Hand Hygiene

Disease Control and Prevention Center
National Center for Global Health and Medicine
(WHO Collaboration Center)
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World Health Organization | Patient Safety

A World Alliance for Safer Health Care

WHO Guidelines on Hand Hygiene in Health Care

First Global Patient Safety Challenge
Clean Care is Safer Care

(WHO Guidelines on Hand Hygiene in Health Care: World Health Organization 2009)

WHO Guidelines on Hand Hygiene

As hands of healthcare professionals play an important role in transmission of pathogens, hand hygiene is an important infection control measure.

(WHO Guidelines on Hand Hygiene in Health Care: World Health Organization 2009)

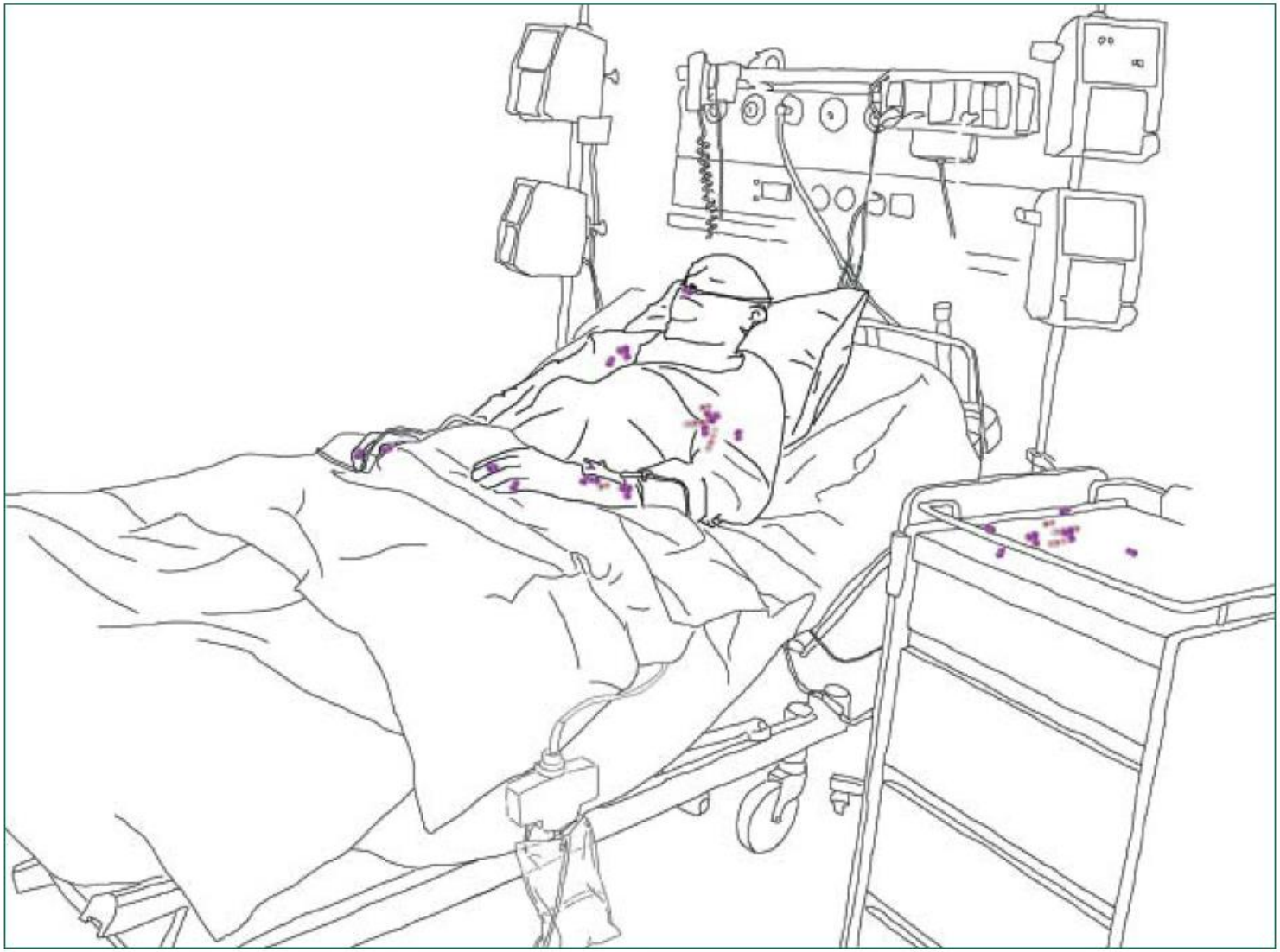
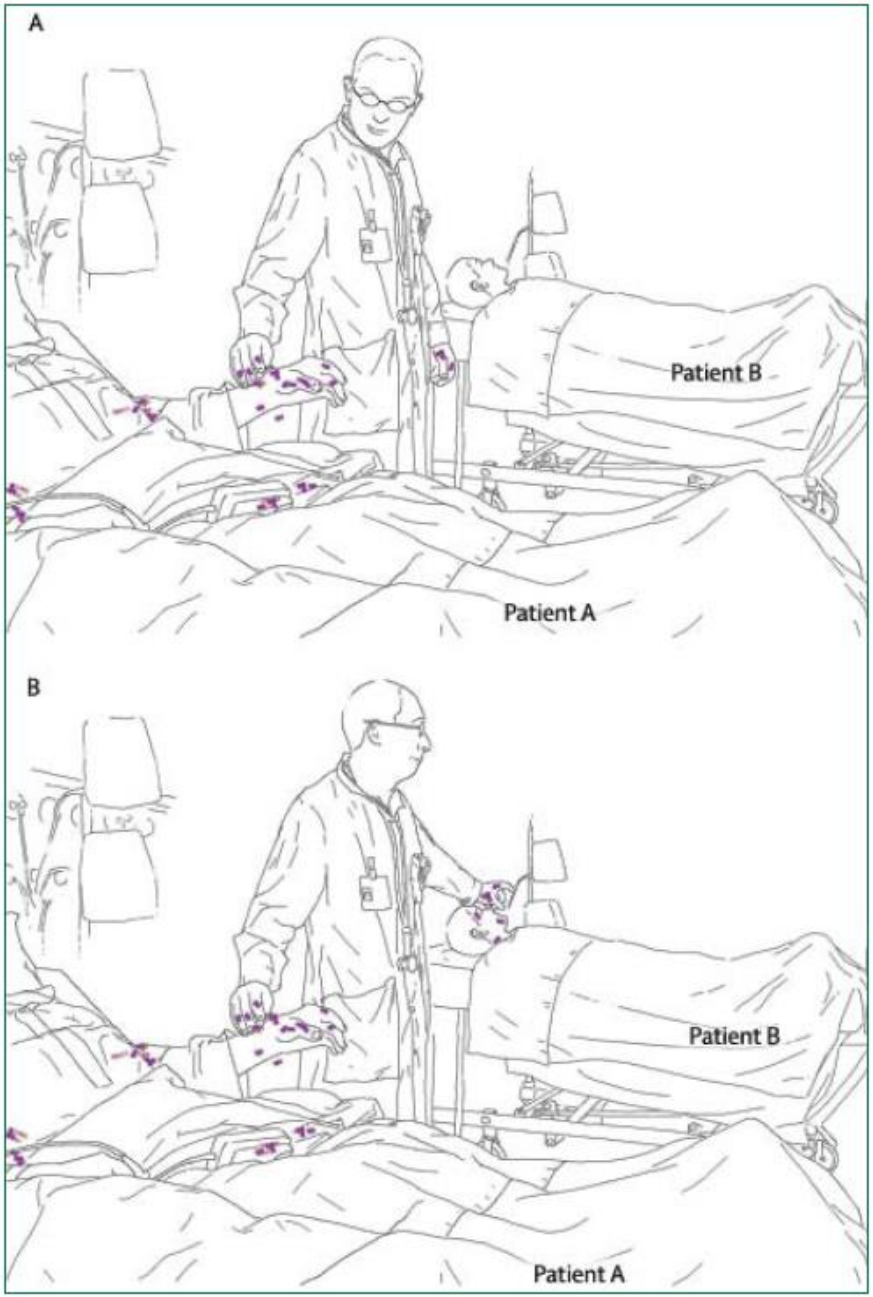
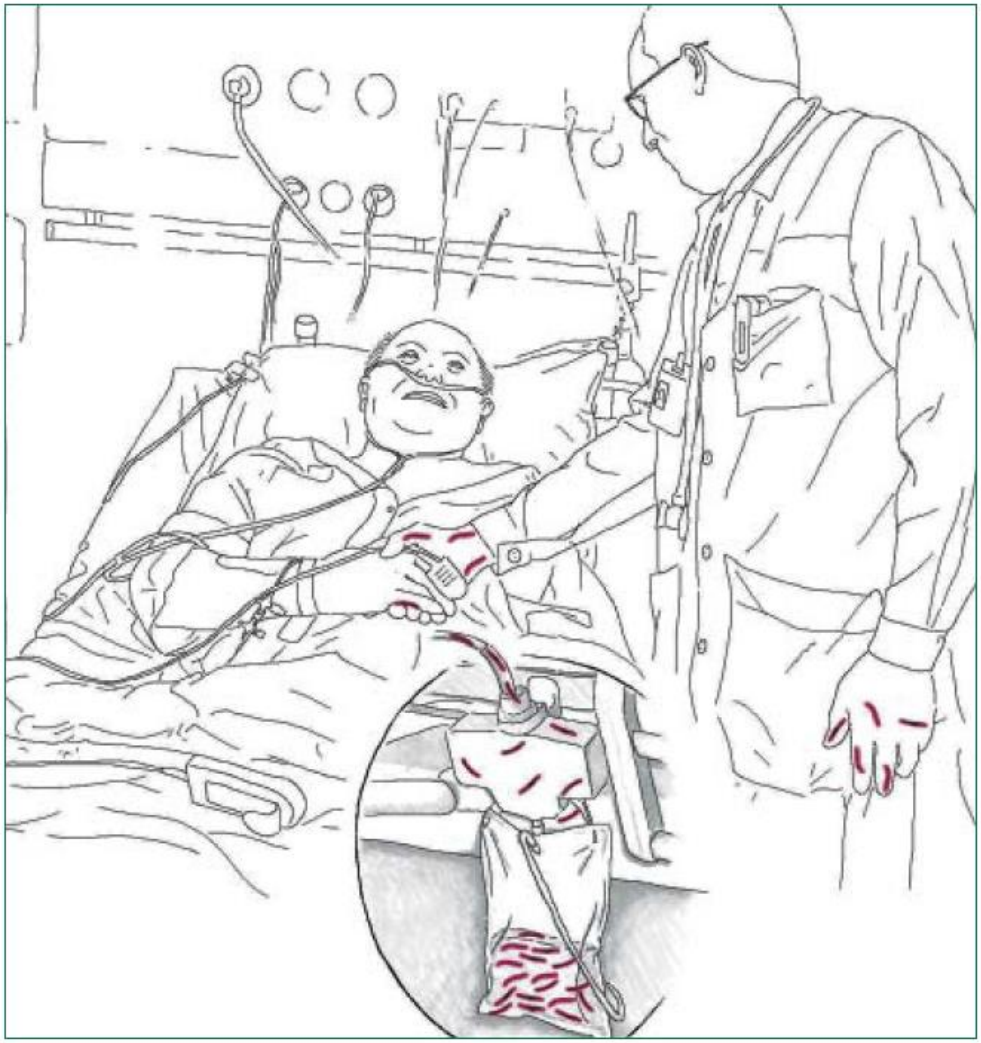


Figure 1: **Organisms present on patient skin or immediate environment**
Bedridden patient colonised with Gram-positive cocci, in particular at nasal, perineal, and inguinal areas (not shown), as well as axillae and upper extremities. Some environment surfaces close to the patient are contaminated with Gram-positive cocci, presumably shed by the patient.

(http://www.who.int/gpsc/5may/background/5moments/en/)





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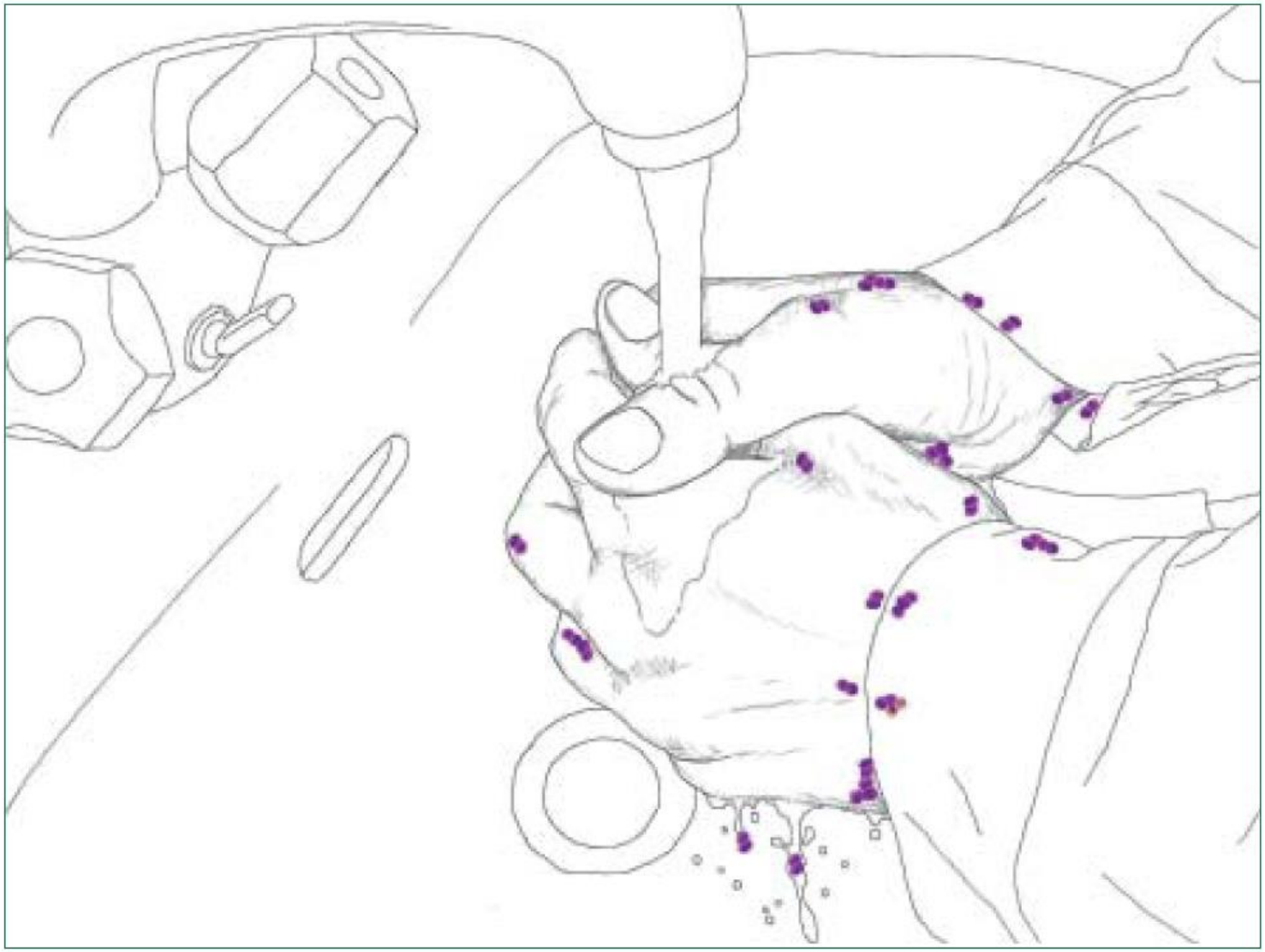
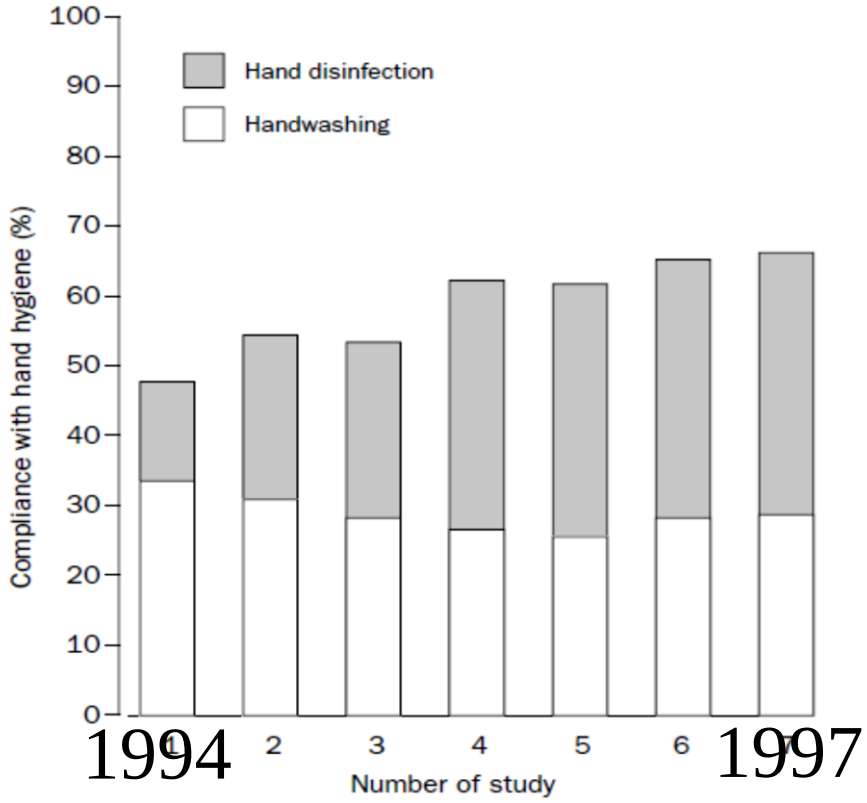


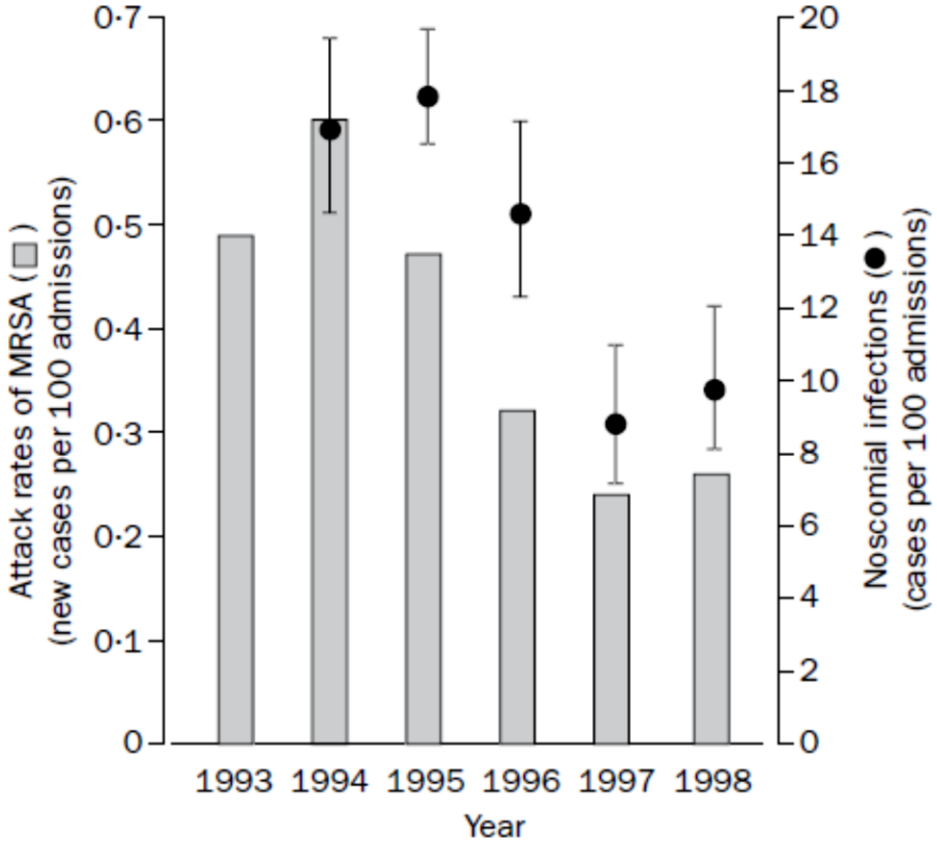
Figure 4: **Incorrect hand cleansing**

Inappropriate handwashing can result in hands remaining contaminated; in this case, with Gram-positive cocci.

(http://www.who.int/gpsc/5may/background/5moments/en/)

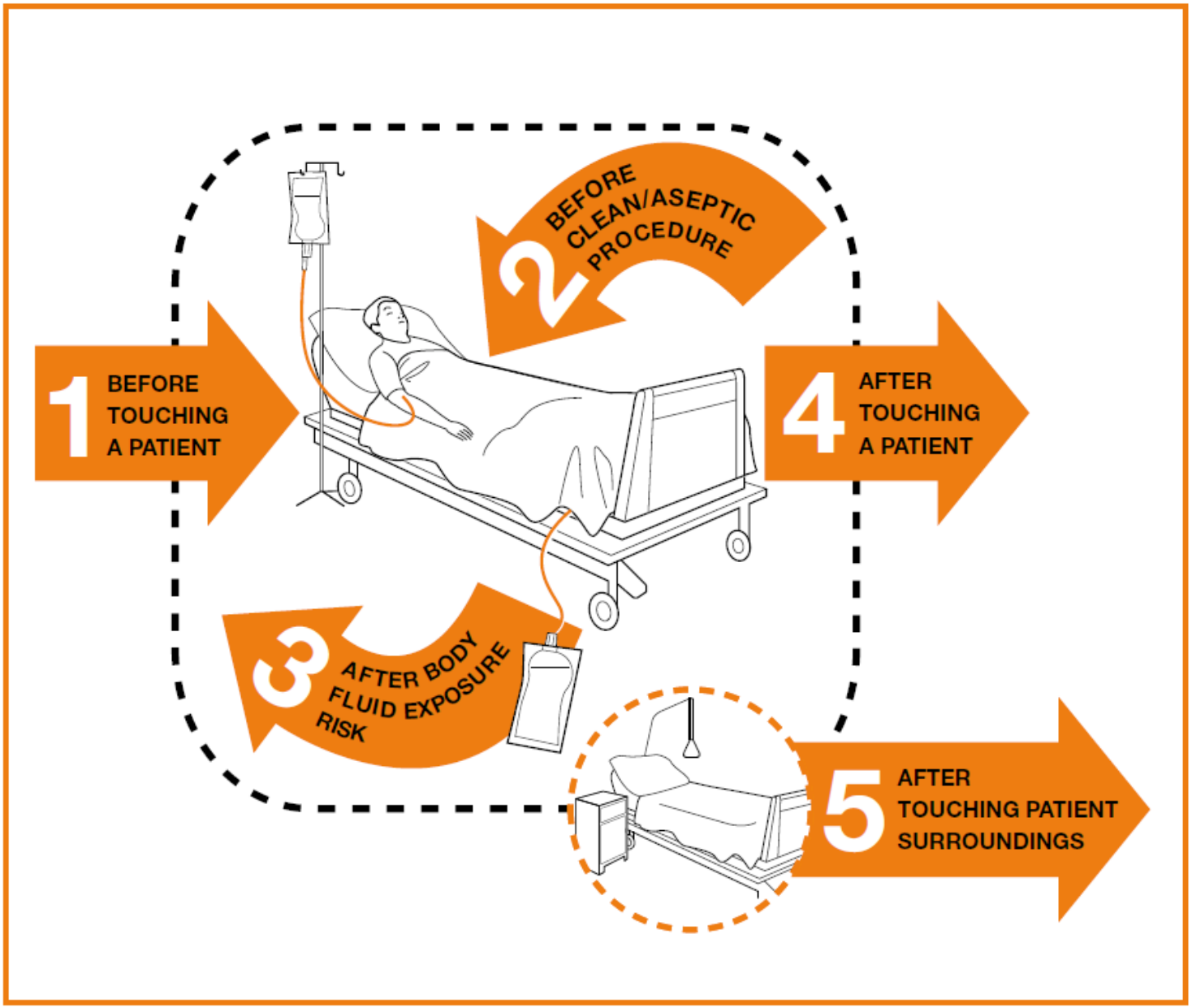
Hand hygiene can decrease nosocomial infections





Lancet 2000; 356: 1307-12.

Figure I.21.5b
Unified visuals for "My five moments for hand hygiene"



(http://www.who.int/gpsc/5may/background/5moments/en/)

Types of Hand Hygiene

Hand-washing with soap under running water

- ✓ When hands are visibly contaminated (blood, body fluid, etc.)
- ✓ When microorganisms that have resistance to alcohol (CD, Norovirus, etc.) are expected

Hand antisepsis with alcohol-based hand-rubs

- ✓ Hands are not visibly contaminated, High effects of sterilization
- ✓ Procedure of protecting skin with humectant is simple

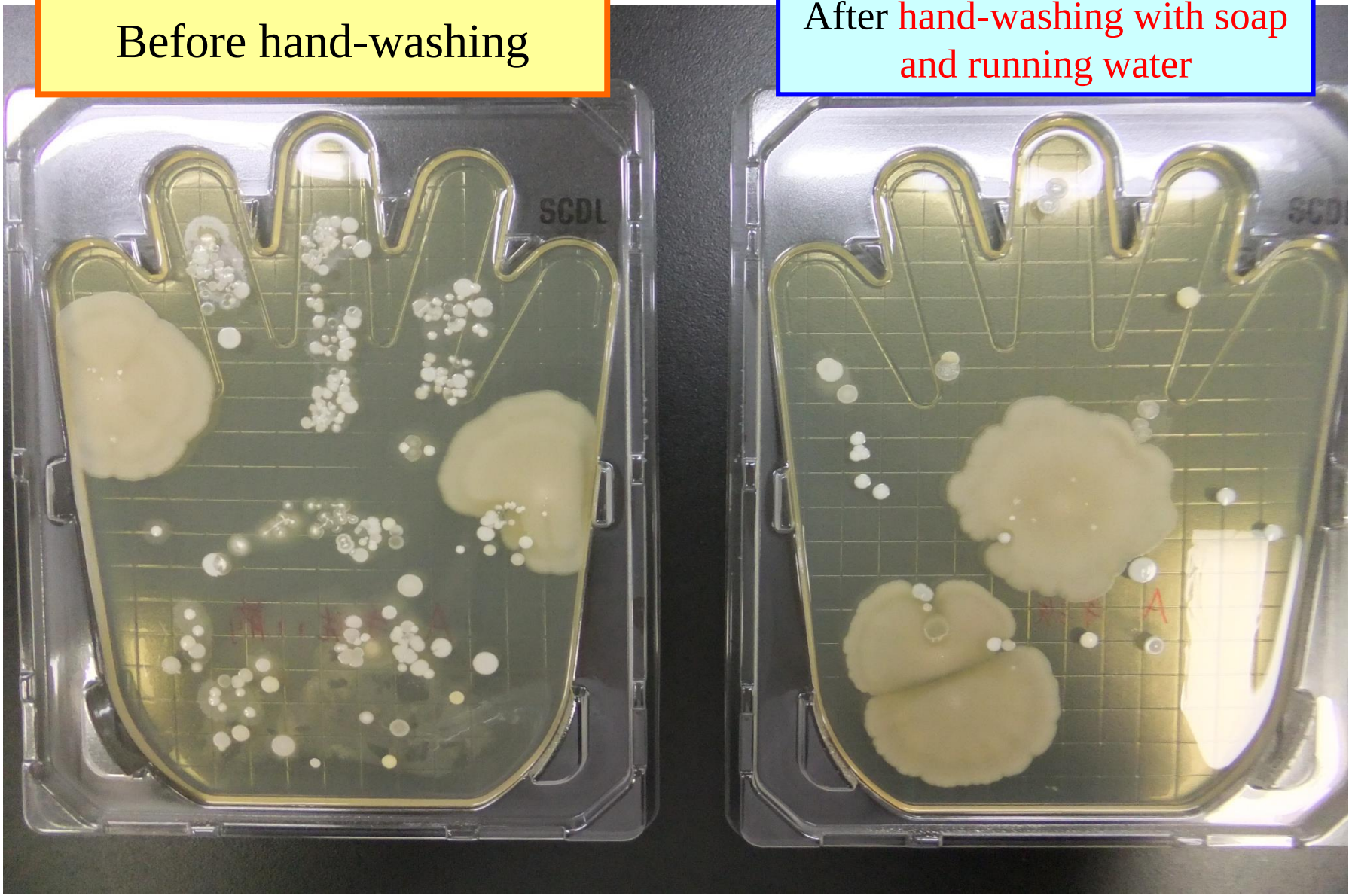
Disinfecting effects of hand hygiene

Hand hygiene technique	Disinfecting effect	
Soap + running water	15 seconds 1/4-1/13	30 seconds 1/60-1/600
Alcohol-based handrub	30 seconds 1/3,000	

Boyce J.M., et al.：MMWR. Recommendations and Reports., 2002, 51（RR-16）, pp. 8-9
Takashi Okubo, Hiroyoshi Kobayashi (supervising translation)“CDC Guideline for Hand Hygiene in Health-Care Settings”, 2003, Medical Publishing, pp. 31-33
Infection Control Editorial Office “INFECTION CONTROL”, 2009 Spring Special Edition, p. 17 (partially modified)

Before hand-washing

After hand-washing with soap and running water




Before hand antisepsis
After hand antisepsis
SCDL
SCDL

TABLE 8. Hand-hygiene adherence by health-care workers (1981–2000)

Ref. no.	Year	Setting	Before/ after	Adherence baseline	Adherence after intervention	Invervention
(*280*)	1981	ICU	A	16%	30%	More convenient sink locations
(*289*)	1981	ICU	A	41%	—	
		ICU	A	28%	—	
(*290*)	1983	All wards	A	45%	—	
(*281*)	1986	SICU	A	51%	—	
		MICU	A	76%	—	
(*276*)	1986	ICU	A	63%	92%	Performance feedback
(*291*)	1987	PICU	A	31%	30%	Wearing overgown
(*292*)	1989	MICU	B/A	14%/28%*	73%/81%	Feedback, policy reviews, memo, and posters
		MICU	B/A	26%/23%	38%/60%	
(*293*)	1989	NICU	A/B	75%/50%	—	
(*294*)	1990	ICU	A	32%	45%	Alcohol rub introduced
(*295*)	1990	ICU	A	81%	92%	Inservices first, then group feedback
(*296*)	1990	ICU	B/A	22%	30%	
(*297*)	1991	SICU	A	51%	—	
(*298*)	1991	Pedi OPDs	B	49%	49%	Signs, feedback, and verbal reminders to physicians
(*299*)	1991	Nursery and NICU	B/A†	28%	63%	Feedback, dissemination of literature, and results of environmental cultures
(*300*)	1992	NICU/others	A	29%	—	
(*71*)	1992	ICU	N.S.	40%	—	
(*301*)	1993	ICUs	A	40%	—	
(*87*)	1994	Emergency Room	A	32%	—	
(*86*)	1994	All wards	A	32%	—	
(*285*)	1994	SICU	A	22%	38%	Automated handwashing machines available
(*302*)	1994	NICU	A	62%	60%	No gowning required
(*303*)	1994	ICU Wards	AA	30%29%	—	
(*304*)	1995	ICU Oncol Ward	A	56%	—	
(*305*)	1995	ICU	N.S.	5%	63%	Lectures, feedback, and demonstrations
(*306*)	1996	PICU	B/A	12%/11%	68%/65%	Overt observation, followed by feedback
(*307*)	1996	MICU	A	41%	58%	Routine wearing of gowns and gloves
(*308*)	1996	Emergency Dept	A	54%	64%	Signs/distributed review paper
(*309*)	1998	All wards	A	30%	—	
(*310*)	1998	Pediatric wards	B/A	52%/49%	74%/69%	Feedback, movies, posters, and brochures
(*311*)	1999	MICU	B/A	12%/55%	—	
(*74*)	2000	All wards	B/A	48%	67%	Posters, feedback, administrative support, and alcohol rub
(*312*)	2000	MICU	A	42%	61%	Alcohol hand rub made available
(*283*)	2000	MICU	B/A	10%/22%	23%/48%	Education, feedback, and alcohol gel made available
		CTICU	B/A	4%/13%	7%/14%	
(*313*)	2000	Medical wards	A	60%	52%	Education, reminders, and alcohol gel made available

Note: ICU = intensive care unit, SICU = surgical ICU, MICU = medical ICU, PICU = pediatric ICU, NICU = neonatal ICU, Emerg = emergency, Oncol = oncology, CTICU = cardiothoracic ICU, and N.S. = not stated.

* Percentage compliance before/after patient contact.

† After contact with inanimate objects.

https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5116a1.htm

Observed risk factors for poor adherence to recommended hand-hygiene practices

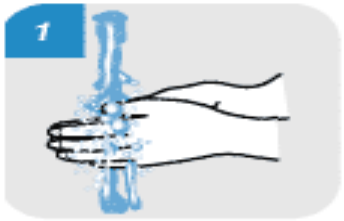
- Physician status (rather than a nurse)
- Nursing assistant status (rather than a nurse)
- Male sex
- Working in an intensive-care unit
- Working during the week (versus the weekend)
- Wearing gowns/gloves
- Automated sink
- Activities with high risk of cross-transmission
- High number of opportunities for hand hygiene per hour of patient care

Additional perceived barriers to appropriate hand hygiene

- Lack of active participation in hand-hygiene promotion at individual or institutional level
- Lack of role model for hand hygiene
- Lack of institutional priority for hand hygiene
- Lack of administrative sanction of noncompliers/rewarding compliers
- Lack of institutional safety climate

https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5116a1.htm

Basic Measure of Infection Control is Hand Hygiene: Correct Technique of Hand-Washing



Wet hand under running water

Dispense soap on the palm

Make a lather with the soap

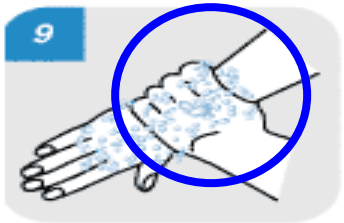
Wash with right palm over left dorsum and vice versa

Wash well between fingers

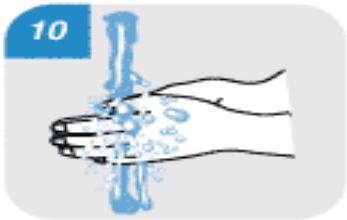
Wash fingers well

Wash thumb clasped in the palm of other hand

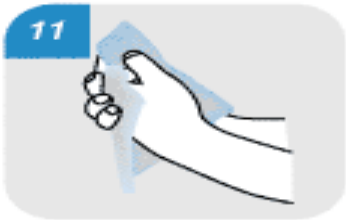
Wash fingertips and nails well



Wash the wrists



Wash off under running water



Tap with a paper towel to wipe away water

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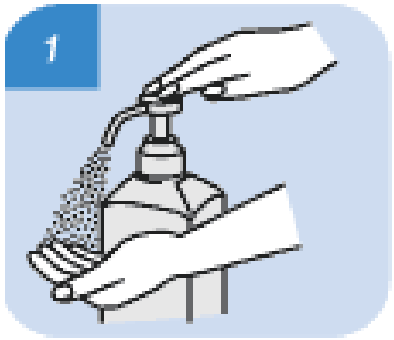
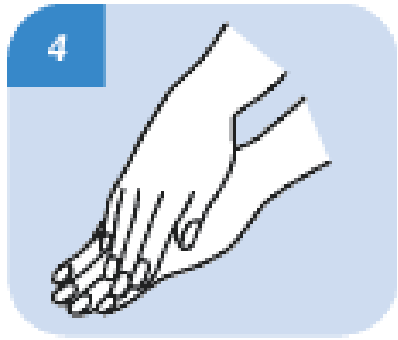
Basic Measure of Infection Control is Hand Hygiene: Correct Technique of Hand-Washing



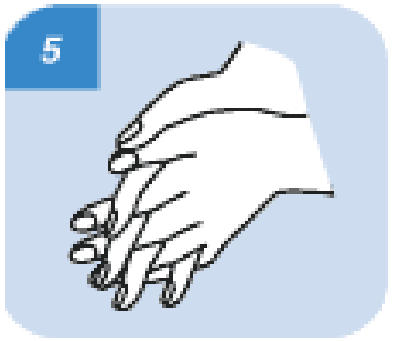
Dispense 1 push of disinfectants on the palm

First, rub fingers of both hands

Then, rub hands palm to palm

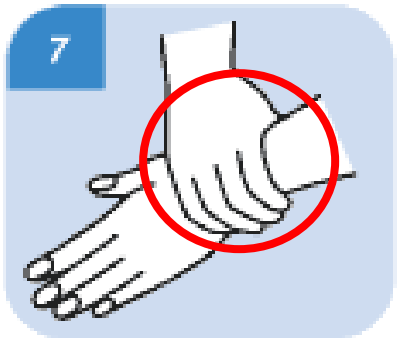


Rub right palm over left dorsum and vice versa



Rub palm to palm with fingers interlaced

Rub thumb clasped in other palm



Remember to rub wrists until they become dry

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Q & A

Even after touching the surroundings of a bed in a patient's room of a patient for whom no MRSA is detected, hand antisepsis is needed.

○ YES NO

Regardless of whether or not a patient has an infectious disease, standard preventive measures including hand hygiene must be taken for all patients.

Q & A

When hands are visibly dirty, do hand-washing with soap under running water.

○ YES NO

When hands are not visibly dirty, alcohol-based handrubs should be used.

Q & A

Hand hygiene is needed not only before wearing gloves but also after removing them.

○ YES NO

Because gloves are not perfect and they may have a pinhole, hand antisepsis is needed before wearing and after removing gloves.

1. **Hand hygiene refers to . . .**

   A. handwashing using plain soap and water.
   B. using an antiseptic hand rub (e.g alcohol, chlorhexidine, iodine).
   C. handwashing using antimicrobial soap and water.
   D. all of the above.

2. Hand hygiene adherence in health-care facilities might be improved by . . .

A. providing personnel with individual containers of alcohol-based hand rubs.
B. providing personnel with hand lotions or creams.
C. providing personnel with feedback regarding hand-hygiene adherence/performance.
D. all of the above.

3. Alcohol-based hand rubs have good or excellent antimicrobial activity against all of the following except . . .

A. viruses.
B. fungi.
C. mycobacteria.
D. bacterial spores.
E. gram-positive and gram-negative bacteria.

4. **Alcohol-based hand rubs are indicated for all of the following clinical situations except . . .**

A. when the hands are visibly soiled.
B. preoperative cleaning of hands by surgical personnel.
C. before inserting urinary catheters, intravascular catheters, or other invasive devices.
D. after removing gloves.

5. Each of the following statements regarding alcohol-based hand rubs is true except . . .

A. alcohol-based hand rubs reduce bacterial counts on the hands of health-care personnel more effectively than plain soaps.

B. alcohol-based hand rubs can be made more accessible than sinks or other handwashing facilities.

C. alcohol-based hand rubs require less time to use than traditional handwashing.

D. alcohol-based hand rubs have been demonstrated to cause less skin irritation and dryness than handwashing using soap and water.

E. alcohol-based hand rubs are only effective if they are applied for ≥60 seconds.

6. Which of the following statements regarding preoperative surgical hand antisepsis is true?

A. Antimicrobial counts on hands are reduced as effectively with a 5-minute scrub as with a 10-minute scrub.

B. A brush or sponge must be used when applying the antiseptic agent to adequately reduce bacterial counts on hands.

C. Alcohol-based hand rubs for preoperative surgical scrub have been associated with increased surgical site infection rates.

D. A and B are true.

E. A and C are true.

Reference

- WHO Guidelines on Hand Hygiene in Health Care: World Health Organization 2009, (modified)

  http://www.who.int/gpsc/5may/background/5moments/en/
- Takashi Okubo, Hiroyoshi Kobayashi (supervising translation) “CDC Guideline for Hand Hygiene in Health-Care Settings”, 2003, Medicus Shuppan Publishers
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Open discussion