


Hand Hygiene



The 'science' behind hand hygiene
Hand hygiene in the community setting

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Disclosure

- This presentation has been adapted from the Ministry of Health and Long-Term Care presentation entitled: *'The Science Behind Just Clean Your Hands: Education on Health Care Associated Infections and Hand Hygiene'*

Overview

1. Quick history of hand hygiene
2. Impact and burden of health care associated infections
3. Role health care providers' hands play in spreading infection
4. Using hand hygiene to prevent health care associated infections
5. Your 4 moments for hand hygiene in community care settings



History of Hand Hygiene



- 1846 - Ignaz Semmelweis
- Noted difference in maternal mortality rates at the General Hospital of Vienna between two obstetrics clinics
 - First Clinic – babies delivered by students and physicians
 - Second Clinic – babies delivered by midwives
- Discovered the students and physicians would come to the obstetrics ward directly from the autopsy ward
- Semmelweis insisted students and physicians wash their hands with a lime (chlorine) solution prior to entering the obstetrics ward and between patients
- The maternal mortality rate dropped substantially and remained low for years as a result of improved hand hygiene

What is a health care associated infection? (HAI)

HAI is:

"An infection occurring in a patient during the process of care in a hospital or other health care facility which was not present or incubating at the time of admission."
(Ducel et al 2002)

Negative Impacts of HAIs

- The fear of acquiring a health care associated infection may impact the patient and community's confidence in the delivery of health care
- In Canada, it has been estimated that 220,000 incidents of HAI occur each year, resulting in more than 8,000 deaths (Zoutman et al 2003)
- It is estimated that antibiotic resistant organisms (AROs) increase the annual direct and indirect costs to patients by an additional \$40 to \$52 million in Canada (Birbaum, 2007)
- Patients with one or more HAIs during in-patient stay remain in hospital and incur costs on average three times greater than uninfected patients (Plowman et al, 2001)

Role Health Care Providers' Hands Play in Spreading Infections

Hand transmission

- Hands are the most common vehicle to transmit health care associated organisms
- Transmission of health care associated organisms from one patient to another via health care provider hands requires five sequential steps

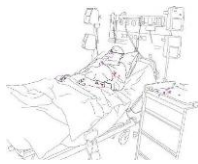


Hand transmission: Step 1

(The Lancet Infectious Diseases 2006)

Organisms present on patient skin and environment surfaces

- Health care associated pathogens can be recovered not only from infected or draining wounds, but also from colonized areas of normal, intact skin
- Organisms present on intact areas of some patients' skin can range from 100-1 million colony forming units (CFU)/cm²
- Nearly 1 million skin squames (flakes of skin) containing viable organisms are shed daily from normal skin which can easily contaminate the patient environment (bed linen, furniture, objects)
- Pathogens include *Staphylococcus aureus*, *Proteus mirabilis*, *Klebsiella* spp and *Acinetobacter* spp

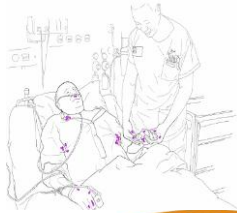


Hand transmission: Step 2

(The Lancet Infectious Diseases 2006)

Organisms transfer on health care providers' hands – examples:

- Nurses can contaminate their hands with during "clean" activities (lifting patients, taking the patient's pulse, blood pressure, or oral temperature), as well as activities that involve direct patient-contact wound care, respiratory tract care or handling patient secretions



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Hand transmission: Step 3

(The Lancet Infectious Diseases 2006)

Organisms survival on hands

- Following contact with patients and/or contaminated environment, organisms can survive on hands for differing lengths of time (2-60 minutes)
- In the absence of hand hygiene, the longer the duration of care, the higher the degree of hand contamination



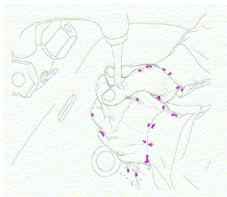
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Hand transmission: Step 4

(The Lancet Infectious Diseases 2006)

Inadequate hand cleansing results in hands remaining contaminated

- Insufficient amount of product, and/or insufficient technique and duration of hand hygiene action lead to poor hand cleaning
- Therefore, transient organisms may still be recovered on hands following handwashing with soap and water, whereas handrubbing with an alcohol-based hand rub has been proven significantly more effective



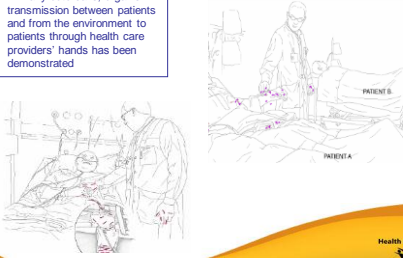
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Hand transmission: Step 5

(The Lancet Infectious Diseases 2006)

Contaminated hands cross-transmit organisms

- In many outbreaks, organism transmission between patients and from the environment to patients through health care providers' hands has been demonstrated



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Prevention of HAIs



Hand hygiene is the ***single most*** effective measure to reduce health care associated infections

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Benefits of hand hygiene in health care

•An increase in hand hygiene adherence of only 20 per cent results in a 40 per cent reduction in the rate of health care associated infections (McGeer, 2007)

•Improvement in patient outcomes and decreased costs associated with HAI's



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Myth of hand hygiene

- Most health care providers believe they are already practicing good hand hygiene

Reality...

- The observational audits from the *Just Clean Your Hands* testing in Ontario showed a baseline general compliance rate of:

<40%

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Why don't health care providers "just do it"?

- Many health care providers do not have a clear understanding of the essential times to clean their hands in health care settings
- Providers' perceive that they are already practicing good hand hygiene
- Hand hygiene products that are unpleasant to use or hard on their hands and the lack of a hand care program to promote healthy intact hands
- Physical barriers such as lack of access to alcohol-based hand rub at *point of care*

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Point of care defined

- **Point of care** - refers to the place where three elements occur together:
 - the patient
 - the health care provider
 - care involving contact is taking place
- The concept refers to a hand hygiene product (e.g., alcohol-based hand rub (ABHR)) which is easily accessible to health care providers e.g., within arm's reach to where patient contact is taking place
- Point of care can be achieved in a variety of methods (e.g., ABHR beside the client's bed or carried by the HCP)
- This enables health care provider to quickly and easily fulfill the *4 Moments for Hand Hygiene*

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Using hand hygiene to prevent health care associated infections

Two methods of cleaning hands

- Alcohol-based hand rub (ABHR) is the preferred method (gold standard) in all clinical situations when hands are not visibly soiled
- Handwashing with soap and running water is used only when hands are visibly dirty or following visible exposure to body fluids



Hand washing with alcohol-based hand rub

1st step: Palm to palm		2nd step: Palm of right hand over back of left hand and palm of left hand over back of right hand	
3rd step: Palm to palm with fingers interlaced		4th step: Back of fingers to opposing palms with fingers interlocked	
5th step: Distal wrist rubbing of right hand clasped in left palm and vice versa		6th step: Distal wrist rubbing back-to-back and forwards with interlaced fingers of right hand over left palm and vice versa	

Hand washing with soap and water

6 STEPS TO PROPER HANDWASHING

1. WET HANDS
2. SOAP
3. LATHER (FOR AT LEAST 15 SECONDS)
4. RINSE
5. TOWEL DRY
6. TURN TAPS OFF WITH TOWEL



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Time constraint: A major obstacle for hand hygiene

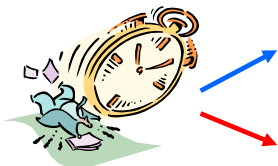
Adequate handwashing with water and soap requires **15 sec lather** with entire procedure taking **at least 1 minute**

Median cleaning time by HCPs in Just Clean Your Hands pilot project:
12 secs



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Alcohol-based hand rub (ABHR): Addresses many of the barriers to improving hand hygiene compliance



Handwashing:
Lather 15 seconds
and at least 1 min
for entire procedure

Alcohol-based
Handrubbing:
15 sec

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When should hand hygiene be performed?

- Before preparing, handling, serving or eating food
- After personal body functions
- Before putting on and after taking off gloves
- Whenever a health care provider is in doubt about the necessity for doing so

While all indications for hand hygiene are important, there are some essential moments in health care settings where the risk of transmission is greatest and hand hygiene must be performed.

...This concept is what *Your 4 Moments for Hand Hygiene* is all about.

Your 4 moments for hand hygiene

Your 4 Moments for Hand Hygiene



Your 4 Moments For Hand Hygiene

Clean your hands when entering, before touching the patient or any object or furniture in the patient's environment.

To protect the patient/patient environment from harmful organisms carried on your hands.

Clean your hands immediately after an exposure risk to body fluids (and after glove removal).

To protect yourself and the health care environment from harmful patient organisms.



Clean your hands immediately before any aseptic procedure.

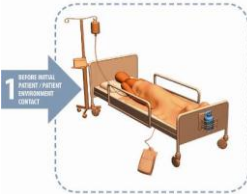
To protect the patient against harmful organisms, including the patient's own organisms, entering his or her body.

Clean your hands when leaving, after touching patient or any object or furniture in the patient's environment.

To protect yourself and the health care environment from harmful patient organisms.

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Can you identify examples of this indication during your everyday practice of health care?



Some examples may be:

- as you arrive at the client's house
- shaking hands, stroking an arm
- helping a patient to move around, get washed, giving a massage
- taking pulse, blood pressure, chest auscultation, abdominal palpation

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Can you identify examples of this indication during your everyday practice of health care?



Some examples may be:

- oral/dental care, giving eye drops
- skin lesion care, wound dressing, subcutaneous injection
- catheter insertion
- preparation of medication, dressing sets

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Can you identify examples of this indication during your everyday practice of health care?



- Some examples may be:**
- oral/dental care, giving eye drops
 - skin lesion care, wound dressing, subcutaneous injection
 - drawing and manipulating any fluid sample
 - clearing up urine, faeces, vomit, handling waste (bandages, napkin, incontinence pads), cleaning of contaminated and visibly soiled material or areas (bathroom, medical instruments)

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Can you identify examples of this indication during your everyday practice of health care?



- Some examples may be:**
- shaking hands, stroking an arm
 - helping a patient to move around, get washed, giving a massage
 - taking pulse, blood pressure, chest auscultation, abdominal palpation
 - touching the furniture
 - changing bed linen
 - holding a bed rail
 - clearing the bedside table

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Other community care-specific issues

- Avoid contact with pets
- Bring own supply of liquid soap and paper towels (avoid reusable cloth towels)
- Bring own alcohol-based hand sanitizer
- Consider the water source of rural homes
 - Potentially contaminated well water

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Questions?

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