

Hand Sanitizers

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ABSTRACT: *Hand sanitizing is now a proven public health benefit, which is growing globally. Alcohol is the most tested, most proven, and thus most commonly used active ingredient for hand sanitizing. Together, the result is the successful, relatively new category of hand sanitizing.*

Hand Sanitizers are a category of products that are used to reduce the microbial load on the hands without the use of soap and water, and are an important tool to help reduce the spread of illness-causing microorganisms. These products are applied to the hands, rubbed in until dry, and are not rinsed off. The vast majority of hand sanitizers contain short chain alcohols [ethanol, 2-propanol, 1-propanol, or combinations thereof] as the active ingredient. In the US, most hand sanitizers are ethanol-based. Hand sanitizers based on alternate antimicrobials can also be found in the marketplace. Hand sanitizers are highly useful as an adjunct to hand washing, particularly when soap and water are not available or convenient. In certain settings, such as in healthcare environments, alcohol-based hand sanitizers are the preferred and recommended method of hand hygiene when the hands are not visibly soiled.¹ Hand sanitizers are well-established as an effective tool for infection control and contribute to substantial reductions in morbidity and mortality of transfer-mediated infectious diseases. Use of alcohol-based hand sanitizers has become an international standard for proper hand hygiene, strongly endorsed by the CDC, the Association for Professionals in Infection Control & Epidemiology (APIC), the Society for

Healthcare Epidemiology of America (SHEA), the Canadian Public Health Agency, the World Health Organization (WHO), and many others. Sanitizer use is expanding rapidly worldwide, most recently as a result of a focus by the World Health Organization in their Patient Safety Initiative.² Over 85% of the world's population is now covered by the WHO initiative.³

In the US, hand sanitizers fall under the purview of the US Food and Drug Administration and are regulated as drugs. The current regulations allow manufacturers of hand sanitizers to make data-supported antibacterial-related claims, such as that their product can be used to “reduce bacteria that potentially can cause disease” or to “decrease bacteria on the skin.”⁴ A claim commonly associated with hand sanitizers is “kills 99.99% of germs,” which reflects their performance in antimicrobial tests.

Since their introduction into the consumer market in the mid 1990's, hand sanitizers have grown dramatically in popularity, because of their proven health benefits and simple convenience. They allow consumers to reduce disease-causing germs on their hands quickly and easily, anytime and anywhere, regardless of the availability of running water. It is this simple value proposition that has made hand sanitizers a common item in the household, in purses, on office desks, in public buildings and practically anywhere a bottle or dispenser can be placed. The convenience, skin friendliness, likeability and efficacy, resulting in superior infection rate reductions, has made alcohol-based hand sanitizers the globally recommended method for hand hygiene in hospitals and healthcare. In 2007, USA Today named PURELL Instant Hand Sanitizer one of the top 25 inventions to have changed our lives over the last 25 years, along with the cell phone, laptop computer and the iPod.⁵

Hand Disinfection: A Historical Perspective

The important role of hand contact in disease transmission has been known for well over a century. Ignaz Semmelweis first established the scientific basis for hand disinfection as a method for reducing infections in his classic studies in the 1840's.⁶ Since that time, numerous studies around the world have established hand hygiene

as a basic tenant of infection control in healthcare settings, and in general settings as a standard public health mantra. Historically, the primary focus of hand hygiene has been upon hand washing, and this focus continues still today. However, physical and functional limitations of hand washing with soap and water have led to the development of alternate hand disinfectants, especially in healthcare venues. Interestingly, Semmelweis was not a proponent of hand washing, but rather of chemical disinfection.⁷ His chemical of choice, chlorinated lime, has been replaced by other materials that are more consumer friendly. Nevertheless, the overall concept of skin disinfection with antimicrobial chemicals is established and growing today, as exhibited by the increasingly widespread use of hand and skin sanitizers.

Current generation hand sanitizers in North America evolved dramatically in the 1980's and 1990's. In the United States their genesis can be traced back to hospitals as emergency preparedness products (i.e. hand hygiene if a hospital lost water or power). The vast majority of effort since the early 1990's has involved product refinement and clinical demonstration of the effectiveness of alcohol-based hand sanitizers for infection reduction in healthcare settings, although various studies also demonstrated infection reduction in educational, consumer, military and general workplace settings.^{1,8-13} Interestingly enough, a key driver of the initial hand sanitizer product evolution was the desire for fast food restaurant thought leaders to implement a practical hand hygiene intervention that was more readily accepted by their relatively young, less hygiene conscious workforce. One of the very first adopters of the widespread use of hand sanitizers as an adjunct to handwashing for infection control was The Burger King Corporation.

The body of evidence around alcohol-based hand sanitizers was formalized in 1994 by the US Food and Drug Administration classification of alcohol as a Category I (Safe and Effective) active ingredient in the Tentative Final Monograph for Healthcare Antiseptic Drug Products,⁴ and again in 2002 with the release of the Centers for Disease Control and Prevention (CDC) Guideline for Hand Hygiene Healthcare Settings.¹ Most recently, the World