



National Training of Trainers for

**C**  **VID-19**

6 March 2020 | New Delhi

# Infection Prevention & Control

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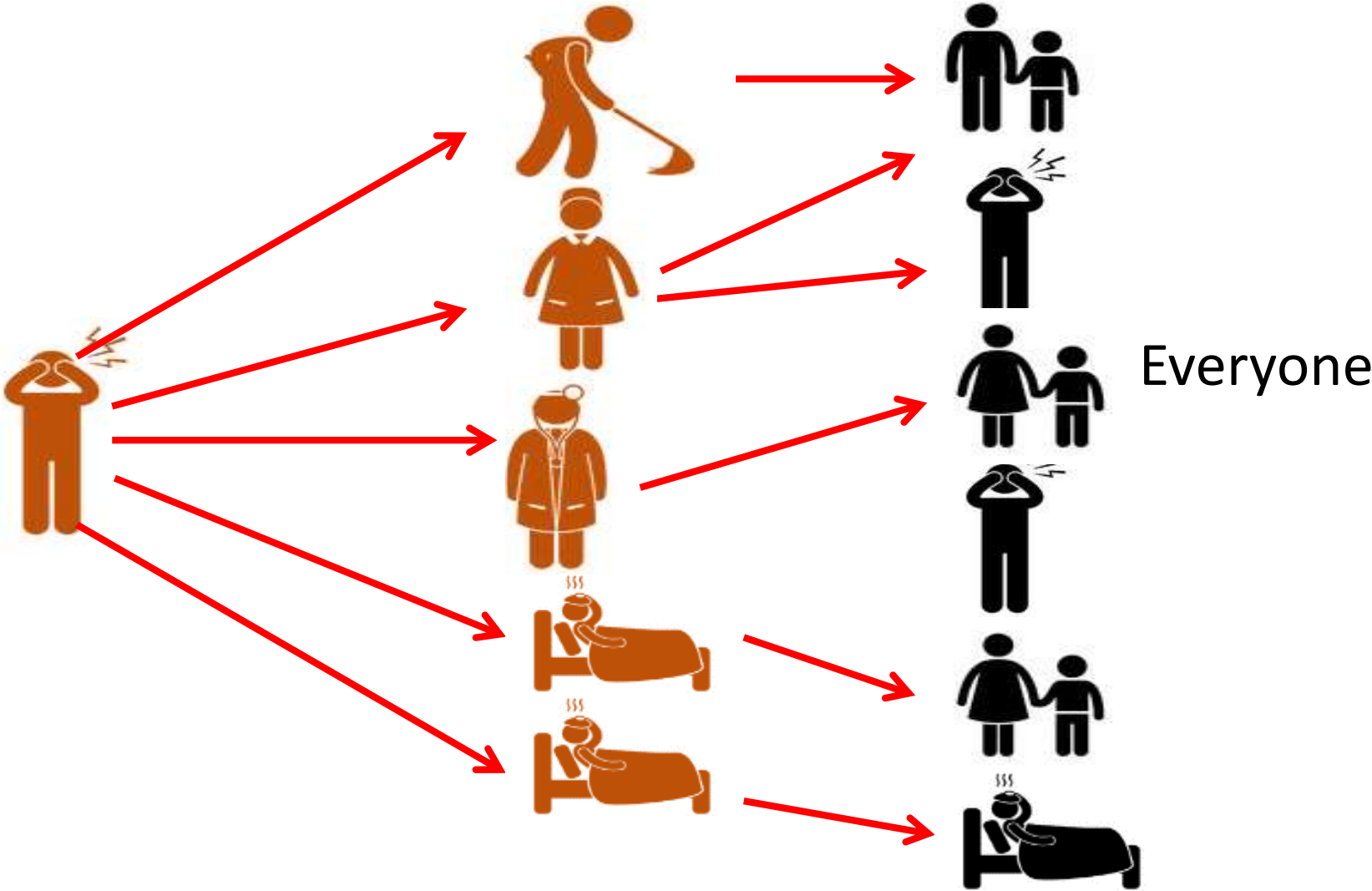
COVID 19 TOT March 2020

# What is infection prevention and control?

Infection prevention and control is:

- a scientific approach with
- practical solutions designed to prevent harm, caused by infections, to patients and health care workers
- grounded in principles of infectious disease, epidemiology, social science and health system strengthening, and
- rooted in patient safety and health service quality

# Who is at risk of infection?



# Benefits of IPC



Protecting yourself



Protecting your patients



Protecting your family, community & environment

# IPC goals in outbreak preparedness



1. To reduce transmission of health care associated infections
2. To enhance the safety of staff, patients and visitors
3. To enhance the ability of the organization/health facility to respond to an outbreak
4. To lower or reduce the risk of the hospital (health care facility) itself amplifying the outbreak

## **Role of the IPC focal point, team or committee**


- Knowledge: have an understanding of the IPC strategies needed for outbreaks/epidemics, etc
- Assessment, preparedness and readiness
- Policy and SOPs development
- Participate in response and recovery
- Participate in surveillance & monitoring
- Patient management
- Infrastructure for patient management
- Education

# General advice for COVID-19


- Avoid close contact with people suffering from acute respiratory infections
- Frequent hand hygiene, especially after direct contact with ill people or their environment
- People with symptoms of acute respiratory infection should practice
  - respiratory etiquette
  - wear a medical mask
  - seek medical care for advice

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## Reduce the risk of Coronavirus infection Follow these important precautions




1  
Wash hands with soap and water frequently



2  
When coughing and sneezing, cover mouth and nose with handkerchief, tissue or elbow



3  
Avoid close contact with anyone with cold, cough or flu like symptoms



If you have cough, fever or difficulty in breathing, contact a doctor immediately

**Stay protected!** **Stay safe from Coronavirus!**

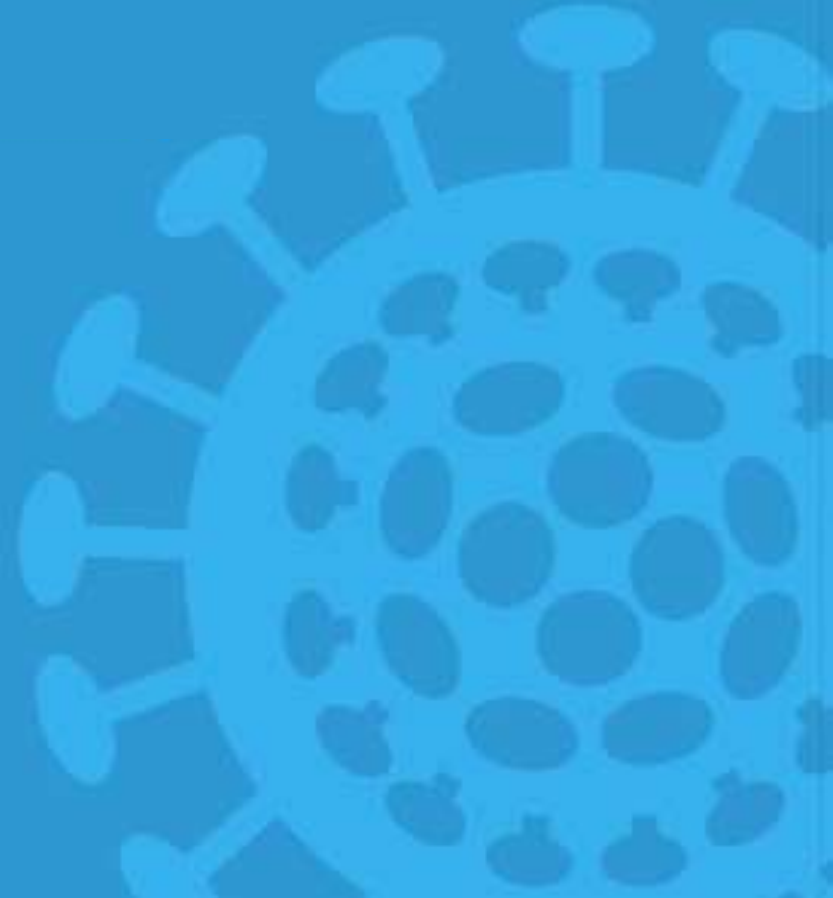
If you have returned from Wuhan China after January 15, then get yourself tested for 2019-nCoV. To know about the centres for testing, call the Ministry of Health and Family Welfare Helpline

If you have returned from China in the last 15 days or have been in contact with any person affected by Coronavirus, then limit your contact with others and use a separate room for sleeping

If you develop fever, cough and difficulty in breathing within 28 days of return from China, immediately call the Ministry of Health and Family Welfare Helpline

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# IPC strategies

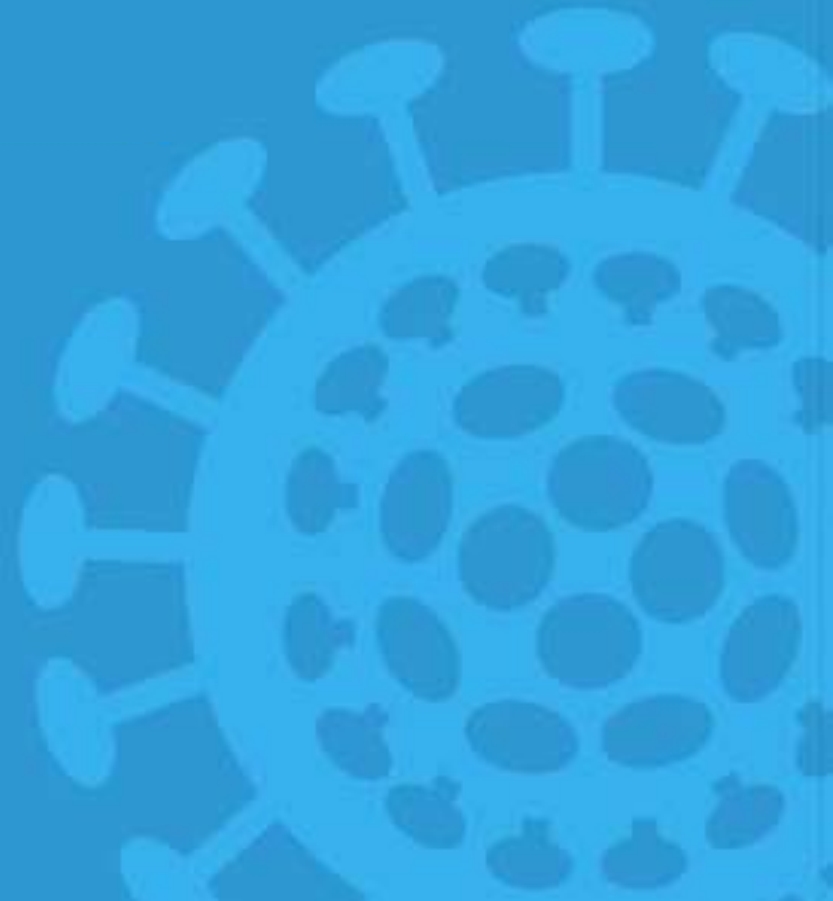




# IPC strategies for preventing/limiting the spread of COVID-19

- Applying standard precautions for all patients
- Ensuring triage, early recognition, and source control
- Implementing empiric additional precautions for suspected cases of COVID-19 infection
- Implementing administrative controls
- Using environmental and engineering controls.

# Standard Precautions



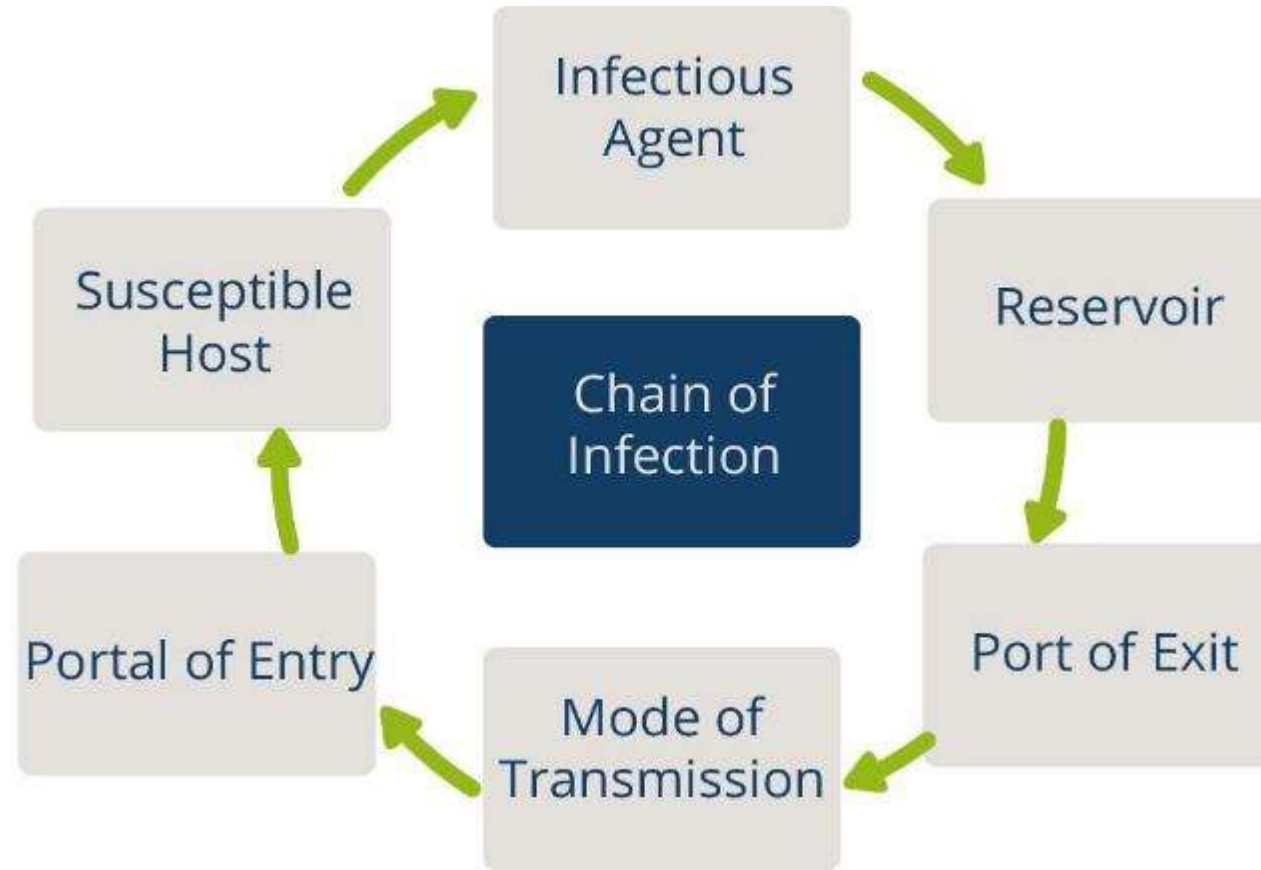
# Standard precautions

- The *basic level of IPC precautions*, to be used for **ALL** patients at **ALL** times regardless of suspected or confirmed status of the patient
- **Risk assessment** is critical for all activities, i.e. assess each health care activity and determine the personal protective equipment (PPE) that is needed for adequate protection

# Elements of Standard Precautions

1. Hand hygiene
2. Respiratory hygiene (etiquette)
3. PPE according to the risk
4. Safe injection practices, sharps management and injury prevention
5. Safe handling, cleaning and disinfection of patient care equipment
6. Environmental cleaning
7. Safe handling and cleaning of soiled linen
8. Waste management

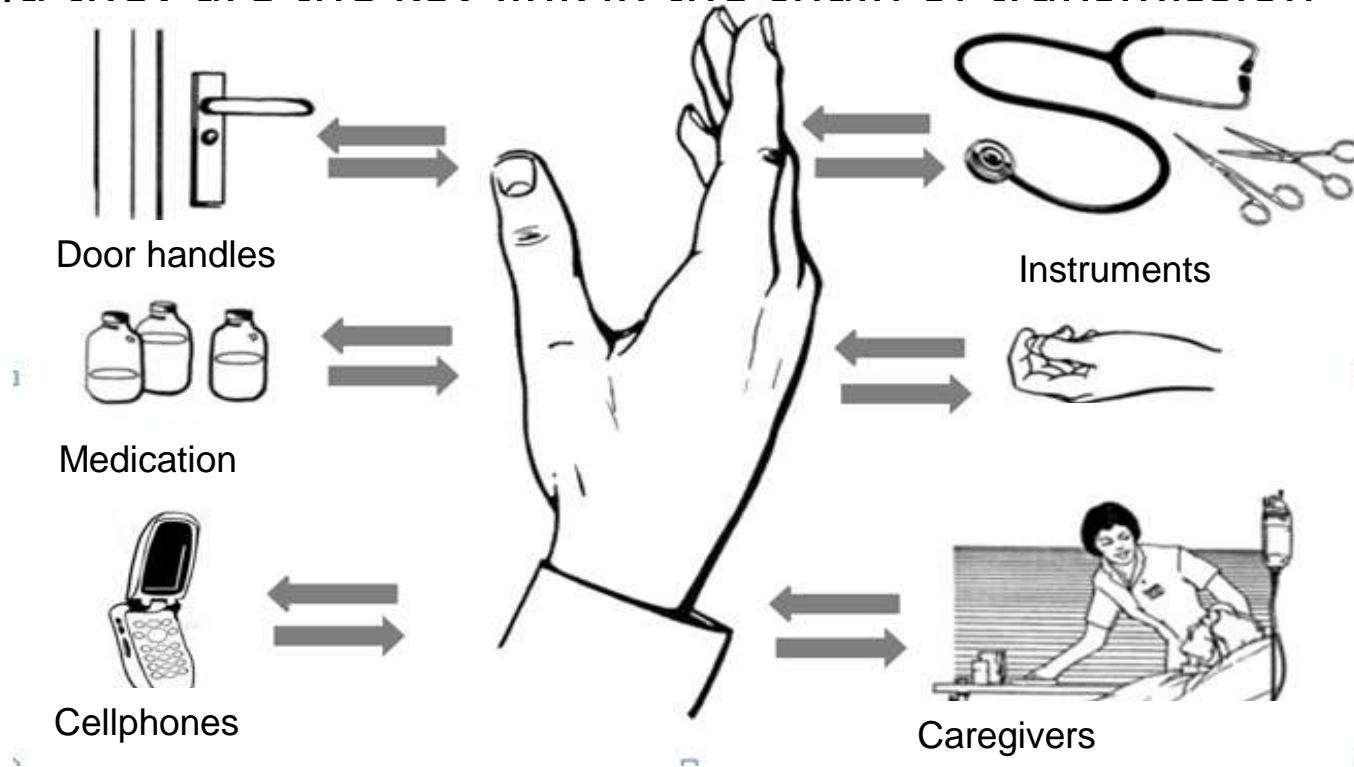
# Chain of Transmission



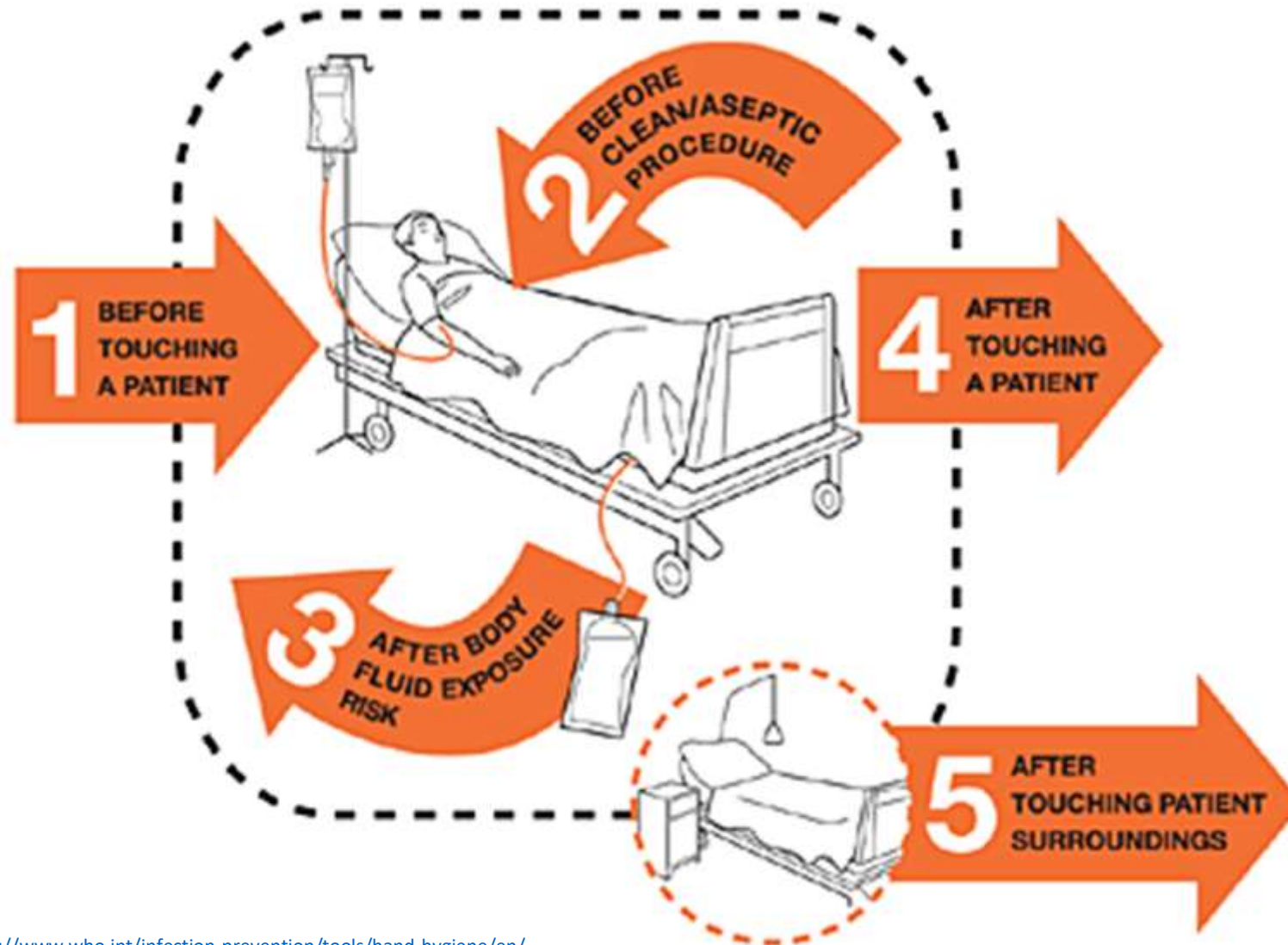
- For an infection to spread, all links must be connected
- Breaking any one link, will stop disease transmission!

# Hand Hygiene

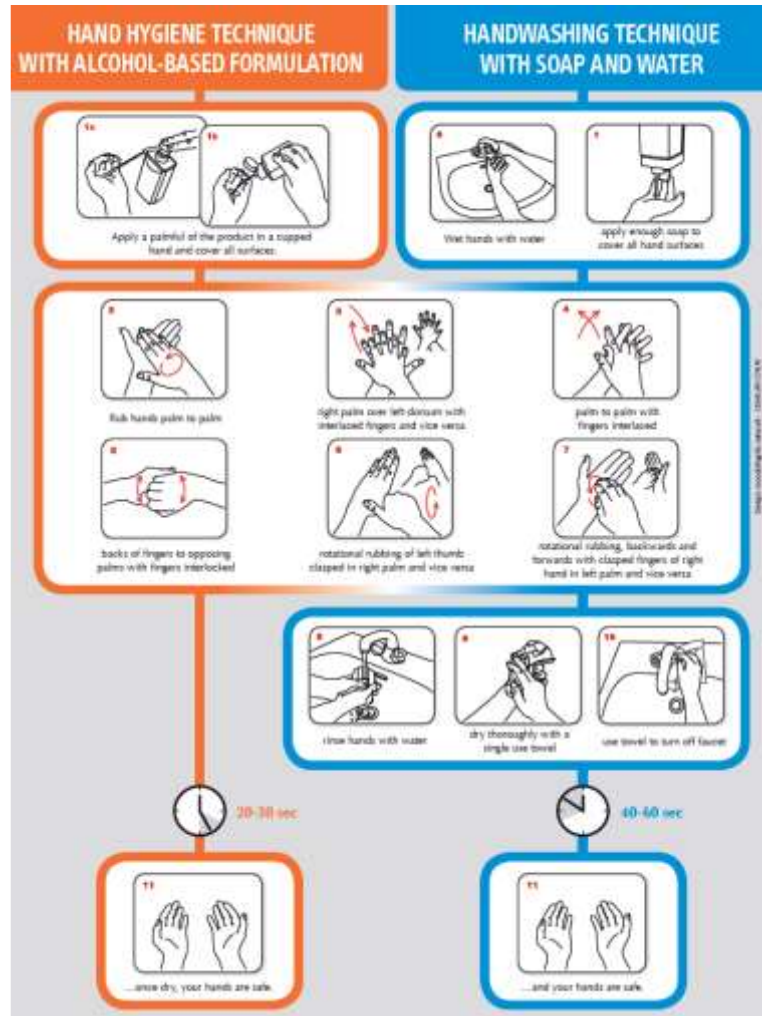
- Best way to prevent the spread of germs in the health care setting and community
- Our hands are our main tool for work as health care workers- and they are the key link in the chain of transmission



# Hand hygiene: WHO 5 moments



# Hand hygiene: HOW



- Use appropriate product and technique
- An alcohol-based hand rub product is preferable, if hands are not visibly soiled
  - **Rub hands for 20–30 seconds!**
- Soap, running water and single use towel, when visibly dirty or contaminated with proteinaceous material
  - **Wash hands for 40–60 seconds!**



# How to handrub?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

**⌚** Duration of the entire procedure: 20-30 seconds



Apply a palmful of the product in a cupped hand, covering all surfaces;

Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;

Palm to palm with fingers interlaced;

Backs of fingers to opposing palms with fingers interlocked;



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

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

Once dry, your hands are safe.

# How to handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

**⌚** Duration of the entire procedure: 40-60 seconds



Wet hands with water;

Apply enough soap to cover all hand surfaces;

Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;

Palm to palm with fingers interlaced;

Backs of fingers to opposing palms with fingers interlocked;



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

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

Rinse hands with water;



Dry hands thoroughly with a single use towel;

Use towel to turn off faucet;

Your hands are now safe.

# Respiratory hygiene/etiquette

Reduces the spread of microorganisms (germs) that cause respiratory infections (colds, flu).

- Turn head away from others when coughing/sneezing
- Cover the nose and mouth with a tissue.
- If tissues are used, discard immediately into the trash
- Cough/sneeze into your sleeve if no tissue is available
- Clean your hands with soap and water or alcohol based products

Do not spit here and there

Image source: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>



# Promoting respiratory hygiene

- Encourage handwashing for patients with respiratory symptoms
- Provide masks for patients with respiratory symptoms
- Patients with fever + cough or sneezing should be kept at least 1m away from other patients
- Post visual aids reminding patients and visitors with respiratory symptoms to cover their cough



# PPE for use in health care for COVID-19

**Face Mask**



**Nose + mouth**

**N95 Mask**



**Nose + mouth**

**Face shield**



**Eyes + nose + mouth**

**Goggle**



**Eyes**

**Gown**



**Body**

**Apron**



**Body**

**Gloves**



**Hands**

**Head cover**



**Head + hair**

# Risk Assessment and Standard Precautions

- **Risk assessment**: risk of exposure and extent of contact anticipated with blood, body fluids, respiratory droplets, and/or open skin
  - Select which PPE items to wear based on this assessment
  - Perform hand hygiene according to the WHO “5 Moments”
  - Should be done for each patient, each time

**Make this routine!**

# Minimize direct unprotected exposure to blood and body fluids

SCENARIO	HAND HYGIENE	GLOVES	GOWN	MEDICAL MASK	EYE-WEAR
Always before and after patient contact, and after contaminated environment	x				
If direct contact with blood and body fluids, secretions, excretions, mucous membranes, non-intact skin	x	x			
If there is risk of splashes onto the health care worker's body	x	x	x		
If there is a risk of splashes onto the body and face	x	x	x	x	x

# Principles for using PPE (1)

- Always clean your hands before and after wearing PPE
- PPE should be available where and when it is indicated
  - in the correct size
  - select according to risk or per transmission based precautions
- Always put on before contact with the patient
- Always remove immediately after completing the task and/or leaving the patient care area
- NEVER reuse disposable PPE
- Clean and disinfect reusable PPE between each use

# Principles for using PPE (2)

- Change PPE immediately if it becomes contaminated or damaged
- PPE should not be adjusted or touched during patient care; specifically
  - never touch your face while wearing PPE
  - if there is concern and/or breach of these practices, leave the patient care area when safe to do so and properly remove and change the PPE
  - Always remove carefully to avoid self-contamination (from dirtiest to cleanest areas)



# The seven steps to safe injections

1 Clean work space

2 Hand hygiene

3 Sterile safety-engineered syringe

4 Sterile vial of medication and diluent

5 Skin cleaning and antisepsis

6 Appropriate collection of sharps

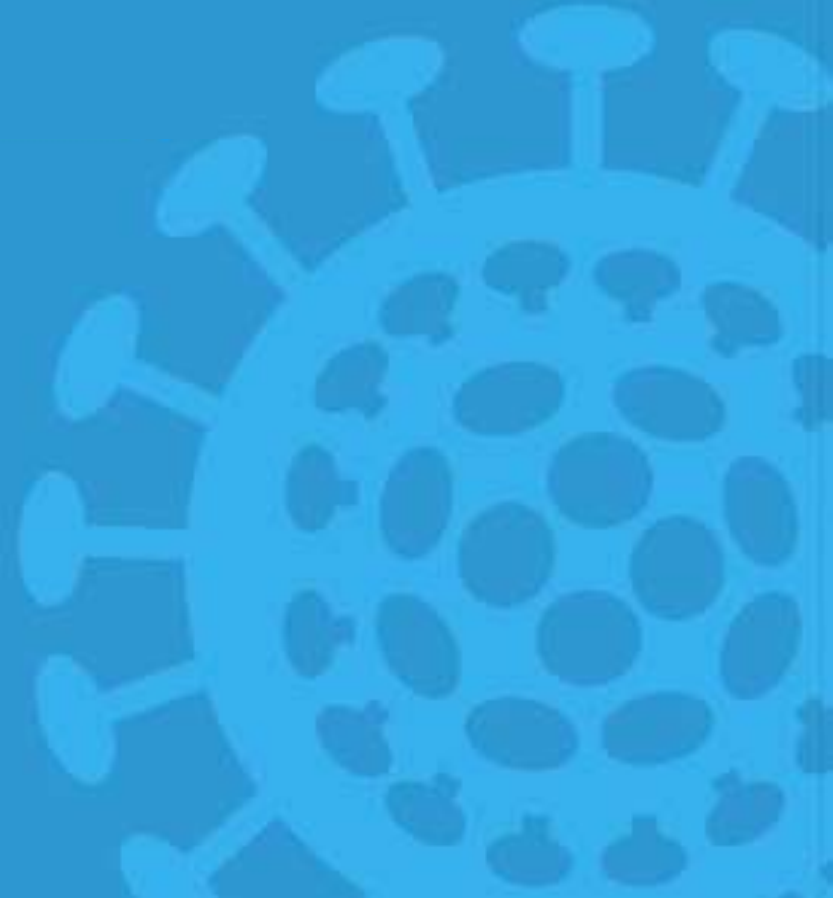
7 Appropriate waste management



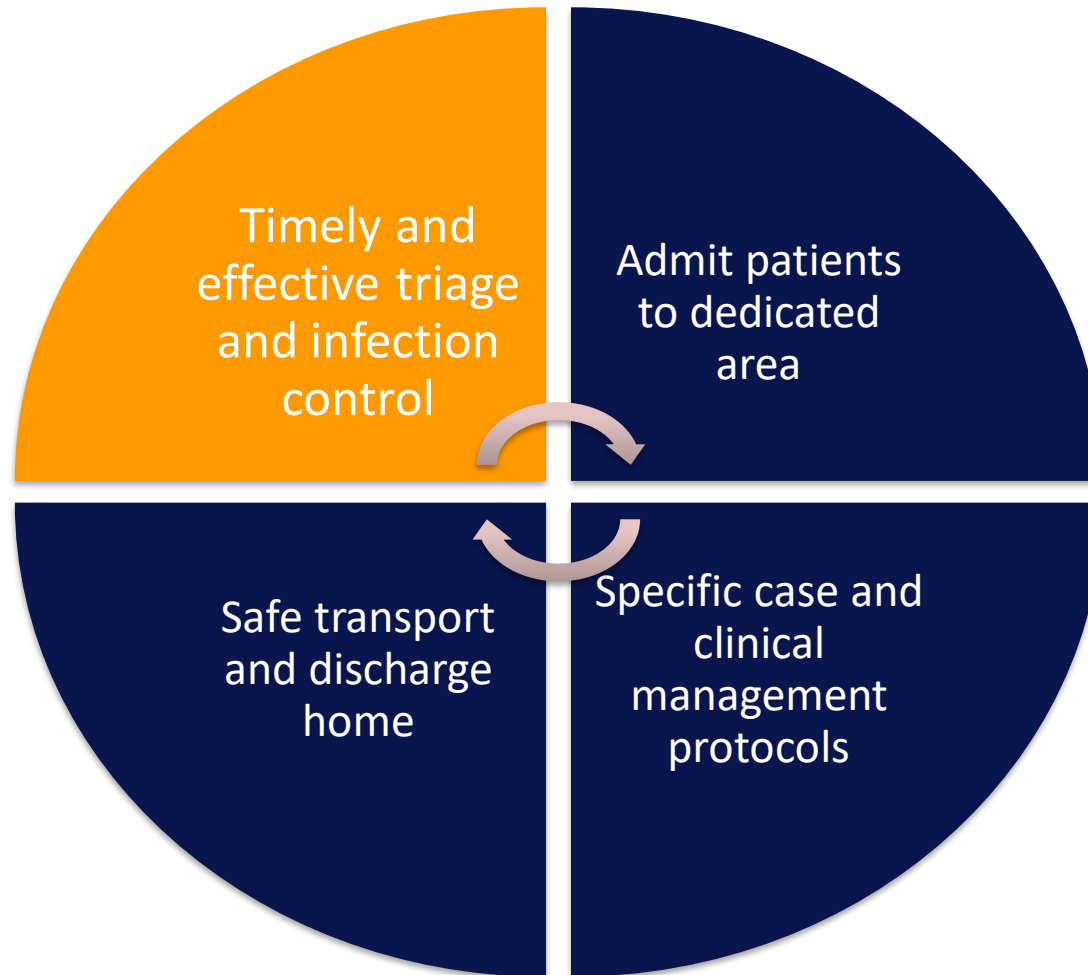
# Environment cleaning, disinfection and BMWM

- It is important to ensure that environmental cleaning and disinfection procedures are followed consistently and correctly.
- Thorough cleaning environmental surfaces with water and detergent and applying commonly used hospital level disinfectants (such as sodium hypochlorite, 0.5%, or ethanol, 70%) are effective and sufficient procedures.
- Medical devices and equipment, laundry, food service utensils and medical waste should be managed in accordance with safe routine procedures.

# **Triage, early recognition, and source control**

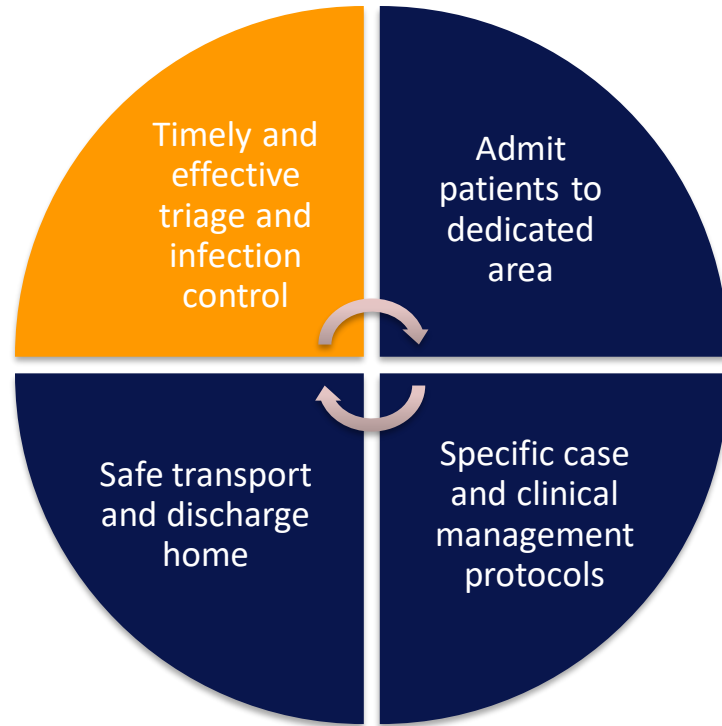


# Manage ill patients seeking care



Use clinical **triage** in health care facilities for early identification of patients with acute respiratory infection (ARI) to prevent the transmission of pathogens to **health care workers** and **other patients**.

# Triage (1)



- Prevent overcrowding.
- Conduct rapid triage.
- Place ARI patients in dedicated waiting areas with adequate ventilation.
- In addition to standard precautions, implement **droplet precautions** and **contact precautions** (if close contact with the patient or contaminated equipment or surfaces/materials).
- Ask patients with respiratory symptoms to perform **hand hygiene**, **wear a mask** and perform **respiratory hygiene**.
- Ensure at least 1 m distance between patients

## Triage (2)

The triage or screening area requires the following equipment:

- Screening questionnaire
- Algorithm for triage
- Documentation papers
- PPE
- Hand hygiene equipment and posters
- Infrared thermometer
- Waste bins and access to cleaning/disinfection
- Post signage in public areas with syndromic screening questions to instruct patients to alert HCWs.

# Triage (3)

Set up of the area during triage:

1. Ensure adequate space for triage (maintain **at least 1 m** distance between staff screening and patient/staff entering)
2. Waiting room chairs for patients should be 1m apart
3. Maintain a **one way flow for** patients and for staff
4. Clear **signage** for symptoms and directions
5. Family members should wait outside the triage area- prevent triage area from overcrowding

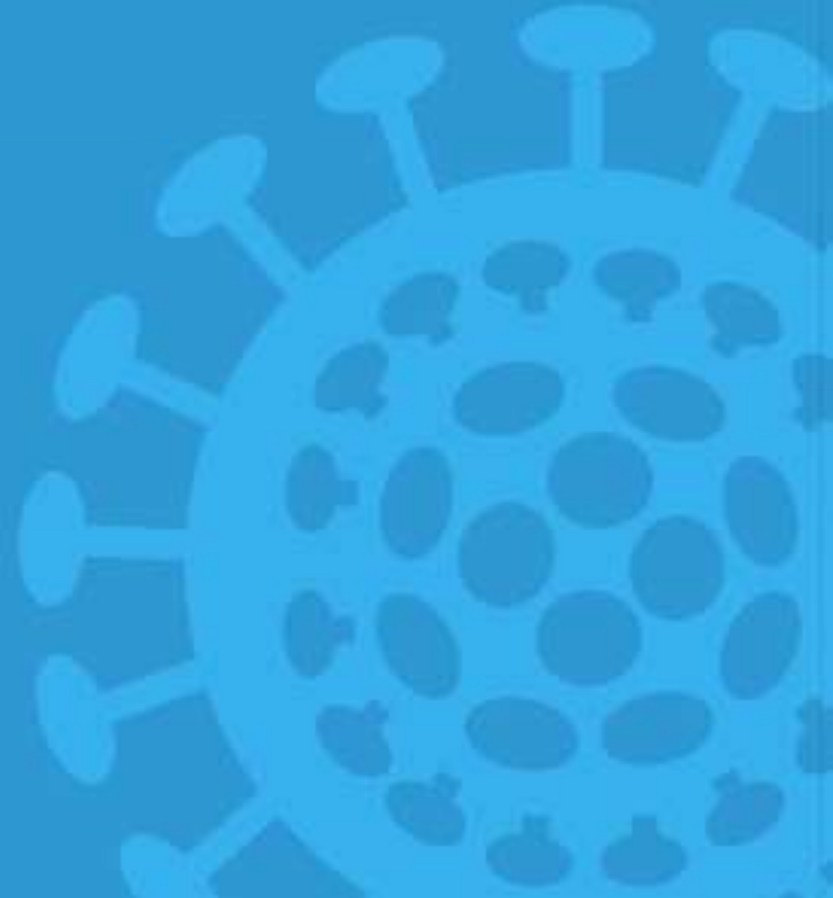
# Hospital admission



- Place patients with ARI of potential concern in single, well ventilated room, when possible
- Cohort patients with the same diagnosis in one area
- Do not place suspect patients in same area as those who are confirmed.
- Assign health care worker with experience with IPC and outbreaks.



# Additional Precautions



# Patients suspected or confirmed COVID-19 (1)

- **Contact and droplet precautions** for all patients with suspected or confirmed COVID-19
- Airborne precautions are recommended **only for aerosol generating procedures** (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation).
- Preferably patient should be in a single room:
  - natural ventilation with air flow of at least 160 L/s per patient or
  - in negative pressure rooms with at least 12 air changes per hour and controlled direction of air flow when using mechanical ventilation
- Cohort: All patients with respiratory illness should be in a single room, or **minimum 1m away from other patients** when waiting for a room
- Dedicated & trained HCW
- **HCW to wear PPE:** a medical mask, goggles or face shield, gown, and gloves
- **Hand hygiene** should be done **any time the WHO “5 Moments” apply**, and **before PPE** and **after** removing PPE



# Patients suspected or confirmed COVID-19 (2)

- Equipment should be **single use** when possible, dedicated to the patient and disinfected between uses
- **Avoid transporting** suspected or confirmed cases – if necessary, have patients wear masks. HCW should wear appropriate PPE.
- Routine cleaning of the environment is crucial
- **Limit** the number of HCW, visitors, and family members who are in contact with the patient. If necessary, everyone must wear PPE.
- All persons entering the patients room (including visitors) should be recorded (for contact tracing purposes).
- Precautions should continue until the patient is asymptomatic.



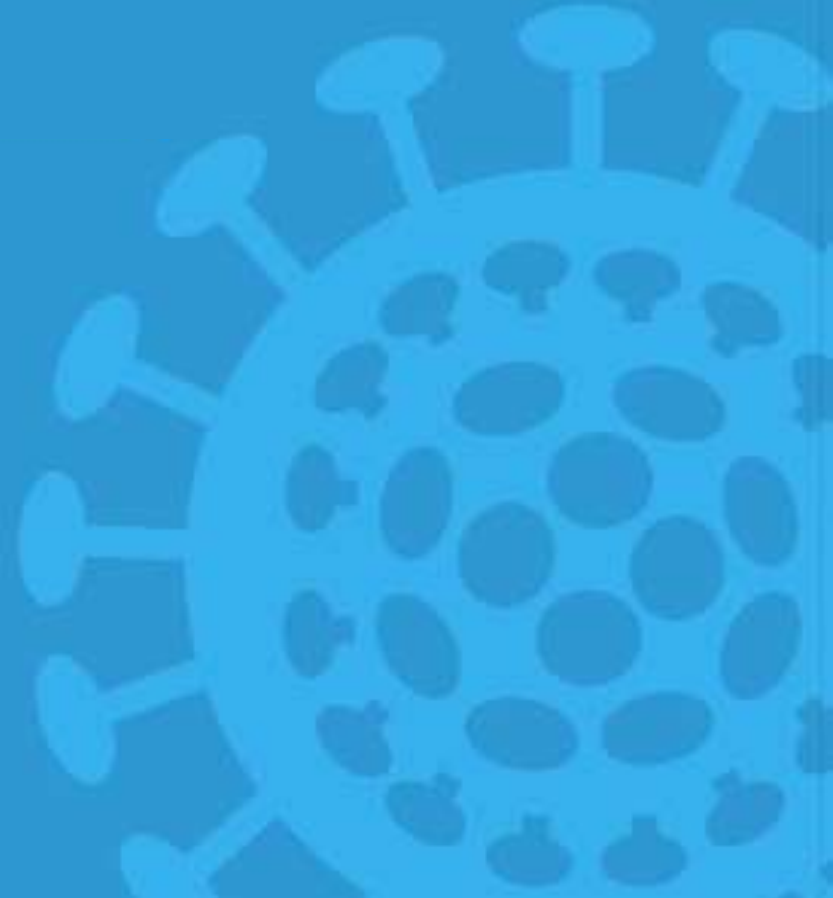
# Outpatient Care

- The basic principles of IPC and standard precautions should be applied in all health care facilities, including outpatient care and primary care.



- **Triage and early recognition**
- emphasis on **hand hygiene, respiratory hygiene** and **medical masks** to be used by patients with respiratory symptoms (consider having signage);
- if possible – place patients in separate rooms or away from other patients in the waiting rooms, and wear mask, gloves and gown if possible when seeing them in the clinic (as much of contact and droplet precautions as possible);
- when symptomatic patients are required to wait, ensure they have a separate waiting area (**1m separation**);
- **prioritization of care of symptomatic patients;**
- educate patients and families about the early recognition of symptoms, basic precautions to be used and which health care facility they should refer to.

# **Additional Control Measures**

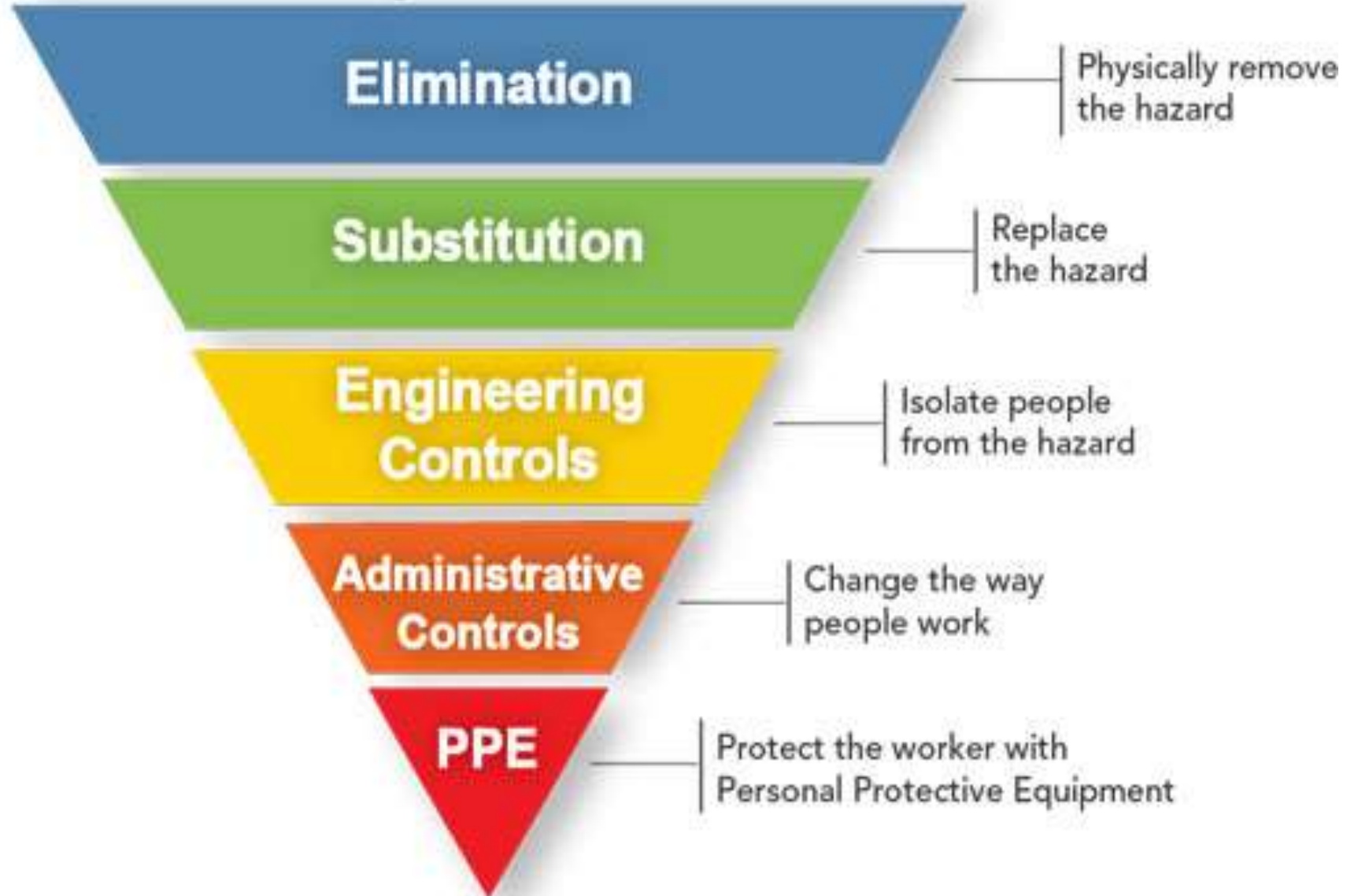


# Hierarchy of Controls

Most effective



Least effective



# Administrative Controls

- Provision of adequate **training** for HCWs;
- Ensuring an adequate **patient-to-staff** ratio;
- Establishing a **surveillance** process for acute respiratory infections potentially caused by COVID-19 among HCWs;
- Ensuring that HCWs and the public understand the importance of promptly seeking medical care;
- **Monitoring HCW compliance** with standard precautions and providing mechanisms for improvement as needed.

# Home care for patients with suspected COVID-19 infection with mild symptoms

- Place the patient in a well-ventilated single room (i.e., with open windows and an open door).
- Limit the movement of the patient & minimize shared space
- Household members should stay in a different room or, if that is not possible, maintain a distance of at least 1 m from the ill person (e.g., sleep in a separate bed).
- Limit the number of caregivers - good health and has no underlying disease
- Visitors should not be allowed.
- Perform hand hygiene after contact with patients or their immediate environment, before and after preparing food, before eating, after using the toilet and whenever hands look dirty.
- To contain respiratory secretions, provide medical mask to the patient.



# Home care for patients with suspected COVID-19 infection with mild symptoms

- Individuals who cannot tolerate a medical mask should use rigorous respiratory hygiene
- Caregivers should wear a tightly fitted medical mask that covers their mouth and nose when in the same room as the patient
- Avoid direct contact with body fluids. Use disposable gloves and a mask when providing oral or respiratory care and when handling stool, urine and other waste. Perform hand hygiene before and after removing gloves and the mask.
- Use dedicated linen and eating utensils for the patient; these items should be cleaned with soap and water after use and may be re-used instead of being discarded.
- Clean and disinfect daily surfaces that are frequently touched in the room where the patient is being cared for (Household soap or detergent should be used first for cleaning, and then, after rinsing, regular household disinfectant-sodium hypochlorite)
- Clean the patient's clothes, bed linen, and bath and hand towels using regular laundry soap and water or machine wash at 60–90 °C with common household detergent, and dry thoroughly

# Use of masks

- Use of Mask- limit spread of certain respiratory diseases
- Mask alone is insufficient to provide the adequate level of protection and other equally relevant measures should be adopted – **Hand hygiene**
- Wearing medical masks when not indicated may cause
  - unnecessary cost
  - procurement burden
  - create a false sense of security that can lead to neglecting other essential measures such as hand hygiene practices.
- Using a mask incorrectly may hamper its effectiveness to reduce the risk of transmission.

# Use of Mask : Community setting

- Individuals without respiratory symptoms
  - Avoid closed crowded spaces
  - Maintain distance – 1m
  - Practice hand and respiratory hygiene
  - Refrain from touching face, nose, mouth
  - No need of mask
- Individuals with respiratory symptoms
  - Wear a medical mask
  - Seek medical care
  - Learn mask management

# Use of Mask : Home care

- Individuals with suspected infection with mild respiratory symptoms
- Relatives or caregivers

Along with

- hand hygiene
- keep distance from affected individual as much as possible (at least 1 meter)
- improve airflow in living space by opening windows as much as possible
- Mask management

# Use of Mask : Health Care Settings

Individuals with respiratory symptoms should:

- wear a medical mask while waiting in **triage** or waiting areas or during transportation within the facility;
- wear a medical mask when staying in **cohorting** areas dedicated to suspected or confirmed cases;
- do not wear a medical mask when isolated in single rooms but cover mouth and nose when coughing or sneezing with disposable paper tissues.

Health care workers should:

- wear a medical mask while providing care to the patient
- Use a particulate respirator N95 (NIOSH certified) , FFP2 (EU standard), or equivalent, when performing aerosol generating procedures (tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation, and bronchoscopy).

# Masks management

- place mask carefully to cover mouth and nose and tie securely to minimise any gaps between the face and the mask
- while in use, avoid touching the mask
- remove the mask by using appropriate technique (i.e. do not touch the front but remove the lace from behind)
- after removal or whenever you inadvertently touch a used mask, clean hands by using an alcohol-based hand rub or soap and water if visibly soiled
- replace masks with a new clean, dry mask as soon as they become damp/humid
- do not re-use single-use masks
- discard single-use masks after each use and dispose of them immediately upon removal

# Conclusions

- IPC is key for containment
- Based on key principles- Hand Hygiene, Respiratory etiquette, safe distance
- Hospital Infection Prevention & control- Standard & Additional precautions
  - Protect Yourself and the community
  - Triage & Admissions
  - PPE
    - Judicious and Appropriate use
    - Pay attention to donning and doffing
- Home care precautions

# Resources

- WHO Coronavirus Homepage
- <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- All coronavirus (COVID-19) technical guidance documents
- <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>
- IPC documents
- <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/infection-prevention-and-control>
- <https://www.who.int/infection-prevention/publications/en/>
- Questions and Answers
- <https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>





Thank you



# Wash your hands

Wash your hands with soap and running water when **hands are visibly dirty**



If your **hands are not visibly dirty**, frequently clean them by using alcohol-based hand rub or soap and water



# Protect yourself and others from getting sick

## Wash your hands



- after coughing or sneezing
- when caring for the sick
- before, during and after you prepare food
- before eating
- after toilet use
- when hands are visibly dirty
- after handling animals or animal waste

# Protect others from getting sick

When coughing and sneezing  
**cover mouth and nose** with  
flexed elbow or tissue



**Throw tissue into closed bin**  
immediately after use

**Clean hands** with alcohol-based  
hand rub or soap and water  
after coughing or sneezing and  
when caring for the sick



# Protect others from getting sick



**Avoid close contact** when you are experiencing cough and fever

**Avoid spitting in public**



If you have fever, cough and difficulty breathing **seek medical care early** and share previous travel history with your health care provider



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## Reduce the risk of Coronavirus infection Follow these important precautions



1

Avoid travel if you are suffering from fever and cough



2

Wash your hands frequently with soap and water



3

Share your travel history with your health worker (ASHA/ ANM)



If you have cough, fever or difficulty in breathing, contact a doctor immediately

Stay protected!

Stay safe from Coronavirus!

If you have returned from Wuhan China after January 15, then get yourself tested for 2019-nCoV. To know about the centres for testing, call the Ministry of Health and Family Welfare Helpline

If you have returned from China in the last 15 days or have been in contact with any person affected by Coronavirus, then limit your contact with others and use a separate room for sleeping

If you develop fever, cough and difficulty in breathing within 28 days of return from China, immediately call the Ministry of Health and Family Welfare Helpline



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## Reduce the risk of Coronavirus infection Follow these important precautions

Coronavirus is a new disease which is happening in China and has affected other countries. The virus has flu like symptoms such as:



Fever



Cough



Difficulty  
in breathing

If you have returned from Wuhan, China after January 15, then get yourself tested for 2019-nCoV. To know about the centres for testing, call the Ministry of Health and Family Welfare Helpline +91-11-23978046

If you have returned from China in the last 15 days or have been in contact with any person affected by Coronavirus, then limit your contact with others and follow these important steps:



Limit contact with everybody for the next 14 days and sleep in a separate room



Cover your nose and mouth while sneezing



Wash your hands with soap regularly



Stay far away from persons who have cough, cold and fever



If you have cough, fever or difficulty in breathing, contact a doctor immediately

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# Reduce the risk of Coronavirus infection

## Follow these important precautions



Remember to wash hands with soap frequently

After coughing and sneezing

After using toilet



Clean your hands before and after caring for sick person

Before cooking, after cooking and before eating food



If you have cough, fever or difficulty in breathing, contact a doctor immediately

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