Optimising skin care in intensive care: a literature review

This paper will focus on the prevention and management of moisture-associated skin damage, centring on a review of the literature surrounding the topic. The aim is to identify and explore some of the methods available to clinicians in optimising skin health. It will include a discussion of the application of evidence-based skin care believed to reduce the risk of moisture-associated breakdown.

Within intensive care, a patient's age, nutritional status, critical illness and immobility significantly increases the risk of skin breakdown (Lowery, 1995) and, as such, its prevention forms one of the cornerstones of intensive care nursing. Skin damage can be attributed to pressure and/or moisture, and although there are many similarities between pressure-associated wounds and moisture-associated wounds, differentiation is of clinical importance since prevention and treatment strategies can differ largely (European Pressure Ulcer Advisory Panel [EPUAP], 2005).

Moisture-associated skin damage

Moisture-associated skin damage occurs when skin is exposed to excess moisture for prolonged periods. The sources of moisture include perspiration, incontinence and wound leakage/drainage (Gibbon, 2009). The EPUAP pressure ulcer classification tool (EPUAP, 2009) recommended by the National Institute for Health and Clinical Excellence (NICE) (NICE, 2005), is widely used in intensive care and defines moisture-associated skin damage as a non-necrotic superficial wound occurring in the present of moisture and or friction. The guidance states that moisture-associated skin damage can occur over bony prominence or in skin folds and highlights that wounds in these areas can be termed combined lesions, resulting from both pressure and moisture (EUPAP, 2005).

Moisture, particularly from urine and stool, alters the pH of the skin causing irritation and inflammation, which leads to skin breakdown (Ersser et al, 2005, Beldon, 2008; McDonagh, 2008). According to Beldon (2008) excessively moist skin is more susceptible to friction and shearing forces, therefore, preventing the build up of moisture may help to reduce pressure ulcer incidence.

The author's experience, in intensive care, identifies the buttocks, perineum, groin and sacrum as areas that are frequently exposed to prolonged periods of both skin-to-surface and skin-to-skin contact, allowing moisture from incontinence and perspiration to collect and rendering these areas as likely to be affected. Optimising the health of the skin in these areas by providing effective skin care is one method of reducing the risk of moisture-associated skin damage and subsequently the risk of pressure damage (McDonagh, 2008).

Johnson (2004) published an article summarising the fundamental

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aspects of skin care. This article presented a model that describes cleansing, moisturising, protecting and replenishing as the four main components of skin care. This model was used to structure several comprehensive literature reviews (Voegeli, 2008; Voegeli, 2010), however, this paper will focus on one specific aspect — cleansing.

Cleansing

According to Ersser et al (2005), cleansing is an important aspect of any skin care regimen, the purpose of which is to remove dirt, soil, and bacteria from skin surface. An article by Henry (2000) that reviewed common skin cleansers in relation to their ingredients and compatibility, stated that the ideal skin cleansing regimen will remove unwanted microorganisms, without compromising the skin's integrity.

Literature reviews of skin cleansing by Downey and Lloyd (2008) and Voegeli (2010), suggest the cleansing process typically comprises a form of washing and then drying the skin. These reviews identified traditional methods, which are still advocated in some nursing textbooks, involving washing the skin with soap and warm water or just water alone. This is concerning as Henry (2000) stated that soaps can remove natural oils, potentially impairing the skin's ability to act as a barrier to pathogens or environmental irritants, and increasing the risk of inflammation, which leads to damage.

Henry's statement is supported by the findings of an experimental cohort study conducted by Voegeli (2008), which identified that the process of cleansing the skin can be potentially harmful if not completed appropriately. Geraghty's (2011) review concurs, advising that soap often adversely affects the skin.

The cohort study conducted by Voegeli (2008) explored the effect of two cleansing methods — soap and warm water or water alone — and two drying methods — rubbing and patting. The cohort, assembled using healthy female volunteers (n=15), all had their arms washed. Variances were minimised by applying the same technique to the same site on each volunteer in addition to controlling temperature and humidity. The study identified that both soap and warm water and water alone elicited irritated skin responses and compromised the skin's condition.

These responses persisted for several hours after initial application and were exacerbated if skin was exposed to repeated washing in this period. The skin changes identified were more evident in skin exposed to soap and warm water compared with water alone. Voegeli (2008) argued that the findings suggest frequent exposure to low-grade irritants does not allow time for the skin to recover, leading to an inflammatory response and skin breakdown.

Clinical setting

While the findings of Voegeli's (2008) study provided a significant insight into the effect that cleansing can have on skin integrity, the applicability of these findings in intensive care is debatable. Craig and Smyth (2002) argued that although Voegeli's (2008) choice of study design was appropriate, the conditions produced bear little resemblance to a clinical setting, whereby neither the application of the products, the time interval used, nor the cohort of healthy female individuals, are occurrences seen in practice.

McDonagh (2008) highlights that the number of participant recruited in to the cohort was small, and a larger number may have produced significantly different variances, giving a greater insight into the effect of cleansing on the skin. Despite these issues, the study identifies that the number of times cleaning is carried out is a factor in the development of moisture-associated skin damage, indicating that the intensive care nurse should consider the frequency that skin cleansing is taking place, in addition to the product being used, when planning nursing care to prevent skin damage.

Cleansers

Soap is a product that is commonly used to clean the skin, but it is not the only one available in the inpatient setting. A number of companies produce liquid cleansers that claim to reduce the adverse effects of soap (Voegeli, 2010). Following a rapid growth in popularity, skin cleansers have been the topic of several studies to determine the influence they have on skin condition, staff time and cost (Dealey, 1995; Whittingham and May, 1998; Cooper, 2000; Zehrer et al, 2004, Bliss et al, 2007). In addition to soap and water or water alone, commonly reviewed cleaning products are Clinisan® Foam Cleaner (Synergy Health), Cavilion™ (3M) and Triple Care™ Cream (Smith & Nephew).

Cooper and Gray (2001) completed a randomised control trial including 101 participants, which attempted to identify the clinical effectiveness of two skin cleansers. The trial took place in the clinical setting improving the generalisability of the results. Skin cleansing with soap and warm water was compared with Clinisan, and the outcome was defined as the presence of skin breakdown, which was blindly assessed using the sterling pressure sore severity scale tool and supported using photographic evidence.

Due to the small number of participants, the study did not show a statistical variance, however, some 66% of the patients cleansed with Clinisan maintained skin integrity, despite a higher number of incontinent episodes. The results of the trial were investigated for correlations with incontinence aids and it was reported that none were found. The staff involved in carrying out skin cleansing were educated by the researcher.

According to Gyatt et al (1995), a randomised control trial provides

superior evidence, and, although not as strong as a systematic review or meta-analysis, a well-conducted randomised control trial can provide credible evidence.

Although Cooper and Gray's (2001) study was well designed, the reliability of the results could be questioned as the outcomes were identified through subjective assessments. Although the use of a blind and standardised assessment will, to some extent, overcome the inherent problems associated with subjective assessments, they remain the subject of much debate (NICE, 2005).

Cooper and Gray's (2001) study is also appraised in McDonagh's (2008) review, where it is described as 'well-conducted'. The researchers' inclusion of an education strategy, demonstrates a further attempt to improve the reliability of the results, unfortunately the details of the teaching were not provided and information recall following the education does not appear to have assessed. It is, therefore, not possible to determine the success of this intervention. According to Tarling and Crofts (2002), successful education programmes can improve reliability and achieve greater concordance, which is a well-known problem in research trials.

The Cooper and Gray (2001) study is not the only one to publish results demonstrating a reduction in skin breakdown when skin cleaners are used. Investigations involving both Cavilion and Triple Care System have also produced results that show that they can also maintain skin integrity (Dealey, 1995; Whittingham and May, 1998).

Whittingham and May (1998) conducted a multisite study that compared Cavilion and Triple Care Cream with a control group using soap and warm water. Generalising the findings to incorporate an intensive care setting is possible due to the fact that the study was conducted in the clinical setting and that participant demographics (n=21) reflected those seen in intensive care, however, it was limited by the small number of participants.

A random allocation of the products avoided bias, but resulted in unequal proportions of male and female participants in the groups. However, as gender is not believed to influence the development of moisture-associated skin damage, it is unlikely that this affected the outcomes.

This study also included an education strategy delivered by company representatives, and, although this is an efficient method of delivering information to clinicians, the details of the information that they were given was not provided and, again, there appears to be no assessment of information recall.

To overcome the issues associated with subjective assessment, one assessor in the Whittingham and May (1998) study blindly completed three different assessments — Waterlow Score, a visual skin inspection and the monitoring of incontinence episodes, which improved the validity of the results. Unfortunately, only one assessment was made during the eight-week trial.

It is possible that participants experienced moisture-associated skin damage during the trial, which was not evident at the end. A greater insight into the effect of the cleaners may have been gained if repeated assessments had been completed over the course of the trial.

The studies conducted by Dealey (1995), and Whittingham and May (1998) suggest that it may be beneficial to incorporate a skin cleanser into skin care regimens in intensive care as the studies demonstrate that skin cleansers are superior to soap and warm water. Unfortunately, weaknesses in both studies means that neither can clearly demonstrate beyond reasonable doubt which skin cleaner is more effective.

Additionally, despite product claims suggesting cleaners are kinder to skin, the Cooper and Gray (2001) and Whittingham and May (1998) studies both reported the withdrawal of participants due to an adverse reaction to the products being used. Although the proportion of participants withdrawn was relatively small, the rate of occurrence suggests that, when using a skin cleanser, it is important to monitor for any allergenic responses.

Discussion

This paper has explored the topic of skin care with the intention of identifying the methods of cleansing that do not compromise the integrity of the skin's structure. It has identified that prolonged exposure to moisture from any source can illicit an inflammatory response, which leads to the development of skin breakdown, thus demonstrating a need for effective skin care, removing excessive moisture from the skin.

Additionally, this paper acknowledges the presence of a number of comparative studies that provide evidence demonstrating specialist cleansers can maintain the integrity of very vulnerable skin. Regrettably, a number of weaknesses in these studies preclude any further conclusive prescription for skin care in the clinical setting beyond the following recommendations.

Practice recommendations

As demonstrated in this article, providing effective skin care interventions is a challenging task. The complex nature of a patient's skin care regimen gives rise to a need for interventions to be carefully planned to ensure that they achieve the defined goal. A holistic assessment, considering both the intrinsic and extrinsic factors that affect skin conditions, will provide sufficient information in defining the goal of skin care. Interventions can, therefore, be planned accordingly.

In addition to the identification of

areas of moisture build-up and any areas where moisture may collect in the future, the assessment should identify the patient's skin temperature and moisture status, as well as consider any wounds that are or may produce exudate. Clinicians must be aware of areas that have the potential to harbour excessive moisture, for example, skin folds, and take into account the patient's mobility level as this will significantly influence moisture build-up.

Before planning intervention, clinicians should identify what cleansing products are available in their area and how each product should be used. The nature of the environment within which the cleansing is taking place, must be explored, for example, the ward, the patient's home or intensive care. If a patient is unstable or immobile, then thorough rinsing of any cleansing products may be difficult to achieve, in which case, it might be more appropriate to use a no-rinse product.

Conclusion

Cleansing is just one aspect of skin care, the other elements, namely moisturising, protecting and replenishing, are also complex. Only once these topics have been explored can a comprehensive regimen be initiated. There is an ever-increasing number of products available and these need to be applied in accordance with the manufacturer's recommendations in order to prevent further harm to fragile skin.

The exploration of teaching strategies to facilitate the delivery of manufacturers' instructions, as well as information on the importance of non-harmful skin care, may prove an effective method in protecting patients from moisture-related skin damage. WE

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