

# Selecting the right alcohol-based hand rub for your healthcare facility

Alcohol-based hand rubs vary considerably with regard to their consistency, scent, drying characteristics, cost and other features. Some products are acceptable to almost all personnel, while other products may appeal to some personnel, but not others.

Before deciding which alcohol-based hand rub preparation to install throughout your facility, it is very important to provide nurses and other healthcare personnel with the opportunity to evaluate alcohol-based hand rub products that are being considered. Ask personnel for their opinions about the desirable features (and any undesirable characteristics) of various products, and assure that purchasing department personnel are aware of the preferences of those who will be using the product most frequently.

***Don't assume that all alcohol-based hand rubs are the same.***

When choosing an alcohol-based hand rub for use in a hospital, long-term care facility or home health agency, the following factors should be taken into consideration:

## Consistency (feel)

■ Hand rubs are available as gels, rinses, or foams

- Gels
  - are currently the most popular type of alcohol-based hand rub preparation in the United States
  - have a thicker consistency than rinses
  - are less likely than rinses to drip from the hands onto the floor
  - some may produce a feeling of emollient “build-up” with repeated use
  - some gels may feel slippery or “oily”, while others do not
- Rinses
  - rinses are the most popular type of alcohol-based hand rub in Europe
  - often have a consistency similar to water; a few are more viscous
  - may be more likely to drip from the hands onto the floor during use; in some hospitals, this has created spots on the floor under dispensers. Some facilities have changed their method of waxing or finishing floor surfaces in order to reduce or eliminate such spots
  - often dry more quickly than gels or foams, a potential advantage
  - may be less likely to produce a feeling of emollient “build-up”
- Foams
  - are least likely to drip from the hands onto the floor during application
  - may produce greater sensation of “build-up” with repeated use

## In-vitro antimicrobial activity

■ The activity of alcohol-based hand rubs against bacteria, fungi and viruses is affected by concentration and type(s) of alcohol included and by preservatives and other ingredients.(1)

- The concentration of alcohol(s) present [e.g., 60%, 70% or more] is one of the major factors affecting the in vitro activity of products against pathogens. Within this range of concentrations, higher concentrations are generally associated with greater *in vitro* antimicrobial activity.
- Ethanol (ethyl alcohol) and isopropanol (isopropyl alcohol) both have *in vitro* activity against bacteria, fungi and viruses.  
Isopropanol has slightly greater activity than ethanol against bacteria.  
N-propanol, which is present in some products sold outside the United States, appears to have the greatest *in vitro* activity against bacteria.

- A few laboratory-based studies have found that alcohol-based hand rinses reduced bacterial counts on the hands of volunteers to a greater degree than the hand gels tested.(2;3)  
Whether routine use of such hand rinses by personnel leads to greater reduction in healthcare-associated infections than use of hand gels is not known.(4) The degree of acceptance and use of alcohol-based hand rubs by personnel may be more important than the degree of antimicrobial activity of such products.

#### □ **Antiviral activity**

- In general, ethanol has greater activity against viruses than isopropanol.
- Based on in vitro and in vivo studies, many alcohol-based hand rubs are likely to be effective against enveloped viruses such as herpes simplex virus, human immunodeficiency virus, hepatitis B virus, and respiratory syncytial virus.(1;5)
- Non-enveloped viruses such as rhinoviruses, adenovirus and rotavirus tend to be somewhat more resistant to alcohols. However, alcohols have been shown in in vivo studies to significantly reduce the titer of such viruses recovered from artificially-contaminated fingers.(6;7)
- Other non-enveloped viruses including hepatitis A virus and enteroviruses are the most resistant to disinfectants and antiseptic agents. Alcohol-based preparations with high alcohol content (e.g., 75% - 95% ethanol) are more likely to be effective against hepatitis A virus and enteroviruses.(1;8;9)

#### □ **Fragrance**

- Heavily scented (perfumed) products may appeal to some personnel, but may be offensive to others, and may discourage frequent use
- Products with pronounced fragrances occasionally may lead to respiratory symptoms in a few personnel who are allergic to perfumes/fragrances. Therefore, consider selecting a product with mild or no added fragrances.
- Some healthcare personnel prefer the smell of products containing ethyl alcohol (ethanol), whereas others may prefer the smell of those containing isopropanol.

#### □ **Drying characteristics**

- In general, rinses with low viscosity tend to dry most quickly. Highly viscous rinses, gels and foams often take longer to dry. Gels vary considerably in drying time, depending on the type of emollients or other ingredients present. Some personnel prefer products that dry quickly.
- Although many products leave hands feeling smooth after use, a few products may become “sticky”, either when they are beginning to dry on the skin, or after they have dried. Products that feel “sticky” are often considered undesirable by personnel.

#### □ **Interaction with glove powder**

- A few alcohol-based hand rubs may interact with glove powder left on the skin after removing powdered gloves. Such hand rubs may cause powder to form small clumps which feel like “gritty” particles on the hands.

If powdered gloves are still in use in your facility, make sure that personnel evaluate alcohol-based hand rubs under consideration by using them immediately after removing gloves to determine if the product causes clumping of residual glove powder.

## ❑ Product dispensers

- Properly designed dispensers that reliably deliver an appropriate volume of product onto the hand are an important element of a program to promote frequent use of alcohol-based hand rubs. Poorly-functioning dispensers can discourage personnel from using alcohol-based hand rubs as frequently as recommended.
- Before selecting a product for use in your facility, evaluate not only pump-type table-top dispensers, but also any wall-mounted dispensers that would be installed throughout the facility.(10)
- If you anticipate having wall-mounted dispensers installed outside each patient room in a hallway, check measurements of the dispensers to determine if they meet local building code regulations dealing with how far wall-mounted equipment may protrude out from the wall.  
**Note:** *The American Disabilities Act (ADA) Accessibility Guidelines for Protruding Objects recommend that fixtures protrude no more than 4 inches (100 mm) into halls or corridors.*
- If you are considering making an alcohol-based hand rub available both in wall-mounted dispensers and pocket-sized bottles, determine if the manufacturer and/or vendor has the product you want available in pocket-sized bottles.(11;12)
- In some nursing units or patient-care areas where wall space is limited, making pump-type bottles or pocket-sized bottles available should be considered.
- Locate dispensers high enough on the wall so they will not become damaged by rolling equipment such as patient beds, and at a height where they are easily accessible and comfortable to use. The ADA recommends that the dispenser push bar be between 48 to 54 inches from the floor.
- Dispensers should be conveniently located. There is no advantage of placing them next to sinks, which are often not located in convenient locations or are not accessible due to equipment such as ventilators or IV pumps.  
Consider placing dispensers outside each room (adjacent to the door), or near the door inside patient rooms, or adjacent to each bed.(11-13)

## ❑ Cost

- While the cost of hand hygiene products will continue to be an important issue for departments responsible for purchasing such products, the level of acceptance of products by healthcare personnel is far more important than the price of the product.(14) An inexpensive product that has undesirable characteristics may discourage healthcare personnel from cleaning their hands as frequently as recommended.
- Foam-type alcohol-based hand rubs are often the most expensive because they require packaging in pressurized containers.(14)

## ❑ Other considerations

- Some healthcare personnel have expressed concern over having ethanol-containing hand rub products on wards where psychiatric or demented patients might be tempted to ingest some of the product. If this is a concern, consider selecting a product containing both ethanol and isopropanol, or isopropanol as the only alcohol, for use on such wards. A number of products contain isopropanol or other forms of alcohol that have a disagreeable taste or other side effects that discourage ingestion by patients.
- Because all alcohol-based hand rub products are potentially flammable, make sure cartons of such products are stored in areas away from high temperatures or flames.

- Alcohol-based hand rubs containing high concentrations of ethanol have lower “flash points” than products with lower ethanol concentrations, or those containing ethanol plus isopropanol, or isopropanol alone.(15)
- If a product with a high concentration of ethanol is used by personnel who may encounter static electricity (small “shock”) when touching metal objects, it is important educate personnel about the need to rub hands together until the alcohol has completely dried before touching metal objects.(16)

### Reference List

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