nursing visits were audited pre- and post-implementation in order to determine the effect of the new approach. The results were collated using Microsoft Excel™ and analysed using SPSS™ v19.0.

## Results

### Caseload characteristics

The caseload comprised patients treated by community nurses predominantly in residential care or within the domiciliary setting (Figure 1). A range of different wound aetiologies were treated (Figure 2) with 73.0% (n=27) being chronic in nature, i.e. having been present and unhealed for longer than six weeks. At baseline 8.1% (n=3) of wounds were classified as infected by the treating nurse. All 37 of the patients had at least one of a range of co-morbidities in addition to their wound, with diabetes (37.8%, n=14) being the most common specific co-morbidity (Figure 3).

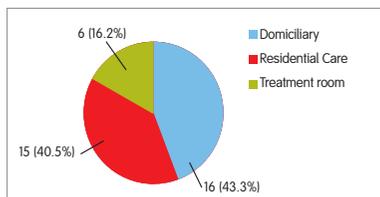


Figure 1: Care setting

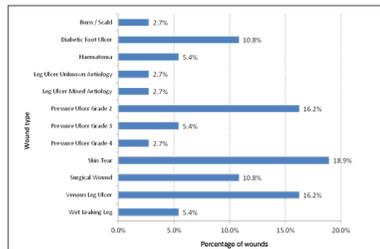


Figure 2: Wound aetiology

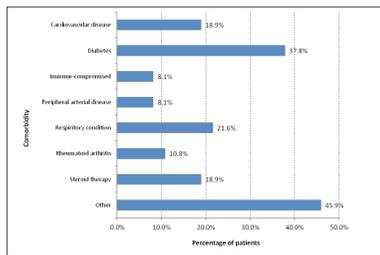


Figure 3: Co-morbidities

### Dressing usage

Excluding bandages, a total of 11 different generic product type combinations (e.g. a wound contact layer used with a foam) were employed in the treatment of the 37 wounds at baseline (Table 1). There were 13 different combinations of different product brands (e.g. specific foam or other brand types) used. This contrasts markedly with the number of dressing product combinations used following implementation of the new product, where only two generic product type combinations were employed, an 81.8% reduction in dressing combinations employed (Table 1).

### Dressing change and visit frequency

Some patient contact visits were used for dressing changes while some were used only for other activities. Both were recorded. The frequencies of both types of visit were calculated before and after the introduction of the new product (Table 2). The mean frequency of dressing change visits was reduced from 3.6 at baseline to 1.8 per week post-implementation. Within the audit population 25 patients (67.6% of patients) were having their wounds re-dressed three or more times per week at baseline. Amongst these 25 patients the mean dressing change frequency, prior to the project implementation, was 4.3 changes per week. At re-audit following introduction of the new product the mean frequency of dressing change for this group had fallen to 2.2 changes per week, a 48.8% reduction.

### Dressing wear time

Using the dressing change frequency data the dressing wear times achieved pre- and post-ALLEVYN Life was calculated for all 37 patients. The mean dressing wear times were then calculated (Figure 4). The same process was repeated using only the dressing change frequency data for the 25 patients who were having their wounds re-dressed three or more times per week at baseline (Figure 5).

Pre-implementation			Post-implementation		
Primary	Secondary	Frequency	Primary	Secondary	Frequency
Foam		16	Foam*		33
Honey dressing	Superabsorber	5	Cadexomer iodine	Foam*	4
Wound contact layer	Foam	4			37
Cadexomer iodine	Foam	3			
Hydrocolloid	Foam	2	ALLEVYN Life		
Hydrocolloid	Superabsorber	2			
Foam	Superabsorber	1			
Gelling fibre	Foam	1			
Gelling fibre	Superabsorber	1			
Wound contact layer	Superabsorber	1			
Cadexomer iodine	Superabsorber	1			
Total		37			

Table 1: Dressing combinations

	Mean frequency (per patient per week)	
	Pre-ALLEVYN Life	Post-ALLEVYN Life
Non-dressing change visits	2.9	2.8
Dressing change visits	3.6	1.8
Total visits	6.5	4.6

Table 2: Visit frequency

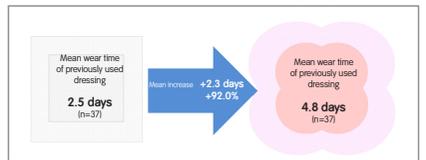


Figure 4: Change in mean dressing wear time following ALLEVYN Life implementation



Figure 5: Change in mean dressing wear time following ALLEVYN Life implementation amongst patients' wounds re-dressed three or more times per week at baseline

## Discussion

Switching to the new dressing was accompanied by a reduction in dressing change visit frequency in 97.3% of patients (36 of the 37 patients). The remaining patient continued with the same dressing change frequency. The mean reduction in dressing change frequency was 1.8 visits per week, representing a 50.0% reduction (Table 2).

Drew *et al.* identified that dressing change frequency is a key area of opportunity for enhancing the efficiency of wound management practice. However achieving this in real-world routine practice can prove a challenge for service providers, since it requires products with the necessary characteristics to help to drive practice change. At the same time, these products need to be acceptable to both patients and clinicians. Crucially, there also needs to be a willingness and drive amongst health care professionals to adopt these products and adapt their practice accordingly.

The demonstrated shift in dressing change visit frequency is shown in Figure 6. This illustrates how the marked reduction in dressing change frequency was achieved. Firstly, the number of patients having three dressing changes per week fell by 61.1% from 18 at baseline to 7 post-implementation. Secondly, the number of patients having one dressing change per week increased from zero to 17. Finally, at baseline there were six patients having seven or more dressing change visits per week compared with zero at follow-up.

### Dressings used per change

Although materials expenditure is not the largest component of the cost of treating wounds, nevertheless, the volume of dressings used to treat a wound can have a considerable effect on the cost of materials. In most instances (apart from cavity wounds which may require packing) it is usually possible to use a single dressing that will meet the needs of the wound and the patient. In many cases therefore, the use of multiple dressings may represent an opportunity to reduce complexity and cost.

Post-implementation the mean number of dressings used per patient per dressing change had fallen by 47.6% to 1.1 from 2.1 at baseline. At baseline across the 37 patients a total of 364 dressings were used per week, an average of 9.8 dressings per week per patient. Following implementation this was reduced across the 37 patients to 73 dressings per week, an average of 2.0

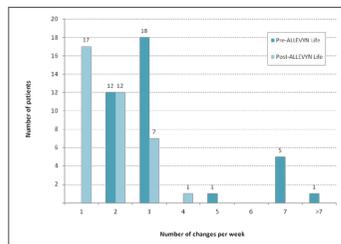


Figure 6: Details of dressing change frequency

dressings per week per patient, representing a reduction in dressings per patient of 79.6%. The reduction in the number of dressings used per change was accompanied by a reduction in the number of different dressing products and dressing combinations (Table 1). It is possible that simplifying dressing selection made the decision making process easier and less complex.

A cost analysis was performed to calculate the cost of dressings pre- and post-implementation. The number of dressings used was multiplied by relevant unit costs.

	Pre-ALLEVYN Life	Post-ALLEVYN Life	Reduction
Mean cost of dressings per dressing change	£5.52	£5.49	£0.03
Mean cost of dressings per patient per week	£28.46	£10.12	£18.34 (64%)

Table 3: Dressing costs

This analysis (Table 3) shows that the mean cost of dressings per change was similar in the pre and post phases, whilst there was a marked reduction in the cost of dressings per patient per week. This demonstrates that optimising frequency of dressing change, combined with simplification of dressing usage, may have potential to reduce expenditure on materials.

### Release of nursing time

One of the key benefits of reducing dressing change frequency is the release of health care professionals' time. The potential time that could be freed by the wider adoption of ALLEVYN Life within Hull CHCP was estimated. Firstly, as a conservative approach it was assumed that the use of ALLEVYN Life would be adopted for those patients having three or more dressing changes per week, and that for this group the reduction in dressing change frequency would equal that achieved for the similar group in this evaluation (a reduction of 2.1 dressing change visits per week). Based on a population estimate of 256,123 for the area covered by Hull CHCP, the number of patients with a wound treated at any one time was estimated to be 708 (using a point prevalence of 3.73 patients with a wound per 1000 population, of which 74.1% are treated in community). Of these patients, 211 would be expected to receive 3 or more dressing change visits per week (29.8%, reported by Ousey *et al.*<sup>7</sup> in a previous audit across five community trusts).

Reducing dressing change frequency by 2.1 visits per week would release 443 visits per week, representing 229 hours of nursing time (assuming 31 minutes per visit).<sup>8</sup> Over a year, this could potentially release 11,908 hours of nursing time. It is possible that wider adoption of ALLEVYN Life could release substantially more time than this, if adopted more widely across all patients with wounds. In this evaluation, the reduction in dressing change frequency across all patients was 1.8 visits per week. Applying this across all 708 patients in a similar way to the above, the potential release of time would be 66,269 visits per year (34,239 hours).

## Conclusion

Releasing time to care for patients is a vital part of making the health service more efficient. As demand increases, it is vital to introduce solutions which enable more efficient use of resources, whilst maintaining quality of care. Firstly, this evaluation shows that a much less complex approach to the use of dressing products can be achieved. Secondly it demonstrates that through the adoption of ALLEVYN Life coupled with training, education and effective promotion of practice change, valuable nursing time can be released. Finally, it suggests that a reduction in materials expenditure may also be realised. In addition to this, some of the HCP time released could in principle be used to reduce agency nurse costs, provide income-generation activities for the provider, or contribute to wound prevention programmes that could be used to reduce the burden of wounds in the community.

## Case Study: using ALLEVYN Life to reduce the impact of a resource-intensive wound

### Background

ALLEVYN Life has been designed to handle more exudate, be more acceptable to patients by masking exudate strike-through, and provide patient and nurses with a visual indicator for dressing change. A collaborative project to appraise the performance and assess the practice impact of ALLEVYN Life was undertaken between Hull CHCP and Smith & Nephew. ALLEVYN Life made available to community nurses with one of the three community localities. The nurses within the locality used ALLEVYN Life wounds that they deemed suitable on the basis of their clinical opinion and experience in conjunction with the product's indications for use as described in the product information literature.

### Results

To assess the impact of ALLEVYN Life on dressing change, data on dressing change frequency was captured before and after the introduction and use of ALLEVYN Life in community clinical practice. Amongst the 37 patients treated with ALLEVYN Life an examination of the baseline pre-ALLEVYN Life data revealed that one patient in particular consumed a disproportionate amount of clinical resource.

### Current Impact

The patient had a wet leaking leg wound that was currently static. The wound was being re-dressed twice daily, meaning that the patient had 14 dressing changes and associated visits per week.

### ALLEVYN Life

The wound management regimen of the patient was changed when ALLEVYN Life was made available. Following the switch to ALLEVYN Life the community nursing team was able to reduce the frequency of dressing changes to just four changes per week. The patient thus required 10 fewer dressing changes and associated visits per week.

### Cost analysis

A cost analysis was performed using the material costs of dressing products and nursing time associated with dressing changes to estimate the treatment cost of the dressing regimen before and after the introduction of ALLEVYN Life (Table A). The results show that the adoption of the ALLEVYN Life dressing regimen resulted in a 81.6% reduction in the patients weekly wound management treatment costs, freeing up over 5 hours of invaluable Community Nurse time per week.

Wound Management Costs at Baseline				Wound Management Costs with ALLEVYN Life			
Item	Unit	Price	Quantity	Item	Unit	Price	Quantity
Material Costs				Material Costs			
ALLEVYN Life	£10m x 220m	£1.20	4	ALLEVYN Life	£10m x 220m	£1.20	1
Wound Contact Layer	£10m x 220m	£1.14	4	Wound Contact Layer	£10m x 220m	£1.14	1
Superabsorber	£10m x 220m	£1.14	4	Superabsorber	£10m x 220m	£1.14	1
Hydrocolloid	£10m x 220m	£1.14	4	Hydrocolloid	£10m x 220m	£1.14	1
Non-dressing change visits			4	Non-dressing change visits			4
Dressing change frequency (dressing per week)			14	Dressing change frequency (dressing per week)			4
Total cost per dressing change			£8.23	Total cost per dressing change			£1.62
Total cost per week			£113.50	Total cost per week			£24.08
				Cost reduction per week			£88.42
				Percentage reduction			81.6%

Table A: Cost analysis pre- and post- a switch to ALLEVYN Life

### Discussion

This individual is not atypical of the sorts of patient which community service must manage. Although not the norm, patients requiring such high levels of clinical resource represent a normal part of a typical community caseload and would be recognisable to the majority of clinical staff who will have had experience of managing wounds in the community setting. Published audit data indicates that there is a small but significant number of patients that require dressing changes either daily or more frequently. In an audit of 4610 wounds Ousey *et al.*<sup>7</sup> reported that 9.3% (n=428) were being re-dressed daily or more frequently.<sup>9</sup> Based on the estimated population for the area covered by Hull CHCP of 256,123, the number of patients with a wound being treated at any one time is estimated at 708 (using a point prevalence of 3.73 patients with a wound per 1000 population, of which 74.1% are treated in community). Based on the data of Ousey *et al.*<sup>7</sup> 66 of these patients would be expected to receive 7 or more dressing change visits per week. Applying these same figures to the UK population of 64.3 million<sup>10</sup> would indicate that there are around 16,528 patients having their dressings changed daily or more frequently. This clearly represents a sizeable group of patients amongst whom the opportunity exists to reduce the current frequency of dressing change, with even a small reduction having a considerable impact on resource usage and patient quality of life.

1. Drew P, Poynton J, Redding L. The cost of wound care for a local population in England. *Int Wound Journal* 2007; 4 (2): 149-155.  
 2. Smith G, Greenwood M, Searle R. Wound nurse use of wound dressings before and after a bespoke education programme. *Journal of Wound Care* 2010; 19 (9): 399-402.  
 3. Henderson V. Use of lean methodology for the management of a total dressing scheme in primary care. *Wounds UK* 2013; 9 (3): 42-44.  
 4. Simon D, Bielby A. A structured collaborative approach to appraise the clinical performance of a new product. *Wounds UK* 2014; 10 (3): 80-87.  
 5. Stephen-Haynes J, Bielby A, Searle R. The clinical performance of a silicone foam in an NHS community trust. *J Comm Nurs* 2013; 27 (5): 30-39.  
 6. NHS Drug Tariff, October 2014.

7. Ousey K, Stephenson J, Barrett S, King B, Morton N, Fenwick K, Carr C. Wound care in five English NHS Trusts: Results of a survey. *Wounds UK* 2013; 9 (4): 20-28.  
 8. O'Keefe M. Evaluation of a community-based wound care programme in an urban area. Poster presented at EWMA Conference 2006.  
 9. Cantile L. Unit costs of health and social care 2013. *SSRS*, University of Kent, 2013.  
 10. Office for National Statistics (2013). Available at: <http://www.ons.gov.uk/ons/neb/npp/national-population-projections/2010-based-projections/rft-table-3-01-principal-projection-uk-population-single-year-of-age.xls> (Accessed October 2014).