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# Using faecal collectors to reduce wound contamination

Faecal incontinence is a potentially complex patient issue that poses a real challenge to healthcare professionals and requires careful and effective assessment and prevention strategies to protect the viability of the skin. This paper explores preliminary results of an observational study undertaken by the authors in an intensive therapy unit. Data highlighted that faecal incontinence can damage the skin's integrity, leading to skin breakdown and possible wound contamination, giving rise to major healthcare costs. To prevent this, faecal collection systems can be used as an effective early intervention. The study mentioned in this article, identified that clinical staff associated a high skin risk assessment score with the need to use a faecal collection device.

Karen Ousey, Warren Gillibrand

## KEY WORDS

Faecal incontinence  
Wound contamination  
Waterlow  
Faecal management systems

Pressure ulcers are caused by a variety of factors including immobility, pressure, shear, friction and incontinence. It is important that pressure is relieved, but of equal importance is the protection of the skin, as uncontrolled faecal incontinence secondary to diarrhoea represents a major risk to perianal skin integrity and healing of perineal wounds (Norton, 2009). Faecal incontinence can lead to wound contamination as well as creating a challenge for practical management giving rise to major healthcare costs (Echols et al, 2007). Urinary and faecal incontinence can cause erythema, maceration and excoriation of the skin (incontinence dermatitis) (Lyder et al, 1992). Added to this is the cost of surgical site infections (SSIs) that can be

linked to antibiotic-related diarrhoeas (particularly *Clostridium difficile enteritis*) (National Institute for Health and Clinical Excellence [NICE], 2008). Surgical site infections have been shown to account for up to 20% of all healthcare-associated infections (HAIs), with at least 5% of patients who undergo a surgical procedure developing a surgical site infection (NICE, 2008). Coello et al (2005) assessed the incidence to be 10% in the United Kingdom. A review of the incidence and economic burden of SSIs in Europe estimated that the mean length of extended stay attributable to SSIs was 9.8 days (Dipiro et al, 1998). Both urinary and faecal incontinence are well-recognised as being significant causative factors in pressure ulceration (Calianno, 2000) and, as such, should be treated with the same importance as the reduction of pressure in preventing skin breakdown.

Most of the literature exploring faecal incontinence tends to concentrate on chronic faecal incontinence; however, aspects of this are directly relatable to the incidence in acute settings. Faecal incontinence can affect patients' quality of life (QoL) leading to distress and embarrassment, with the Department of Health (DH, 2000) emphasising the importance of promoting a good patient experience and dignity in healthcare environments. Health-status instruments and gastrointestinal quality-of-life instruments have been used, with

mixed results, to measure quality of life related to faecal incontinence (Eypasch et al, 1995; Sailer et al, 1998). Faecal incontinence is a socially stigmatising condition and healthcare professionals should be aware of the physical and emotional impact it can have on individuals, their families and their carers (Powell, 2008).

Faecal continence has been defined as 'the ability to retain faeces until a socially appropriate time and place for elimination' (Doughty, 2000, p.345), whereas faecal incontinence has been described as accidental and unintentional loss of stool (De Lillo and Rose, 2000).

Generally, faecal incontinence has been explored from the perspective of a chronic condition with associated aetiology of a variety of disorders (Madoff et al, 2004). Prevalence data is difficult to determine from the chronic perspective, as it relies on patient self-reporting. As this condition is seen to be intensely embarrassing, it is often under-reported (Johanson and Lafferty, 1996). Other epidemiological studies have reported varying prevalence due to different populations sampled, differences in data collection and no standard definitions (Madoff et al, 2004). Globally, reported prevalence ranges from 4.4% in the community population (Faltin et al, 2001), to 18.4% of out-patients (Johanson and Lafferty, 1996). In the United Kingdom, prevalence figures are sketchy, with

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the DH (2000) estimating it at 25% in institutional care. Current epidemiological information highlights that between 1% and 10% of adults are affected with faecal incontinence, depending on the definition and frequency of faecal incontinence used. It is likely that 0.5–1.0% of adults experience regular faecal incontinence that affects their quality of life (NICE, 2007). Faecal incontinence is a real problem and challenge for all healthcare professionals and requires careful and effective assessment and prevention strategies to protect the viability of the skin.

### Guidelines

Two guidelines have been published, in the UK, *Good practice in continence services* (DH, 2000), and *Faecal incontinence: the management of faecal incontinence in adults* (NICE, 2007). In addition, the launch of Skills for Health (2008) National Occupational Standards continence care suite 5, which relates to bowel care, and the new Royal College of Nursing (RCN, 2008) guidance: *Bowel Care, Including Digital Rectal Examination and Manual Removal of Faeces* has highlighted the importance of managing faecal incontinence. Healthcare professionals should have relevant skills, training and experience to manage patients with faecal incontinence, preferably working within an integrated continence service (ICS) (DH, 2000). The aim being to ensure a multiprofessional approach to management and care that promotes effective planned referral pathways between primary care, continence specialists, and colorectal, gastroenterology or other specialist care, as relevant to each patient.

### Effect of faecal incontinence on skin

Consideration needs to be given to the pathophysiological effects of contamination by faecal matter in wound management. The combination of urinary and faecal incontinence results in increased skin wetness and permeability, leading to skin breakdown (Berg et al, 1986; 1994). Urine and faeces contain both proteolytic and lipolytic enzymes that are deactivated during the digestive process. If faeces remain on the skin, ammonia released from the faeces reactivates the enzymes leading to further skin irritation (Berg, 1986). Urine and faeces convert urea to

ammonia, which destroys the skin's acid mantle; simultaneously, the high pH of urine activates protease and lipase, which break down the epidermis (Leyden, 1986). It has been recognised that for the skin to maintain a healthy barrier function, the normal skin pH should be slightly acidic at 4.0–5.5 (Cooper and Gray, 2001). Both urine and faeces are alkaline and so raise the skin pH, causing skin irritation and inflammation of the perineal area (Cooper, 2002). The skin's pH needs to be maintained to effectively produce natural oils, preventing dryness and deterring bacterial colonisation. Beldon (2008) highlighted that if a patient has both urinary and faecal incontinence, the risk of pressure ulceration is increased.

### Wound contamination and infection

Contamination is the deposition and survival, but not the multiplication of the organism (Ayton, 1985); whereas wound infection occurs when the amount and/or virulence of microorganisms overcome the body's natural defence mechanism (Cooper, 2005). However, Stephen-Haynes and Toner (2007) identified that there has been a growing recognition that, depending on the host response to the bacteria, even relatively low levels of bacteria in a wound can have effects on wound healing and that wound colonisation or infection cannot be treated in isolation, but must be addressed as part of a holistic approach to wound management. From a microbiological perspective, successful wound healing is dependent on maintaining a host manageable bioburden (Bowler, 2003), with Landis et al (2007) confirming that a certain, undefined bioburden can delay healing. The containment of faecal matter from the patient's skin is therefore a vital element in the maintenance of skin integrity.

### Clinical assessment and faecal incontinence containment

There is some consideration in the management of faecal incontinence of the need for rational, clinical decision-making made by nurses, based on individual patient assessment. This assessment needs to encompass risk to skin integrity. A number of risk assessment tools are available to the nurse practitioner, and are used in research and clinical practice with acknowledgement of their equivocal reliability and validity. The faecal

incontinence severity index uses patients' input to assign numerical values and this, together with a daily diary of bowel movements, is a far more stringent method than patients' recall (Madoff et al, 2004).

A study exploring acute faecal incontinence management is currently being undertaken by the author in partnership with nurses working in a West Yorkshire Foundation Trust Intensive Therapy Unit. Preliminary analysis indicates that 10 out of 45 (22%) patients had perianal skin breakdown following the onset of faecal incontinence. Data collected from the observational study highlights that the majority of patients who developed acute faecal incontinence would have had care interventions of hygiene methods or faecal collection systems instigated (Table 1).

Thirty-one percent of patients had their skin managed by hygiene methods, i.e. washing and drying, whereas 30% of patients had a faecal collection system inserted.

Clinical staff within the intensive therapy unit highlighted that if a patient was assessed as being 'very high' or 'high' risk in accordance with the Waterlow score, a faecal collection device would be the chosen intervention to prevent further skin deterioration as can be seen in Table 2.

The main aim of the study was to establish an estimate of current prevalence of acute faecal incontinence and investigate plausible relationships between management and wound complications or moisture ulcer development. The limitations of this study were that it was a 'snapshot' prospective observation of current status and practice and was completed over a three-month period. It is acknowledged that it is difficult to prove a direct link between faecal containment systems and prevention of wound contamination, based on a small scale study. However, the intention is to use this initial data in the design of larger studies to establish the clinical and cost-effectiveness of an intervention guideline in the management of faecal incontinence. This guideline would include faecal collection devices but will also have

other intervention strategies, based on sound principles of individual patient assessment. This also warrants further exploration of issues pertinent in this area, e.g. dignity, family/carer perceptions and patient experience.

**Skin protection**

Proactive protection of the skin from maceration should be a priority of nursing and clinical care. Effective management of acute faecal incontinence and timely interventions will help to prevent maceration, skin breakdown and possible wound contamination. The risk of developing pressure ulcers or other problems with the skin increases where there is incontinence, with faecal or urinary sources often resulting in maceration of the skin (Cutting and White, 2002). Regular skin inspection and cleansing regimens should be implemented and accurate recordings made of skin assessment and frequency of incontinence episodes.

When a patient suffers with acute faecal incontinence, the integrity of the skin is compromised often with the result of the appearance and sensation of a burn. Moreover, wounds that are present in this area, i.e. sacrum, perianal region, groins and lower abdomen are at risk of becoming contaminated with faecal matter. To prevent damage to the skin's integrity and wound contamination due to faecal incontinence, faecal collection systems may be used. Additionally, a structured skin cleansing regimen that does not deplete the skin of moisture should be implemented and adhered to. Humectants such as glycerine, esters, lanolin, cetyl or stearyl alcohol, as well as mineral oils, were highlighted by Nix (2006) as being useful because they prevent the loss of natural moisture from the skin, and ointments that are oil-based are more occlusive, offering greater protection to the skin.

**Use of faecal collection systems to prevent wound contamination**

There are three major collection systems that can be purchased for the management and collection of faecal incontinence; Flexi-Seal™ faecal management system (FMS) (ConvaTec); Zassi® Bowel management system (Hollister) and Bard's DigniCare® Stool management system. Each system has

**Table 1**

Nursing care interventions of patients with acute faecal incontinence

Management	n	%
Hygiene	14	31
Incontinence pad	9	20
Faecal collector bag	8	19
Flexi-Seal® faecal management system (ConvaTec)	7	15
Zassi® bowel management system (Hollister)	7	15

**Table 2**

Management of acute faecal incontinence

Management	Mean score	Risk
Flexi-Seal® faecal management system (ConvaTec)	24.86	Very high
Zassi® bowel management system (Hollister)	20.17	Very high
Faecal collector bag	18.75	High
Hygiene	18.86	High
Incontinence pad (during collection of the data staff identified that they used pads in all cases of faecal incontinence)	21.22	Very high
Total	20.45	

been designed to:

- ▶ Safely divert faecal matter away from the patients' skin
- ▶ Protect wounds from faecal contamination
- ▶ Reduce skin breakdown and reduce the spread of infection.

Through redirection of faecal matter there is a lessened risk of an ulcer becoming contaminated by faeces. The systems are inserted into the patient's rectum and secured by inflating a balloon that prevents the device being dispelled; faecal waste passes through the tube and is collected in a bag. This prevents the skin being damaged by exposure to wetness and faeces in the bed linen, and contains odour that may cause discomfort and embarrassment for the patients. Although the initial cost of the faecal collection devices is high, they have been proved to have a cost-saving effect when compared

to changing bed linen (Echols et al, 2007). Indeed, Keshava et al (2007) and Morris et al (2005) reported that when faecal incontinence management systems were used there was a significant reduction in the mean bed linen change in patients and a reduction in staff costs. It is important to note that each system should be used for no longer than 29 days; after this period, reassessment for the need of the device should be undertaken. They are only recommended for persons over the age of 18 years.

**Summary**

This paper has discussed the main issues that nurses face when providing appropriate care for patients with faecal incontinence to prevent wound contamination, possible infection and maintain skin integrity. It is clear that there is minimal research data available to support the most clinical and cost-effective interventions in this area.

It is argued that research is needed to investigate faecal incontinence and its link to skin breakdown and wound complications. Another issue to be addressed is the clinical and research application of objective skin risk assessment tools, to ensure that continuing evaluative data is produced that support their use. Prevention of wound contamination, infection and pressure ulcer development is a paramount standard of clinical nursing practice. The management of acute faecal incontinence contributes to this standard and, therefore, nurses have a duty of care to use the best available, evidence-based interventions to treat this condition. Given the paucity of research in this area, it is recognised that nurses currently need to base their decisions on rational clinical judgement after an individual patient assessment. **WUK**

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## Key points

- ▶▶ Both urinary and faecal incontinence are well-recognised as being significant causative factors in pressure ulceration.
- ▶▶ Faecal incontinence is a real problem and challenge for all healthcare professionals and requires careful and effective assessment and prevention strategies to protect the viability of the skin.
- ▶▶ When a patient suffers with acute faecal incontinence, the integrity of the skin is compromised often with the result of the appearance and sensation of a burn.
- ▶▶ Preliminary analysis indicates that 10 out of 45 (22%) patients had perianal skin breakdown following the onset of faecal incontinence.
- ▶▶ Through redirection of faecal matter there is a lessened risk of an ulcer becoming contaminated by faeces.

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