

In total, 25 patients took part in the product evaluation. There were eight females and 17 males. The mean age of patient was 59 years (range: 39–82) with no significant difference between the CHG group (58 years) and the baseline dressing (60 years). Fourteen patients (four females) were recruited in the CHG dressing and 11 for the baseline dressing (five females). Comparison of the bacterial colonisation rates between the two groups using a two-tailed *t*-test suggests a significant difference ($P < 0.001$). The majority of the bacteria identified were CNS (Table 1). These bacteria are known to contribute significantly to the development of catheter-related bloodstream infections due to their ability to attach and produce polysaccharide substances on foreign materials.

The results of the product evaluation suggest the use of the Tegaderm CHG™ dressing is well tolerated by the patient and shows a good level of adhesiveness and longevity compared to the baseline dressing. The dressing also appears to offer antimicrobial protection. Although the dressing is more expensive at £5.69 compared to the current dressing adopted, because of its longevity and antimicrobial protection, this may be a cost-effective replacement for the longer-term patient.

In summary, we have demonstrated the potential usefulness of the Tegaderm CHG™ dressing in reducing catheter-related bloodstream infection rates. We believe that hospital trusts could find the CHG-impregnated dressing or a similar systems using 2% CHG useful in achieving a reduction in bloodstream infection rates.

Conflict of interest statement

None declared.

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M. Madeo*

L. Lowry

L. Cutler

Doncaster & Bassetlaw NHS Foundation Trust, Doncaster, UK

* Corresponding author. Address: Doncaster & Bassetlaw NHS Foundation Trust, Infection Prevention & Control, Thorne Road, Doncaster DN2 5LT, UK.
Tel.: +44 1302 647232.

E-mail address: maurice.madeo@dbh.nhs.uk (M. Madeo)

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Cyanoacrylate dressings: are they microbiologically impermeable?

Madam,

Cyanoacrylate dressings have been marketed by pharmaceutical companies as a revolution in wound coverage following surgery. They are described as flexible, low profile waterproof dressings that prevent microbial transit from the atmosphere to the wound surfaces. Additional benefits include enabling patients to wash immediately following application, and the transparent nature of the dressing once dry allowing wound examination without removal.

Despite the apparent advantages of using cyanoacrylate glue as a bonding material in surgery, there is limited independent evidence for the microbial impermeability and the application of this property in surgical procedures.

In 2004, Coulthard *et al.* published a meta-analysis in the Cochrane database examining the use of cyanoacrylate dressings in closing surgical incisions, and they drew the conclusion that cyanoacrylate was no better or worse for patient satisfaction or infection than sutures or adhesive tapes.¹ There was, however, a discernable improvement in appearance when assessed by the operating surgeon when the tissue adhesive was used.

One of the principal properties of cyanoacrylate marketed by manufacturers is bacterial impermeability. Limited work has been carried out to validate the impermeable nature of the compound. In 2003, Mertz *et al.* carried out in-vitro studies examining microbiological penetration of cyanoacrylate, and showed that the compounds were successful in preventing bacterial transmission.² The study did not compare any standard occlusive dressings with the adhesive.

We elected to study the microbiological permeability of cyanoacrylate compounds, using Liquiseal (MedLogic Global Ltd, Plymouth, UK) as an example. One of its alleged primary attributes is as a compound that remains impervious to micro-organisms and water for one week following application. The occlusive dressing used was OpSite (Smith & Nephew, London, UK), commonly used in surgical procedures. The method detailed below is well established in the investigation of bacterial penetration through various materials.³ The organisms selected are known to be common pathogens causing surgical site infections.

Nine CLED (Cysteine Lactose Electrolyte Deficient agar; Thermoscientific, Waltham MA, USA) and nine CROM (Staphylococcus Chromogenic agar; E&O Laboratories, Bonnybridge, UK) plates were applied with a layer of cyanoacrylate. Each standard diameter plate received 10 drops of the glue from the applicator, which was then evenly spread by hand around the plate surface using a hockey-stick spreader in an aseptic manner. A second set of nine CLED and nine CROM plates then each had an OpSite dressing applied to them. The use of CLED and CROM plates allows easy assessment of microbiological activity using the indicator qualities of the substrate. Following the application of the tissue adhesive, *Staphylococcus aureus* and *Escherichia coli* were applied to the surface of the glue in concentrations of 10^2 , 10^4 and 10^6 per litre.

This procedure was then duplicated in the same manner with OpSite adhesive dressings taking the place of the cyanoacrylate. Control plates were also included to ensure the viability of the organisms used in each dilution. Each set of plates was incubated for seven days at 37 °C and reviewed daily by a senior microbiology technician. At the end of incubation, each plate was removed and individually visually examined for any evidence of microbiological proliferation and metabolism, i.e. any colour change of the underlying substrate.

Both cyanoacrylate glue and the occlusive dressings used were impervious to bacterial penetration at all concentrations and at all time points.

Several plates, some at all dilutions, of both bacteria showed indications of organisms migrating around the sides of both the standard adhesive dressing and the cyanoacrylate. This acted as a control mechanism, showing that viable organisms had been used during the procedure.

This study demonstrates that, as a barrier to microbiological penetration, cyanoacrylates are as effective as standard occlusive dressings. The limitations of the two types of dressing are similar; both have the potential to allow bacteria to travel around the edges of the dressing and potentially infect the wound. However, as suggested by Bady and Wongworawat, the adhesion that the cyanoacrylate compounds makes to the skin is effective in preventing the translocation of micro-organisms across the skin.⁴ Further work is required to determine how these compounds will perform when used in conjunction with skin clips and sutures.

Cyanoacrylates have been used for many years in superficial abrasions and lacerations. Cyanoacrylates are now emerging as a useful tool in managing the surgical wound, and the results from this study suggest that they are as good as, if not better than, adhesive dressings. The next step is to begin in-vivo randomised controlled trials, such as have been carried out in hip arthroplasty to evaluate how the cyanoacrylate performs under the demands placed upon it by different procedures and techniques.⁵

Conflict of interest statement

None declared.

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B. Rocos*
A.W. Blom
K. Bowker

Bristol Implant Research Centre, Avon Orthopaedic Centre,
Southmead Hospital, Bristol, UK

* Corresponding author. Address: Bristol Implant Research Centre,
Avon Orthopaedic Centre, Southmead Hospital, Westbury on Trym,
Bristol, UK. Tel.: +44 7973 628108.

E-mail address: brettrocos@yahoo.co.uk (B. Rocos)

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Practical steps to deal with meticillin-resistant *Staphylococcus aureus* in hospitals

Madam,

Meticillin-resistant *Staphylococcus aureus* (MRSA) is a major nosocomial pathogen worldwide. It is a multifactorial problem and guidelines on controlling MRSA emphasise the importance of compliance with optimal infection control practices and the prudent use of antibiotics.¹ Although there is a broad consensus on the need for adherence to infection control practices and prudent antibiotic use to control the spread of MRSA, optimal compliance rates are difficult to achieve. For example, studies assessing compliance with hospital antibiotic guidelines showed suboptimal compliance, ranging from 18 to 33%.² Similarly, most studies assessing the hand hygiene compliance of healthcare workers have shown low rates, with hand-washing averaging about 40%.¹ Thus, the way forward in terms of controlling the spread of this pathogen may be to focus on the introduction of a series of restrictive rather than persuasive methods. A systematic review of 66 different studies was carried out to identify interventions that are effective in promoting prudent antibiotic prescribing to hospital inpatients.³ In this review, interventions were categorised into two groups. First, interventions that sought to educate or persuade staff to change their prescribing behaviour, e.g. educational lectures, seminars and audit with feedback. Second, interventions that imposed a restrictive set of guidelines and orders, e.g. formulary restriction, requiring prior authorisation of prescriptions by infectious disease physicians and antibiotic policy change strategies such as cycling. The authors found that restrictive interventions had a greater immediate impact than persuasive interventions.³ In an attempt to identify the size of the MRSA problem, and to provide a theoretical basis for interventions needed to control nosocomial MRSA which can then be subjected to empirical evaluation, a retrospective quasi-experimental study was undertaken.⁴ The results generated from this study demonstrated the relative efficacy of different MRSA-controlling measures and provided: (i) a model suitable for the investigation of nosocomial MRSA problems; (ii) a possible way forward in determining the optimal strategy and time frame required for an antibiotic restriction policy in the case of an institutional MRSA problem.⁴

It has been shown that adherence to hand hygiene of >40% should be sufficient to prevent outbreaks of staphylococcal infection, provided that transmission is only via hands of healthcare workers.⁵ To eliminate possible MRSA transmission via other routes (e.g. the environment), guidelines for controlling MRSA have emphasised the importance of environmental cleaning. Recently, it has been shown that level 2 cleaning (i.e. environmental decontamination of a room/bed space using detergents to clean and 1% hypochlorite solution to disinfect) was effective in eliminating MRSA from the environment; however, a rapid recontamination trend with MRSA, post level 2 cleaning, was observed.⁶ Therefore, the beneficial effects of these cleaning regimens could be rapidly negated by subsequent failures in infection control practice. Such findings highlight the need to consider the importance of the development and the utilisation of detergent and disinfectant products with prolonged/residual biocidal activity.⁷ The concept of using such materials to reduce contamination from frequently touched surfaces would mean that hand hygiene would not be as critical an issue, provided that hand hygiene compliance was in the region of 40%.

Given the important contribution of the admission of MRSA-colonised patients into hospital to high nosocomial MRSA rates, the use of a rapid polymerase chain reaction (PCR) screening method is suggested as a useful tool in addressing this problem.⁴ However, our experience has indicated that the time between swabs being