

Prevention of hospital-acquired infections



By:

Dr. Ali Kermanjani

Faculty of medicine

Iran University of medical Sciences

What is Hospital Acquired Infection

- Any infection that is not **present** or **incubating** at the time the patient is admitted to the hospital

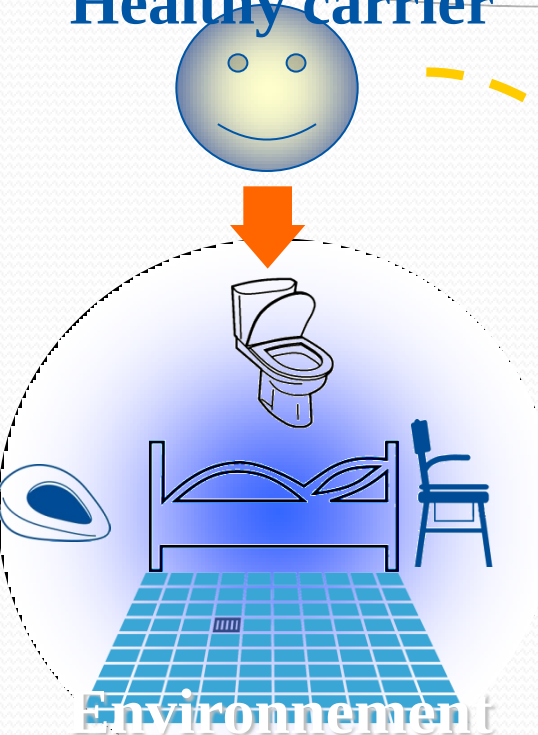


Vectors for transmission of infection

Asymptomatic patient
Healthy carrier

Symptomatic patient

Healthy patient



Environnement

Caregivers/Nurses

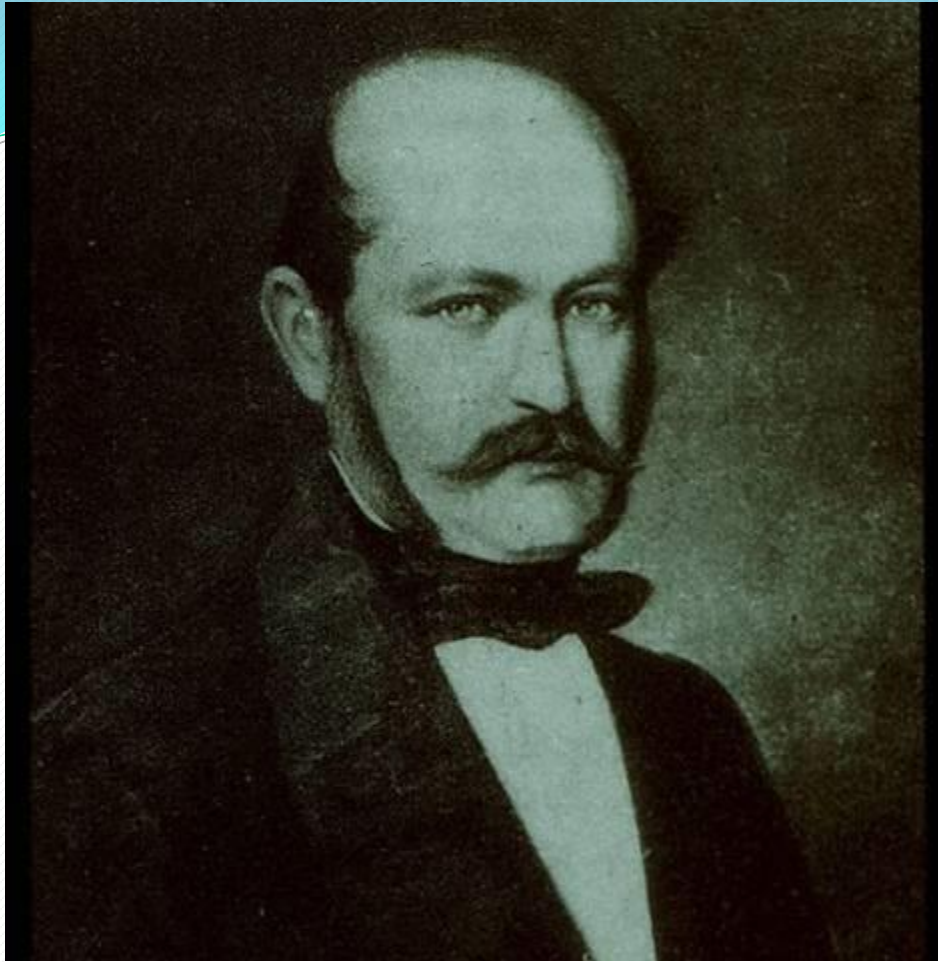
ایزولاسیون و احتیاطات

پاکسازی و ضد عفونی ابزار پزشکی

استفاده درست از آنتی بیوتیک ها

رعایت بهداشت دست

پاکسازی محیط



Ignaz Philipp Semmelweis before and after he insisted that students and doctors clean their hands with a chlorine solution between each patient

Intervention

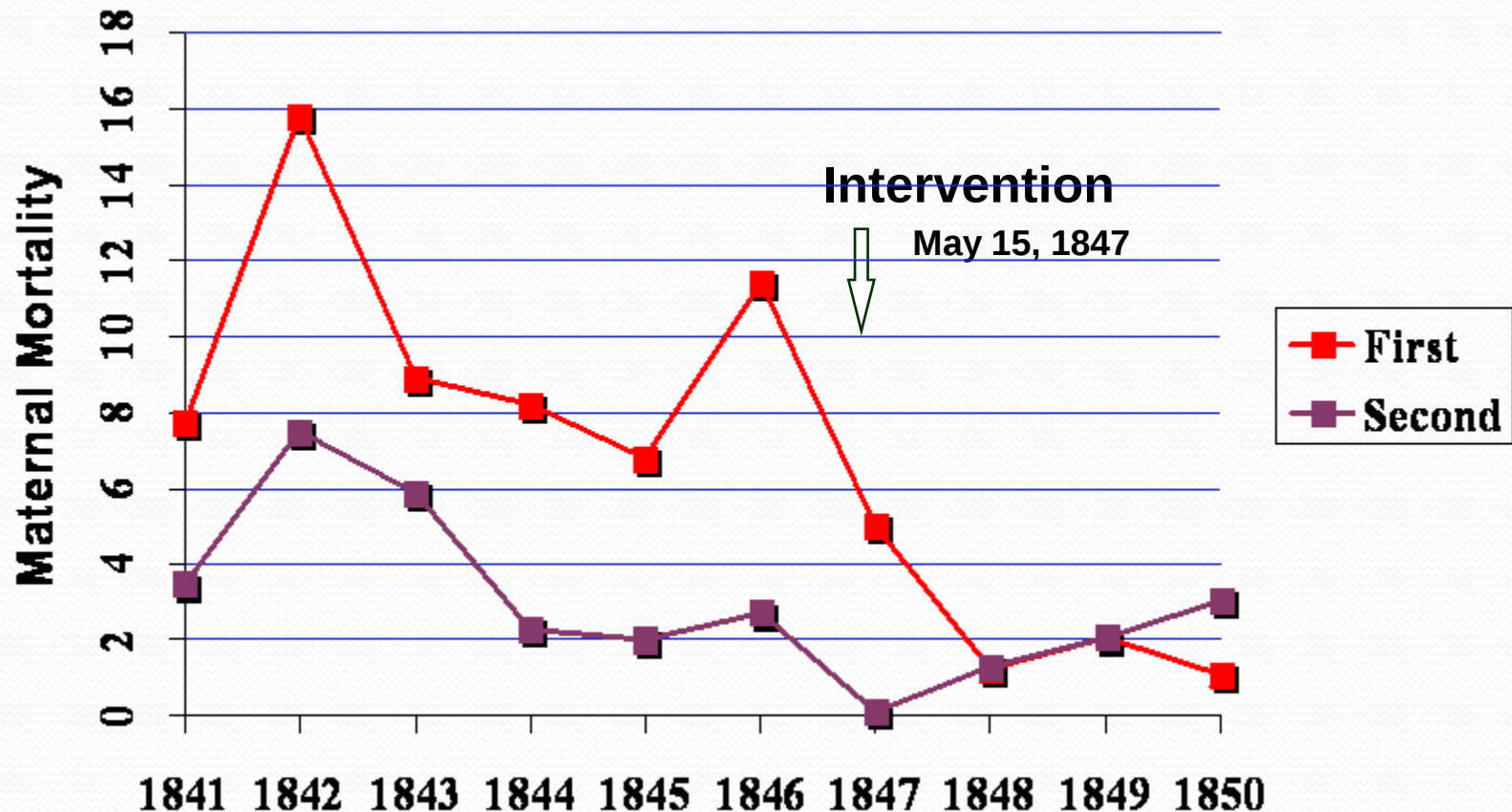
May 1847

**Students and doctors were required to:
clean their hands with a chlorinated lime
solution when entering the labour room**



**in particular when moving from the
autopsy to the labour room**

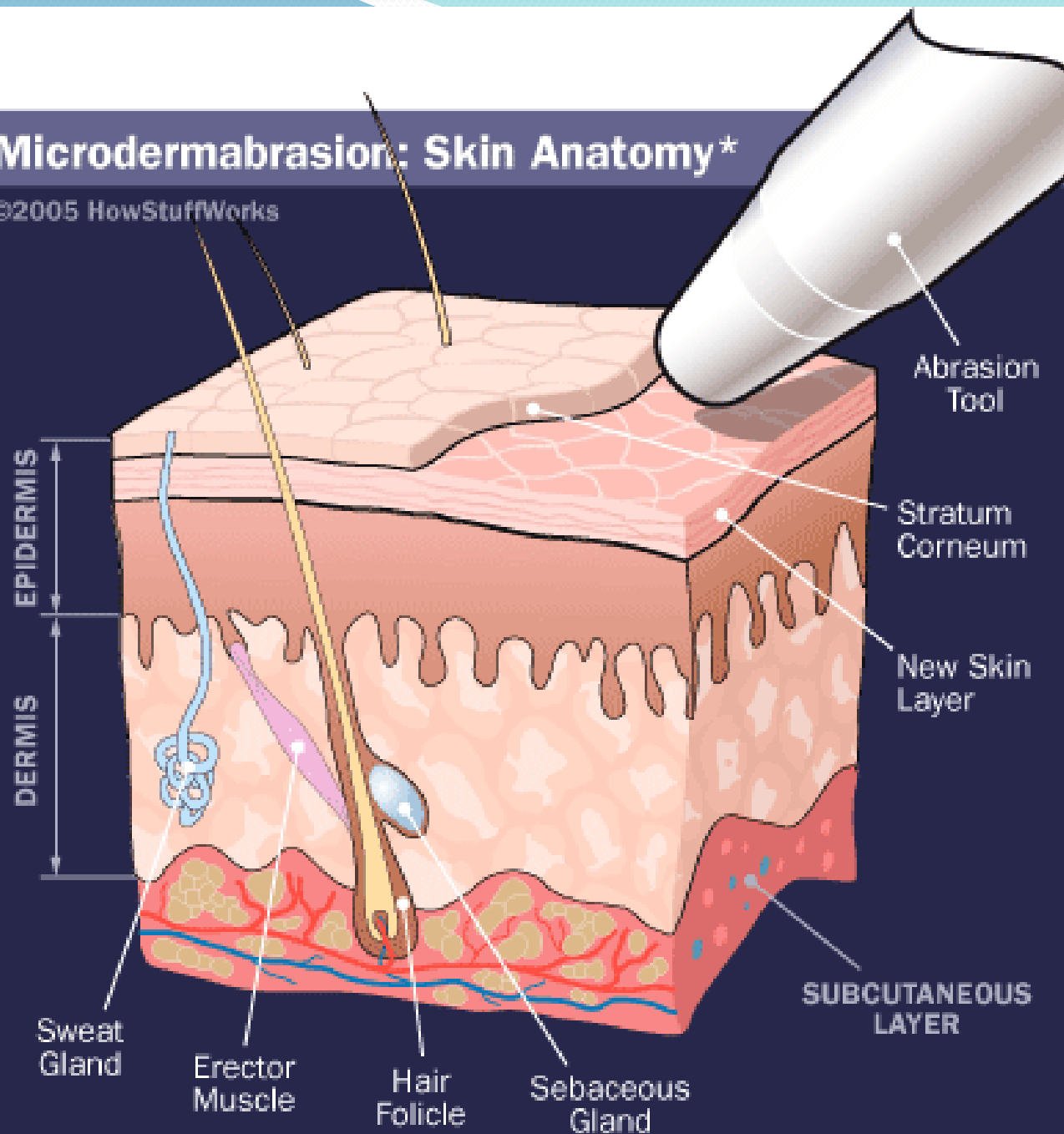
Maternal mortality rates, First and Second Obstetrics Clinics, GENERAL HOSPITAL OF VIENNA, 1841-1850



Semmelweis IP, 1861

Microdermabrasion: Skin Anatomy*

©2005 HowStuffWorks



*not to scale

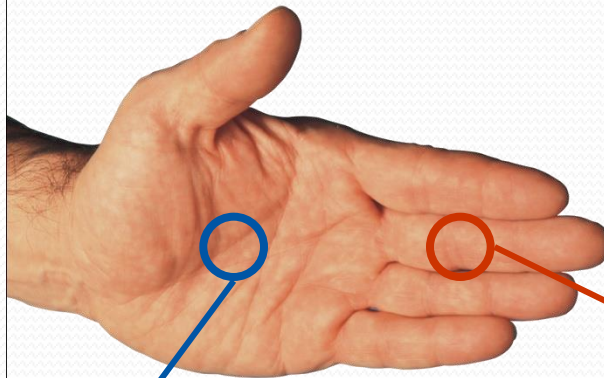
Transient & resident skin flora

Resident Flora: microorganisms located permanently on the skin

On the surface layer of the skin

Plays an important role in resistance to colonization of pathogenic organisms

Transient Flora: micro-organisms that contaminate recently the skin. Coming from digestive tract, contaminated patients, environment or instruments. Transient since eliminated by protector effect of resident flora



RESIDENT FLORA

Staphylococcus epidermis

Staphylococcus haemolyticus

Staphylococcus simulans

Corynebacterium jeikeium

Corynebacterium urealyticum

Corynebacterium minutissimum

Brevibacterium

TRANSIENT FLORA

Enterobacteria

Pseudomonas spp

Streptococcus group A

Enterococcus spp

Staphylococcus aureus

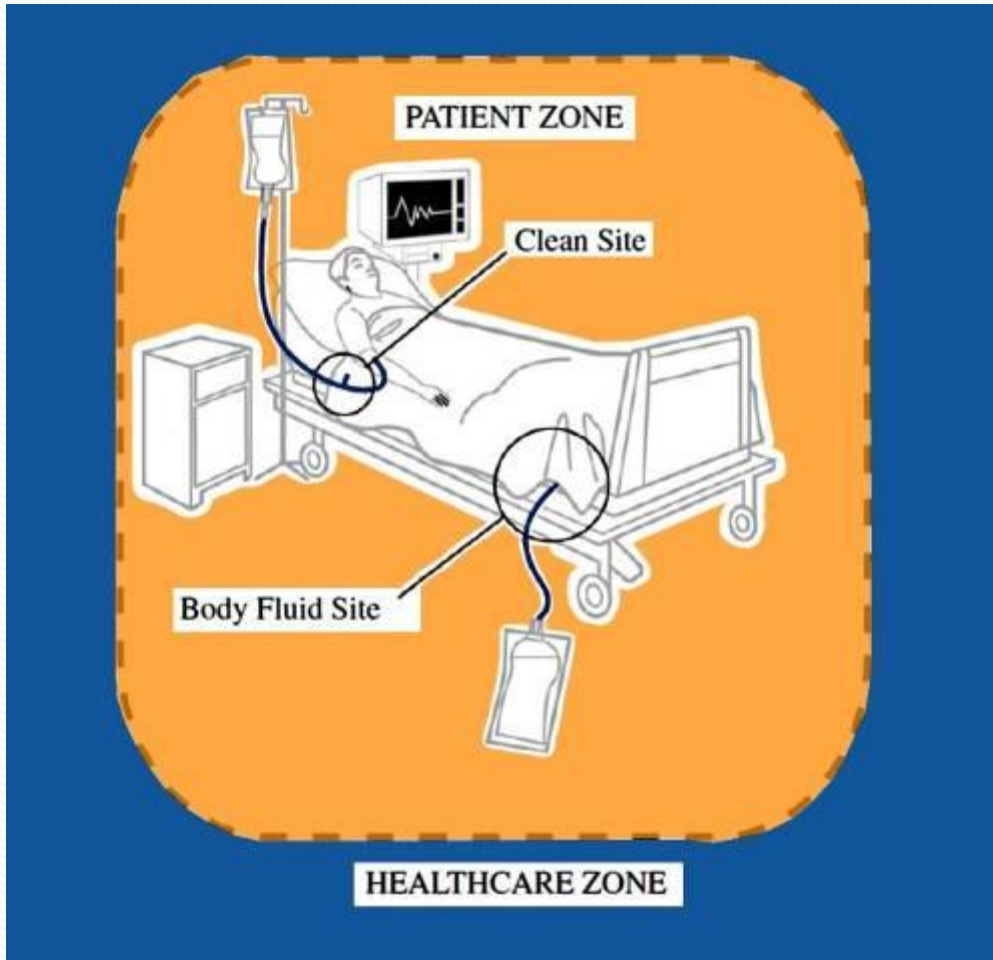
Candida albicans (immunodeprived or diabetic patients)

Spores of *Bacillus spp* & *Clostridium spp*

Klebsiella spp

Enterobacter spp

Two Zones



- The Healthcare Zone

- The Patient Zone:

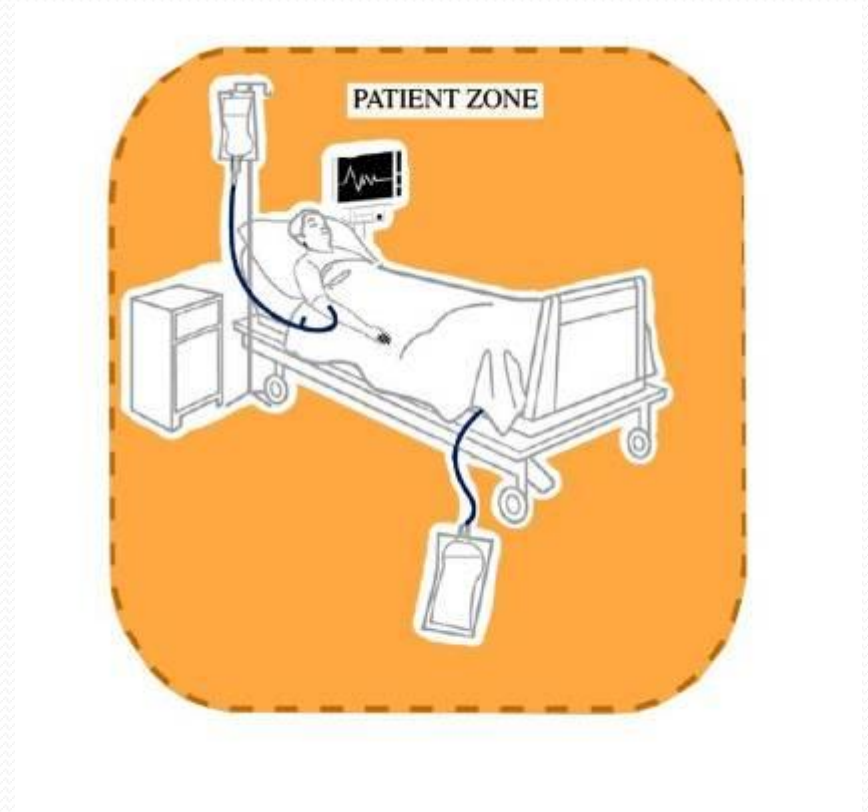
- The patient &
- The patient's immediate surroundings

Two Critical Sites

- Clean site
- Body fluid site

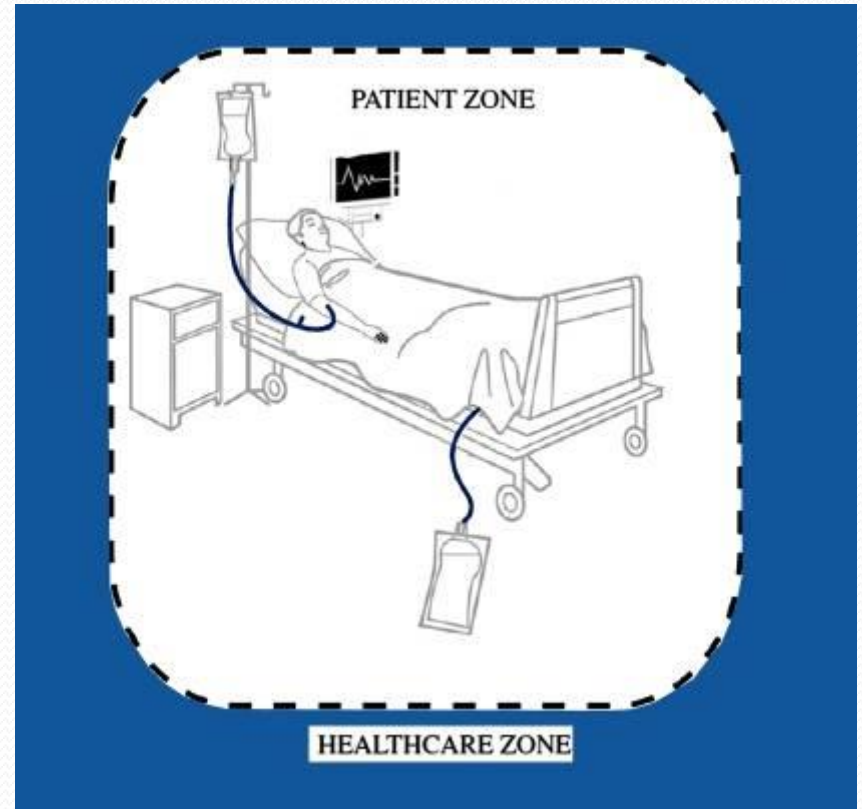
Patient Zone

- Assumptions
 - Patient flora rapidly contaminates entire patient zone
 - Patient zone is cleaned between patients



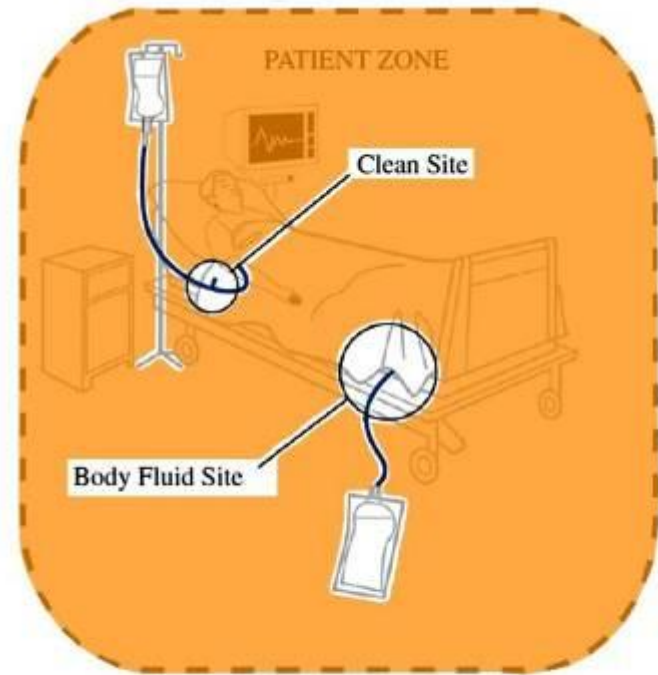
Healthcare Zone

- Assumptions
 - Contaminated with organisms foreign and potentially harmful to Patient X
 - Transmission results in exogenous infection

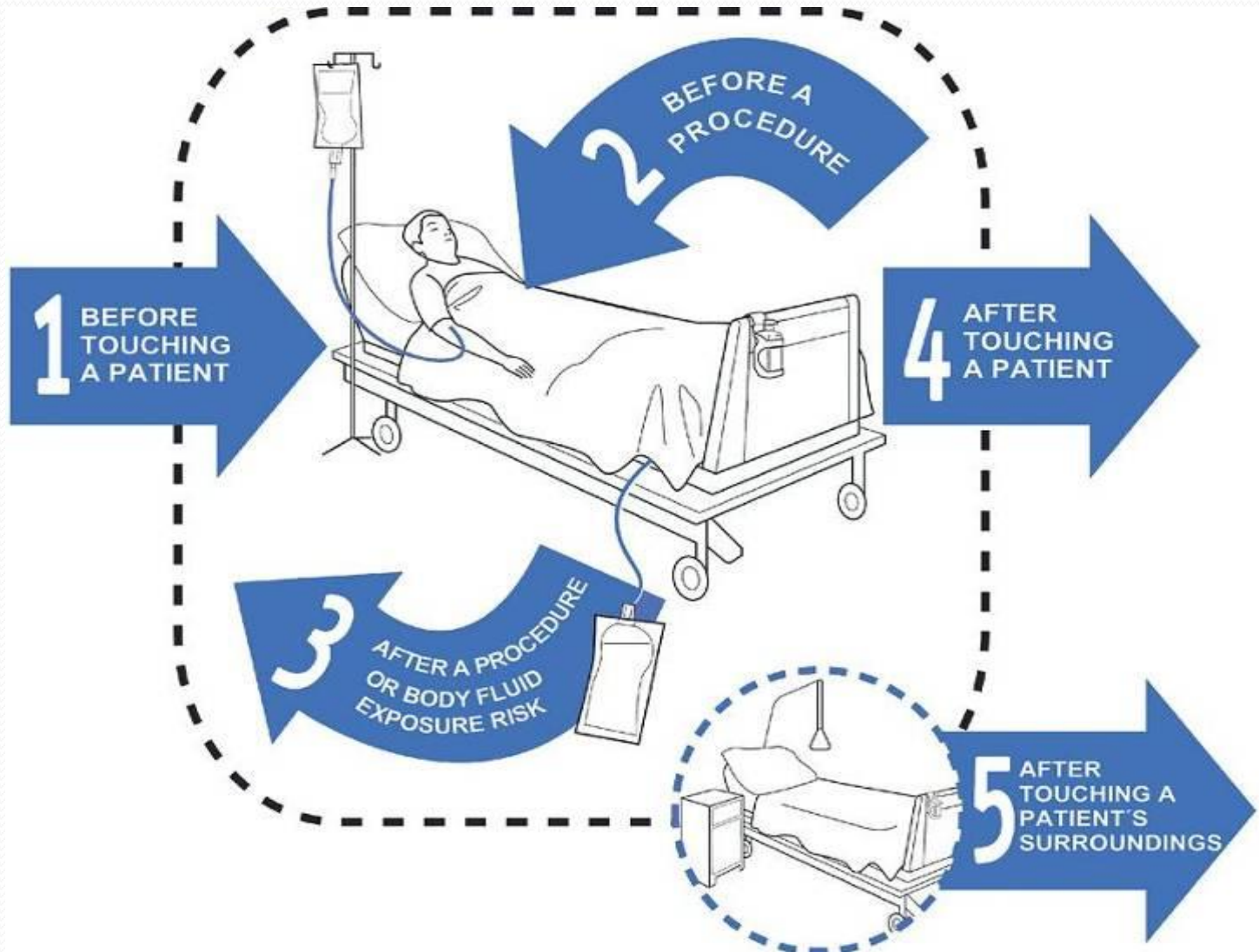


Critical sites

- Clean sites
 - Have to be protected against microorganisms
- Body fluid sites
 - Lead to hand exposure of body fluids



The 5 Moments



What we Know

☛ In summary we know:

- ☛ Bugs are on our hands
- ☛ Bugs can be washed off
- ☛ Washing bugs off our hands saves lives

☛ **So what is the problem???**

☛ **HCWs don't wash their hands!!!**

Why we don't wash our hands

- ☛ Too busy/insufficient time
- ☛ Patient needs take priority
- ☛ Understaffing/overcrowding
- ☛ Sinks are inconveniently located or lack of sinks
- ☛ Lack of soap and paper towels
- ☛ Hand washing agents cause irritation and dryness
- ☛ Low risk of acquiring infection from patients

HCW are not
bad just busy!

Poor
design

Poor product

More education

ABHR's are literally the solution

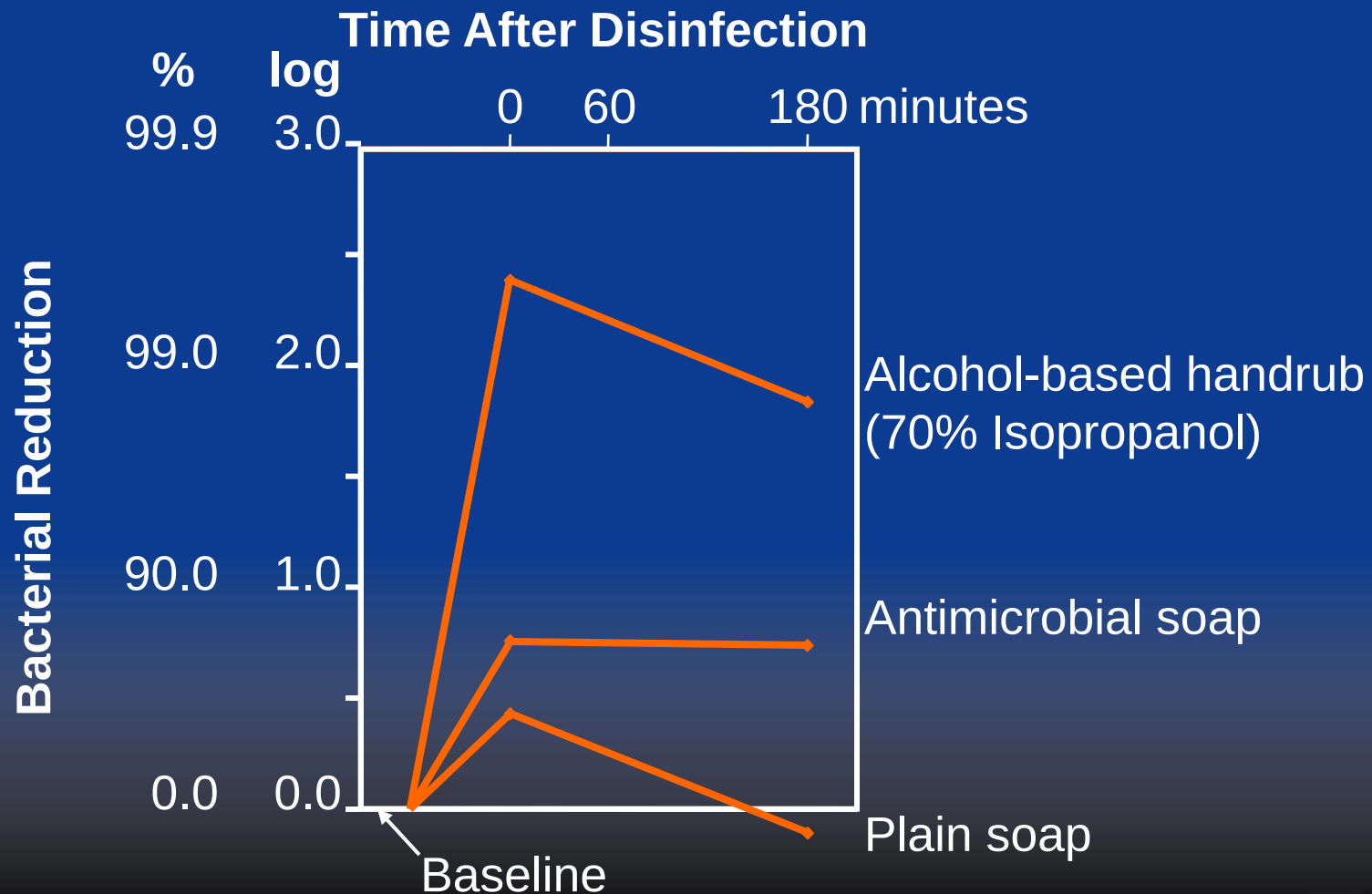
Sample products only



Time Spent Cleansing Hands

- ☛ One nurse per 8 hour shift
- ☛ Hand washing with soap and water: **56 minutes**
 - ☛ Based on seven (60 second) hand washing episodes per hr
- ☛ Alcohol-based hand rub: **18 minutes**
 - ☛ Based on seven (20 second) hand rub episodes per hr
- ~ Alcohol-based hand rubs reduce time needed for hand hygiene ~

Ability of Hand Hygiene Agents to Reduce Bacteria on Hands

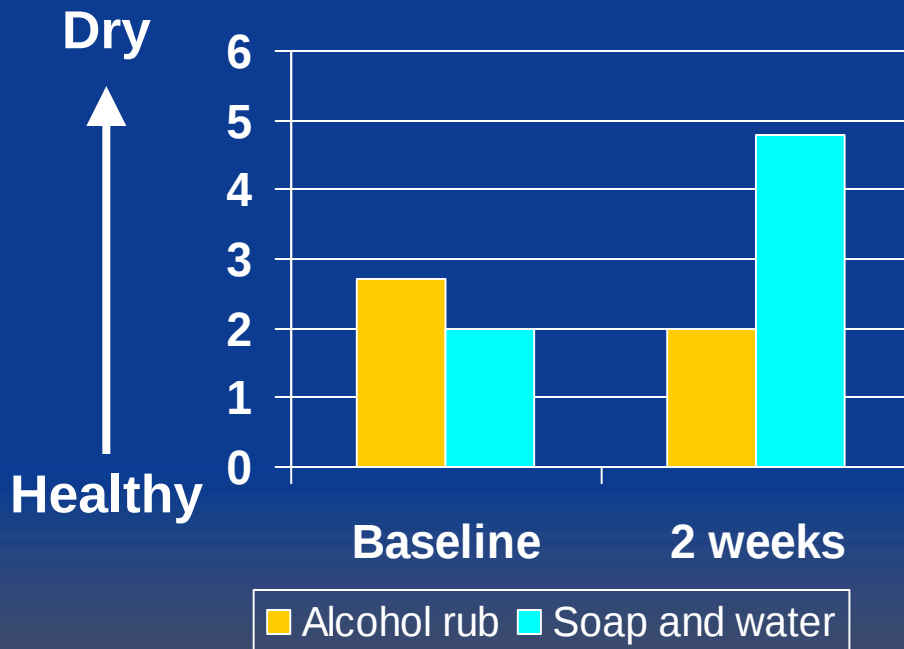


Adapted from: *Hosp Epidemiol Infect Control*, 2nd Edition, 1999.

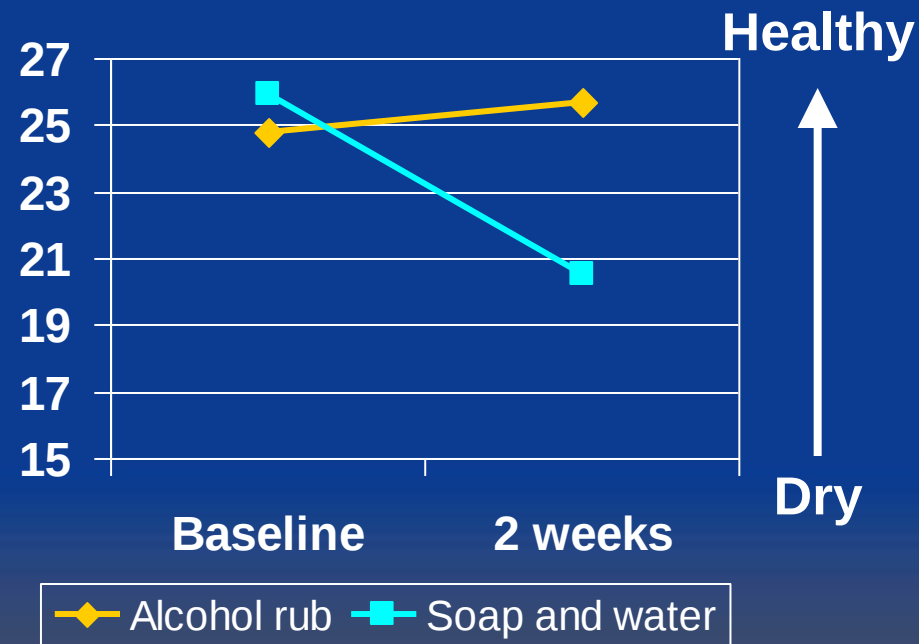
Effect of Alcohol-Based Handrubs on Skin Condition



Self-reported skin score



Epidermal water content



~ Alcohol-based handrub is less damaging to the skin ~

Efficacy of Hand Hygiene Preparations in Killing Bacteria



Good

Better

Best



Plain Soap

Antimicrobial
soap

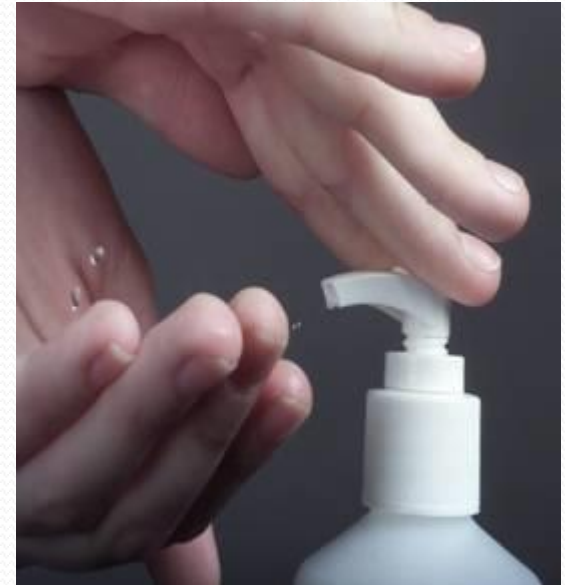
Alcohol-based
handrub

Indications for Hand Hygiene

- ☛ When hands are *visibly dirty, contaminated, or soiled*, wash with non-antimicrobial or antimicrobial soap and water.
- ☛ If hands are visibly clean, use an alcohol-based hand rub for routinely decontaminating hands.

Why Use ABHR ??

- 👉 Reduces bacterial count on hands
- 👉 More effective for standard hand wash
- 👉 Requires less time
- 👉 Less irritating
- 👉 Can be readily accessible/portable



Accessibility





PREVENTION IS PRIMARY!

*Protect patients...protect healthcare personnel...
promote quality healthcare!*

SAFER • HEALTHIER • PEOPLE™