

SAFE SKIN, SAFE PATIENTS: THE VALUE OF PATIENT HYGIENE

Clinical consensus statement





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The COVID-19 pandemic has had an adverse impact on the quality of healthcare delivery. Infection preventionists have had to grapple with the rapidly changing nature of the hospital environment, while also navigating the risks posed by this new disease. The proliferation of life-threatening hospital acquired infections (HAIs) across the US¹ has placed more impetus on the need for hospitals to develop a consistent approach to their patient hygiene practices. With the heightened risk of HAIs since the pandemic, we owe it to our patients to drive a change in hygiene practices that can ultimately protect them from preventable illnesses.

There is a significant variation in how hospitals approach HAIs, including the different types of interventions that they utilize. While some infection preventionists deliver Chlorhexidine gluconate (CHG) bathing exclusively for patients in intensive care units (ICUs), others bathe all patients with CHG. This clearly indicates that there is no standardised approach to patient bathing, and often these protocols are implemented in an inconsistent manner across practices.

From a Mölnlycke perspective, we feel that we have a responsibility to help empower healthcare providers and organizations with the tools they need to prevent HAIs. We believe that this not only comes from the provision of the products that we manufacture, but also through our dedication to education in hospitals, clinical support, and our work with compliance monitoring. As a company, we are deeply passionate about delivering non-biased professional education via lectures and educational events that we sponsor. We

believe that we should constantly engage with experts in the field, so that we can learn as an organization and share knowledge with healthcare workers (HCWs) and infection preventionists around the globe.

Our Patient Hygiene Advisory Board meeting, which brought together world leading experts from across the infection prevention landscape, is the latest chapter in this journey. During this discussion, we reached a consensus on the value of high-quality hygiene practices and the crucial role that it plays during a patient's hospital stay. I and everyone at Mölnlycke hopes that the 'Safe skin, safe patients: The value of patient hygiene' report can act as the start of a conversation on this important and often overlooked area of clinical care. I am thankful to all our colleagues who gave up their time to share their expertise, insights and perspectives and I look forward to building on this work in promoting patient hygiene practices.

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Executive Summary of Statements

The scale and impact that healthcare acquired infections (HAIs) have on the health system represents a persistent challenge that hospitals have had to grapple with over many decades. Despite the best efforts of HCWs, patients face a high risk of infection rates and longer hospital stays, leading to increased financial burdens for hospitals and health systems.^{2,3,4} It is therefore vital, that healthcare environments implement the best practice protocols and ensure that any avoidable risks are lessened.

To address these issues, Mölnlycke has worked in close collaboration with the infection prevention community to understand how we can best support HCWs to prevent HAIs in their hospital settings. We believe that this grass-roots approach which includes a constant dialogue with experts is vital in alleviating the day-to-day pressures that HCWs face on the hospital wards.

On 19th October 2021, Mölnlycke convened a two-hour patient hygiene advisory board bringing together world leading infection preventionists from across the United States. The purpose of this advisory board was to build on the work we have done previously by acting as a forum to reflect on the role that patient bathing has in improving both patient hygiene and care in hospitals post-pandemic.

Joining us at the roundtable were:

- **Dr Tod Brindle**, Global Medical Director-Antiseptics, Gloves, ORS, Mölnlycke, Chair
- **Ann Marie Pettis**, President, Association for Professionals in Infection Control and Epidemiology
- **Dr Edward Septimus**, Professor Internal Medicine Texas A&M College of Medicine, Senior Lecturer Department of Population Medicine, Harvard Medical School
- **Dr Jingjing Shang**, Professor of Nursing, Columbia University
- **Kathleen Sposato**, Corporate Director, Infection Prevention, Jackson Health System
- **Linda McKinley**, Research health scientist, Madison VA Hospital
- **Dr Nasia Safdar**, Medical Director of Infection Control, University of Wisconsin
- **David K. Warren**, Medical Director, Washington University Infection Prevention Program

'Safe skin, safe patients: The value of patient hygiene' sheds a light on the best approaches to empowering HCWs and organizations with the tools needed to prevent HAIs. Our diverse set of experts successfully came to a consensus on a range of key discourses drawn from the infection prevention and control space, offering their valuable insights and reflections on a wide range of topics that span across the breadth and depth of this clinical area. We believe that these five consensus statements help demonstrate the value that safe and effective hygiene practices can have in preventing infections and aiding patients in their recovery.

Outline of Consensus Statements

Statement One:

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The role of patient hygiene in promoting a safe and speedy recovery remains a deeply underappreciated and underemphasized area of healthcare among many HCWs.⁵ Over 70% of HAIs are preventable⁶, but owing to inadequate hygiene practices, avoidable risks to a patient's health remain dangerously high.

Participants at our roundtable emphasized the numerous benefits of increasing the uptake of CHG bathing among patients. They highlighted that it was important to view CHG bathing as part of a wider package of prevention measures and stated that they had integrated the protocol in some capacity in their medical administrations to ensure that patients did not skip their bath once they had taken their medication. Moreover, participants were keen to frame the use of language around CHG bathing carefully, as the word 'bathing' gave the impression that it was optional bath. Instead, participants were keen to promote CHG bathing holistically, as being an integral part of a patient's treatment and therefore aimed to inform patients on its benefits.

Significantly, panellists also built a consensus around the best approaches to combatting HAIs. A key finding drawn from the discussion was the need to promote high-quality education for nurses and nursing assistants to improve patient hygiene practices. Panellists reflected on the decline in traditional cleaning methods, which had come at the expense of other care protocols.

Members of the panel acknowledged that these issues had been made more complicated by the low retention rates among nurses in ICUs. This issue has been further compounded by the fact that the average turnover rate for registered nurses was recorded at 18.7% in 2020, an increase of 2.8% from 2019.⁷ Participants strongly agreed that this high level of turnover resulted in a weakening of institutional knowledge and a drop in compliance rates, and it was therefore important to introduce measures to incentivise nurses to remain in their positions.

The group came to a consensus on the need for educational and organizational facilities to play a central role in raising awareness of HAIs. Members of the panel stated that this was best achieved through bold and simple messaging that could be used throughout hospitals, such as posters and written pamphlets.

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One of the main functions of the skin is to protect the host from invasion, and this is achieved through its physical barriers.⁸ However, during a patient's visit to the hospital, infectious pathogens can often find easy access to the bloodstream of a patient when an open wound is present from an injury or an invasive surgery. This can cause the skin's normal flora to become pathogenic. Once a patient is infected, the hospital stay is extended, sometimes by months and can even result in death, with at least 90,000 US patients dying from HAIs each year.⁹ Attendees were keen to emphasize that these risks from HAIs often started once there were breaks in the skin's integrity.

Participants came to a consensus about the value of a 'three-pronged approach' to reducing the risks of HAIs associated pathogens. This included, 'clean hands, a clean environment and a clean patient'. Members of the panel highlighted epidemiological studies that demonstrated the favourable role that simple hygiene practices such as handwashing have in preventing the transmission of pathogens in health care facilities.¹⁰

Importantly, attendees clearly highlighted the benefits that CHG bathing had in reducing the risks posed by a range of HAIs. Using CLABSI rates as an example, members of the roundtable stated that cases dropped by up to 65% when a daily patient CHG bathing protocol was implemented as part of a hospital's bundled approach to hygiene.^{11,12,13,14,15}

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The COVID-19 pandemic has elevated pressures on healthcare systems in all forms. Since 2020, there has been a sharp increase in the number of critically ill patients requiring prolonged periods in ICUs.¹⁶ Historically, the longer a patient stays in hospital, the greater the risk they face in their normal flora becoming pathogenic. Throughout 2020, ICUs reported a high incidence of pressure ulcers, because the loss of mobility tends to lead to greater compromises in a patient's skin barrier.¹⁷ This issue has been compounded by social distancing precautions, which has meant nurses were often unwilling to touch patients for any extended periods of time, resulted in increased incidences of pressure injuries developing from invasive devices.¹⁸

At the advisory board, there was consensus on the need for maintaining best practice approaches to promoting skin integrity and preventing skin related injuries. There was an emphasis on the need for infection preventionists to work in close collaboration with wound care specialists to help evaluate the effective of products and medical procedures. Of note, attendees highlighted that one particularly important area of dialogue was around an organization's approach to the bathing of a patient's genitals, and the need to ensure that these areas were kept clean throughout a patient's hospital journey .

Members of the advisory board were acutely aware of these risks and cited the important role that daily CHG bathing had in promoting healthy skin for patients on the ward. They cited a study conducted in the Jackson Health System, whereby integrating CHG protocols into care routines helped promote longer term savings for the hospital because of the reduction of re-admittance rates.¹⁹

Participants also highlighted that CHG bathing products did not have a negative impact on a patient's skin integrity, because they had a low irritancy potential, including an invitro patch test study suggesting these levels were similar to water. This meant that there was a limited level of hygiene related skin breakdown which was seen as a major concern. Instead, the Jackson Health System found that washing patients using CHG baths actually improved wound recovery significantly.

The impact of COVID-19 has also had a significant impact on the development of other conditions such as Incontinence-Associated Dermatitis (IAD). Despite sparse research on the topic, a growing body of evidence suggests that patients staying at hospital for extended periods of time are more prone to developing IAD.²⁰ There was a clear consensus among members of the panel that those patients who suffered from these skin conditions still benefited from the use of CHG bathing. Attendees also highlighted that it was important for hospital staff not to allow patients to use other products that could deactivate the protective effects of CHG, such as deodorants.

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HAIs cause considerable morbidity and medical costs. Annually in the US, approximately 722,000 people develop a HAI and such burdens cost the health system up to \$9.8 billion annually.²¹ COVID-19 has further complicated the issue by lessening the collective focus on these dangerous forms of infections. If left unchecked, the long-term implications for patients, clinical teams and healthcare systems will be significant and long-lasting.

One of the core themes that emerged throughout our roundtable was the need for healthcare facilities to refocus the recovery on reducing the risk of all HAIs. Panellists came to a consensus to CHG bathing plays a central role in reducing these threats and acting as a companion throughout a patient's hospital journey. They highlighted the role that CHG bathing plays in preventing the spreading of HAIs, reducing long terms costs for hospitals and promoting greater patient satisfaction.

Panellists highlighted that there was a clear ambiguity in the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force guidelines which merely called for patients to be bathed before surgery.²² Members of the advisory board spoke on a range of interventions that they had trialled, including soap and water procedures, placebo and daily CHG bathing with evidence clearly indicating that CHG offered the most efficacious intervention for HAI prevention .

While it may be tempting to economise the daily hygiene practices to save money, participants strongly favoured the use of CHG bathing and highlighted that there was a powerful business case for its use throughout hospital settings. They called for a more nuanced approach to the conversation on costs, which needed to view this intervention for its overall value rather than just the upfront costs that facilities paid towards it. In turn, this would help drive down lengthy hospital stays, reduce readmittance rates and consequently, provide cost savings in the longer-term.

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The COVID-19 pandemic has directly resulted in a spike in CLABSI, CAUTI, VAE, and MRSA bacteremia cases compared to 2019.²³ At a time when the risks from such HAIs are heightened, CHG bathing plays a highly important role in mitigating the impacts of these infections because of its role as horizontal approach to infection prevention. Since this intervention is pathogen independent, it is therefore able to address a broad range of new pathogens that can enter a hospital environment. In comparison, vertical approaches, while often effective in solving specific issues, can at times result in additional costs in the form of further tests and targeted decolonization.^{24,25}

Many of these concerns were echoed by the participants of our roundtable, who highlighted that that hygiene practices needed to integrate preventative tools which can safely aid patients in recovering swiftly, while also mitigating the risks from harmful pathogens. Throughout the US, there are multiple examples of healthcare providers successfully introducing forms of CHG bathing protocols and subsequently seeing a reduction in their HAI rates. For example, one acute care hospital recognized *Clostridium difficile* (CDI) as one of the top challenges for its patients' health. After 100 days of implementing CHG bathing, the hospital lowered CDI rates by 88% with only one hospital onset CDI during that period. Throughout the study, participants found that CHG soap kills the vegetative *C. difficile* cells, and it was also necessary to use soap and water to remove spores. Therefore, the team integrated a two-step wash and rinse approach which helped in the overall reduction of CDI rates.²⁶ Participants indicated that a horizontal approach was the most effective method of reducing the risks of HAIs. This included generic strategies such as standard precautions, hand hygiene, antimicrobial stewardship, environmental cleaning and crucially, daily CHG bathing.²⁷

Due to its holistic role as a preventative tool, participants highlighted the long-term cost savings that CHG bathing could play for a hospital. Participants cited a number of studies which indicated that this was indeed the case. For example, following an increase in HAIs in the Oncology Unit, St. Joseph Health Hospital expanded its use of patient bathing beyond ICU and post-surgical patients to all patients, house wide. The result was a reduction in HAI rates by between 28%-100% and a cost saving of \$514,739.²⁸

The standardization of CHG bathing practices to address the disparity of patient outcomes was another topic that consensus was achieved on. Participants called for a more nuanced engagement program to take place with frontline workers to ensure they felt ownership in delivering these interventions. They also considered on the fact that because frontline workers were the individuals who would actually implement these approaches within their units, that a grass-roots approach was required which ensured that these workers were seen as an integral part of a patient's safety and hospital journey.



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The Value of Patient Hygiene

What is CHG Bathing?

Various infection control strategies, known as bundles of interventions, have been used to decrease the incidence of HAIs. Chlorhexidine gluconate (CHG) is an antiseptic with a wide range of antimicrobial activity and has been proven through numerous studies to act as an infection prevention tool in intensive care units.²⁹ CHG is a broad spectrum cationic bisguanide antiseptic which is active against Gram-positive bacteria, Gram-negative bacteria, and some fungi.³⁰ CHG reduces the density of microorganisms on the skin by binding to the negatively charged bacterial cell walls, causing bacterial cell death.³¹

Daily bathing with CHG is a highly effective intervention for HAI prevention.^{32,33,34} It is used throughout a patient's stay in a hospital, where a nurse will help clean an individual using a CHG skin cleanser and water, in the place of a soap bath. We believe that CHG bathing, implemented universally across the hospital, offers a key tool to reduce instances of HAIs. There are a range of successful interventions by hospitals that demonstrate the clear benefit that CHG bathing has in preventing the spread of HAIs, reducing long-term costs, and promoting greater patient satisfaction.^{35,36}

Overview of literature on the value of CHG bathing

There is a considerable range of literature and case studies which demonstrate the value of CHG bathing. A wealth of academic literature has indicated that CHG bathing is particularly effective in killing both bacteria and helping to cleanse pathogens from the skin. This means that CHG baths capture susceptible bacteria such as *Staphylococcus aureus* and washes away those that are not affected by antiseptics such as *Clostridioides difficile* germs.^{37,38}

Treatments that utilize 4% CHG are found to kill pathogens on contact and patients that have benefited from daily CHG bathing have reported fewer complications, greater ease of use and are less likely to be re-admitted to hospital.^{39,40,41}

Similarly, clinical studies have compared the effectiveness of soap and water against CHG bathing and have found that CHG is far more effective in reducing the risks of HAIs than traditional practices. One such trial found that implemented a comprehensive 4% CHG bathing programme reduced HAIs by 45% compared to soap and water.⁴² Moreover, the application of CHG daily bathing is felt to lead to a durable reduction in potential patient skin with microbial growth increasing 1-3 days after CHG use was stopped.⁴³

The benefits of CHG bathing as part of a broader horizontal approach have been demonstrated by the financial savings that the protocol can help provide in the longer term. As discussed during our patient advisory board meeting, the reduction in downstream costs such as readmittance to hospitals and reduced hospital stay provides a compelling case for utilizing this intervention.⁴⁴ Moreover, hospitals which recognized the benefits that horizontal approaches have seen increases in the quality of services provided by healthcare teams.

Considerations for future research

A wealth of mid-level evidence and anecdotal evidence exists to support the practice of CHG bathing; however, a thorough review of the existing literature is required using a rigorous methodology to draw additional conclusions on its use and identify gaps that should be addressed in the future. Therefore, Mölnlycke is funding an external research consulting company, Monument Analytics to conduct a systematic review of the efficacy of CHG bathing and HAIs using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology. We hope that through this new study, we can further demonstrate the value that CHG bathing plays in enhancing patient hygiene.

Concluding remarks

Our expert panel came to a consensus on the role that daily patient bathing with CHG plays in protecting high-risk patients, however, outside of the US, there are ongoing conversations about the effectiveness of its application. Mölnlycke is committed to generating clinical knowledge on these differing perspectives and the organization hosted a second advisory board alongside leading infection preventionists in the United Kingdom on April 26th, 2022. We believe that the conclusions from this second advisory board will help advance the science on this topic for our global audiences and Mölnlycke are excited about the role we can play in raising international awareness around the importance of maintaining high quality standards of care for all patients.



Translational Performance Improvement

Case studies drawn from across the United States reflect on the overwhelming benefits that daily CHG bathing can yield for hospitals, staff and most importantly patients.

Indiana University

Hospitals which recognized the benefits that horizontal approaches have seen increases in the quality of services provided by healthcare teams. When Indiana University Hospital implemented a patient-centered wellness bundle which included CHG bathing, the program was associated with fewer SSI, CDI and CAUTI. Colon and abdominal hysterectomy rates reduced from 9.5 per 100 surgical cases preintervention to 4.9 post-intervention. At a time when resources are stretched, the initial investments required in a horizontal approach can pay dividends through both reduced equipment use and patient bed days.

The Moffit Cancer Center

Daily CHG bathing has also been attributed to greater levels of patient satisfaction compared with traditional wipe down methods. The Moffit Cancer Center began to use CHG bathing in response to low patient compliance for other bathing protocols. Patients reported greater satisfaction rates and compliance rose to a new high of 84%.⁴⁵ Similar successes have been reported by the Abilene Regional Medical Center, which addressed barriers to patient satisfaction by adopting a CHG bathing protocol that demonstrated higher levels of gentleness and ease of use compared to the hospital's previous hygiene practices.⁴⁶

Nebraska Medical Center

Other case studies have indicated MRSA and VRE rates drop when CHG bathing is implemented as part of a patient's hygiene protocol. Nebraska Medical Center suspended routine contact isolation precautions house wide for endemic MRSA and VRE. Hand hygiene, environmental cleaning/disinfection and CHG bathing protocols were implemented, and compliance monitored. Rates were compared from the 12 months before and 12 months after contact isolation precautions were discontinued and showed no change in acquisition or infection rates for endemic MRSA and VRE.⁴⁷

Tucson Medical Center

CHG bathing has been reported to reduce the rate of surgical site infections (SSI), Tucson Medical Center developed an SSI Reduction Pathway incorporating both current and newly implemented strategies to address SSIs in their C- section patient population. Among additions were CHG pre-operative showering, standardized wound care instructions and a decision tree for Mepilex Border Post op AG use by surgeons. SSI rates decreased from 18 in 2018 to 2 in October 2019: an 88% decrease.⁴⁸



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