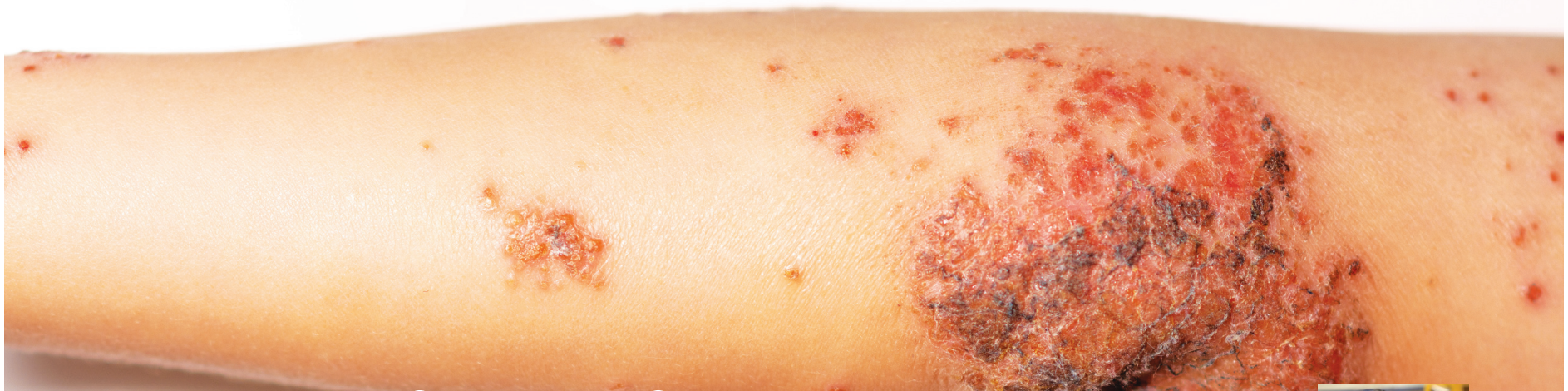

Mupirocin awareness

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In 1976, Sutherland *et al* introduced mupirocin as a promising drug against gram-positive bacteria.[1]

MUPIROCIN IS AN RNA synthetase inhibitor antibacterial (bactericidal) officially indicated for the topical treatment of impetigo due to susceptible isolates of Staphylococcus aureus and Streptococcus pyogenes. It is active against most 'Gram-positive' and some 'Gram-negative' bacilli.[2]

Even though it is a topical ointment, there is very little systemic absorption following the topical application of mupirocin. It is available in an ointment, cream and a special nasal ointment preparation. Each gram of ointment contains 20mg (2%) mupirocin in a water-miscible ointment base supplied in 22-gram tubes, the nasal ointment contains 2.15% w/w mupirocin calcium (equivalent to 2% mupirocin free acid) in a soft white ointment base supplied in single-use 1-gram tubes.

Recommended usage is to apply to an area/nose three times per day up to 10 days. Adverse reactions include (less than 1%) local irritation, burning, stinging or pain and itching.

The following risks have been linked with the use of mupirocin ointment, *Clostridium difficile*-Associated Diarrhoea (CDAD), risk of Polyethylene Glycol absorption, risk associated with use at intravenous sites: Mupirocin ointment should not be used with intravenous cannula or at central intravenous sites because of the potential to promote fungal infections and antimicrobial resistance. The safety and effectiveness of mupirocin ointment have been established in the age range of two months to 16 years, but for the nasal ointment, the safety has not yet been established.

MUPIROCIN RESISTANCE

The first report of mupirocin-resistant *S. aureus* came shortly after its introduction, in 1987 from the UK.[3] A significant limitation to the use of mupirocin is resistance, which reportedly ranges from 1% to 81%.[4]

Mupirocin is also used by many clinicians for the treatment of local skin infections, mild to moderate epidermal and dermal wounds, superficial infected burns and most commonly surgical sites, which all contribute to mupirocin resistance (MR). The emergence of MR has been increasing particularly among methicillin-resistant Staphylococcus aureus (MRSA) isolates in many parts of the world and such resistance is often related with the above mentioned widespread treatment areas.[5–11]

Although both low-level and high-level MR were reported among MRSA isolates, the rate of resistance is different in various geographic areas. A few studies have been done to report the prevalence of high-level and low-level MR *S. aureus* isolates in Africa but current MR patterns is unclear in sub-Saharan Africa. In the study performed by Fritz *et al*., 1089 patients infected with skin and soft tissue infections were followed for up to one year to identify MR *S. aureus* isolates. They reported that 2.1% (n = 23) of patients were infected with *S. aureus* isolates, which were high-level resistant to mupirocin[12]. Nicholson and colleagues have reported the prevalence of low-level and high-level resistance to mupirocin among MRSA isolates. They showed that 30% of MRSA isolates were low-level and 24% high-level resistant to mupirocin.[13]

Moyo *et al* have conducted a study on 89 patients infected with *S. aureus* isolates. They reported that 25% (n = 22) of the isolates were MRSA, of which 1.1% (n = 1) were MR.[14] In another study done by Orrett, 188 MRSA isolates mostly collected from bloodstream and surgical site infections were tested for MR.

He showed that 26% (n = 49) of MRSA isolates were high-level and 44% (n = 83) low-level resistant to mupirocin.[15] Monecke *et al* have conducted a study on 294 *S. aureus* strains isolated during 2012–2013. They reported that 15.3% (n = 45) of these strains were MRSA, of which 5.8% (n = 17) were mupirocin A-positive isolates.[16] Recurrent skin infections over a one year period, is the most important indicator that a possible resistance is present.

CONCLUSION

Judicious clinical use of mupirocin, particularly in high-risk populations whether in the hospital or community, may prevent the development of additional and widespread resistance. Going forward, it will be critical to identify and validate the efficacies of alternative topical strategies. MC

References available on request.