

Prevention of nosocomial infections

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PREVENTION
IS BETTER
THAN
CURE



HAND HYGNE

- The relationship between hand hygiene and the occurrence of infections has been known for 170 years.
- hand hygiene is widely regarded as a fundamental element of programs infection prevention and control.
- Spread and widespread acceptance of the use of alcohol-based preparations for hand hygiene/disinfection improves work efficiency and safety employees who can comfortably practice hand hygiene even at short intervals.

Who starts that?

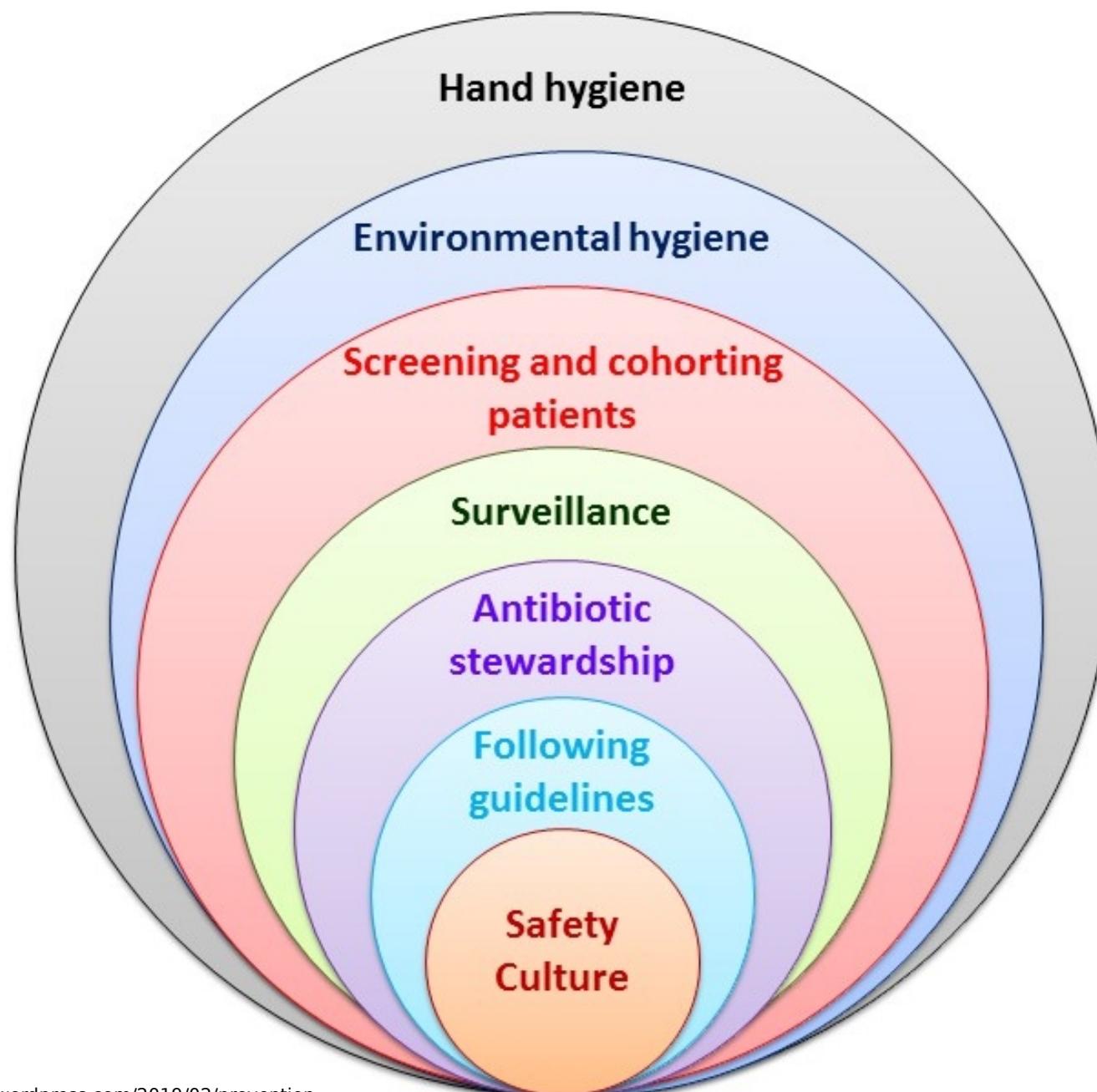
- In the mid-nineteenth century, Ignaz Semmelweis, working in Vienna, noticed that in the maternity clinic he runs, the mortality rate of postpartum women, mainly as a result of the puerperal fever was significantly higher compared to another branch run by none medical preparation of nuns (16% and 7%, respectively).
- He also observed that doctors and medical students were going to work, including examining women after childbirth, often immediately after autopsies were performed and their hands smelled bad.
- In relation with this, he introduced the hypothesis of "corpse particles" transmitted through the hands of doctors and students, causing puerperal fever.
- Consequently, Semmelweis recommended washing hands before any contact with the patient. After this simple procedure, maternal mortality dropped to 3%.



<https://images.theconversation.com/files/327551/original/file-20200413-177938-r4kf7z.jpg?ixlib=rb-1.1.0&q=45&auto=format&w=1000&fit=clip>

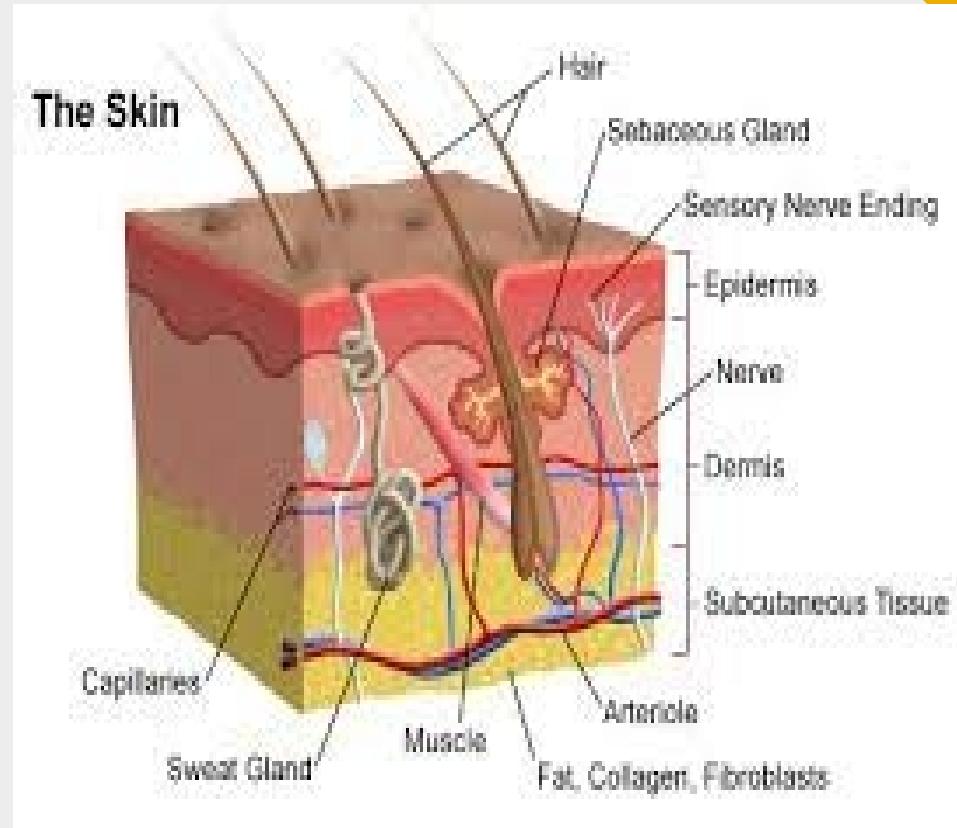
- The next stage in the development of modern hand hygiene was 1905, when was published *Hygienische Händedesinfektion* (in "Zeitschrift für Hygiene und Infektionskrankheiten") by Dr. Albrecht Speck, in which he proposed replacing hand washing with hand disinfection. He advised various compounds and preparations, including also a mixture of alcohols.

7 strategies to prevent healthcare-associated infections



Skin and its flora

- The skin is the first and most important barrier to limit invasion and growth pathogenic bacteria.
- Skin structure guarantees its high antibacterial defense mechanisms: low pH and slightly lower temperature, exfoliating skin cells, covered with fatty "coat" produced by a lot of sebaceous glands apocrine.



<https://api.kramesstaywell.com/Content/ebd5aa86-5c85-4a95-a92a-a524015ce556/ucr-images-v1/Images/anatomy-of--the-skin-125522>

Wash or disinfection?

- Detergents - and even just water without soap, cause temporary damage to the protective barrier by loosening the epidermis, removal its stratum corneum and lipid sheath - worse, along with the proper one its physiological flora.
- It should be remembered that the most appropriate and most often desired from the point the maintenance of the skin along with its physiological flora is a procedure only hand disinfection - without unnecessary and sometimes harmful them washing.

Washing

- Washing your hands is cleansing them with soap and water and hand drying with a one-time towel.
- You have to wash your hands when:
 - visibly dirty or had contact with excretions, secretions or patient's body fluids
 - Also when caring for a patient with disease caused by e.g. scabies or microbes sporogenic, e.g. with post-antibiotic Clostridium difficile diarrhea.

Disinfection

- Hand sanitizer is application of preparations to disinfection to reduce amount of transient bacterial flora; but the rule is protection of its own flora bacterial.
- According to the rule "five moments hand hygiene", under provided there are no hands visibly dirty or not have had contact with excretions, secretions or body fluids patient.

5 moments hand hygiene

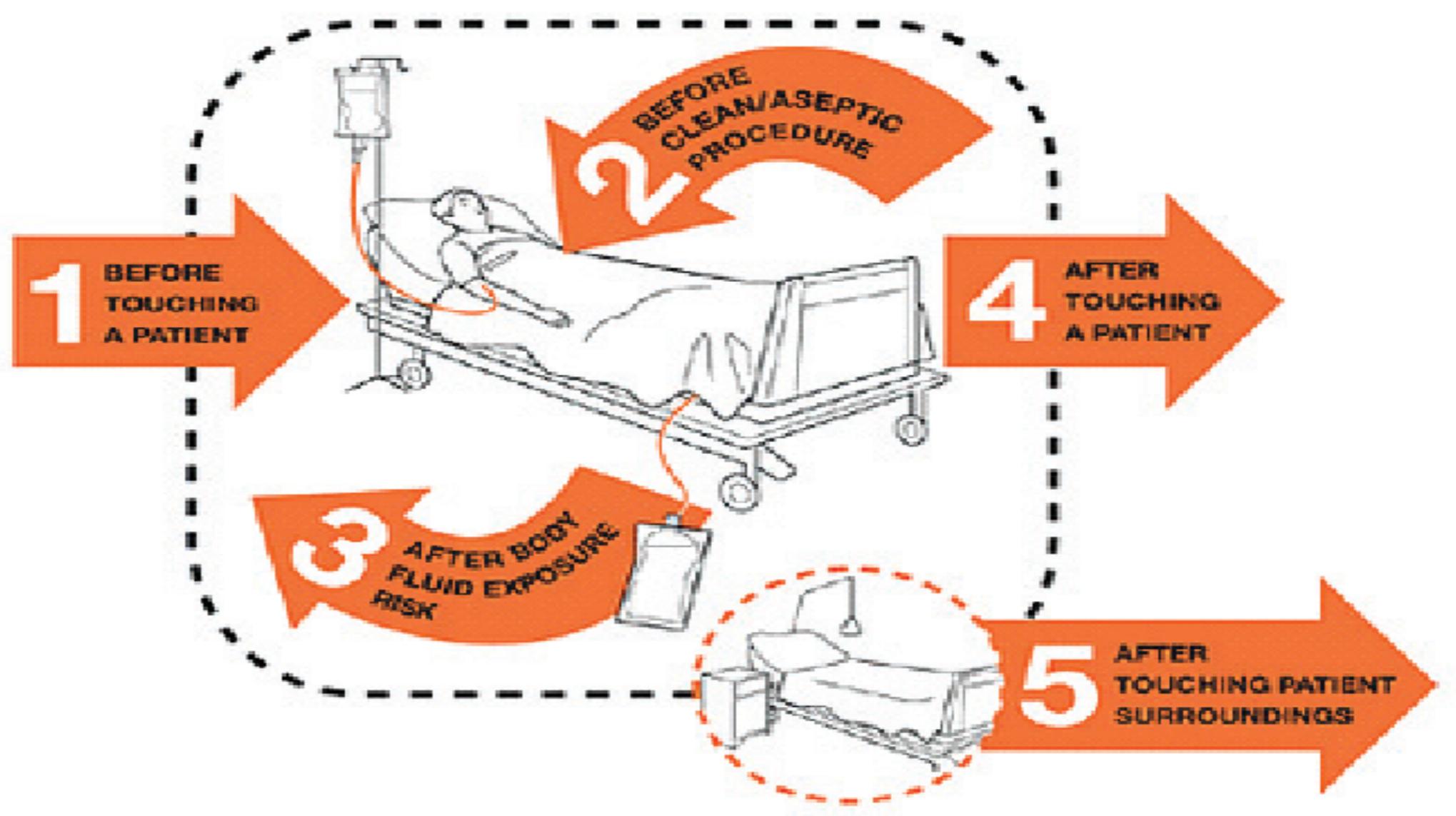
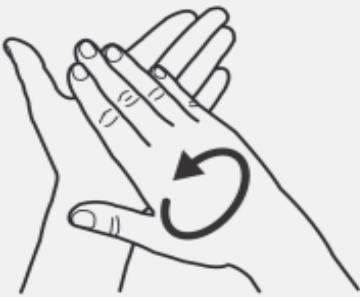


Figure I: World Health Organization's five moments for hand hygiene

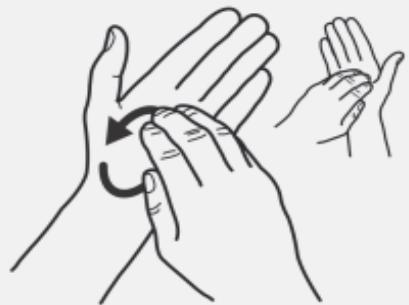
<https://d3i71xabuhd42.cloudfront.net/de6ea862828ce775f5cf3c349cb60dcfb1a3b422/2-Figure1-1.png>

1



Rub hand palm to palm

6



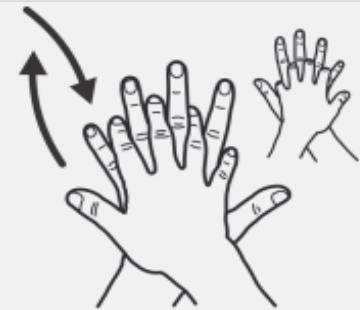
Rotational rubbing , backwards and forwards with clasped fingers of right hand in left palm and vice versa

5



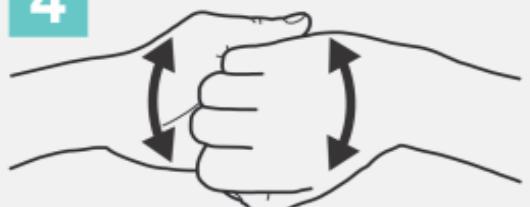
Rotational rubbing of left thumb clasped in right palm and vice versa

2



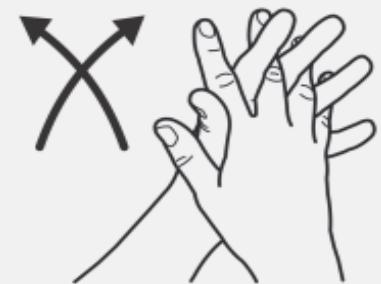
Right palm over left dorsum with interlaced fingers and vice versa

4



Backs of fingers to opposing palms with fingers interlocked

3



Palm to palm with finger interlaced

film

- <https://www.youtube.com/watch?v=LJyxxqNarsc>

Other rules

- In the definition of hand hygiene, there are also others independent elements necessary for safe and hygienic work in contact with the patient:
 - No wearing in work jewellery, including:
 - a) on the fingers: rings and wedding rings,
 - b) on wrists: watches and bracelets.
 - Obligation to keep short, natural and unpainted nails.
 - Failure to work in case the presence of cuts on the skin, skin changes that may have association with the growth of microorganisms or open wounds.
 - Use of soap dispensers or alcohol-based preparations only as recommended by the manufacturer

Protective gloves

- Protective gloves do not replace hand hygiene - always before put on and take off gloves, you must disinfect (or wash) hands.
- They should only be used if:
 - performing invasive procedures,
 - performing procedures using sharp tools,
 - exposure to excretions/secretions/fluids body parts, including blood, mucous membranes and wounds.

- **Put on immediately before taking action and take off immediately after its completion.**
- **Gloves must not be "worn".**



- In gloves you are not allowed to take notes, leave the patients room, transport the patient, answer the phone, touch frequently touched elements (door handles, elevator button, control panels monitoring devices), prepare medical supplies, organize the ward first aid kit or equipment from the table/trolley procedure - unless we are dealing with sharp tools or biological material has been spilled or - in a given place - to lose, for example, a needle with the risk of a needle stick with inoculation.

WORK CARD

- 1) Who invented the principle of hand hygiene?
- 2) List when to wash hands and when to disinfect?
- 3) Describe 5 moments of hand hygiene?
- 4) List when you have to wear protective gloves?