

# Impact of interfering substances on the bactericidal efficacy of different commercially available hypochlorous acid-based wound irrigation solutions commonly found in South-East Asia

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**Objectives:** Chronic wounds are commonly manifested with biofilms that result in delayed healing and recurring infection episodes. Due to increasing antimicrobial resistance, antiseptics have played a significant role in wound infection management. To date, there is no standardised method to assess the 'true' antimicrobial efficacy of different antimicrobials, especially in testing condition that stipulate a high protein environment in the wound. As clinicians often rely on the antimicrobial efficacy profiles for product selection, a rigorous testing is warranted. Hypochlorous acid (HOCl)-based solutions have been introduced as a good alternative for wound cleansing but the assessment of its antimicrobial activities in a stipulate wound environment is limited. In this study, we assessed the *in vitro* bactericidal activities of 7 commercially available wound irrigation products commonly found in South-East Asia. **Method:** The evaluation was conducted using quantitative suspension method, EN 13727 in either low or high protein conditions. **Results:** Under low protein conditions, four out of the five HOCl products achieved bactericidal activity ( $\geq 5 \log_{10}$  reduction factor; RF) within 2 to 5 minutes, and only one product achieved 5 log RF at 15 seconds. None of the HOCl achieved 5 log RF under high protein, even after 30 minutes of exposure time. In contrast, protein interference on the antimicrobial activities of polyhexamethylene biguanide-based product is less pronounced (low protein: 60 seconds vs. high protein: 2 minutes to attain  $\geq 5 \log$  RF). Octenidine dihydrochloride is the only active not affected by protein interference achieving  $\geq 5 \log_{10}$  RF within 15 seconds in both low and high protein conditions. **Conclusion:** These findings warrant the need to screen antimicrobial wound care products, especially HOCl-based products, in high protein condition to better reflect the antimicrobial activities in wound care.

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# Efficacy of octenidine- and chlorhexidine-based wash-mitts against *Candida albicans* and *Candida auris* – a comparative study

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**Objectives:** Management of outbreaks of the newly emerging pathogen *Candida auris* may include use of antimicrobial wash-mitts for decolonization. In the absence of large-scale clinical trials, the immediate assessment of the efficacy claims for these products can be based on *in vitro* experimental data that follows the standard protocols established by CEN (European committee for Standardization). In this study, the chemical tolerance of *C. auris* was compared with the surrogate test organism *Candida albicans* as established in the European standards (EN). **Methods:** The study was conducted following the protocol for the quantitative suspension test EN 13624 using *C. albicans* ATCC 10231 in comparison to *C. auris* DSMZ 21092 and *C. auris* DSMZ 105986. Two commercially available wash-mitts containing chlorhexidine digluconate (CHG) or octenidine dihydrochloride (OCT) were used. Experiments were conducted using the impregnation liquid squeezed from the wash-mitts at different dilution concentrations between 0.5% to 97% at a contact time of 30 sec in the presence of 0.03% bovine serum. **Results:** Yeastcidal efficacy according to EN 13624 was found for the OCT wash-mitts at 30 sec at  $\geq 10\%$  concentration with *C. albicans* ( $\geq 4 \log$  RF). In comparison, for both *C. auris* strains  $\geq 4 \log$  RF was found at a much lower concentration of  $\geq 1\%$ .

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For the CHG wash-mitts efficacy against *C. albicans* was below 2 log RF at 97% concentration within 30 sec. In contrast efficacy against the two *C. auris* strains was around 3 log RF. **Conclusion:** In conclusion, both *C. auris* strains were found to be significantly more susceptible when compared to *C. albicans* in this study. Moreover, our data also demonstrates that not all antiseptic-impregnated body wipes is equally effective against *C. auris* with OCT having a higher efficacy compared to CHG.

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# Harnessing the capabilities of an electronic health record system to enhance surveillance for Middle East respiratory syndrome in an acute hospital

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**Objectives:** The recent experience of the COVID-19 pandemic emphasized the critical need for a surveillance system to alert healthcare facilities about the admission of patients with emerging infectious diseases (EID), thereby preventing nosocomial transmissions. **Methods:** Tan Tock Seng Hospital, an 1800-bed acute tertiary-care hospital in Singapore, transitioned to a new-generation electronic medical record system, Epic, in August 2022. Leveraging the system's capabilities, we developed an algorithm to generate the line-list of suspected Middle East Respiratory Syndrome (MERS) patients, in alignment with the screening guidelines provided by Singapore's Ministry of Health. The algorithm first identifies patients who presented within 14 days (maximum incubation period) of their travel to Arabic peninsular countries. This information is documented by the emergency department's triage nurses. Additionally, patients with suspected MERS indicated in the problem list or diagnosis by attending clinicians, particularly emergency-medicine physicians or infectious-disease physicians, are included. Furthermore, patients who are ordered for a MERS- Coronavirus polymerase chain reaction test, are identified. The algorithm can also be further modified as and when the case definition of the EID changes. **Results:** The surveillance report constructed with Epic algorithm can be scheduled for daily generation or generated on demand within a few minutes. This newer approach is more time- and resource-efficient compared to the manual surveillance process, which necessitates at least three staff members to engage in a series of prolonged manual processes. The report, by extracting information directly from Epic in near real-time, also minimizes the likelihood of errors that may occur during the manual process. Subsequently, the team of epidemiologists identifies the suspected MERS patients from the generated report and efficiently follow up them until a diagnosis of MERS is excluded. **Conclusions:** Harnessing Epic's capabilities, we constructed an algorithm to efficiently and swiftly identify suspected MERS patients, enabling the timely implementation of infection prevention strategies to prevent nosocomial transmission.

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# Using oral care sets to reduce ventilator-associated pneumonia in intensive care units of tertiary care hospitals in a middle-income country: a multi-center study

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**Objectives:** A multi-center study aimed to determine the outcome of using oral care sets for cleaning the oral cavity of the patients admitted to the Intensive Care Units (ICU). **Methods:** Oral care sets which are single-use sets consisting of two toothbrushes with toothpaste, six 0.12% chlorhexidine swabs, and an oral moisturizer swab were developed. The ICUs of fourteen tertiary care hospitals participated in the study. All ICU nurses were asked to brush the patient's teeth twice and clean the patient's oral cavity with antiseptic six times daily. One thousand four