The vulnerable patient with high risk skin integrity – positive benefits of a long wear time, silicone wound contact layer

KEY WORDS

- Atraumatic removal
- Non adherence
- Positive patient and clinician experience
- Silicone wound contact layer

Within respiratory medicine, patients often present with complex, challenging wounds and skin conditions which, alongside their respiratory management, require intense intervention over lengthy periods of time. Wounds require timely intervention with effective products if complications and subsequent delayed discharge within the respiratory care journey are to be minimised. This evaluation explores the benefits of a silicone wound contact layer (Cuticell® Contact) within a high-risk patient group who presented to a respiratory department with reduced skin integrity over a 6-week period. Objectives and subsequent positive outcomes were non-adherence to the wound bed, wear time of 14 days, atraumatic removal and patient/clinician experience.

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The burden of lung disease, excluding associated wound and skin care, is immense. Lung disease kills one in five people per annum currently in the UK, more than diseases such as ischaemic heart disease and diabetes, and lung cancer remains the most common cancer. The UK has the highest death rates from lung disease, with a higher prevalence than both other European countries and EU averages, and more women than men dying. The social and individual cost to the patient and carer is considerable and the financial cost to the NHS is estimated to be well over £6.6 billion, with half of this spent on care costs alone (British Thoracic Society, 2010).

Respiratory disease and dysfunction affects all ages and population groups, irrespective of socio-economic status. Respiratory diseases often require intense medical and or surgical intervention and are complicated by comorbidities such as diabetes, ischaemic heart disease, vascular disease and obesity (NICE, 2014). The most common presentations to the respiratory department are detailed in *Box 1*.

RESPIRATION AND WOUND CARE

Respiration refers to the processes involved in oxygen transport from the atmosphere to the body tissues and the release and transportation of carbon dioxide produced by the tissues to the atmosphere. Respiratory disease negatively impacts upon this biological process as it either delays or inhibits vital gas exchanges and the transport of essential components particularly oxygen to the cells (McGowan et al, 2003).

Clinicians who manage wounds and reduced skin integrity will no doubt encounter those patients who have, to some degree, respiratory dysfunction and disease as a result. This may be from chemical exposure (e.g. asbestos), lifestyle choice (e.g. smoking), disease (e.g. cancer), thoracic trauma (e.g. stabbing), or invasive procedures (e.g. chest drains).

Key elements of respiratory management include intense steroid therapy, antibiotic regimens and non-invasive/invasive mechanical support, all which can have a negative impact upon the tissues and skin function, and therefore on healing (NICE, 2014).

Oxygen is a necessary component of the skin's normal function and the wound healing process. Bodily functions at the cellular level, including the prevention of bacterial activity, can use up to 90% of consumed oxygen (Norris, 2014). The tissues have no capacity for retaining oxygen, so a steady supply is required. Often respiratory disease negatively impacts upon this supply and demand, increasing

Box 1. Common respiratory presentations (NICE, 2014)

- Asthma.
- Chronic obstructive pulmonary disease.
- Cystic fibrosis.
- Lung cancer.
- Mesothelioma.
- Pulmonary fibrosis.
- Infection.
- Sleep apnoea and snoring.
- Tuberculosis.
- Acute respiratory distress syndrome.
- Other mechanical ailments – effusions.
- Trauma, pneumothorax.

the risk of decreased skin integrity, infection and delays in wound healing (Timmons, 2006). When there is a deficit in respiratory function, there is a negative impact upon wound healing and it will be more difficult for the wound to move itself from the inflammation stage through proliferation and maturation (Bateman, 2015). Due to the vulnerability of respiratory patients' wound tissue, there is a need for products that are atraumatic on application and removal, do not adhere to the wound bed, and can remain in situ for longer periods.

CUTICELL® CONTACT

Silicone wound contact layer dressings are manufactured to increase comfort for the patient, have minimal or non-adhesion to the wound and surrounding tissues, low trauma and pain on removal, low toxicity, flexibility, longer wear time, cost effectiveness and simplicity in use (Barrett 2012; White, 2014; Suess-Burghart et al, 2015). This product range is currently used in wound care management across all wound types, including burns, pressure ulcers, diabetic foot ulcers and leg ulcers (Gates, 2000; Hampton, 2010; Edwards, 2011).

Cuticell® Contact wound contact layer (*Figure 2*) is a relatively new silicone primary dressing which is suitable for most wounds that require non-adhesive, and atraumatic properties. The product literature proposes a 14 day wear time. Cuticell Contact allows the transportation of viscous exudate through an optimal number of perforations (up to 10 per cm^2) within the dressing, allowing the clinician to cleanse the wound without removing the dressing and to visualise the wound bed clearly for assessment. The dressing is also only coated with silicone on one side to allow for easier application. Peri-wound skin maceration is reduced because excessive exudate is able to transfer through the perforations in the product into the secondary absorbent dressing and can be used upon low to high level exuding wounds (BSN Medical, 2014; Suess-Burghart et al, 2015).

Figure 2. Cuticell® Contact wound layer

METHOD

Over a 6-week period, within an acute respiratory ward, 30 patients who presented with various wounds who met set criteria (*Table 3*) and who required a non-adherent wound contact layer (*Box 4*) were recruited into an evaluation. All patients gave verbal consent which was documented within the medical notes, after being given a verbal explanation by the ward manager and written product information (in line with the organisation's evaluation guidelines). Due to the nature of the evaluation process and the product's availability in the regional supplies chain, ethical approval was not required. A service evaluation document was completed.

The evaluated patients had a broad range of demographics and wound types (*Table 5*). These are typical representations of the patients who are often admitted to the respiratory ward within this Trust.

Cuticell Contact wound layer was used to line the wound bed following the manufacturer's instructions. It replaced the various wound liners available on the Trust's current formulary. Cuticell Contact was used in conjunction with the normal regimen of wound bed preparation, sterile saline cleansing and conventional dressings. This particular product was chosen due to its non-adherence, long wear time and atraumatic pain-free removal

Table 3. Evaluation inclusion/exclusion criteria

Inclusion criteria	Exclusion criteria
Patient resident within the respiratory ward	Patients outside of the respiratory ward.
>18 years of age.	< 18 years of age.
Wound requiring a non-adherent wound contact layer.	Wounds that do not require a non-adherent wound contact layer.
No contraindications or allergy to silicone .	Has allergy, sensitivity or contraindications to silicone.
Patient verbal consent documented within medical notes.	Patient refusal or unable to consent.

properties, which were shown to be beneficial to this patient group in an evaluation carried out by Derbyshire (2014). The wound bed liner, size according to wound need, was applied on day 1 and was to remain in situ until day 14 or more, or earlier if wound healing occurred and/or complications arose. Removal of secondary dressings was dictated by wound status, such as high exudate levels or external soiling, product recommendation and normal dressing regimen.

Data were collected using the Applied Wound Management tool (Gray et al, 2005), which is nationally recognised and utilised across the Trust, providing clinicians with a consistent, comprehensive and focused document in regards to wound healing, infection, and exudate. Data were collected by the ward manager, who did not undertake any of the wound dressing changes, which were being undertaken by the nurse or allied healthcare worker on that particular day.

RESULTS

Although the evaluation referred to a reasonably small cohort (*n*=30), the results were extremely positive in respect of the key outcomes, despite the variation and complexity of the wound types, demographics and comorbidities (*Table 6*). The results in regards to non-adherence, long wear time and pain-free atraumatic removal reflect the positive outcomes of previous clinical evaluations by Suess-Burghart et al (2015) and Derbyshire (2014), adding increasing evidential credibility to the product within this patient group.

The wound groups within the evaluation were a good representation of typical types that have a known tendency to adhere to dressing products, particularly those of skin tears, haematomas and burns, making up to 78% of potential adherence risk (Edwards, 2011). Prior to the evaluation, 52% of these wounds had some form of a non-adherent product applied, to which the patients and clinicians stated that they did not wish to return. The results demonstrated that Cuticell Contact silicone wound contact layer had 100% non-adherence, offering a protective dressing layer to the vulnerable wound bed tissues.

In regards to wear time, the overall dressing regimen was dictated by the wound type, exudate levels and secondary dressing manufacturer recommendations. A 14-day wear time was achieved in 50% of wounds, with an unexpected increased wear time of up to 17 days occurred in a further 30%. Six patients (20%) had a reduced wear time, due to wounds healing earlier than the 14-day wear time or, in one case, the patient dying from an expected end stage respiratory condition.

The McGill pain assessment tool asks the patient "what is your pain, discomfort or sensation on a scale of 0 to 10, with 0 being no symptoms and 10 being the worst you have experienced?" (Melzack, 1975). Patients are familiar with this tool and it was used within the evaluation to aid consistency of patient experience. The symptoms were assessed by the clinician carrying out the wound care at each stage of dressing change. At the onset of the evaluation all 30 patients had some degree of pain, discomfort or negative sensation, despite conventional chosen dressing products. A total of 91% were assessed as having moderate to severe symptoms prior to the application of Cuticell Contact, with only three patients (9%) having low or no symptoms. At the first secondary dressing change (day 7) the pain score had changed dramatically, with all 30 patients having a reduction down to either 1/10 in 40% or complete free of symptoms in 60% of cases. At the next secondary dressing change 100% had symptom-free assessments documented (excluding those six patients who had either healed or died). No alteration in pre-evaluation

Box 4. Cutimell® Contact indications

Cuticell® Contact is suitable for use on the following wound types:

- Cuts.
- Lacerations.
- Abrasions.
- Blisters.
- Burns.
- Skin lesions.
- Moisture lesions.
- Trauma.
- Pressure ulcers.
- Leg ulcers.
- Radiation burns.

Table 5. Patient demographics at the beginning of the evaluation.

Gender	Male Female	*n*=13 *n*=17
Age	28–92 years	
Wound duration pre-evaluation	<1–730 days	
Wound type	Skin tears Haematoma Pressure ulcer Burn Infected cannula Vascular ulcer (V2/A1) Diabetic ulcer Rash Moisture lesion Trauma	*n*=11 (38%) *n*=3 (10%) *n*=3 (10%) *n*=3 (10%) *n*=3 (10%) *n*=3 (10%) *n*=1 (3%) *n*=1 (3%) *n*=1 (3%) *n*=1 (3%)
Exudate levels	High Medium Low	*n*=15 (50%) *n*=10 (33%) *n*=5 (17%)

Table 6. Summary of results (clinician and patient)		
Clinical visibility	Yes	*n*=30 (100%)
Pain score pre-evaluation	10/10	*n*=8 (27%)
	9/10	*n*=3 (10%)
	8/10	*n*=7 (24%)
	7/10	*n*=0 (0%)
	6/10	*n*=2 (7%)
	5/10	*n*=6 (22%)
	4/10	*n*=0 (0%)
	3/10	*n*=1 (3%)
	2/10	*n*=1 (3%)
	1/10	*n*=1 (3%)
	0/10	*n*=0 (0%)
Pain score first dressing change	1/10	*n*=12 (40%)
	0/10	*n*=18 (60%)
Pain score second dressing change	0/10	*n*= (100%)
Wear time (days)	17	*n*=2 (7%)
	16	*n*=5 (16%)
	15	*n*=2 (7%)
	14	*n*=15 (50%)
	13	*n*=1 (3%)
	12	*n*=0 (0%)
	11	*n*=0 (0%)
	10	*n*=2 (7%) healed
	9	*n*=0 (0%)
	8	*n*=2 (7%) 1 healed/1 patient died
	7	*n*=1 (3%) healed

analgesia had been undertaken at these stages.

Patient and clinician experience was also positive within the evaluation. At the study endpoint, they were asked the question "What is your overall experience of this product?" using a five-item scale from 1 (would not use at all) to 5 (excellent, would continue to use). All clinicians and patients deemed the product as either excellent (30 clinicians and 29 patients) or very good (1 patient).

The patient who rated it as very good was undergoing radiotherapy and was nervous about the product being used on his skin because of the unavailability of efficacy data on Cuticell Contact being left in situ during radiotherapy. The product was removed prior to therapy and reapplied after therapy. There is currently no evidence for leaving the product in place while a patient is undergoing radiotherapy, so a patient may be at risk of burns if left in place. Therefore, all products are removed before radiotherapy to an area. This is an area that may require further exploration.

All of the patients and clinicians chose to continue with the product outside of the evaluation collection data time period and did not return to previously used wound contact layers.

Although not a pre-set evaluation outcome, it was noted within the assessment documentation that during cleansing none of the wounds dressed with Cuticell Contact had the product removed. Clinicians were able to clearly visualise the wound bed and adequately clean the wound and surrounding skin without disturbing or removing the product. This key benefit of the product, along with a reduction in maceration levels from the outset, has been highlighted in other studies (Derbyshire, 2014; Suess-Burghart et al, 2015).

Within this respiratory group none of the patients developed maceration skin damage to the wound borders or peri-wound skin. This may be attributed to the optimal number of perforations within the dressing, which allow exudate to travel out and cleansers to travel in. *Figure 7* shows Cuticell Contact in situ.

Wound exudate was moderate to high in 83% of the wounds at evaluation onset, which places the wounds at a higher risk of maceration and subsequent tissue damage. It is well documented that wounds that have viscous and moderate to high exudate have an increased incidence of pain, product adherence and dressing leakage, leading to increased infection and delayed healing (Vowden et al, 2015).

All wounds continued to move along the healing continuum within this evaluation, with no adherence to secondary products or evidence of leakage. It is not appropriate to leave dressings in situ for all wounds. For example, where biofilm is suspected the dressings should be changed frequently and the surface of the wound adequately disrupted.

EVALUATION LIMITATIONS

The evaluation cohort group represented a small number (*n*=30) of patients who presented within a respiratory ward who required a wound bed contact layer within their management regimen. The product's effects within other specialities and the wider population outside of this remit have not been addressed and the benefits are therefore not known.

However, the data collected acknowledges a wide variation in age groups and typical chronic wound

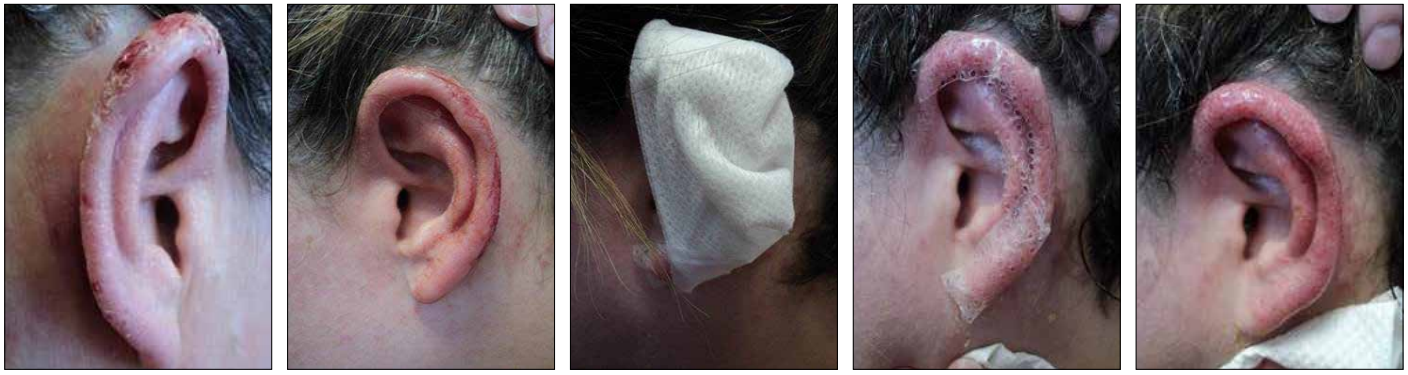

Figure 7. An example of Cuticell Contact in practice. Here it has been applied to a 28-year-old woman with exacerbation of eczema who presented with sloughy wounds requiring a non-adhesive product. She had no adhesion or pain from Cuticell Contact and was happy to continue to use it. Left to right: initial presentation; application; wound dressing in place; day 7; day 14. (Photos courtesy of Adam Derbyshire.)

groups requiring a wound bed contact layer, which can be related to other clinical areas, enriching the increasing evidence base for Cuticell Contact.

There were no patient drop outs. The data was collated and cross-checked by the author, producing positive results in regards to set outcomes which duplicates clinical efficacy of current available evaluation and study literature.

Positive patient and clinician experience, although explored basically in this work, would benefit from a more in-depth patient insight alongside the economic elements of the product if we are to generate increased knowledge and awareness across the speciality of wound care.

CONCLUSION

Silicone wound contact layer dressings have been widely used for many years across all areas of wound care, providing a primary treatment in those wounds that require non-adherence to reduce trauma, longer wear time to reduce cellular disturbance and comfort to the patient on application and removal (Gates, 2000; Edwards, 2011; Derbyshire, 2014; Suess-Burghart et al, 2015).

Throughout this 30-patient evaluation, the implementation of a Cuticell Contact wound contact layer has demonstrated successful benefits in regards to non-adherence, long wear time of 14 days or more, atraumatic removal and a positive patient/clinical experience. Additional outcomes of no maceration, clinician visibility and cleansing alongside secondary product adherence are a welcome efficacy addition to this product's benefits.

In this evaluation, it was found that Cuticell Contact wound contact layer is can remain in situ for 14 days, making it a cost-effective option. It is simple to use by both clinician and patient, providing an overall positive experience.

It is proposed that this product be made available to clinicians and patients through inclusion in local dressing formularies as a clinical and cost-effective alternative to current silicone wound products. WUK

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