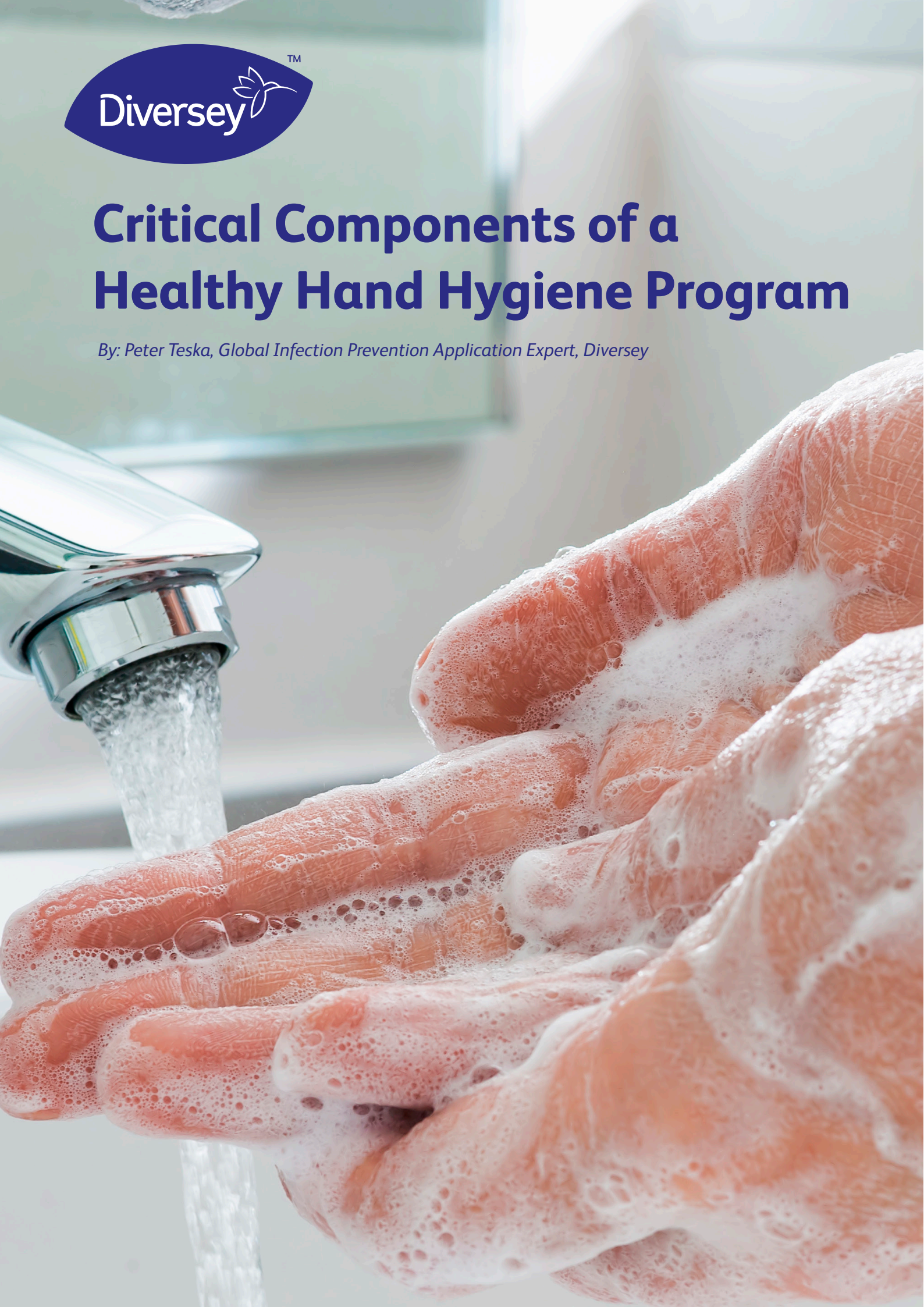
Critical Components of a Healthy Hand Hygiene Program

By: Peter Teska, Global Infection Prevention Application Expert, Diversey



Introduction

Skin connects people to the world. From expressing affection to maintaining one's livelihood, healthy skin is necessary in order to experience a fulfilling life. For many workers however, maintaining healthy skin is easier said than done. If you are constantly exposing yourself to dangerous pathogens and not conducting proper hand hygiene, you are putting yourself and those around you, at risk. According to the Centers for Disease Control and Prevention (CDC), influenza (i.e. the flu) costs U.S. companies approximately $10.4 billion and causes 31.4 million outpatient visits every year.[1] Healthcare associated infections and foodborne illness are also costly to the U.S. economy and a significant risk to people's health. In both cases, some amount of illness can be prevented by proper hand hygiene, which provides greater benefit if the person has health skin. When it comes to hand hygiene, every moment counts. Workers must know when to conduct hand hygiene and have access to effective hand care products to prevent damage to their skin. This white paper will explore three critical components of an effective hand hygiene program: skin health, product efficacy and product delivery. It will describe the overall significance of a hand hygiene program and provide guidance on how to protect workers' skin effectively.

Skin Health

According to the CDC, conducting hand hygiene is the single most important step people can take to prevent illness and the spread of germs to others. An important step in maintaining healthy skin is proper and frequent handwashing. Handwashing involves five easy steps: wet, lather, scrub, rinse and dry.

To contain the spread of germs and limit the spread of infections, workers should wash their hands:

- After using the restroom, changing diapers, cleaning up after pets or handling money
- Before and after eating
- Before and after food preparation
- After coughing or sneezing

To prevent outbreaks through handwashing, workers should:

- Wet hands with warm water
- Rub hands together, making sure to scrub all areas including under the fingernails
- Rub for a minimum of 15-20 seconds
- Rinse thoroughly
- Dry hands on a clean towel
- Turn faucet off with a towel, not hands, to prevent recontamination

The World Health Organization (WHO) promotes a handwashing procedure that uses a series of movements or points of technique, to ensure hands are properly washed.

While frequent handwashing can protect workers from pathogens, it can create problems if the hand soap is too harsh, damaging the employee's skin. Because handwashing removes oil from the skin, skin may lose flexibility and crack, which creates more opportunities for transient pathogens (bacteria not ordinarily on one's skin that can cause disease) to enter the skin. Hand soaps are often harsher on the skin than alcohol-based hand sanitizers, which generally contain moisturizers to protect the skin. It is, therefore, important for organizations to use hand soaps that contain moisturizers to replace water thus preventing dryness in the skin.

To ensure a product is mild on the skin, organizations should select products that have been classified as mild through patch, Repeated Open Application Test (ROAT) and/or Transepidermal Water Loss (TEWL) testing. A patch test is used to classify hand soaps as mild or harsh and to compare the relative mildness and irritancy potential of hand hygiene products. The tests are conducted in a panel of volunteers who use the soap, with skin assessments made and test sites graded for erythema, scaling and fissuring. A daily mean average is calculated for each and the values summed to give a daily total score. Soaps with an average score of one or less are characterized as mild, and if the average score exceeds five the soaps are characterized as harsh.

ROAT tests are similar to patch tests, but conducted with a panel test that uses the product a set number of times each day for a period of days to imitate high-frequency handwashing. This test is particularly relevant for products that are used often throughout the day. A TEWL test measures the water levels in the skin before and after use to determine if the product dries the skin by removing the moisture that is naturally present.

While frequent handwashing and use of hand sanitizer help to prevent the spread of germs and diseases, side effects and individual sensitivity should be considered when selecting a product. Organizations should select hand soaps and hand sanitizers that add moisture to the skin after every use. This limits the potential for unpleasant side effects caused by repeated handwashing and hand sanitizer use, encouraging hand hygiene compliance at every critical moment.

Product efficacy

Hand sanitizers offer an effective solution for people looking to decontaminate their hands when hands are not visibly soiled or when handwashing sinks and water are not available. Handwashing should occur when hands are visibly soiled.

Hand sanitizers should have a minimum of 70 percent alcohol to be considered effective against viruses, but alcohol level alone is no guarantee of efficacy. While Europe allows claims against viruses on hand hygiene products, in the U.S., the Food and Drug Administration (FDA) doesn't allow hand sanitizer manufacturers to make viral claims at all, including against norovirus. This makes it difficult for facilities to select an appropriate hand sanitizer.

An additional complication is that human norovirus cannot currently be grown in a lab, so testing to prove efficacy against norovirus is conducted against a surrogate (a substitute that behaves similarly but can be grown in a lab). In the U.S., Feline calicivirus is the most commonly used surrogate because the EPA recognizes it as the approved surrogate when testing disinfectants, while in Europe, Murine norovirus is used. Organizations should look for products that have been tested against one of these two surrogates.

U.S. companies can also look to Europe for guidance on the efficacy of alcohol-based hand sanitizers against norovirus where manufacturers can make efficacy claims against the virus. Organizations should look for manufacturers that have passed the EN 14476 Quantitative Suspension Test for the Evaluation of Virucidal Activity of Chemical Disinfectants and Antiseptics in Human Medicine. The purpose of the test is to determine virucidal activity of chemical disinfectants or antiseptic products for surfaces, hands, laundry and medical instruments, according to EN test methods established by the European Committee for Standardization (CEN).[2] This allows hand sanitizer manufacturers in Europe to make three types of claims:

- Enveloped virucidal activity, by showing efficacy against Vaccinia virus strain Ankara
- Limited virucidal activity, by showing efficacy against Murine norovirus and Adenovirus. This allows hand sanitizer manufacturers to make virucidal claims against enveloped viruses
- Fully virucidal activity, by showing efficacy against *Murine norovirus,Adenovirus* and *Poliovirus*

Additionally, effective hand sanitizers should contain a denaturant that prevents people from drinking the sanitizer.

Product Delivery

Hand sanitizers are available as a gel, liquid and foam. Historically, gels were developed because alcohol made liquid sanitizers too thin and "runny." When used in a dispenser, liquid sanitizers would frequently drip onto the floor creating a mess and safety hazard – and damaging floors. Gels therefore grew in popularity as a replacement for liquid sanitizers.

Gel alcohol hand sanitizers contain thickening agents. While these thickeners help prevent dripping on the floor, they can also make it harder to spread the gel on the hands, may leave a sticky/tacky residue on hands and can interfere with the efficacy of the hand sanitizer. For these reasons, use of foam alcohol hand sanitizers has steadily increased since their creation as foam overcomes both of these issues.

To create foam, dispensers insert air into the sanitizer as it is dispensed, creating a foamy bubble matrix that stays uniform in an end user's hand. This makes it easier to spread the product across one's hands, encouraging compliance.

Another consideration is pack size and format. Three main formats exist: a wall mounted dispenser, portable sizes such as countertop bottles with a pump on the top, and pocket sizes of 50 to 100 mL bottles.

It is important to choose a format and size that works best for your working environment and based on how employees use the product. Do you need more dispensers or different pack sizes to enable more frequent hand hygiene? Are dispensers placed in the optimal locations? It is important to provide easy access to hand sanitizers to encourage hand hygiene compliance. Understanding where product is needed and how much sanitizer to provide is key to creating a safe and healthy working environment.

The Internet of Things (IoT) and Hand Hygiene

By connecting assets to the Internet, the IoT is changing the way people live and work. For hand hygiene, it is adding a whole new level of efficiency and accountability to the operation.

For example, with a connected dispenser, organizations can be preemptive and predict when a hand hygiene station needs to be refilled **before** it is empty. This ensures workers always have access to hand hygiene solutions. Additionally, data may demonstrate that certain areas require additional dispensers due to a high volume of activity. Organizations could also monitor the frequency in which people conduct hand hygiene and provide reminders of when hand hygiene needs to occur.

Always Available Hand Hygiene

To keep workers safe, it is imperative to offer a hand hygiene system that works effectively and efficiently. The system should include functionality that ensures the systems is always stocked and product is always accessible.

Diversey recently launched IntelliCare™, a new commercial hand care system featuring the industry's first hybrid automatic hand care dispenser with both touchless and manual activation. The versatile dispensing system is compatible with Diversey liquid, gel and foam antibacterial hand soaps and sanitizers and provides low content and battery alerts to help ensure dispensers are always full and functioning.

Key benefits of IntelliCare™ include:

- **Patented hybrid technology:** With a seamless, automatic switch between touchless and manual mode, hand hygiene is always available.
- **Greater operational efficiency:** Effective infection prevention is managed reliably and efficiently, accessible and available across all locations, with frequency and time needed for maintenance interventions reduced to only when they are truly needed.
- **Ultimate versatility:** A single dispenser for all solutions - foam, liquid, gels, creams - allows customers to customize product selection at any time based on environment, site or user needs.
- **Organizations are in control:** Reduce complexity of daily management of hand hygiene with low-battery, low-content signals that enable at-a-glance checks from afar to determine if hand hygiene product is available.
- **Greater sustainability:** Collapsible refills minimize environmental impact, while product formulations are optimized for minimal CO2 footprint and adherence to requirements of leading eco certification bodies globally
- **Trusted global platform:** IntelliCare™ offers a single dispenser, product range and support tools available anywhere, with globally trusted formulas. It also offers language neutral color coding and product design which minimizes user error.

Conclusion

Workers' safety begins with the health of their skin. If workers are in contact with dangerous pathogens regularly and not conducting proper hand hygiene, they are putting themselves and their organizations' brands at risk.

When developing a hand hygiene program, organizations should focus on skin health, product efficacy and product delivery. Companies should choose hand hygiene products that effectively kill bacteria, but are gentle on the skin.

It is important to choose a format and size that works best for your working environment and how employees use the product. Hybrid systems that feature always-available functionality ensure the highest levels of hand hygiene compliance. Investing the time and effort to establish an effective hand hygiene program is imperative to protecting an organization's staff, customers, guests, patients and visitors – and ultimately its brand.

Peter Teska is Global Infection Prevention Application Expert at Diversey, Inc., a leading provider of commercial cleaning, sanitation and hygiene solutions.

He can be reached at peter.teska@diversey.com. For more information, visit www.diversey.com.

1. "Business Pulse - How CDC protects the health of your business," http://www.cdcfoundation.org/businesspulse/flu-prevention-infographic

2. "EN 14476 QUANTITATIVE SUSPENSION TEST FOR THE EVALUATION OF VIRUCIDAL ACTIVITY OF CHEMICAL DISINFECTANTS AND ANTISEPTICS IN HUMAN MEDICINE,"

http://www.accuratuslabs.com/en-14476-quantitative-suspension-test-for-the-evaluation-of-virucidal-activity-of-chemical-disinfectants-and-antiseptics-in-human-medicine-3/

Diversey has been, and always will be, a pioneer and facilitator for life. We constantly deliver revolutionary cleaning and hygiene technologies that provide total confidence to our customers across all of our global sectors.

Diversey is headquartered in Fort Mill, SC, USA. For more information, visit www.diversey.com or follow us on social media.

www.diversey.com