

ARTICLE

## Common beliefs about CHG: Do they hold water?

There are a lot of opinions about the best way to bathe a patient. Let's dive into the facts.



Patients don't expect to become sicker as part of healthcare treatment. But despite clinicians' best efforts to prevent healthcare-associated infections (HAIs), 1 in 25 patients will come away with one.<sup>1</sup> Besides added pain and suffering for the patient, HAIs incur an estimated \$9-10 billion in treatment costs in the U.S. annually.<sup>2</sup> In addition, a hospital that performs in the bottom-quartile of institutions for HAI measures will lose 1% of its Medicare reimbursement.<sup>3</sup> Hospitals faced an estimated \$385 million in penalties under this program in 2018.<sup>4</sup>

Hospitals have access to a number of tools that, when used together, reduce the risk of HAIs. One useful tool in this fight against HAIs is chlorhexidine gluconate (CHG). In several studies, CHG has been shown to reduce risk of HAIs when included as a standard part of patient bathing protocols. Yet on the patient floor, confusion remains around the differences between CHG products, how to use them effectively to kill bacteria — and whether using CHG is really “worth it” compared to soap and water.

Let's clear up the confusion and address some of the common misconceptions around CHG and effective patient bathing.

### Common HAIs include:



#### CLABSIs

Central line-associated bloodstream infections



#### CAUTIs

Catheter-associated urinary tract infections



#### SSIs

Surgical site infections



#### VAP

Ventilator-associated pneumonia

### 1. “I see a lot of products labeled CHG. They're all the same, right?”

Not at all. From liquid and foam skin cleansers to wipes, there are differences between antiseptic products and how they are used by hospital staff and patients. While the active ingredient (chlorhexidine gluconate) is the same across CHG products, manufacturers have varying formulation makeups within their brand of products. The format of the product also affects how it works: CHG skin cleansers used to provide a bath do a good job of removing dirt, debris, and bacterial spores, whereas CHG wipes are good applicators of the active ingredient but may leave contaminants on the skin.<sup>5</sup>

### 2. “We've heard regular soap & water works just fine, and that the only reason to use CHG is for pre-op surgical patients. We're mostly concerned that the patient gets a bath, period.”

When used correctly and consistently, soap and water can be an effective way to remove common bacteria from the skin. **However, soap and water baths don't kill pathogens or provide lasting protection after the bath** in the same way as an active ingredient such as CHG may. Patient bathing with CHG-based skin cleanser products contributes to infection prevention protocols because of their ability to remove or drastically reduce the microorganisms on the patient's skin.

Patients don't have to have surgery to be at risk of HAIs. The pathogens normally found on patient skin may also cause an infection. For example, as many as one-third of the human population naturally carries *Staphylococcus aureus* on their skin<sup>6</sup> — and Staph is the leading cause of HAIs in the U.S.<sup>7</sup> These microorganisms can migrate from medical equipment such as stethoscopes or develop on patients' central lines.

#### Prevention favors horizontal, standardized practices

Studies suggest that a horizontal approach to infection prevention — targeting the full range of pathogens through practices such as proper hand hygiene, environmental cleanliness, and universal decolonization — can reduce HAIs throughout a facility<sup>8</sup> and reduce testing and precaution costs.

Standardizing care throughout the facility can also potentially increase efficiency and save clinician time by streamlining bathing procedures and reducing potential staff decision errors. Facility-wide patient bathing may also address additional factors, such as cross-transmission from lower-risk patients.

## CHG products are effective antiseptics and may have utility for a wide range of high risk situations:



Preoperative antiseptic showering

Postoperative antiseptic washing

Routine inpatient bathing

Patient skin decolonization

Hygiene for immunocompromised patients

Hand hygiene

### 3. “Isn't CHG harsh on the skin? I dilute it with water prior to application so patients don't suffer skin irritation.”

This is often misunderstood. CHG is a commonly used antiseptic and generally well tolerated. Manufacturers of CHG products will likely have irritation information on their specific formulation; contact a company representative and request this information before choosing a chlorhexidine product.

From a patient comfort perspective, additives may leave a sticky residue on the patient's skin<sup>9</sup> — which can be a factor in the patient agreeing to a bath.

Clearly, when assessing infection prevention protocols that include CHG, it is vitally important to weigh the many benefits of CHG against the relatively small risks. Those risks can also be mitigated by examining formulations for ingredients that are more likely to cause skin irritation or other issues, rather than diluting the CHG product with water.

### 4. “If CHG is the preferred choice for infection prevention, wouldn't it be easier to use CHG wipes versus a bath?”

It might sound counterintuitive, but impregnated CHG wipes aren't necessarily more efficient or convenient for staff and patients than a CHG-based antiseptic skin cleanser. Moreover, patient baths that include a CHG-based cleanser provide additional benefits.

While a CHG wipe infers a “1-step process,” that's not the case. CHG-based antiseptic skin cleansers often involve the same number of patient bathing steps as CHG wipes, and at times fewer.<sup>11</sup> It's important to note that CHG wipes do not contain skin cleansers, so patients are supposed to shower or rinse their skin before using a CHG wipe. Missing or skipping that step may compromise the effectiveness of the CHG application.<sup>11</sup>

This means that some facilities are washing patients with soap and water first, and then bathing with a CHG wipe as a secondary step. Alternatively, using a CHG-based skin cleanser allows for a true 1-step antiseptic bathing process.

Another potential consideration is that 2% CHG wipes are sometimes used to provide daily bed baths to patients that they are not as convenient. However, the label of these wipes indicates that they are not to be used for general skin cleansing. In fact, to get the intended effect, users are advised to apply these wipes on a 5” by 5” area of skin. The possibility of reduced efficacy may be worth considering before going with a CHG wipe.

There are significant hands-on operational requirements that come with storing and using CHG wipes. CHG wipes require special warmers that can add steps to the bathing process. These warmers consume power and can create additional waste. Another concern is that CHG wipes have shorter shelf life once warmed. After that point, they are only viable for 72 hours.<sup>10</sup> Managing these expiration logs can create additional administrative burden, potentially affecting staff efficiency and product inventory.

Patient preference is an important factor in compliance to bathing procedures. One large study showed that patients are less likely to comply with CHG wipe procedures compared to a bath.<sup>3</sup> Specifically, the residue that CHG wipes can leave on patients' skin led to some patients refusing wipe downs.

It is worth noting that CHG-based antiseptic skin cleansers are widely available over the counter, meaning that many patients will already be familiar with the product and may have encountered it outside of a clinical setting.

At first glance, CHG wipes may sound like the simplest way to administer CHG baths. However, when established as the standard practice, baths with CHG skin cleansers can be performed nearly as quickly, while increasing patient compliance.

### 5. “Isn't CHG washed away during patient baths? Will that make the antiseptic less effective at preventing infection?”

This is another area that is often a source of confusion until you understand how CHG works: **It binds to the patient's skin during application and rinsing.** This means you are not washing all of the CHG down the drain. In fact, CHG begins working on contact, remains on the skin and continues to kill flora long after alcohol and other antiseptics would have stopped being effective.

The combination of washing and rinsing, even when using CHG, can remove pathogenic spores such as *Clostridioides difficile* (*C. diff*). This rinsing step during the bathing process helps to physically remove spores that are otherwise not addressed by topical antiseptics; this is essential to fight the spread of CDI. Meanwhile, the CHG helps to kill vegetative *C. diff* cells that it may encounter.<sup>11</sup>

Rather than being contradictory, washing, rinsing along with the use of CHG are key pieces that fit together to help prevent the spread of dangerous infections.

### 6. “Our budget is limited. Why shouldn't we just choose the product with the lowest cost-per-piece?”

When choosing a CHG product, it is important to consider many factors, not just unit price. Quality and practicality are also important and can determine whether a purchase will serve both your budget and your patients.

Some CHG products may come with a lower unit price. Consider if and how the manufacturer of those products may support your facility. Help with implementing new protocols and tools to maintain and measure compliance are invaluable — an infection prevention strategy is only as good as compliance to protocol!

It's also important to evaluate process and usability. Even the way the products are dispensed could have a significant effect on your budget. For example, some wipes may be distributed via cumbersome dispensers or difficult packaging that can cause clinicians to use more product than they need. These seemingly minor usability issues could lead to larger costs at scale.

When making your decision, make sure the product fits your needs and will fit your budget not just immediately, but over time. This means examining more factors than just unit cost.

**To summarize, all of the following should be top of mind when selecting a CHG product. Make sure the one you choose:**

- **Contains the right ingredients to kill bacteria and remove spores.** The difference between products may be significant. You will want to make sure that the CHG product has the formulation and presentation necessary to protect patients.
- **Is soft on patient skin.** CHG does not commonly cause skin irritation — but other ingredients added to CHG soaps or wipes (such as lanolin<sup>9</sup>) may be irritants. To protect your patient's comfort, look for CHG products that are as gentle on the skin as possible.
- **Can be implemented with a simple, efficient workflow.** Staff time is a precious resource. That's why it's important to evaluate the efficiency and simplicity of any CHG bathing process that you implement. Look for products that support processes with fewer steps that also foster compliance.
- **Is a high-quality product.** Make sure you consider factors aside from unit cost. Higher quality products — solutions with gentler solutions, or cloths that are soft yet durable — may reduce the overall cost of care in the long run.
- **Offers solid clinical evidence of preventing HAI-related complications.** This can subsequently shorten length of stay and decrease readmissions. These outcomes are, ultimately, the most important considerations when looking at CHG products.

With these common misconceptions cleared up, now you can determine which CHG product may best support your patients, staff, HAI prevention efforts and budgetary goals.

## References

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