

A photograph of several surgical team members in blue scrubs and masks, with their hands held up in a gesture of hygiene or readiness. The background is a light blue gradient.

# **Surgical Hand Scrub Updates**

February 2009

# Objectives

- Review facts on Pathogens
- Review AORN and CDC guidelines for hand scrubs
- Review steps to Water-based hand scrub application
- Review steps to Avagard application

# Facts on Pathogens

- The contribution of the surgical scrub is critical in reducing the incidence of operative wound infections.
- It is known that the individual person is the primary source of nosocomial bacteria in the operative setting.
- Handwashing results in a significant reduction in pathogen carriage<sup>[i]</sup>.

<sup>[i]</sup> Steere AC, Mallison GF. "Handwashing practices for the prevention of nosocomial infections. *Ann Intern Med* 1975;83:683-90.

# Products

Ideally the surgical hand scrub product should have the following properties

- Broad spectrum of action
- Fast acting
- Persistent
- Non-irritating to the skin

# Categories of antiseptics for scrubs

- Alcohols

Alcohols are effective against most gram positive and negative bacteria, as well as most fungi and viruses.<sup>[i]</sup>

<sup>[i]</sup> Larsen EL, Morton HE. Alcohols. In: Block SS, ed. Disinfection, sterilization and preservation. 4th ed. Philadelphia: Lea and Febiger, 1991; 191-203.

- Chlorhexidine Gluconate (CHG)

CHG is more effective against gram-positive than gram-negative bacteria and also provides action against enveloped viruses<sup>[ii],[iii]</sup>.

CHG is not as effective as other agents at immediately reducing bacterial counts, but its action is more persistent than others, lasting at least 6 hours.

<sup>[ii]</sup> Denton GW. Chlorhexidine. In: SS Block. Disinfection, sterilization, and preservation. 4<sup>th</sup> ed. Philadelphia: Lea and Febiger, 1991:274-89.

<sup>[iii]</sup> Bernstein D, Schiff G, Echler G et al. "In vitro virucidal effectiveness of a 0.12%-chlorhexidine gluconate mouthrinse. J Dent Res 1990;69:874-6.

# Categories of antiseptics for scrubs

- Iodophors

Exhibit a rapid onset of antimicrobial activity, due to the action of free iodine.

They are effective against a broad range of microbes including gram-positive and negative bacteria, some bacterial spores, fungi and viruses<sup>[i]</sup>.

They have a limited duration of action due to neutralizing properties of organic matter<sup>[ii]</sup>, and are also commonly associated with skin irritation and damage.

<sup>[i]</sup> Gottardi W. Iodine and iodine compounds. In: Block SS, ed. Disinfection, sterilization and preservation. 4th ed. Philadelphia: Lea and Febiger, 1991:152-66.

<sup>[ii]</sup> Zamora JL, Price MF, Chuang P, Gentry LO. "Inhibition of povidone-iodine's bactericidal activity by common organic substances: an experimental study." Surgery. 1985 Jul;98(1):25-9.

# Current Products

## Cardinal Health Scrub Care

- (Chlorhexidine Gluconate Solution, 4%) – brush & sponge
- (15% Povidone-Iodine) – brush & sponge.

## 3M

- Avagard Waterless Hand Antiseptic (Chlorhexidine Gluconate 1% Solution and Ethyl Alcohol 61%)



# AORN and CDC Recommendations



- **AORN** recommends for facilities to standardize scrub times and has presented studies to show that **scrub times of three to four minutes are as effective as five-minute scrubs.**<sup>[1]</sup>
- The **CDC** has stated that former traditional 10 minute scrubs are not necessary and frequently leads to skin damage, and sites studies that **scrubbing for 2 or 3 minutes reduced bacterial counts to acceptable levels.**<sup>[2]</sup>

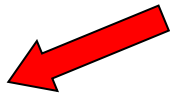
<sup>[1]</sup> AORN, *Perioperative Standards and Recommended Practices*, 2008 Edition, Denver: AORN Publications, 401.

<sup>[2]</sup> Center for Disease Control *Hand Hygiene Guidelines*, <http://www.cdc.gov/handhygiene/> (Retrieved on 10/16/08).



# New Protocol

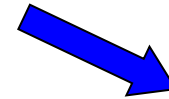
Choose one of these hand scrub methods and apply following new guidelines:



## Water Based Hand Scrub Three Minute Scrub



Either-Or



## Alcohol Based (Avagard)

Apply to clean, dry hands and nails. For the first use of each day, wash hands and clean under nails with a nail stick. **Note:** Whenever debris is present, wash & dry hands before application.

# AORN- Surgical Scrub Brush

- AORN outlines that the **use of a brush for surgical hand scrubs is not necessary** and scrubbing with a brush is associated with an increase in skin cell shedding.<sup>[1]</sup>
- AORN published an article that states that **brushless scrubbing is believed to be less caustic and abrasive** to the skin than traditional scrubbing and can aid in maintaining skin integrity, even after repeated use in the preoperative setting.”<sup>[2]</sup>

<sup>[1]</sup> AORN, *Perioperative Standards*, 402.

<sup>[2]</sup> Berman, Mara One Hospital's Clinical Evaluation of Brushless Scrubbing. AORN Journal, (Volume 79, No. 2), 2004 retrieved at [www.nursingconsult.com](http://www.nursingconsult.com) on 11/4/08.

# CDC- Surgical Scrub Brush

- The CDC states that use of a **brush results in increased shedding of bacteria** from the hands.<sup>[1]</sup>
- **Neither a brush nor a sponge is necessary to reduce bacterial counts** on the hands of surgical personnel to acceptable levels, especially when alcohol-based products are used.<sup>[2]</sup>

<sup>[1]</sup> CDC, *Hand Hygiene Guidelines* <http://www.cdc.gov/handhygiene/>

<sup>[2]</sup> Ibid.

# Step One: Water based hand scrub



## **Step One**

Wet hands and arms up to the elbows.  
Use nail pick to clean nails under  
running water.

## Step Two: **Water based hand scrub**



Wet sponge and squeeze to work up lather.  
Wash each finger, hand, and arm to two inches above the elbows using the non abrasive sponge for a total scrub time of three minutes.

**Note: Use brush side only on nails and cuticles or on areas of visible soil.**

# Step Three: Water based hand scrub



Rinse hands and arms from finger tips to elbows. Dry hands and arms with a sterile towel.

# Avagard: Pump 1



Dispense one pump (2ml) into the palm of one hand. Dip fingertips of the opposite hand into the hand prep and work under fingernails. Spread remaining hand prep from wrist to 2" above the elbow.



# Avagard: Pump 2



Dispense one pump (2ml) and repeat procedure with opposite hand/arm.



# Avagard: Pump 3



Dispense final pump (2ml) of hand prep into either hand and reapply to all aspects of both hands up to the wrists. Allow to dry- Do not use towels!

# Reference sheets for scrub sinks

## Sterile Procedure Hand Scrub Protocol

Choose your preferred hand scrub method and apply following the guidelines below:

### Water Based Hand Scrub Three Minute Scrub



#### Step One

Wet hands and arms up to the elbows. Use nail pick to clean nails under running water.



#### Step Two

Wet sponge and squeeze to work up lather. Wash each finger, hand, and arm to two inches above the elbows using the non abrasive sponge for a total scrub time of three minutes.

**Note: Use brush side only on nails and cuticles or on areas of visible soil.**



#### Step Three

Rinse hands and arms from finger tips to elbows. Dry hands and arms with a sterile towel.

### Alcohol Based (Avagard)

Apply to **clean**, dry hands and nails. For the first use of each day, wash hands and clean under nails with a nail stick. **Note:** Any time debris is present, wash & dry hands before application.



#### Pump 1

Dispense one pump (2ml) into the palm of one hand. Dip fingertips of the opposite hand into the hand prep and work under fingernails. Spread remaining hand prep from wrist to 2" above the elbow



#### Pump 2

Dispense one pump (2ml) and repeat procedure with opposite hand.



#### Pump 3

Dispense final pump (2ml) of hand prep into either hand and reapply to all aspects of both hands up to the wrists.

# Summary of Hand Scrub Updates

- Choice of Water based hand scrub or Avagard
- Water based:
  - 3 minute scrub time
  - Use brush only on nails and cuticles- or visible soil

# Summary of Updates, continued:

- Avagard:
  - Wash hands and pick nails before first application.
  - Wash and dry hands if soiled before any subsequent applications.
  - Apply product following manufacturer's recommendations.