

Comparative analysis on the effectiveness of commercial hand sanitizer



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A hand sanitizer or hand antiseptic is a supplement or alternative to hand washing with soap and water. Various preparations are available, including gel, foam, and liquid solutions. The active ingredient in hand sanitizers may be isopropanol, ethanol, n-propanol, or povidone-iodine. Inactive ingredients in alcohol rubs typically include thickening agents such as polyacrylic acid for alcohol gels, humectants such as glycerin for liquid rubs, propylene glycol, and essential oils of plants.

Alcohol based hand sanitizers are more effective at killing germs than soaps and do not dry out hands as much. Consumer alcohol-based hand sanitizers, and health care hand alcohol or alcohol hand antiseptic agents, are antiseptic products used to avoid transmission of pathogens. It is well-known that the primary vector of transmission for disease causing pathogens is hand contact. Even when rigorous protocols for hand washing and hygiene are followed, pathogens present on any contact surface can easily recolonize recently sanitized hands.

Health care settings in particular increasingly demonstrate the problems of pathogen transmission leading to nosocomial infections due to the number of the highly susceptible populations in health care facilities. Other problems associated with regulatory pressures are also demonstrated by the fact that Medicare is planning to no longer reimburse for hospital-acquired infections—particularly Methicillin Resistant Staphylococcus aureus (MRSA). The Center for Disease Control suggests that there are two main ways to contract any of the common viral illnesses.

Contracting may occur through coughing or sneezing with airborne illness (known as “droplet spread”), or through direct contact with germs spread through touching of contaminated items. Coughing and sneezing of infected individuals propel respiratory droplets of infection through the air and deposit on the mouth or nose of people in the surrounding vicinity, spreading the ailment often without notice. Oftentimes, influenza germs may remain on object surfaces affected by infected individuals, leaving those surrounding persons vulnerable to the second most common form of disease contraction, direct contact.

Direct contact may occur in two ways, including through contact with an infected individual through touching and sharing of personal items such as food or silverware, or through surface contact, meaning that an uninfected individual becomes exposed to the harmful bacteria left behind on objects touched, coughed on, or sneezed on by infected individuals post interaction with the object or surface. Most often, individuals make contact with surfaces tainted with respiratory droplets, and touch the eyes or mouth before properly disinfecting, resulting in the spread of disease.

Once infected, presenting symptoms of viral and respiratory disease include coughing, sneezing, fever, fatigue, muscle or body aches, weakness, headaches, and sore throat. With today’s increased rates of flu and sickness, government officials push for the continual use of preventative techniques employed to reduce the spread of disease. The Centers for Disease Control says the most important way to prevent the transmission of dangerous diseases is to frequently wash your hands with soap and water and/or use a hand sanitizer.

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It also has high viricidal activity against many different kinds of viruses, including enveloped viruses such as the flu virus, the common cold virus, and HIV, though is notably ineffective against the rabies virus. Alcohol rub sanitizers are not very effective against Norovirus (winter vomiting virus) unless they are combined with benzalkonium chloride in a hand sanitizer. Alcohol rubs also kill fungi. University of Virginia Medical School researchers concluded that hand sanitizing is more effective against fighting the common cold than hand washing.

Alcohol kills both pathogenic (disease causing) microorganisms as well as resident bacterial flora, which generally do not cause illness. Research shows that alcohol hand sanitizers do not pose any risk by eliminating “good” germs that are naturally present on the skin. The body quickly replenishes the good germs on the hands, often make moving them in from just up the arms where there are fewer harmful germs. Antibacterial hand sanitizers are marketed to the public as an effective way to “wash one’s hands” when traditional soap and water are not available. These “waterless” products are particularly popular with parents of small children.

Manufacturers of hand sanitizers claim that the sanitizers kill 99.9 percent of germs. Hand sanitizers work by stripping away the outer layer of oil on the skin. This usually prevents bacteria present in the body from coming to the surface of the hand. However, these bacteria that are normally present in the body are generally not the kinds of bacteria that will us sick. Common non-alcohol, rinse-free hand sanitizer brands use either small concentrations of the nitrogenous cationic surface-acting agent benzalkonium chloride or the chlorinated aromatic compound triclosan or povidone-iodine.
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Alcohol free hand sanitizers may be effective immediately while on the skin, but the solution themselves can become contaminated because alcohol is an in-solution preservative and without it, the alcohol free solution itself is susceptible to contamination. However, even alcohol containing hand sanitizers can become contaminated if the alcohol content is not properly controlled or the sanitizer is grossly contaminated with microorganisms during manufacture.

Gross contamination of any hand sanitizers by bacteria during manufacture will result in the failure of the effectiveness of that sanitizers and possible infection of the treatment site with the contaminating organism. Some brands started combining alcohol rubs with natural products and essential oils to provide luxury lines for the growing skin care industry. These luxury products contain 60% alcohol necessary to kill germs effectively and safely, but employ additional ingredients to moisturize and condition the skin. Most recently, the 2009 pandemic of swine flu has prompted the need for research on preventative interventions.

Hand washing behavior has become of public interest and various campaigns have been arranged to promote behavior aimed at disease prevention. In public facilities worldwide, posters and signs present the harmful effects of failing to sanitize, and increasing numbers of automatic sanitizer dispensers may be found upon entering such facilities. The general assumption adopted by government officials regarding this matter is that when provided with enough information, the materials required acting, and an opportunity to act, human behavior will change in accordance to the information provided (Kalill, 2000).

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The approach adopted by ensuring such methodology is referred to as the psycho educational approach to preventative behavior, and is widely accepted by the general public and health officials as effective at promoting proper hygiene, though proper experimentation and measurement of directly observable effects have not yet been conducted due to the lack of literature on such methods. The effectiveness of hand sanitizers depends on the number of issues, including the alcohol content of the product and how the product is used.

Hand sanitizers are not meant as a constant substitute for hand washing; however, these hand sanitizers can be effective supplement to the traditional hand cleaning, particularly when soap and water are not available. The Swine flu of 2009 has conducted to hand sanitizers' squirts on the hand across the globe. People have been seen using hand sanitizers at public places, before eating, after using restrooms, at work places, etc.

Therefore using hand sanitizers is very important in avoiding some bacteria being acquired in all our activities involving the use of the hands such as after using the restroom, after working and before eating especially when there is no available water or maybe soaps. This study is a great help to all health workers and to all individuals especially children who are fun of soils and dirty things.

It will give more knowledge to the health workers on how to minimize the spread of bacteria and give also tips for them to prevent the existing bacteria in the hospitals. Conceptual Framework Hand sanitizer as cleansing materials are highly indispensable materials in today's busy world for its

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being a quick cleanser. It is most especially needed by travelers, health workers or people for which place to visit in their present locations find no sources to water and alcohol.

The use of hand sanitizer is becoming more and more popular these days, particularly with current news stories focusing on different sorts of disease-causing viruses. Most hand sanitizers are alcohol-based that will protect our hands from bacteria and will also protect us from picking up germs from the common things we touch everyday. As alternative cleanser, it would help reduce cost of medical interventions, alternatives, inconvenience and bacteria-caused ailments.