

Hand Hygiene in Healthcare settings

A Key Indicator of infection control, Healthcare Quality and Patient Safety

Presented by:

Dr Amal Soliman

LECTURER OF MEDICAL MICROBIOLOGY & IMMUNOLOGY, FACULTY OF MEDICINE, ASU & MTI

CONSULTANT OF INFECTION PREVENTION & CONTROL

MEMBER OF MEDICAL MICROBIOLOGY & IMMUNOLOGY ASSOCIATION , MMIA



16th & 17th April 2025



MTI (Modern Technology & Information University)





Why should you clean your hands?

- Any health-care worker, caregiver or person involved in patient care needs to be concerned about hand hygiene
- Therefore hand hygiene does concern **you**!
- **You** must perform hand hygiene to:
 - **protect the patient** against harmful germs carried on **your** hands or present on his/her own skin
 - **protect yourself** and the health-care environment from harmful germs



HANDS
SPREAD
GERMS

Importance in Healthcare settings;

- Hand hygiene is the easiest & critical practice to reduce & prevent healthcare-associated infections (HAIs).
- Prevents transmission of antimicrobial-resistant organisms.
- Enhances patient and healthcare worker safety.
- Improves overall healthcare quality and outcomes.



16th & 17th April 2025

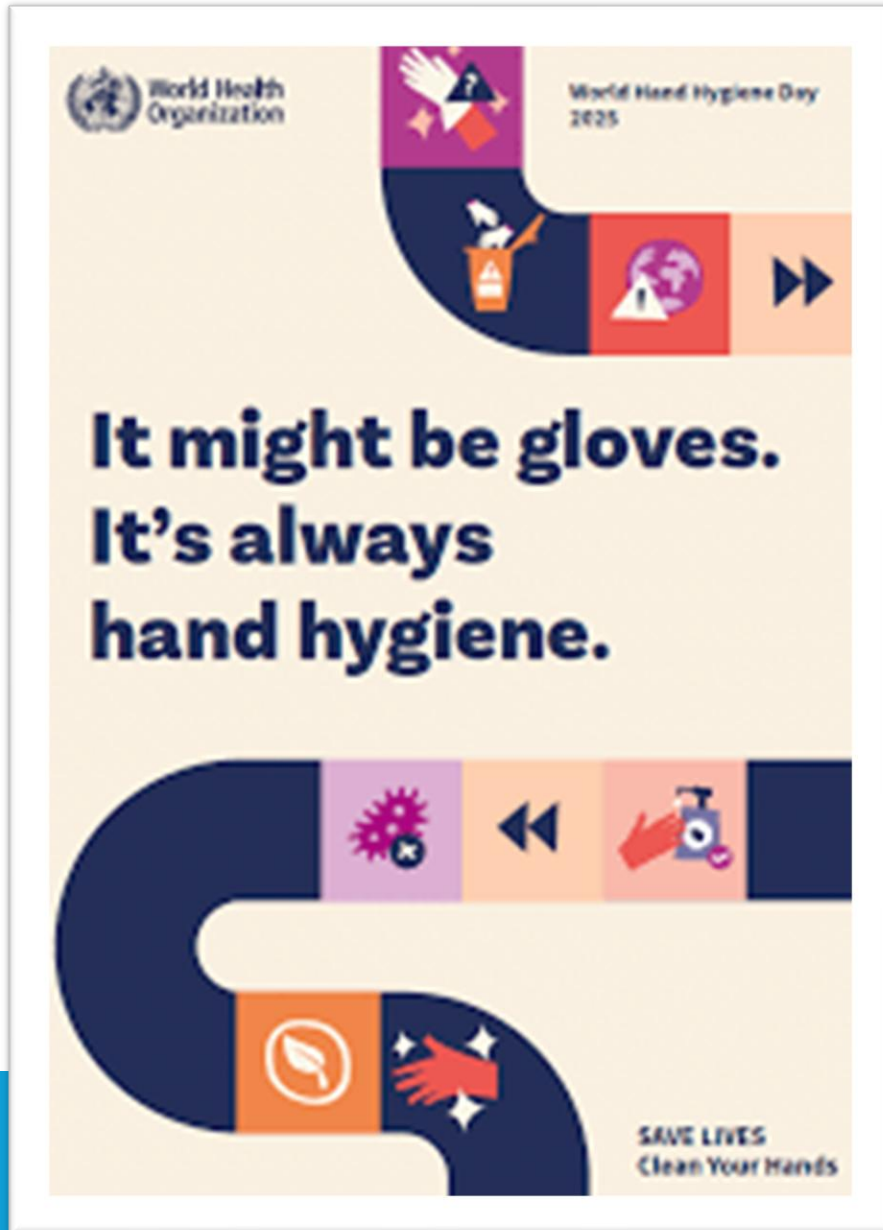


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What is living on our hands?

- Total bacterial counts on the hands of HCW ranges from 40000 to 4 millions CFU!!!
- Two categories of micro-organisms:
 - Transient flora
 - Resident flora (on the surface and deep in the skin layers)
- The patient may be colonized but not infected , so **NO SIGNS OF INFECTION** , But still can be a source !!!
- HH has been accepted as **the most important measure to prevent transmission of infection** and *is the corner stone of most IPC programs*





Can the use of sterile gloves replace hand washing?

- ***NO!!***
- The gloves are not 100% barriers
- The gloves barrier effect decrease by time (hence double gloving is indicated in long duration procedures)
- The gloves can rupture or be torn during the procedure
- Hand washing should be done after removing gloves as warmth and humidity favors the microorganism growth
- The hands can be contaminated even with the use of the gloves

Is there evidence that hand washing matters?

- 1847- Semmelewis insisted that physicians' clean hands with chlorine between each patient.
- Maternal mortality dropped and stayed low.
- Forty years later the practice was not widely used despite good evidence.



Hand Hygiene

The simplest and most effective procedure a HCP can do to prevention the spread of infections is to perform hand hygiene!

- ❖ Identified centuries ago (1847) by Ignaz Semmelweis
- ❖ Surgical scrub became routine in 1829's
- ❖ 1980s hand hygiene officially incorporated into American health care and release of the first national hand hygiene guidelines

Compliance today remains somewhere between 40%- 60%



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- This intervention by Semmelweis represents the first evidence indicating that cleansing hands with an antiseptic agent between patient contacts may reduce healthcare associated transmission of infections more effectively than hand washing with plain soap and water.



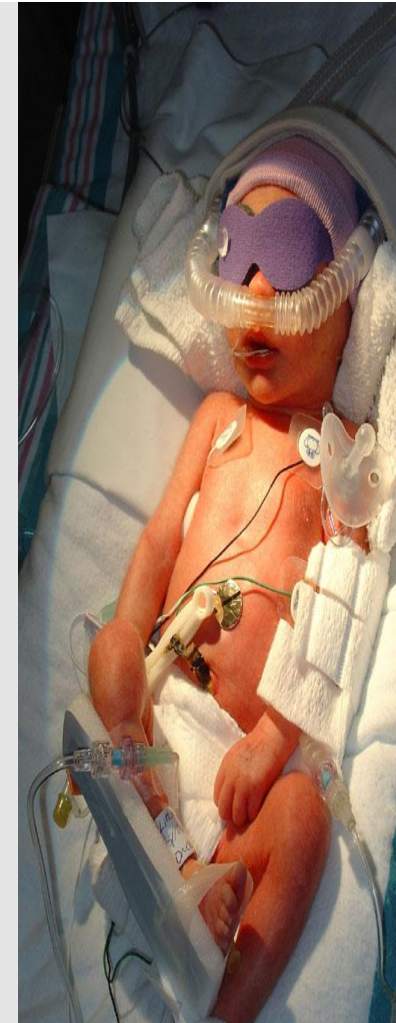
Evidence that supports hand washing

❑ 1960's a prospective trial showed that :

- ✓ Nurses who washed their hands after caring for a child colonized with *S. aureus* transmitted fewer infections to other children.
- ✓ Nurses who did not wash their hands after caring for the infected child transmitted more infections to other children.

❑ Retrospective studies of outbreaks showed that :

- ✓ Lack of hand washing is a risk factor for outbreaks in day care centers, restaurants and hospital infections.
- ✓ For examples: Multiple infections respiratory, E. coli, food-borne illness, hepatitis E, giardia, rotavirus, hepatitis A.



INTERESTING FACTS ABOUT **HAND-WASHING**



80%
diseases are
transmitted
by touch



Only **5%**
of people wash
their hands
correctly



1 in 5
person don't
wash after using
the bathroom



Only **1 in 20**
people actually
wash their hands
with **soap** for
15 seconds
or more



26,000
live bacteria can be
found on an average
banknote



The average
keyboard can
contain more
bacteria than a
toilet seat





who is responsible for public health?

all sectors of society

Health departments

coordinated efforts - other stakeholders

Other areas of government

Private sector

NGOs

International Organizations



**hand
hygiene
saves lives**

Community

**Improving
Health**

Activate Windows.
Go to Settings to activate Windows.



GLOVES ARE NOT ENOUGH

Wearing gloves is NOT a substitute for cleaning your hands.



- ▶ Your hands can get contaminated while wearing or removing gloves.
- ▶ Cleaning your hands after removing your gloves will help prevent the spread of potentially deadly germs.

Protect Yourself.
Protect Your Patients.



Who do your **#CLEANHANDSCOUNT** for?



www.cdc.gov/HandHygiene

This material was developed by CDC. The Clean Hands Count Campaign is made possible by a partnership between the CDC Foundation and GOJO.



Onlinebiologynotes.com



Global Hand Hygiene Standards

- **WHO** Guidelines on Hand Hygiene in Healthcare (2009)
- **CDC** Hand Hygiene Recommendations
- The Joint Commission's hand hygiene compliance requirements
- National patient safety goals emphasizing hand hygiene





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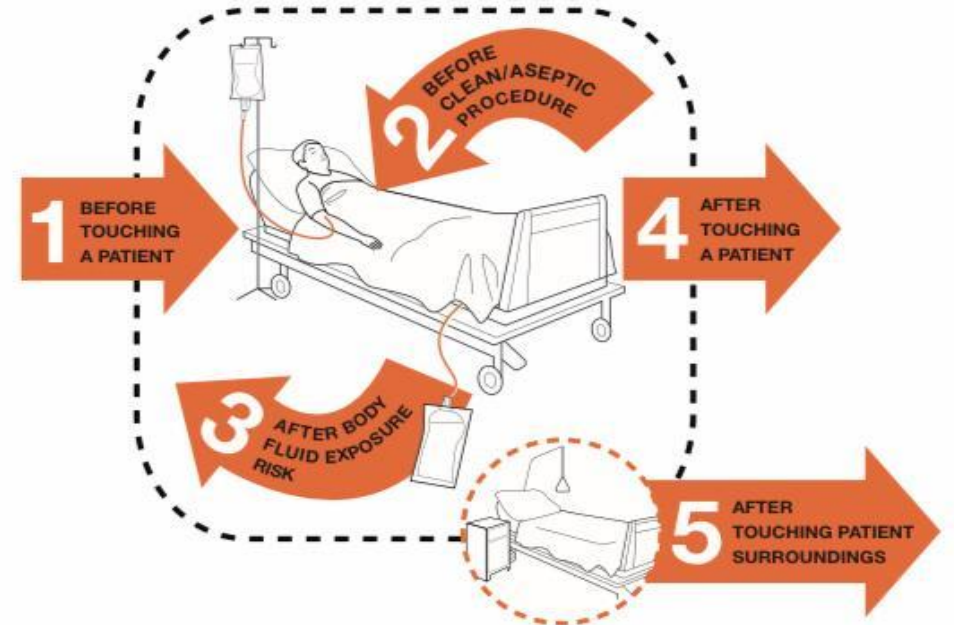
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- **The CDC & WHO Guidelines are designed to encourage alcohol-based hand rub to:**

- Make cleaning your hands faster and easier .
- More effective for standard hand wash than soap
- More accessible than sink
- Improve skin condition
- increase adherence of healthcare workers to recommended hand hygiene procedures
- reduce the spread of microorganisms in healthcare settings

Your 5 Moments for Hand Hygiene



1	BEFORE TOUCHING A PATIENT	WHEN?	Clean your hands before touching a patient when approaching him/her.
		WHY?	To protect the patient against harmful germs carried on your hands.
2	BEFORE CLEAN/ASEPTIC PROCEDURE	WHEN?	Clean your hands immediately before performing a clean/aseptic procedure.
		WHY?	To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3	AFTER BODY FLUID EXPOSURE RISK	WHEN?	Clean your hands immediately after an exposure risk to body fluids (and after glove removal).
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
4	AFTER TOUCHING A PATIENT	WHEN?	Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
5	AFTER TOUCHING PATIENT SURROUNDINGS	WHEN?	Clean your hands after touching any object or furniture in the patient's immediate surroundings, when leaving – even if the patient has not been touched.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.



World Health Organization

Patient Safety

A World Alliance for Safer Health Care

SAVE LIVES

Clean Your Hands

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AI ROLE IN Hand hygiene compliance rates

The Electronic Hand Hygiene Compliance System
You Can Trust to Drive Clinical Outcomes

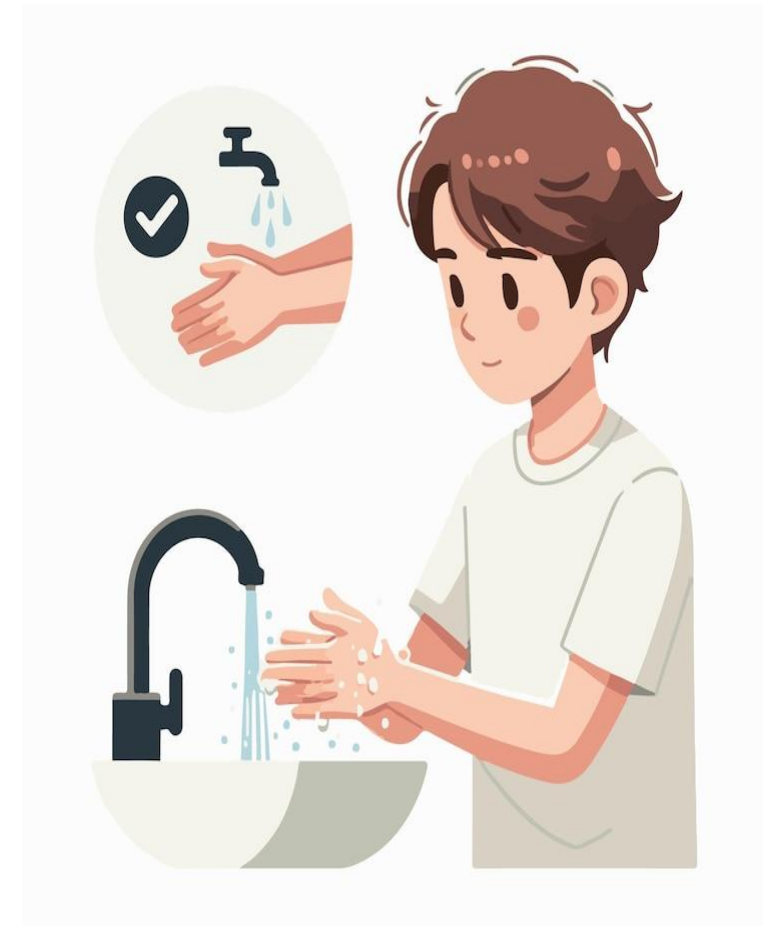
USE OF ARTIFICIAL INTELLIGENCE IN DAILY LIFE



Benefits of Using Intelligent Observation



- ✓ Measures “**Bed Zone Proximity**” (accurate proxy for the WHO 5 Moments) and/or “**In and Out**” hand hygiene compliance standard
- ✓ Provides both **group** and **individual level** reporting
- ✓ Works with **any brand** of soap and/or sanitizer
- ✓ Captures/reports **hand washing duration** – only solution in the world to do so!
- ✓ Totally stand alone – **no integration with hospital** Wi-Fi, network etc. – no IT support required
- ✓ Helps facilities meet the monitoring requirements for **Leapfrog's** Hand Hygiene Standard.



New SureWash Hand Hygiene APP

Available on iOS



surewash



Date: _____


Opportunities for hand hygiene	Number of times feedback given											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Before touching patient												
2. After touching patient												
3. Before a clean/aseptic procedure												
4. After touching patient's body fluids												
5. After touching patient surroundings												
6. At entry into main unit												
7. At exit from main unit												
8. Before wearing gloves												
9. After removing gloves												

Signature: _____

Print Name: _____



(WHO) Hand Hygiene observation form (data collection)

 World Health Organization			Patient Safety <small>A World Alliance for Safer Health Care</small>			SAVE LIVES <small>Clean Your Hands</small>		
Observation Form								
Facility: _____			Period Number*: _____			Session Number*: _____		
Service: _____			Date: ____ / ____ / ____			Observer: _____		
Ward: _____			Start/End time: ____ : ____ / ____ : ____			Page N°: _____		
Department: _____			Session duration: ____ (mm)			City**: _____		
Country**: _____								

Prof.cat Code N°	Opp.	Indication	HH Action	Prof.cat Code N°	Opp.	Indication	HH Action	Prof.cat Code N°	Opp.	Indication	HH Action	Prof.cat Code N°	Opp.	Indication	HH Action
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* To be completed by the data manager.
 ** Optional, to be used if appropriate, according to the local needs and regulations.

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WHO acknowledges the Hôpitaux Universitaires de Genève (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.

The observer point of view

Indications and opportunity for hand hygiene

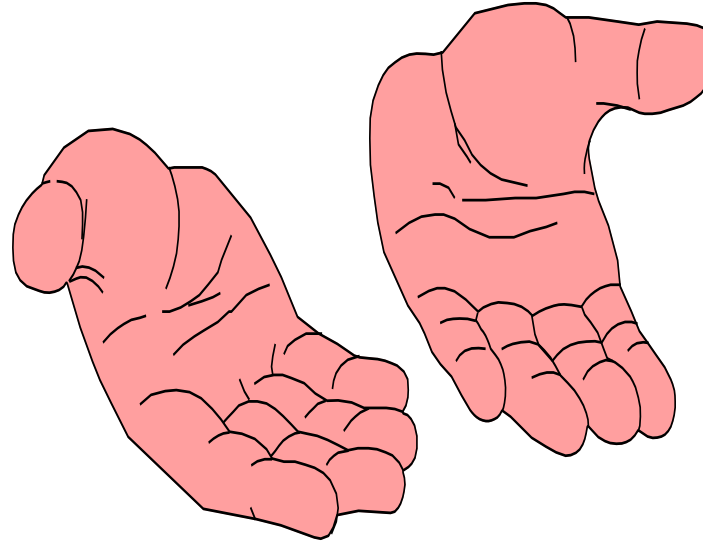
- The opportunity is the number of times hand hygiene is necessary
- Indications are the reasons for hand hygiene
- Indications are not exclusive and may be single or multiple at a time
- At least one indication defines the opportunity
- Multiple indications may define one opportunity

Opp.	Indication	HH Action
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- ✓ Tracking hand hygiene compliance BY measuring a percentage where the numerator is the total number of times an HCW was observed to have appropriately washed his or her hands before and after a patient encounter. The denominator is the total number of observations made.

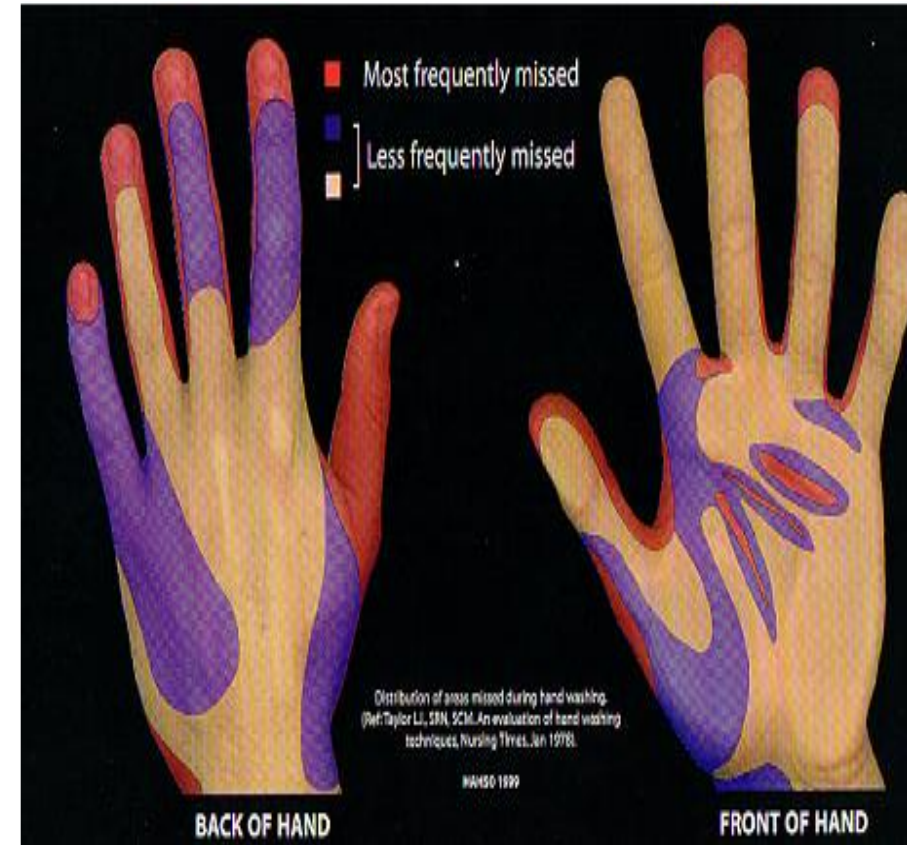
Hand Hygiene Compliance Rates to give a mirror to good practice

- Compliance with hand hygiene protocols is a key quality indicator in hospitals.
- Studies show that hand hygiene compliance rates vary between 30% and 70%.
- Increasing compliance leads to reduced infection rates, better patient outcomes and less hospital stay.



✓ Soap can be a source of pathogens

- If bar soap is used, use small bars.
- Drain soap on racks to decrease growth.
- Clean liquid soap containers when empty; liquids should not be added to a partially full dispenser
- Small amounts of antiseptics or soaps should be available for a shift or a working day. Change or refill after disinfection of the container.



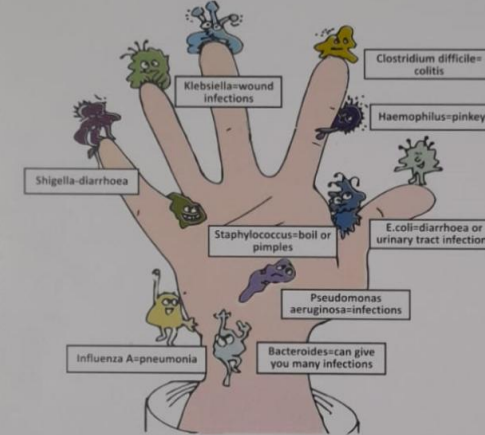
Updates— What We Should Not Be Doing

1. Do not use hot water for hand washing because it can irritate the skin.
2. Do not use ABHR when hands are visibly soiled.
3. Do not use triclosan-containing soaps.
 1. Lack of evidence supporting its effectiveness compared with chlorhexidine gluconate soaps or ABHR.
 2. Potential to promote antimicrobial resistance
4. Do not use self-report as the primary method of hand hygiene adherence measurement.
 1. Use direct observation, product volume measurement, automated systems or a combination of strategies to measure compliance



Clean Hands Save Lives

Why...



Where...

Wash all surfaces thoroughly



How...

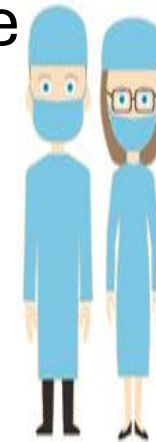
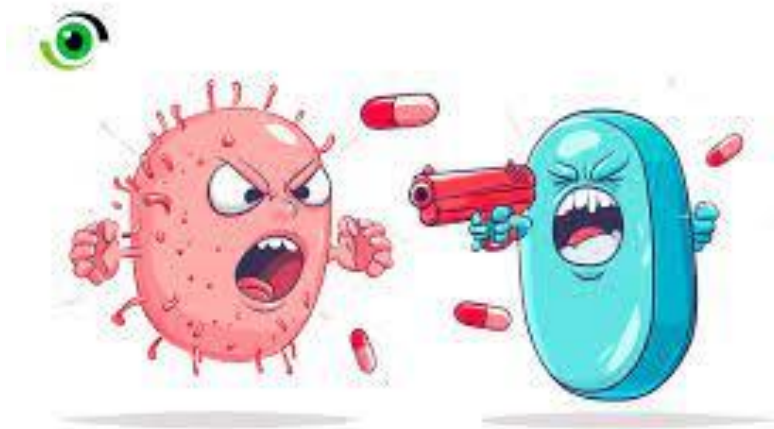


When...



Consequences of Poor Hand Hygiene

- Increased risk of healthcare-associated infections (HAIs)
- Higher morbidity and mortality rates
- Longer hospital stays and increased healthcare
- Spread of antimicrobial resistance (AMR)



50%

of surgical teams
do not follow
the standard hygiene
practices



35%

of health care
facilities in low
and middle income
countries
do not have
soap and water
for hand hygiene

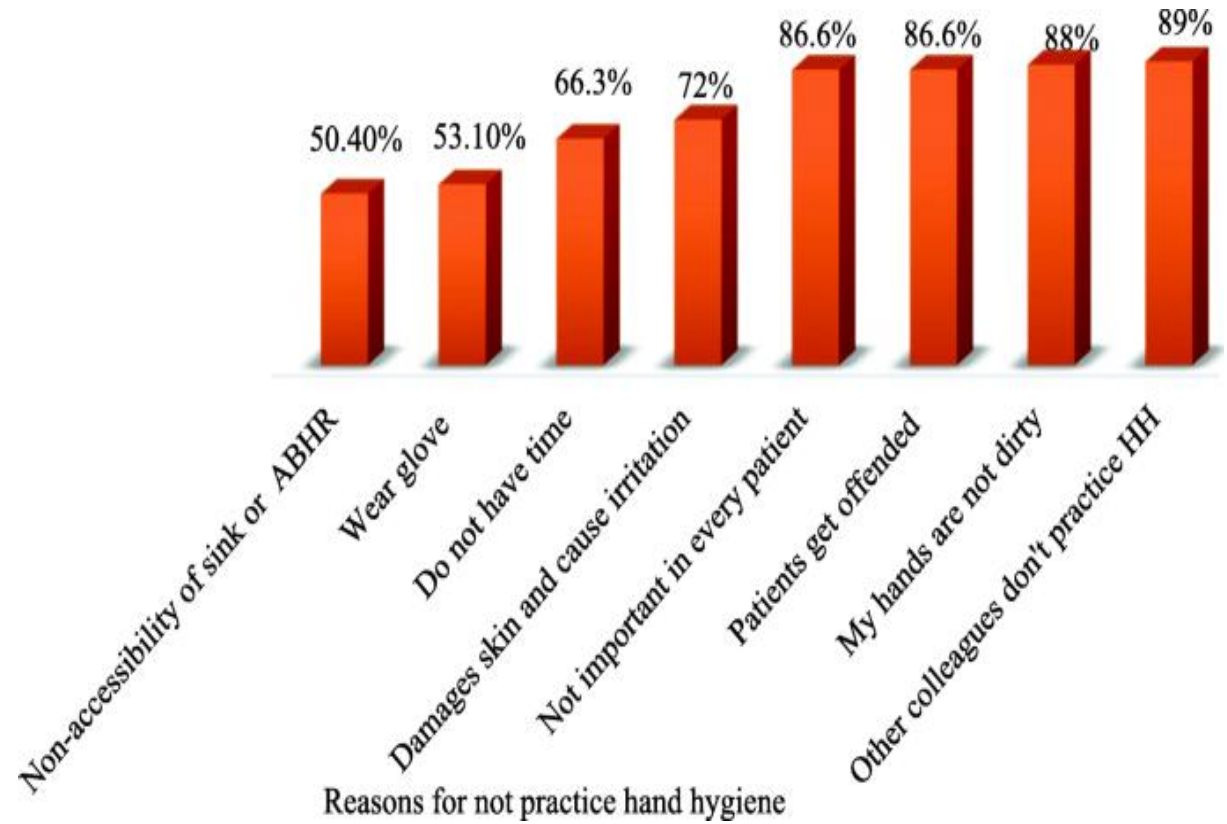
Case Studies: Effectiveness of Hand Hygiene

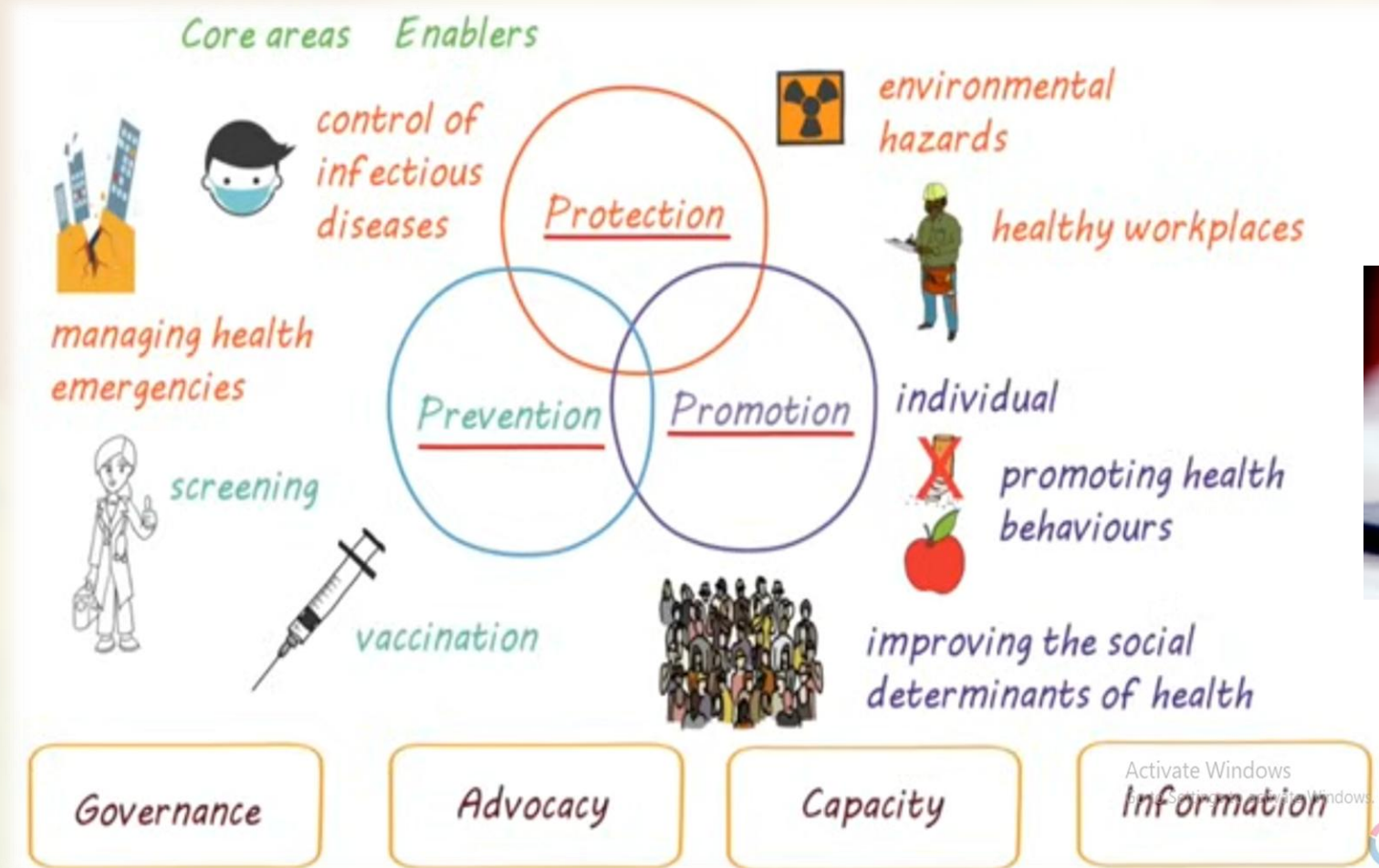
- 1. **WHO Hand Hygiene Campaign (2005-Present)**
 - Implemented in over 180 countries
 - Reduced healthcare-associated infections (HAIs) by 50%
- 2. **Pitt County Memorial Hospital, USA**
 - Improved hand hygiene compliance from 58% to 96%
 - ❑ Reduced MRSA infection rates by 75%
- 3. **Geneva University Hospital, Switzerland**
 - 10-year study showed increased hand hygiene compliance
 - Resulted in a 41% reduction in nosocomial infections



Reasons for poor compliance

- Hand washing is believed not be important.
- Using gloves can replace hand washing.
- Lack of role models.
- There are no policies or protocols of hand washing.
- Rarity of sinks.
- Hand washing supplies not available.
- Skin irritation and dryness.
- Insufficient time & lots of tasks.
- Lack of staff & large number of patients





How to Improve Hand Hygiene Compliance?

- Regular hand hygiene training for healthcare workers
- Implementation of WHO's 'My 5 Moments for Hand Hygiene' approach
- Availability of hand sanitizers at key points of care
- Use of electronic monitoring systems to track compliance
- Use soap and water when hands are visibly dirty
- Hand sanitizer (at least 60% alcohol) is a good alternative when soap is unavailable

ALCOHOL-BASED HAND RUBS (ABHR)

ABHRs are the preferred method for hand hygiene in most situations.

Exceptions: Use soap and water if hands are visibly dirty or contaminated; after exposure to spore forming bacteria such as *C. difficile*; and after using the bathroom.



POST COVID ERA

Handwashing is one of the key cornerstones of COVID-19 prevention. Now more than ever as we embrace the new normal and live with COVID-19.

It becomes an integral part of our daily routine and our lives, as we live through this pandemic, and beyond, to protect us from diseases.

COVID-19 transmission mainly through direct contact with infected people via mouth and nose secretions, or indirect contact (through contaminated objects or surfaces)

SO, washing hands with soap and running water is of critical importance.



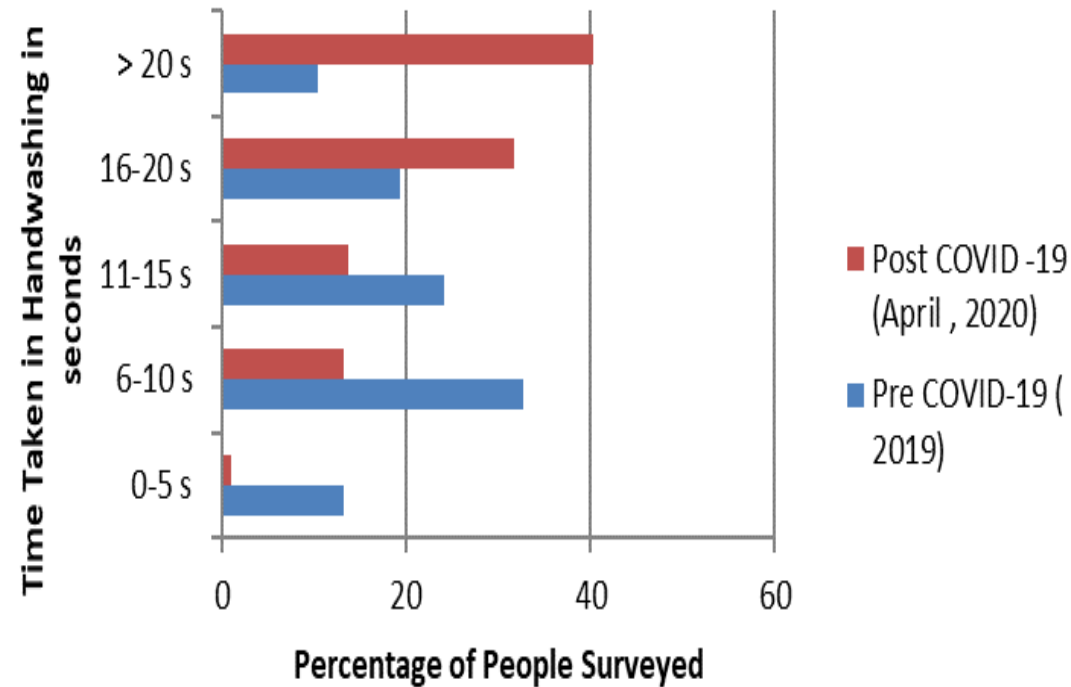
Hand hygiene practice reflected significantly on HAIs, mainly gastrointestinal tract & respiratory tract infections.



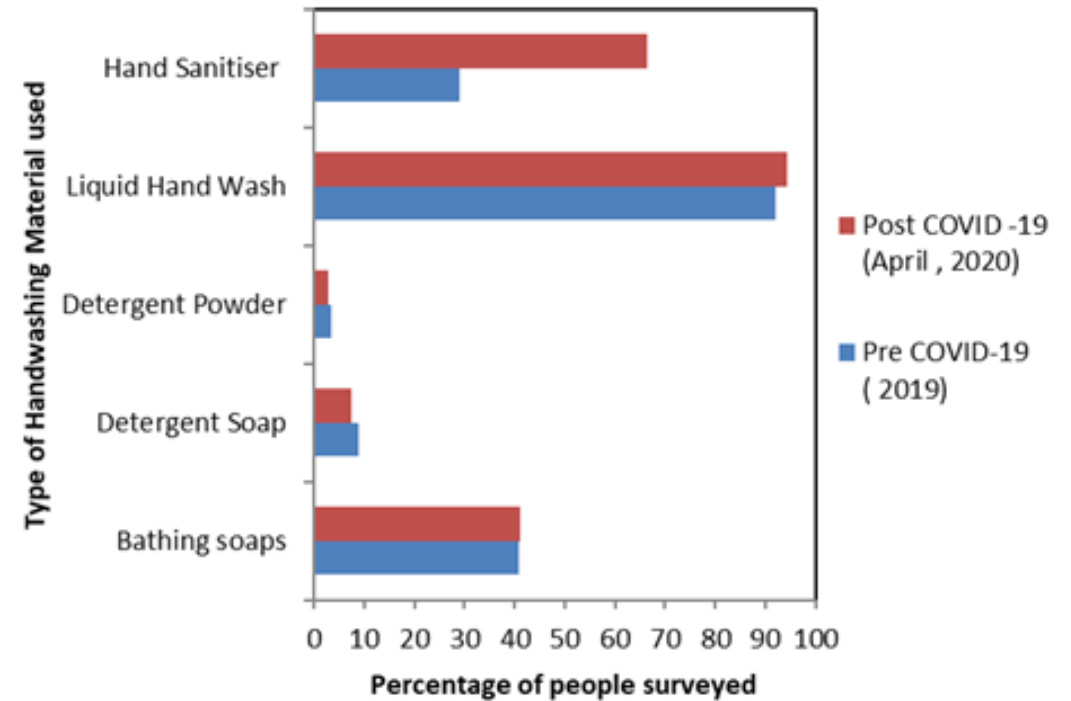
For each opportunity to perform hand wash or hand rub gives the chance to control many communicable microorganisms.

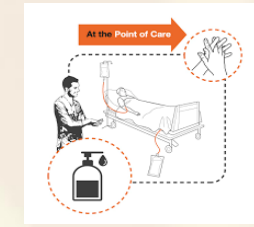
Post COVID ERA

Changes in time taken in Hand Washing



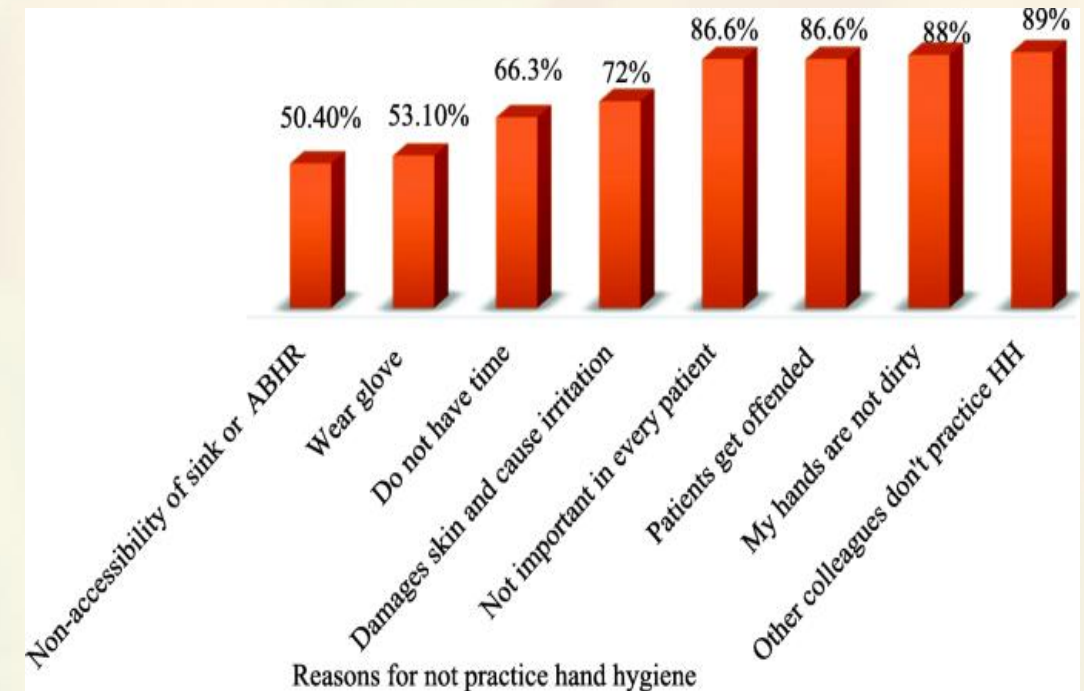
Change in use of safe hand washing material



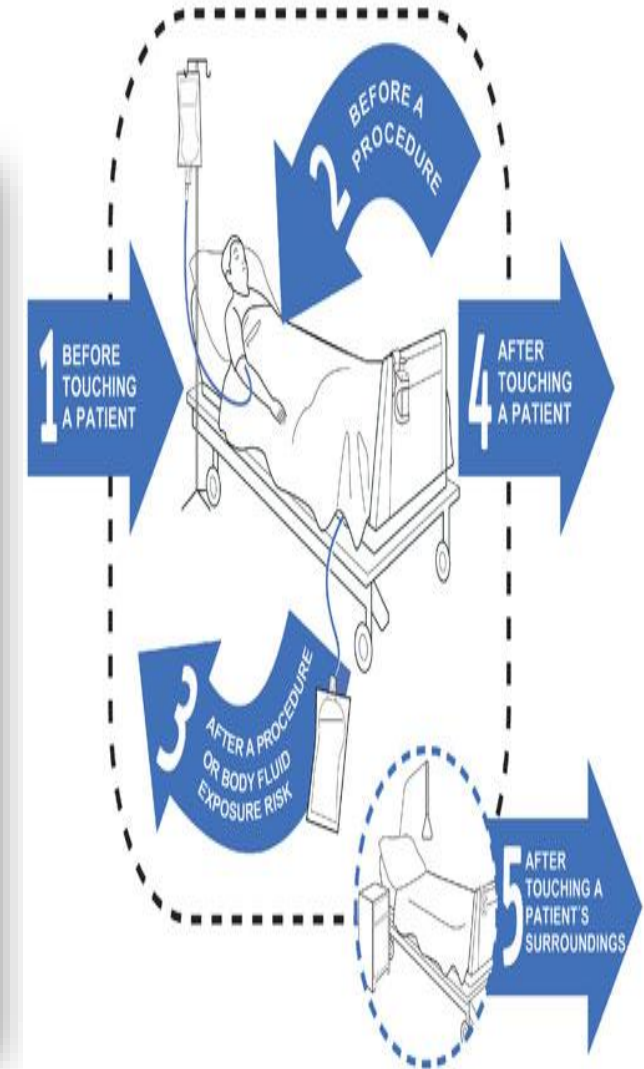
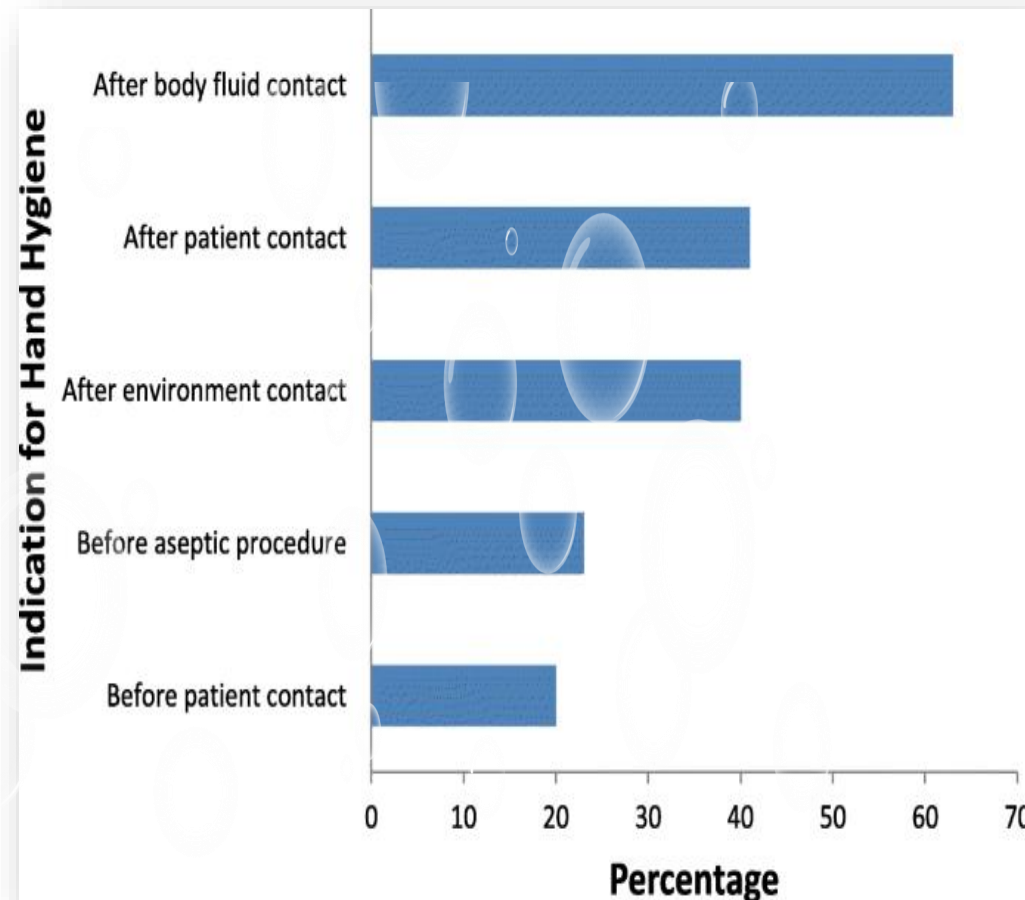
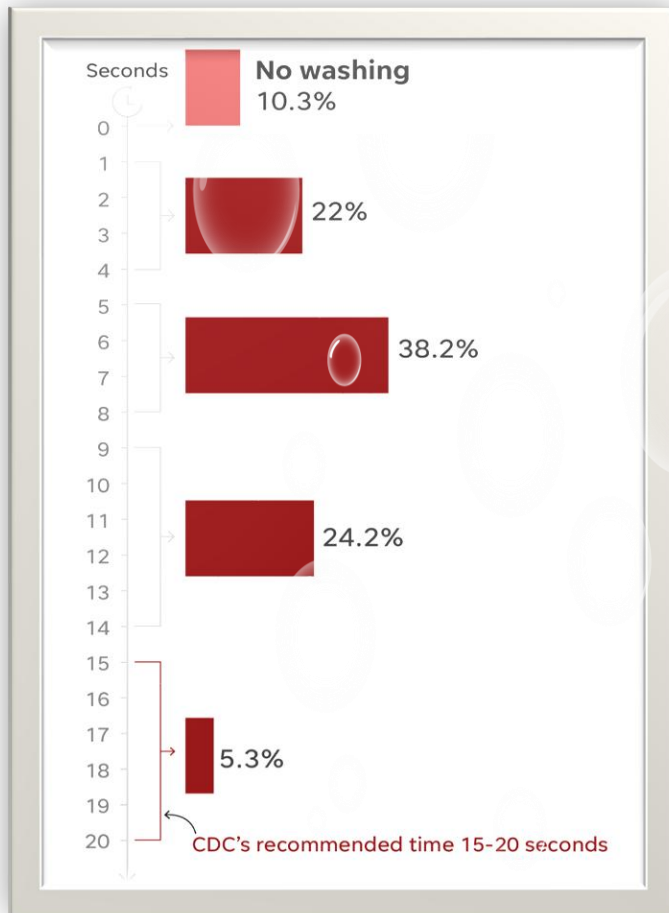


Many studies have proven the close association between hand hygiene practicing & reduction of many infectious agents especially Coronavirus.

- There was a statistically significant association between COVID-19 infection and hand washing ($p < 0.001$).
- Frequent use of Anti-Bacterial Hand Rub was associated with lower odds of infection (aOR: 0.26; 95% CI: 0.13, 0.52), but frequent hand washing showed no significant effect



Studies on proper timing & technique reveals the following results



- **Many studies have proven the close association between hand hygiene practicing & reduction of many infectious agents.**

Improving hand hygiene practice reduces HAIs by considerable rates either Gastrointestinal **BY 31%** & Respiratory infections **BY 22 %**

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HH Products : antimicrobial activity

Antimicrobial activity and summary of properties of antiseptics used in hand hygiene

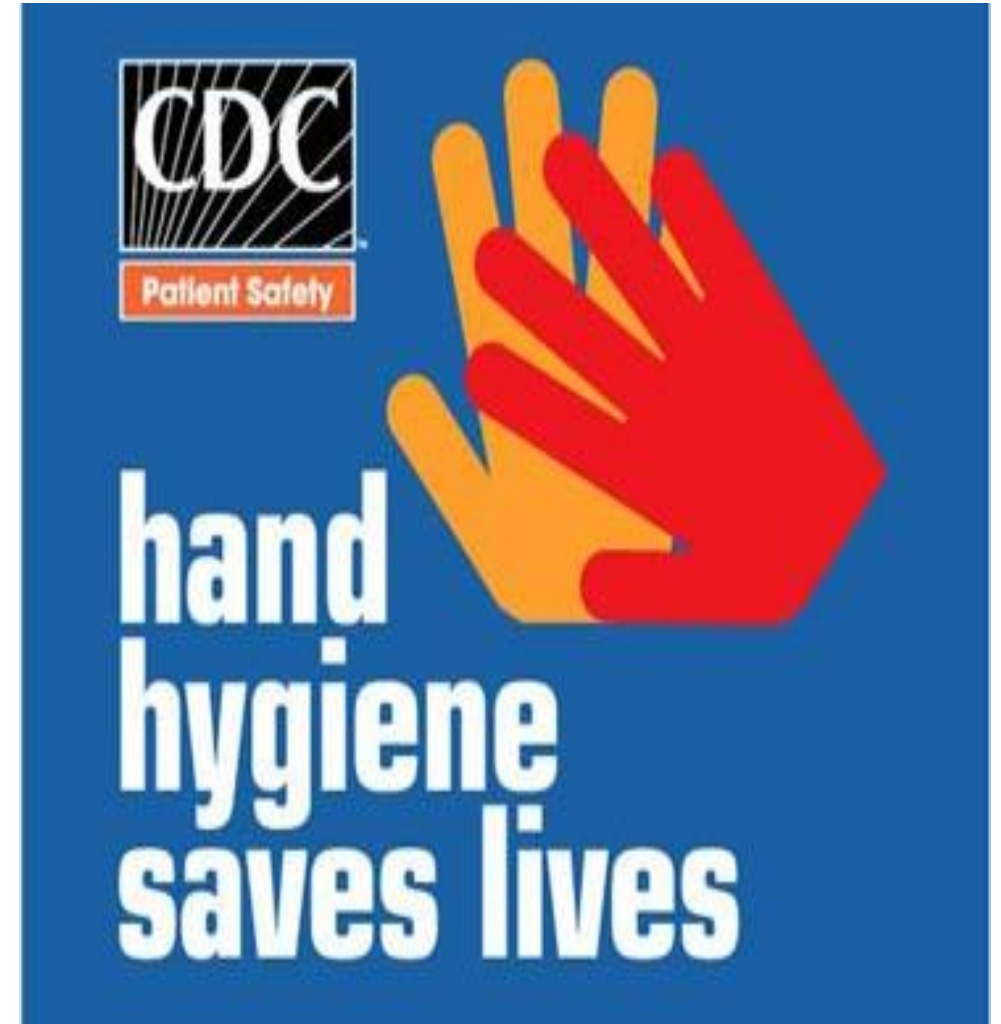
Antiseptics	Gram-positive bacteria	Gram-negative bacteria	Viruses enveloped	Viruses non-enveloped	Myco-bacteria	Fungi	Spores
Alcohols	+++	+++	+++	++	+++	+++	-
Chloroxylenol	+++	+	+	±	+	+	-
Chlorhexidine	+++	++	++	+	+	+	-
Hexachlorophene ^a	+++	+	?	?	+	+	-
Iodophors	+++	+++	++	++	++	++	± ^b
Triclosan ^d	+++	++	?	?	±	± ^a	-
Quaternary ammonium compounds ^e	++	+	+	?	±	±	-

HH Products : antimicrobial activity

Antiseptics	Typical conc. in %	Speed of action	Residual activity	Use
Alcohols	60-80 %	Fast	No	HR
Chloroxylonol	0.5-4 %	Slow	Contradictory	HW
Chlorhexidine	0.5-4%	Intermediate	Yes	HR,HW
Hexachlorophene ^a	3%	Slow	Yes	HW, but not recommended
Iodophors	0.5-10 %)	Intermediate	Contradictory	HW
Triclosan ^d	(0.1-2%)	Intermediate	Yes	HW; seldom
Quaternary ammonium compounds ^e		Slow	No	HR,HW; Seldom; +alcohols

Take home messages

- **Hand hygiene is a vital healthcare quality indicator.**
- **Vigorous handwashing for 40-60 seconds with soap and water is the first choice to break the chain of infections.**
- **Hand sanitizer containing at least 70% alcohol, properly applied, is also effective except in case of visibly wet or Presence of dirt.**
- **Compliance reduces infections and improves patient outcomes.**
- **Hospitals should implement monitoring and training programs especially AI supplemented tools.**
- **Everyone has a key role in maintaining good hand hygiene.**

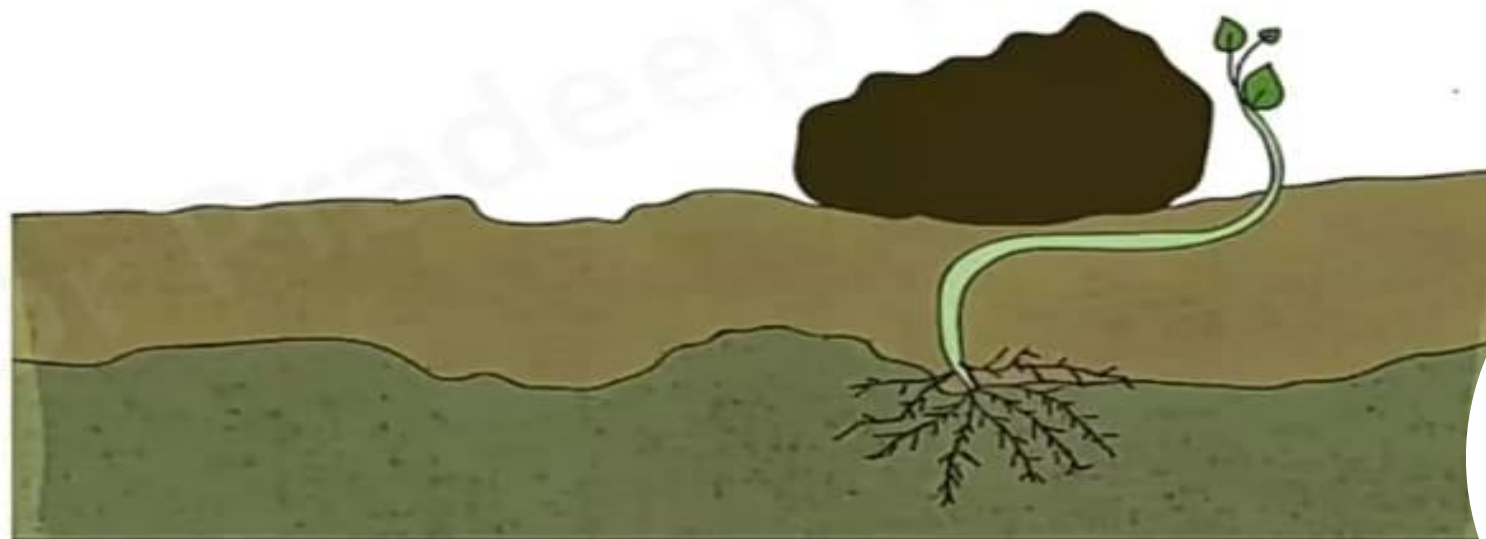


We don't grow when
things are easy,
we grow when we face
challenges.



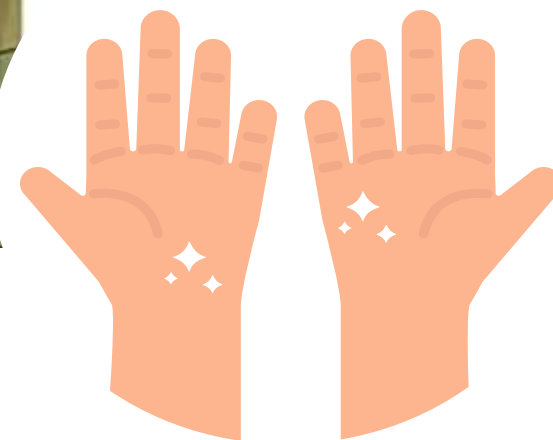
THANK
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