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ASSOCIATION OF HEALTHCARE PROVIDERS (INDIA)

HAND WASH & HAND HYGIENE





AUTHORED BY

DR. ASHTO MATHUR (CONSULTANT OBSTETRICIAN & GYNAECOLOGIST)

EDITED BY

DR. SUNIL KHETARPAL (DIRECTOR AHPI)

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ABOUT THE AUTHOR

Ashto Mathur , is a highly motivated and hard working medical consultant. She began her career in Mumbai as a Medical Officer in Mumbai Municipal Corporation.

During her career she worked in different capacities in many reputed hospitals on Clinical as well as Hospital Management and Administration issues. She has had extensive experience in all topics of infection control in hospitals and other clinical settings.

She worked as a visiting faculty at different institute, e.g. SNDT Polytechnic, Gurunanak Hospital Nursing College, All India Institute of Local Self Government, Mumbai Marine Institute, teaching medical & Health care Management with a specific brief to enhance efficiency and service levels.

As a Medical Director with Family Planning Association of India, she guided, advised, and monitored the maintaining of Quality of Care Standards in a chain of 40 Clinics all over India.

This manual is the outcome of her many months of full time effort with the aim to promote awareness about the importance of infection prevention and control measures in health care workers and co-workers, patients and visitors and to make it part of their daily practice.

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1. INTRODUCTION

“Prevention is better than cure”. No other situation fits as aptly to this popular phrase as hospital / health care associated infection.

Hand washing is the act of cleaning one’s hands with the use of any liquid with or without soap for the purpose of removing dirt or microorganisms. It is the most effective measure in reducing the risk of transmitting infectious diseases.

It cannot be said too often that hand washing is the most important and most basic technique in preventing and controlling infections. It is the single most effective infection control measure.

Hand washing is under the umbrella of hand hygiene. **Hand hygiene is defined by the World Health Organization as a general term that applies to hand washing, antiseptic hand wash, antiseptic hand rub or surgical hand antisepsis.**

Good hand hygiene of all members of the staff is one of the most crucial interventions to prevent cross-infection in health care facilities.

Hands become easily contaminated with microorganisms. Frequent hand washing can reduce the spread of infection from the hands of health workers and others. By persuading people, especially young children, to wash their hands with soap and clean water after going to the toilet, or after handling or changing a dirty baby, or doing other tasks that potentially contaminate hands (cleaning vegetables, fresh meat or fish) can reduce diarrheal diseases.

When you need to wash your hands:

Hands normally carry lots of germs and should be washed:

- After visiting the toilet,
- Before handling food,
- When visibly dirty,
- After coughing or sneezing into your hands.

2. HAND WASHING

Hand washing is defined as a vigorous, brief rubbing together of all surfaces of lathered hands, followed by rinsing under a stream of water. The detergent or soap in the hand washing solution dissociates the microorganisms from the skin by reducing the surface tension. This is also facilitated by the mechanical rubbing together of the hands. The subsequent rinsing with a stream of water removes these microorganisms.

Washing hands properly is one of the most important things to help prevent and control the spread of many illnesses. It is the most effective method for preventing the transfer of bacteria between personnel and patients within the hospital.

The detergent or soap in the hand washing solution dissociates the microorganisms from the skin by reducing the surface tension. This is also facilitated by the mechanical rubbing together of the hands. The subsequent rinsing with a stream of water removes these microorganism.

Hand Hygiene:

Hand Hygiene is a means of achieving a reduction in or removal of visible soiling, transient or resident organisms and/or other hazardous toxic substances while maintaining the integrity of the skin.

Pathogenic organisms from colonized and infected patients (and sometimes from the environment) transiently contaminate the hands of Healthcare delivery team comprising broadly eight categories namely; doctors (allopathic, alternative medicine); nursing and midwifery professionals; pharmacists; dentists; paramedical workers; grass-root workers and support staff during normal clinical activities and can then be transferred to other patients.

Hand Hygiene is a means of achieving a reduction in or removal of visible soiling, transient or resident organisms and/or other hazardous toxic substances while maintaining the integrity of the skin.

3. HAND FLORA

There are two groups of micro-organisms on the hands i.e. Transient micro-organisms and Resident micro-organisms.

Transient micro-organisms are carried temporarily on the surface of the skin and acquired on the hands through contact with other sites on the same individual, from other people, or from the environment. **These microorganisms do not survive on the skin for more than a few hours due to antibacterial properties of the skin but can readily be transferred to other people or objects.** These microorganisms are derived from a health care environment thus they are more likely to be of pathogenic potential. Removal of These organisms is achieved by hand washing with soap and water.

Resident micro-organisms are deeply seated and live within the epidermis under the finger nails and in the deeper layers of skin (hair follicles, sweat glands and sebaceous glands). **They are also known as "normal" flora and are not readily transferred to other people or surfaces.**

Though these organisms are usually harmless and in most situations, there is a risk that they may enter the epidermis (skin) during invasive procedures, e g. surgery and cause surgical site infections.

4. LEVELS OF HAND DECONTAMINATION

- Hand washing
- Hygiene hand washing
- Surgical hand washing

Social Hand Washing is the mechanical displacement of microorganisms. It is normally done using plain soap and water. This will remove most transient micro-organisms from moderately soiled hands e.g. when first attending to a patient and between patients.

Hygienic Hand Washing or Antiseptic Hand rub inhibits and kills both transient and resident flora on the hands. It is a procedure where antiseptic detergent preparation and waterless alcohol-based hand rub products are used for washing or disinfection of hands (for at least a minimum of 15-30 seconds).

Surgical Hand Washing/ antisepsis is an extension of hygienic hand washing. It is performed before donning sterile attire preoperatively. The aim is to both reduce the number of resident and transient flora to a minimum and also to inhibit their re-growth for as long as possible, on the hands, the wrists and forearms.

5. INDICATIONS FOR SOCIAL HAND WASHING

- At the start of a shift a 2-minute scrub is essential.
- After any direct contact with patient or patient equipment.
- Between procedures on the same patient.
- Before contact with the next patient.
- Before and after nursing the patient (e.g. bathing, bed making).
- Before caring for patients in ICU, nurseries and immunocompromised patients.
- Before and after direct physical contact with a client/patient.
- Before putting on sterile or high-level disinfected surgical gloves or examination gloves and after removing gloves and protective clothing.
- Before performing invasive procedures.
- Before and after touching wounds, mucous membranes, blood, body fluids, secretions or excretions (except sweat).
- After handling contaminated items objects, including used instruments such as dressings, bedpans, waste, urinals and urine drainage bags, commodes, toilet seats etc.
- During an outbreak of infection.
- When hands are visibly dirty.

Points to remember before the Hand Washing procedure and preparation:

The effectiveness of decontamination is increased by certain important parameters. Remember to:

- Keep nails short, Clean and Polish Free.
- Avoid wearing wrist watches and jewellery, Specially Rings with ridges or Stone and Bracelets.
- Not to wear artificial Nails
- Cover cuts and abrasions with the water proof Dressings.
- Roll up long sleeves before washing your hand and wrists.

Basic Hand Washing Area



Illustration: Basic Hand Washing Area

Indications for Hand Washing:

- Before preparing or serving food.
- Before eating, drinking or handling food.
- After visiting the toilet, blowing your nose or covering a sneeze/cough.
- Before and after each work shift or work break.
- Before and after smoking.
- Whenever hands become visibly soiled
- Before and after patient contact
- After touching a contaminated environment

Hand Washing Technique

- Hands should be wet by putting them under running water and avoiding splashing of water to surrounding areas. Liquid/bar soap should be applied to cover all hand surfaces. (In places where

running tap water is not available, a drum with a drain spout could be elevated to serve as running water. Alternatively, a clean bowl of water can be used. Water should be replaced between each use.)



1.Wetting the hands with water



2.Applying the foam soap



3.Leathering the soap and scrubbing both hands palm to palm

- All surfaces of the hands should be rubbed vigorously for at least a minimum of 10-15 seconds paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers.



4.Scrubbing back of each hand with palm of other hand



5.Scrubbing finger tips of each hand in palm of opposite hand



6.Scrubbing each thumb in opposite hand

- A nailbrush should only be used if the nails are dirty – it should not be used on the skin.

- Hands should be rinsed thoroughly under clean running water from a tap or a bucket. Dipping hands into a basin containing standing water should be avoided because microorganisms can survive and multiply in this water even if an antiseptic agent is added .A bucket with tap or a bucket with a pitcher can be used if running water is not available from the tap and splashing of water in the surrounding area should be avoided.



7.Scrubbing each wrist



8.Washing thoroughly Under running water

- There should be no visible trace of detergent remaining on the hands.

- Hands should be dried with personal dry clean towel, disposable paper towel (by patting rather than rubbing) or air dried.

- Used paper towels should be disposed of according to the local waste disposal policy.

- The whole procedure usually takes about 40-60 seconds.

- If bar soap is used, it should be kept in a receptacle (soap container/box) which facilitates its drying. Wet bar soaps can be a source of infection



9.Drying (patting) hands with paper towel



10.Turning off water with same towel

- Liquid soap dispenser should be thoroughly cleansed and dried before refilling.
- Topping up liquid soap should not be practiced.

6. INDICATIONS FOR HYGIENE HAND WASHING

- Hands should have been washed previously with soap and water and should be visibly clean and dried from fingertip to elbow.
- Antiseptic soap containing an antiseptic agent (often chlorhexidine, iodophors, or triclosan) instead of plain soap should be applied on each hand to cover all hand surfaces and scrubbed using a rotator movement from finger tips to elbow for at least 20 seconds before rinsing under running water.
- Any breaks in the skin should be securely covered by a waterproof dressing.
- During hand washing, care should be taken that the arms are not passed back and forth but held flexed under running water so that the water drips from hands to the elbow and not vice versa.

- The water should be turned off using either the elbow or foot depending on the taps. If the taps do not operate this way, leave the water running until drying of the hands is complete, when the taps can be turned off using a clean paper towel.

7. INDICATIONS FOR SURGICAL HAND WASH

- Before donning sterile attire preoperatively.
- Before all surgical procedures.
- To be performed preoperatively by the surgical team to prevent the risk of wound contamination in case gloves become damaged.
- Before handling dressings or touching open wounds, inserting urinary catheter etc.
- Before contact with invasive devices.
- Before performing any invasive procedures such as placement of an intravascular device.
- Before contact with immunocompromised patients.
- Before caring for highly susceptible patients in high-risk areas: ICU, OR, Burn Unit, Dialysis, and Intensive Care Nurseries.

Surgical Hand Washing Technique

- All jewellery should be removed as jewellery harbours micro-organisms and is difficult to clean.
- Debris from under nails should be removed using a nail pick. Nail brushes should not be used as it is difficult to keep them clean.
- Hands and arms up to the elbow should be wet under running water.
- Hands and arms should be washed with an antimicrobial solution or plain soap under running water right up to the level of the elbows for at least one more minute using an extra squirt of washing liquid/ plain soap.



1.Wet hands with water



2.Take soap in the hands



3.Cleaning below the nails

- Water should flow from the area of least contamination to the area of most contamination. Soap can kill some micro-organisms.



4.Hand washing



2.Scrubbing the hands and elbow



3.Rinsing the hands

- Hands should be washed with soap by :
  1. Rubbing the back of each hand with the front of the other
  2. Rubbing the palms against each other with the fingers between each other
  3. Rubbing the back of each hand with the front of the other with the fingers between each other.
  4. moving from fingertips to the elbows of one hand and the same procedure should be repeated with the other hand.

- All surfaces of hands, fingers and forearms should be vigorously rubbed for at least 2 minutes.

- Each arm should be rinsed separately, fingertips first, holding hands above the level of elbows at all times.

- Rinse water should not flow over clean areas.
- Splashing water over the whole surgical attire should be avoided.
- Hands should be kept up and away from the body and any surface or article should not be touched.



4.Hand washing

- Hands and forearms should be dried thoroughly with sterile paper hand towel for each hand, rotating down hands to elbows before discarding.



5.Drying of finger tips

- Hot air hand dryers are forbidden in healthcare facilities.
- While donning sterile gloves and gown, hands should be held above the level of the waist without touching anything. The area below the level of the waist is considered contaminated.

8. ALCOHOL BASED HAND RUB AND HAND WASH

- **Alcohol Based Hand Rub** contains a minimum of 60% alcohol and can be used in all clinical situations except when hands are visibly dirty.
- **Alcohol based hand wash** Alcohol rub is applied in five strokes rubbing backwards and forwards and by rubbing palm to palm with fingers interlaced.
- Alcohol should evaporate before donning sterile or high-level disinfected surgical gloves to avoid the risk of dermatitis. The product usually dries within 15-20 seconds.



Alcohol based hand rub in palm from bottle



rubbing palm to palm over left dorsum



Rubbing palm to palm fingers interlaced



Back of Fingers to opposite palms with fingers interlaced

9. RECOMMENDATIONS

To encourage hand hygiene practices, it is recommended that hand hygiene facilities should be provided which are easily too accessible and with reminders to do so.

10. HAND HYGIENE FACILITIES

Access to appropriate hand hygiene facilities should be there:

- Adequate supplies for hand hygiene products.
- Availability of hand-free tap system.
- Mixed taps are preferred to provide correct temperature of water for performing hand hygiene.
- Hand washing poster, indicating the correct hand washing technique should be placed at all the hand washing areas.
- Signs explaining the importance of hand hygiene should be visible on all important entry to all health care facilities especially on entry and exit from health care facilities.
- Soap and a bowl of water or hand cleansing wipes should be offered to patients who are unable to access hand washing facilities.
- Alternative options like waterless alcohol-based hand rubs should be made available to improve the compliance with hand washing.
- Disposal of body fluids at the clinical hand wash-hand-basin should not be done.
- Hand wash basin should not be used for storing used equipment awaiting decontamination.
- After contact with inanimate surfaces and objects (Including medical equipment) in the immediate vicinity of the patient.
- Hand rub solution should be kept at the bedside and replaced as soon as possible

11. STEPS TO INCREASE THE CHANCES OF SUCCESS FOR HAND WASHING

- Educate healthcare providers about the need and methods of hand hygiene.

- Healthcare providers should reduce the frequency of hand hygiene required, by minimizing unnecessary direct contact with patients, their immediate environment and actions such as leaning on bedrails.

- If the patient bathroom is used for hand hygiene, contamination of hands with potentially contaminated surfaces and objects should be avoided.

- Patients and visitors should be instructed on proper hand hygiene e.g. Patient should perform hand hygiene before eating (with assistance, if necessary), after personal use of the toilet, and when soiled.

- Current guidelines for hand hygiene practices should be widely disseminated with the evidence supporting their effectiveness in preventing disease and the need for health providers to adhere to the guidelines.

- Wall dispensers, education, brochures, buttons, posters should be made available.

12. MYTHS

Hand Washing

- Between every patient encounter is unnecessary as it does not affect clinical outcome.

- Is unnecessary when gloves are worn.

- Is unnecessary as routine or frequent hand washing interrupts efficient patient care

- Frequent hand washing damages skin and causes cracking, dryness, irritation and dermatitis.

- Damages nails and nail polish.

- Facilities are not conveniently placed or well designed.

- Is not always convenient and takes too much time.

Mistakes

- Use of a bar soap
- Use of warm water
- Not washing hands after toilet
- Not rinsing and scrubbing and rinsing for long enough (20-30 seconds)
- Use of warm water
- Use of air dryer
- Use of one hand towel for the whole family

13. SUMMARY

Hand hygiene is the most important precaution that prevents the spread of infection. It is the single most important procedure for preventing the transmission of diseases and infection. After washing, hands should be dried carefully. If soap and clean water are not available, an alcohol-based product should be used to clean hands. Washing hands properly can help prevent the spread of the germs (like bacteria and viruses) picked up from out surfaces that cause serious complications, especially for young children and the elderly people. Proper hand washing can protect you and others from a range of diseases.

14. ACTION PLAN

The Hospital Administrator under the advice of Infection Control Team should ensure that:

- Current guidelines for hand hygiene practices is widely disseminated with the evidence supporting its effectiveness in preventing disease and the need for health providers to adhere to the guidelines.

- Should be involved in promoting and enforcing the guidelines by convincing them of the cost benefits of hand washing and other hand hygiene practices.
- A hand washing policy should be established and effectively communicated to all the healthcare providers.
- Successful educational techniques including role modelling (especially by supervisors), mentoring, monitoring and positive feedback should be used.
- To promote compliance performance improvement, approaches should be targeted to all healthcare providers and not just physicians and nurses.
- Occasional training programmes should be arranged for all the healthcare providers.
- Annual mandatory hand hygiene training should be arranged for all the staff to maintain their level of competency and knowledge. All new staff should receive hand hygiene training at general induction.
- Hand washing policy should be established.
- All the members of the Infection Control Committee should be effectively involved in developing and implementing the Hand Hygiene Policy.
- The Hand Hygiene Policy should be effectively communicated to all healthcare providers in the facility.
- Demonstrate hand washing policy through action.

15. MONITORING

Monitoring of healthcare worker hand hygiene performance is considered a standard in most hospitals. Collection and feedback of compliance data is used to educate and engage healthcare providers in hand hygiene improvement campaigns. Data also allows Infection Preventionists to track the success of interventions or to identify areas of potential problems. Monitoring can be accomplished using

several different methods, though the gold standard is direct observation of healthcare provider practices by a trained observer.

Unknown observers should monitor hand hygiene practices on all the units using standardized definitions and data collection procedures. Known monitors under direct feedback program should address, educate, and take the name of staff the moment that they are observed not performing hand hygiene appropriately. Hand hygiene compliance should be monitored upon each entry to and exit from a patient care room or area.

16. AUDITING

A hand hygiene audit is used to assess hand hygiene techniques being performed within healthcare settings. It aims to prevent the spread of infection between healthcare providers and patients through observational inspections. The simplest and most effective solution for healthcare providers is always to practice proper hand hygiene techniques while on duty.

Performing a hand hygiene audit of healthcare providers

- Before commencing the audit, the hospital administration should be informed about the period of observation and the purpose of performing the hand hygiene audit.
- Healthcare providers should be informed about the data documentation method (e.g. photo evidence).
- All the areas to be identified where audit is to be taken. The head nurse, the chief doctor of the unit or the department manager and other healthcare staff responsible for patient's safety should be informed.
- Patient privacy must not be compromised during auditing. Written permission from patients may be required.
- Auditing should not be done during extreme situations (e.g. emergency medical treatment, signs of uncontrolled stress in a healthcare provider).

A sample Checklist for auditing is provided below:

Activity	Location	Response	Remarks
Soap/scrub soln and clean water available in all hand washing areas			
Staff wash hands and use antiseptic solution before and after each clinical procedure, after handling waste or touching body fluids.			
Staff wear sterile disposable surgical gloves when performing surgical procedures or dressings			
Staff wear utility gloves when cleaning or handling dirty instruments/ equipment and contaminated surfaces			
Routine hand washing is done before wearing gloves, after examining or having a contact with the client and after removing the gloves			

Hand is washed with plain or antiseptic soap, rinsed with clean running water, dried with personal sterile towel.			
Both hands are scrubbed up to elbow with soap and water /antiseptic solution several times for 3 to 5 minutes and kept in upright position till dried			

17. TRAINING & EDUCATION

Healthcare facilities should perform regular hand hygiene audits to identify training and remind staff of the importance of basic infection control.

- Healthcare providers should receive training frequently regarding hand hygiene in the facility.
- There should be a process to confirm that all health-care providers complete the training.
- All the documents should be easily available to all healthcare providers.
- There should be a professional with adequate skills to serve as trainer for hand hygiene educational programmes active within the health-care facility.
- There should be a system in place for training and validation of hand hygiene compliance observers.
- There should be a dedicated budget that allows for hand hygiene training.

18. TIPS & WARNINGS

- Hands and arms should be passed slowly under the running water to allow all the soap to be removed.
- If further rinsing is needed to remove soap, entire rinse process should be repeated again, starting at the fingertips and not beginning at the elbow. After surgical scrub is complete, nothing unsterile should be touched.

References

1. WHO Guidelines in Healthcare
2. Kaya Kelp Guidelines
3. Good Practice in Infection and Prevention and Control at Service

Delivery Points: By Ashto Mathur