A collaborative project to enhance efficiency through dressing change practice

- **Objective:** A collaborative project between Hull CHCP and Smith and Nephew wound management, which sought to enhance practice efficiency, specifically in relation to the optimisation of dressing change frequency. The project involved the use of a new foam dressing (Allevyn Life, Smith & Nephew, Hull) designed to manage wound exudate more effectively, be more acceptable to patients by masking staining of the dressing surface, and to provide both the patient and clinical staff with an indicator for dressing change.

- **Method:** The project comprised a targeted programme of training and education to promote appropriate use of the new product and encourage practice change in dressing change frequency. The frequency of nursing visits, dressing changes and, where applicable, the reasons for a dressing change were documented pre- and post-implementation to determine the effect of this approach.

- **Results:** Switching to the new dressing was accompanied by a reduction in dressing change visit frequency in 97.3% (36/37) of patients. The mean reduction in dressing change frequency was 1.8 visits per week per patient, representing a 50.0% reduction. Post-implementation the mean number of dressings used per patient per dressing change had fallen from 2.1 at baseline to 1.1 (a 47.6% reduction). Furthermore, at baseline an average of 9.8 dressings were used per week per patient. This fell to an average of 2.0 dressings per week per patient following implementation, a reduction in dressings per patient of 79.6%.

- **Conclusion:** The results illustrate that a much less complex approach to the use of dressing products can be achieved. Furthermore, they demonstrate that with the adoption of advanced practice-enhancing products, coupled with appropriate training, education and effective promotion of practice change, valuable nursing time can be released.

- **Declaration of interest:** Alistair Bielby is a contractor for Smith & Nephew. Richard Searle is an employee of Smith & Nephew. This project was supported by an unrestricted grant from Smith & Nephew.

- **Keywords:** dressings; wound healing; standard of care; Allevyn Life; foam dressing

Among the resource issues faced by wound care service providers, two of the most critical are the frequency with which dressings are changed and the number and complexity of products used. In community wound care, time spent by nurses providing care for their patients is the largest component of resource, accounting for up to 66% of nursing time. Optimising dressing change frequency should, in principle, free up resource, and improve productivity. However this requires products designed to overcome some of the issues for nurses, such as a clear indication of when the dressing requires changing, and for patients, the ability to mask exudate so that it is less unsightly.

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

A collaborative assessment of resource use following practice change was undertaken between Hull City Healthcare Partnership CIC (CHCP) and Smith & Nephew Wound Management. Hull CHCP is an independent, ‘for better profit’, co-owned business providing over 75 different community health and integrated social care services to over half a million people in Hull, the East Riding of Yorkshire and Knowsley, Merseyside. Community adult nursing services complete over 16,000 face-to-face consultations per month, with the majority being for wound care.

CHCP Community Nursing recognises the need to enhance patient outcomes by improving wound management through the adoption of approaches that have proven in-practice benefits. However, successfully implementing evidence-based change presents challenges for a resource constrained health sector. Evaluating patient outcomes and service efficiency is central to good clinical governance and risk management, of which wound management is one component. It is essential that services and clinicians pay more attention to evaluating wound management practice and outcomes as part of the usual process of care, reducing the burden of disease on patients.

The objective of the assessment 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...
among suitable patients and simplifying the dressing selection process. This involved the introduction of a new foam dressing (Allevyn Life, Smith & Nephew, Hull) which is designed to manage wound exudate effectively, and be more acceptable to patients by masking staining of the dressing surface with exudate. The foam dressing also provides an unequivocal indication for when changing is required. The dressing has a clover leaf shaped structure comprising four lobes. When exudate strike is visible at the margins of three of the four lobes change is indicated.

The clinical effectiveness of the dressing has been demonstrated in a 148-patient non-comparative case series, which concluded that patients and clinicians benefited from the design features, and that these benefits may have a positive effect on wound healing.\(^7\) In addition, a case series has demonstrated that it achieved a considerable increase in wear time.\(^8,9\)

The objective of this project was to explore whether similar decreases in dressing change frequency could be achieved when the product was used routinely across a community caseload rather than within the confines of a product appraisal.

**Method**

The collaborative assessment included all relevant community staff in the ‘East Locality’, which includes patients treated in a variety of care settings, and represents one of the three localities that comprise Hull CHCP. An initial training and education phase (2 weeks) was undertaken, during which clinical staff were made aware of the project and received information on the appropriate use of the product. This was followed by an implementation phase (1 week) in which the staff adopted the dressing where appropriate and adjusted their practice accordingly.

A simple-to-follow dressing selection flow chart was distributed to all staff within the locality as part of the 2-week training phase. This aided staff in appropriate use of the foam dressing and helped them to optimise dressing change practice. A patient information video explaining the benefits was recorded which could be played to patients via a tablet by nursing staff to support the process of switching to the new dressing.

The foam dressing was used on wounds staff deemed suitable, based on their clinical opinion and its indications for use. Clinicians were free to stop using the product at any time.

Anonymised data on wound characteristics, dressing products used, the frequency of dressing changes and nursing visits were audited pre- (1 week before) and four weeks post-implementation. All patient visits were included even if the visit was related to a comorbidity rather than a dressing change.

Patients of community nursing services are routinely asked to participate in the ‘Friends and Family Test’ that collects feedback on their experience of service provision.\(^10\) This was used to measure patient satisfaction with the care received. All questions related to patient-related goals and expectations and were used to monitor the patients experience of wound management. All patients with complex wounds completed these at the start and end of treatment. The results were collated using Microsoft Excel and analysed using SPSS v19.0.

### Dressing cost and nurse time estimations

Dressing costs were calculated by multiplying the numbers of dressings used by unit costs relevant to community health care (NHS Drug Tariff for England and Wales). Nursing time associated with dressing changes was estimated by assuming a time per visit of 31 minutes.\(^4\)

#### Table 1. Wound aetiology

<table>
<thead>
<tr>
<th>Wound Aetiology</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burn/scald</td>
<td>2.7</td>
</tr>
<tr>
<td>Diabetic foot ulcer</td>
<td>10.8</td>
</tr>
<tr>
<td>Haematoma</td>
<td>5.4</td>
</tr>
<tr>
<td>Leg ulcer unknown aetiology</td>
<td>2.7</td>
</tr>
<tr>
<td>Leg ulcer mixed aetiology</td>
<td>2.7</td>
</tr>
<tr>
<td>Pressure ulcer category 2</td>
<td>16.2</td>
</tr>
<tr>
<td>Pressure ulcer category 3</td>
<td>5.4</td>
</tr>
<tr>
<td>Pressure category grade 4</td>
<td>2.7</td>
</tr>
<tr>
<td>Skin tear</td>
<td>18.9</td>
</tr>
<tr>
<td>Surgical wound</td>
<td>10.8</td>
</tr>
<tr>
<td>Venous leg ulcer</td>
<td>16.2</td>
</tr>
<tr>
<td>Wet leaking leg</td>
<td>5.4</td>
</tr>
</tbody>
</table>

#### Fig 1. Comorbidities

- Cardiovascular disease: 18.9%
- Diabetes: 37.8%
- Immunocompromised: 8.1%
- Peripheral arterial disease: 8.1%
- Respiratory condition: 21.6%
- Rheumatoid arthritis: 10.8%
- Steroid therapy: 18.9%
- Other: 45.9%

% of patients
Results

Case load characteristics

The caseload comprised 37 patients treated by community nurses. The majority of patients were located either in residential care, 40.5% (n=15) or within the domiciliary setting 43.2% (n=16), with 16.2% in a treatment room setting (n=6). A range of different wound aetiologies were treated (Table 1), with 73.0% (n=27) being chronic in nature, unhealed for longer than six weeks. At baseline, 8.1% (n=3) of wounds were classified by the treating nurse as infected. All patients had at least one comorbidity, with diabetes (37.8%; n=14) being the most common (Fig 1).

Dressing usage

Excluding bandages, a total of 11 different generic dressing combinations (for example, a wound contact layer with foam) were used at baseline (Table 2). There were 13 different combinations of different product brands. This contrasts markedly with the number of dressing combinations used following implementation of the foam dressing, where only two generic dressing combinations were used, an 81.8% reduction in the number of dressing combinations employed (Table 2).

Dressing change and visit frequency

Table 3 shows the frequency of changes both before and after implementation. The mean frequency of dressing change visits reduced from 3.6 at baseline to 1.8 per week post-implementation. At baseline 25 patients (67.6%) were having their wounds re-dressed three or more times per week (mean 4.3). Following introduction of the foam dressing this fell to 1.8 per week post-implementation. At baseline the mean wear time increased from 2 to 3.8 days.

Dressing wear time

The mean dressing wear times increased from 2.5 (n=37) to 4.8 days (n=37), a mean increase of 2.3 days (92%). 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, the mean wear time increased from 2 to 3.8 days.

Patient experience

Patients gave feedback on their experience of aspects of care including control of wound leakage at baseline during routine care and following project implementation (Fig 2). The proportion of patients responding ‘very good’ or ‘good’ rose from 57.1% to 62.9% following implementation and practice change. Conversely, the proportion of patients indicating that the control of leakage was ‘poor’ decreased from 25.7% at baseline, to 14.3%.

Patients were also asked their opinion on wound care before, and following project implementation. The proportions of patients responding ‘very good’, ‘good’ and ‘fair’ remained unchanged.

Estimation of dressing costs

A cost analysis was performed to calculate the cost of dressings pre- and post- implementation. The number of dressings used was multiplied by unit costs. This analysis (Table 4) shows that the mean cost of dress-
ings per change was similar in both phases, while 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 the potential to reduce expenditure on materials.

**Release of nursing time**
A key benefit 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 the new dressing within Hull CHCP was estimated. Firstly, as a conservative approach it was assumed that the foam dressing would be used on 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 three or more dressing change visits per week (29.8%, reported by Ousey et al. 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). Over a year, this could potentially release 11,908 hours of nursing time. It is possible that wider adoption of the foam dressing could release substantially more time than this, if adopted 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).

**Discussion**
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 among health-care professionals to adopt these products and adapt their practice accordingly.

Efficiency gains were clearly demonstrable, but it was vital to ensure that patient satisfaction and experience was not impacted upon negatively. The results of the ‘Friends and Family Test’ suggest that although efficiency savings in were made in nursing visits, this was not detrimental to the patients’ wound care expe-
Table 4. Dressing costs

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Post-change</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean cost of dressings per dressing change</td>
<td>£5.52</td>
<td>£5.49</td>
<td>£0.03 (0%)</td>
</tr>
<tr>
<td>Mean cost of dressings per patient per week</td>
<td>£28.46</td>
<td>£10.12</td>
<td>£18.34 (64%)</td>
</tr>
</tbody>
</table>


13 Department of Health (Medicines, Pharmacy & Industry Group) (2008). Best practice guidance on joint working between the NHS and pharmaceutical industry and other relevant commercial organisations.

Experience. Time gained in reduced visit frequency may mean that increased time could be spent with patients, increasing the quality of visits, and ensuring that patients feel valued as proactive partners in their care planning and delivery.

Patient centricity is starting to gather pace, specifically as a means to improve outcomes through enhanced collaboration between patients and practitioners. If patient centricity is to become a reality it is necessary to establish partnerships between practitioners, patients and their families that meet tailored needs. Any approaches that release practitioner time (e.g. via the reduction of unnecessary patient visits) will facilitate the achievement of this.

Dressings used per change

Although materials expenditure is not the largest component of the cost of treating wounds, the volume of dressings used 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. Therefore, the use of multiple dressings may represent an opportunity to reduce complexity and cost.

At post-implementation, the mean number of dressings used per patient per dressing change had fallen. At baseline a total of 364 dressings were used per week: following implementation, this reduced to 73 dressings per week, an average of 2.0 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. It is possible that simplifying dressing selection made the decision-making process easier and less complex, thereby benefiting both nurse providers and procurement.

Project working

In order to achieve high quality care within a patient-centred service, it is essential to explore new and innovative ways of working. Joint working between industry and health-care providers is one means of meeting the needs of patients and achieving clinical excellence.13 This project has proved extremely beneficial for the service provider. Community nursing referrals are increasing. Furthermore, it was evident that enhancing practice efficiency was essential to maintain standards of care provision, but such improvements could not be made at the expense of a diminution of the patient experience.

The involvement of front-line clinicians from the outset was vital to the success of the project. Gathering the necessary level of clinician engagement to ensure a project’s success is problematic, particularly within services that are stretched due to increased demand. However, early and complete staff involvement, process review before implementation, efficient data collection to ensure no increase or duplication of workload, and comprehensive support and education for change proved effective in gaining staff engagement.

A fully informed clinician will help to ensure a better patient experience in any project or service delivery change. Staff meetings were held and provided an opportunity to talk about the importance of providing personalised and patient-focused services throughout the project. Providing details of current service provision in the form of tangible facts and figures (where are we now?), followed by a clear definition of the planned practice changes and the role of staff therein (where are we going? How are we getting there?), also aided increased engagement throughout the project. Providing teams with regular feedback throughout the project ensured continued engagement (how are we doing?), and will be a key element in the methodology of any future projects.

Limitations

This project does have some limitations. The number of patients included was relatively small and the project was conducted in one locality within a single provider organisation. It would be useful to undertake further work, ideally across a number of localities in other provider organisation to determine the extent to which the results obtained are readily reproducible. It would be of benefit to conduct further studies into dressing change efficiency employing a range of study designs and methodologies across a range of care settings to further explore this aspect of clinical practice.

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, while maintaining quality of care. 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 the foam dressing 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.
Are you feeling the squeeze?

By adopting the following approach the NHS could reduce dressing spend by over **£5.28 million** and save **1.15 million nursing visits per annum**¹

**We recommend...**

**ALLEVYN Life** for patients receiving 3 or more dressing changes per week

**ALLEVYN Gentle Border** for patients receiving 1 or 2 changes per week

**DURAFIBER** when a gelling fibre is required underneath ALLEVYN²,³

References

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