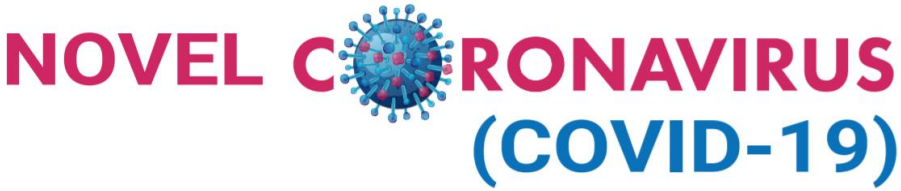
State level Training of Trainers (ToT) on Corona Virus (COVID-19)

Training Material on



Department of Health, Medical and Family Welfare
Govt. of Andhra Pradesh

Agenda

State level ToT on

NOVEL CORONAVIRUS (COVID-19)

Training Objectives

Dr T Geetha Prasadini,
Addl. Director, MCH

National Training of Trainers for COVID-19

6 March 2020 | New Delhi

Training Objectives

1. Sensitize Trainers from central government institutions/ States/ UTs on COVID-19.
2. Explain the strategic approach for managing COVID-19.
3. Describe the key interventions aligned with the strategic approach.
4. Demonstrate and practice important skills required for implementing the interventions.
5. Plan for scale up of similar trainings at state/district level

Training Objective 1

Sensitize Trainers from Central Government Institutions / States/ UTs about Novel Coronavirus Disease (COVID-19)

- COVID-19 is a new disease, that is fast spreading globally and still there are several critical unknowns.
- understand the key aspects related to the disease emergence, epidemiology, and how to contain further spread in the country.
- Fill the knowledge gaps
- Practice the important skills.

Training Objective 2

Explain the strategic approach for managing COVID-19

India will be following a scenario based approach to manage COVID-19. The strategic approach to each of these scenarios will be explained.

- Travel related case reported in India
- Local transmission of COVID-19
- Community Transmission of COVID-19 disease
- India becomes endemic for COVID-19

Training Objective 3

Describe the key interventions aligned with the strategic approach.

- Surveillance (including at Points of Entry)
- Contact Tracing
- Laboratory surveillance
- Infection Prevention and Control (IPC)
- Clinical Case Management
- Risk Communications and Community Engagement

Training Objective 4

Demonstrate and practice important skills required for implementing the interventions……..

1. Infection prevention control practices
2. Donning and doffing of PPEs
3. Sample collection, packaging and transportation

Training Objective 5

Plan for scale up of similar trainings at state/district level

- The trainers for the National workshop, are expected to carry forward the knowledge and skills gained through this National ToT, for further cascade of trainings at state and district level.

- This needs to be much more comprehensively done at sub-national level, involving all key stakeholders (including the private sector), who are going to play a critical role if a COVID-19 outbreak occurs.

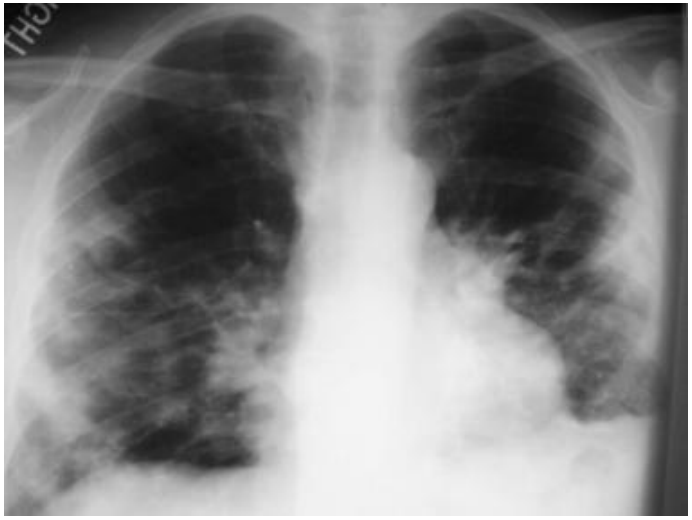
State ToT on

NOVEL CORONAVIRUS (COVID-19)

Epidemiology of COVID-19, Global and India Update

Dr S Neelima,
Assistant Professor, Community Medicine, O/o DME
09.03.2020

Cluster of Pneumonia Cases of Unknown Origin in December 2019



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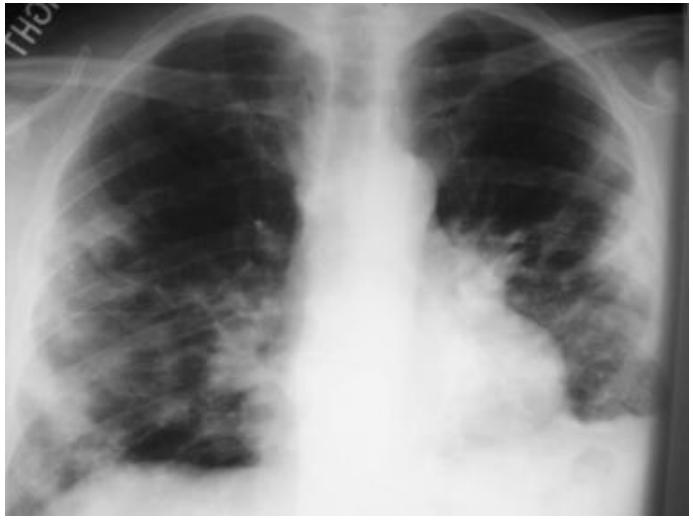

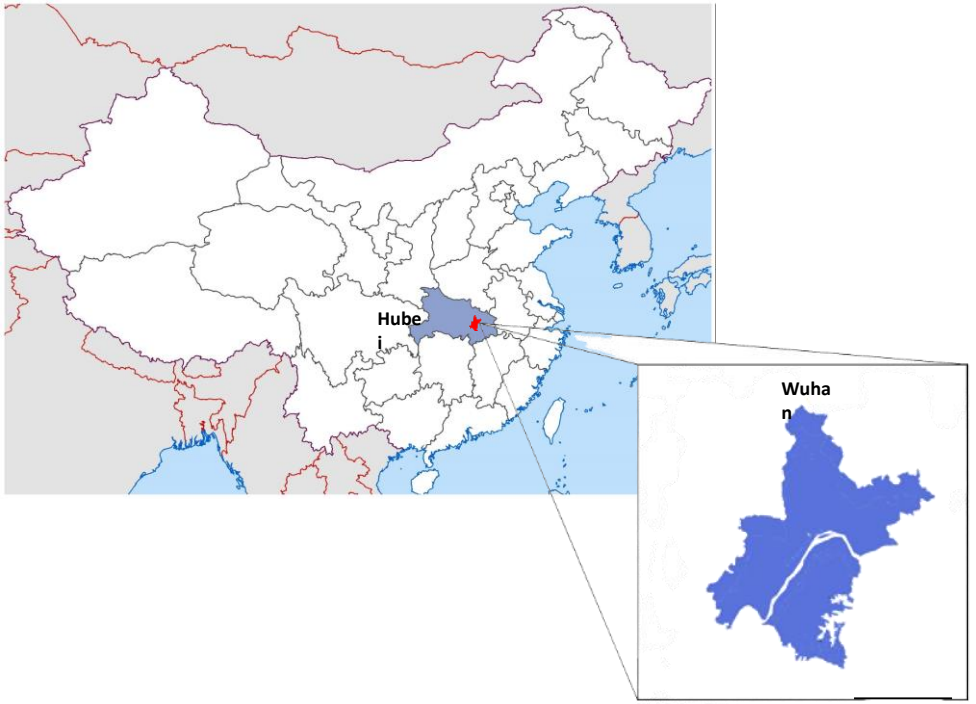

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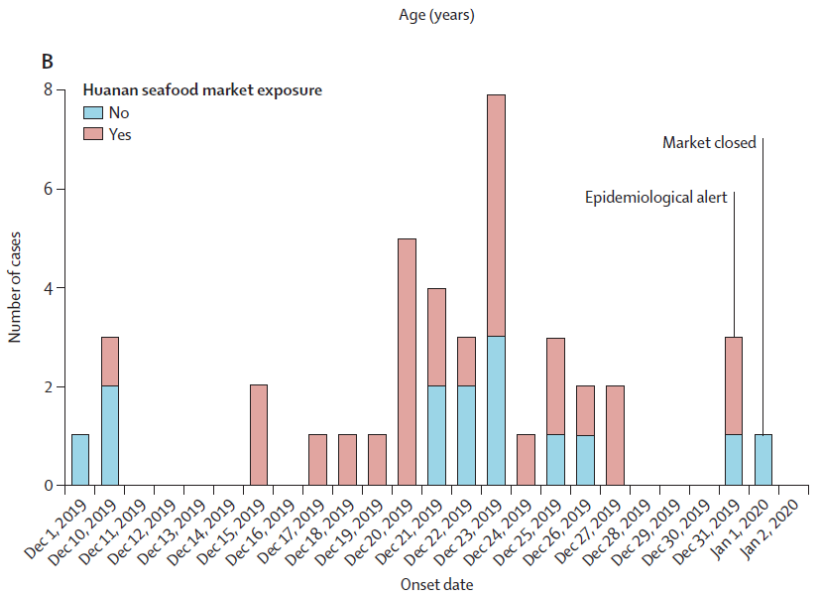
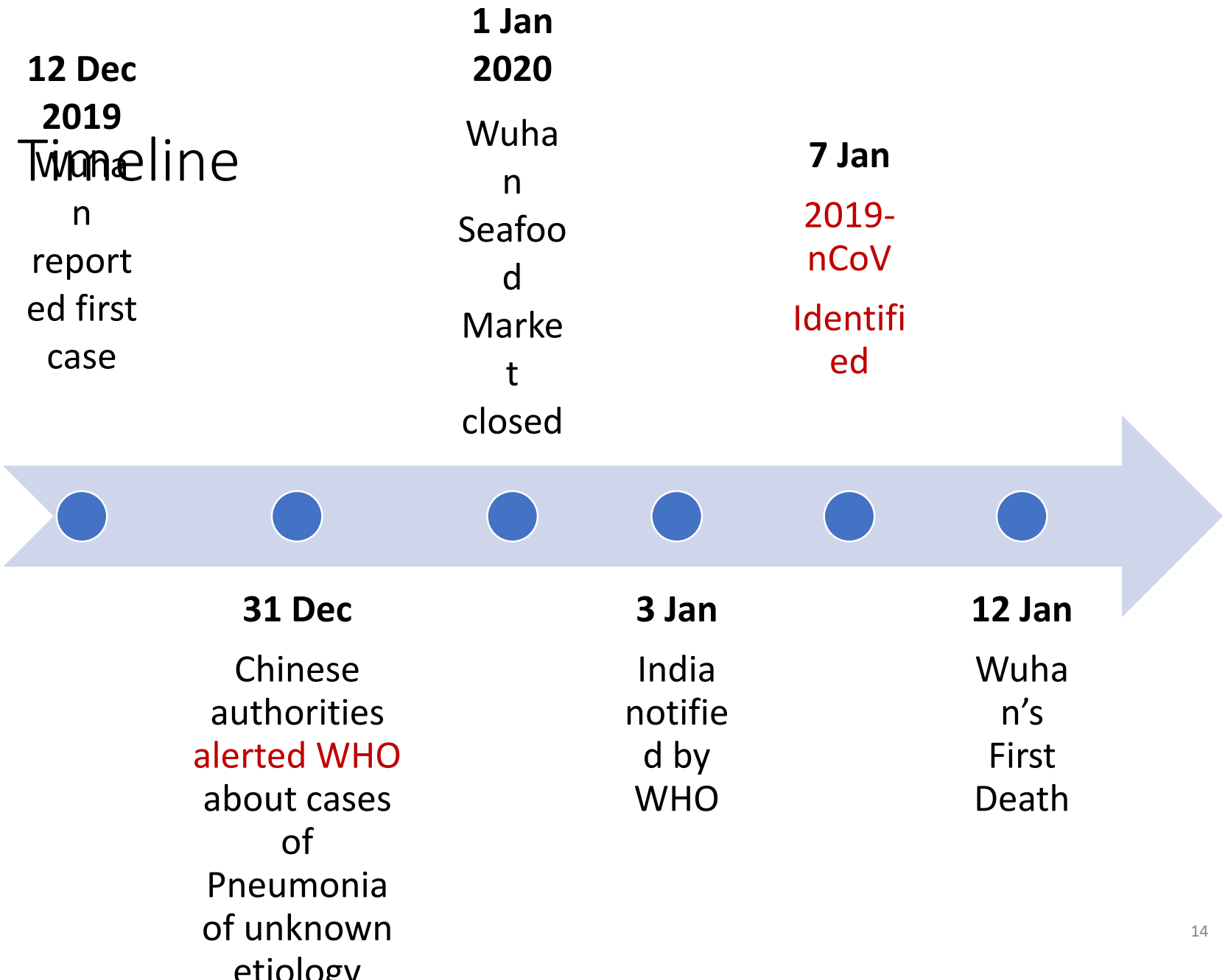


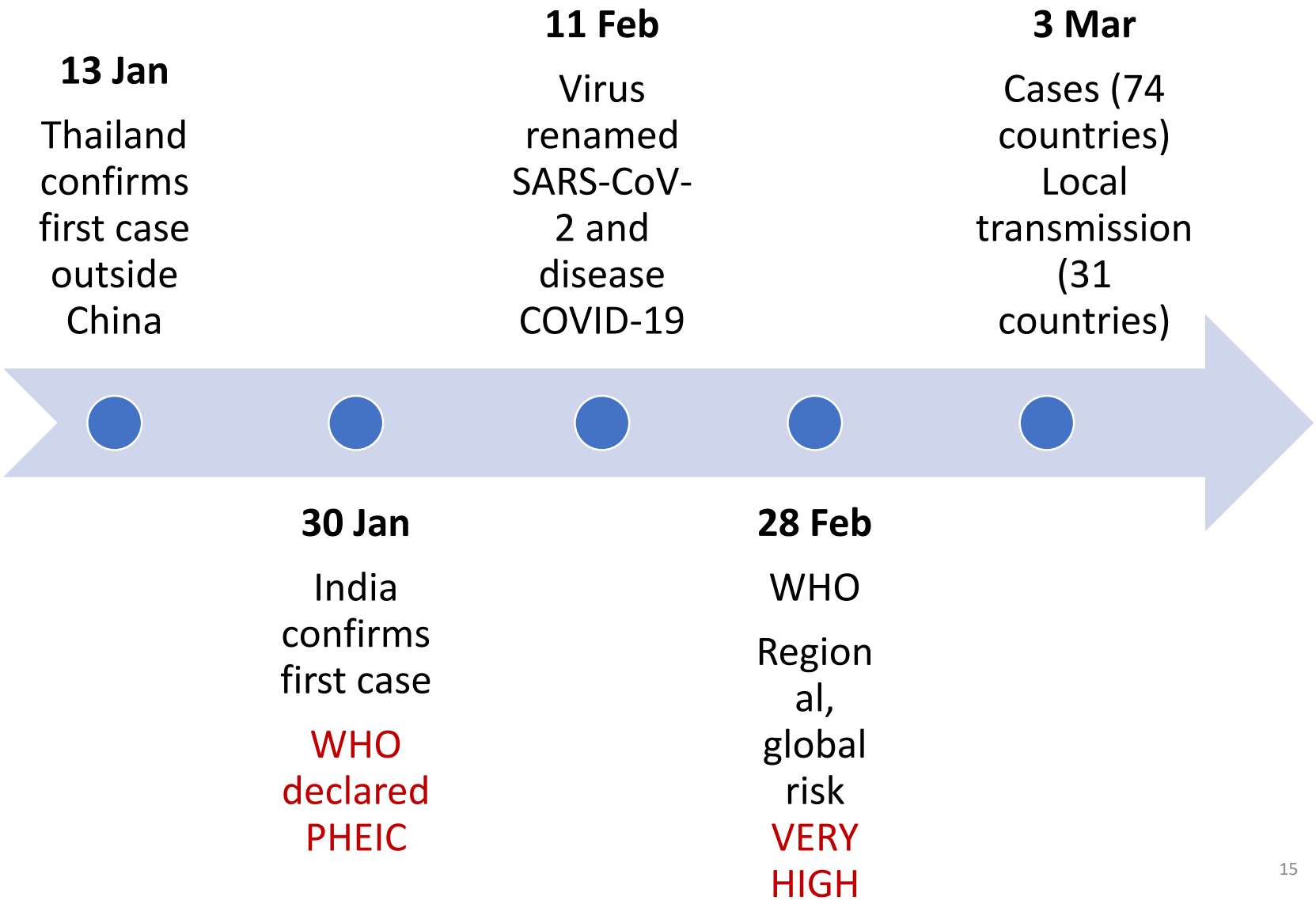
Of 41 patients, 66% (27) had exposure to a seafood market (Lancet, DOI 10298)

- SARS originated in Guangdong, China in November 2002
- Affected 8096 persons, 774 deaths in 26 countries

Timeline


12 Dec 2019
Wuhan reported first case
1 Jan 2020
Wuhan Seafood Market closed
7 Jan
2019-nCoV Identified
31 Dec
Chinese authorities alerted WHO about cases of Pneumonia of unknown etiology
3 Jan
India notified by WHO
12 Jan
Wuhan's First Death

Timeline


13 Jan
Thailand confirms first case outside China
30 Jan
India confirms first case
WHO declared PHEIC
11 Feb
Virus renamed SARS-CoV-2 and disease COVID-19
28 Feb
WHO
Regional, global risk VERY HIGH
3 Mar
Cases (74 countries)
Local transmission (31 countries)

WHO Risk Assessment

China	**Very High**
Regional	**Very High**
Global	**Very High**

- Likelihood of spread
  - Ongoing human-to-human transmission
  - Confirmed identified in 31 provincial level administrative areas (10 with >100 cases)
  - Majority of cases exported outside China have been epidemiologically linked to Wuhan
  - Human-to-human transmission documented in other countries
  - Source of outbreak remains unknown
  - Disaggregated data is needed to better understand the epidemiology

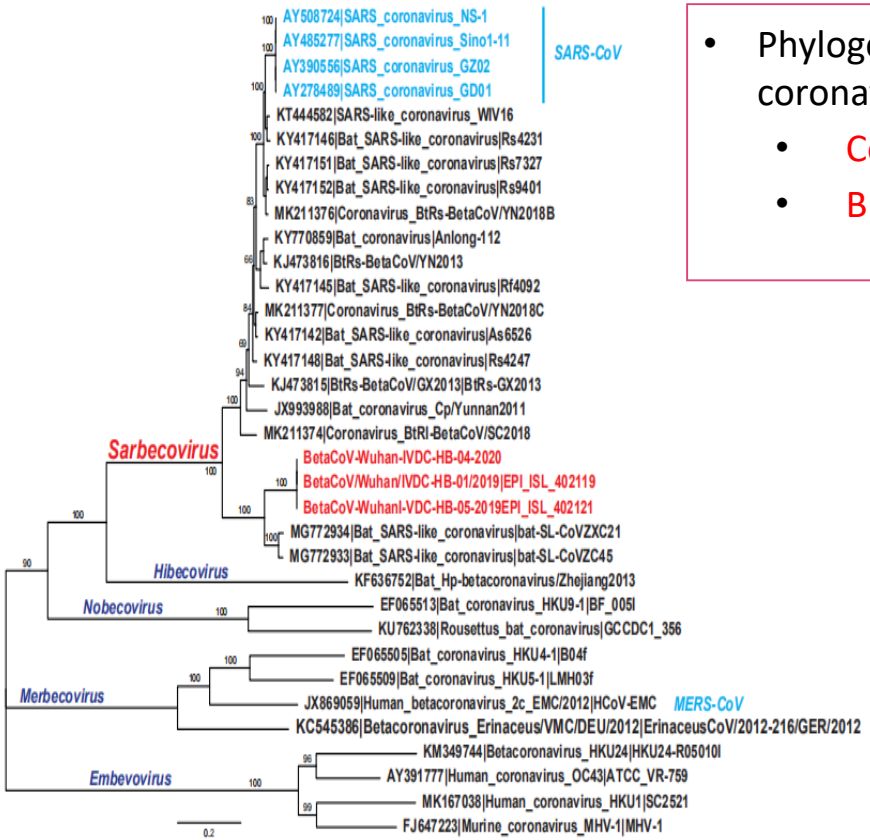
- Potential impact to human health
  - Can causes severe disease and fatalities
  - Severity is not fully understood
  - Transmission from asymptomatic cases

- Likelihood of insufficient control capacities
  - China has implemented major control measures
  - Currently affected countries have strong public health systems
  - Some countries may be less prepared to manage cases

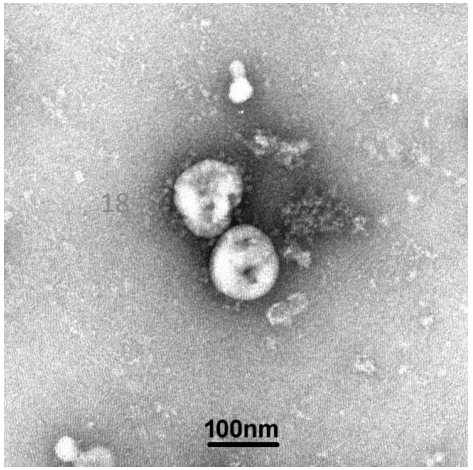
Coronavirus

- Large family of enveloped, positive- strand RNA virus
- Ecologically diverse, circulates in humans and animals
- Divided into 4 genera: alpha, beta, delta, and gamma
  - alpha and beta CoVs infect humans
- Four HCoVs (HCoV 229E, NL63, OC43, and HKU1) endemic globally
  - 10-30% of upper respiratory tract infections in adults
- Rarely, animal coronaviruses evolve and infect people and then spread between people–SARS (2002) and MERS (2012)

Phylogenetic analysis of the 2019-nCoV and other *Beta coronavirus* genomes under the Orthocoronavirinae subfamily



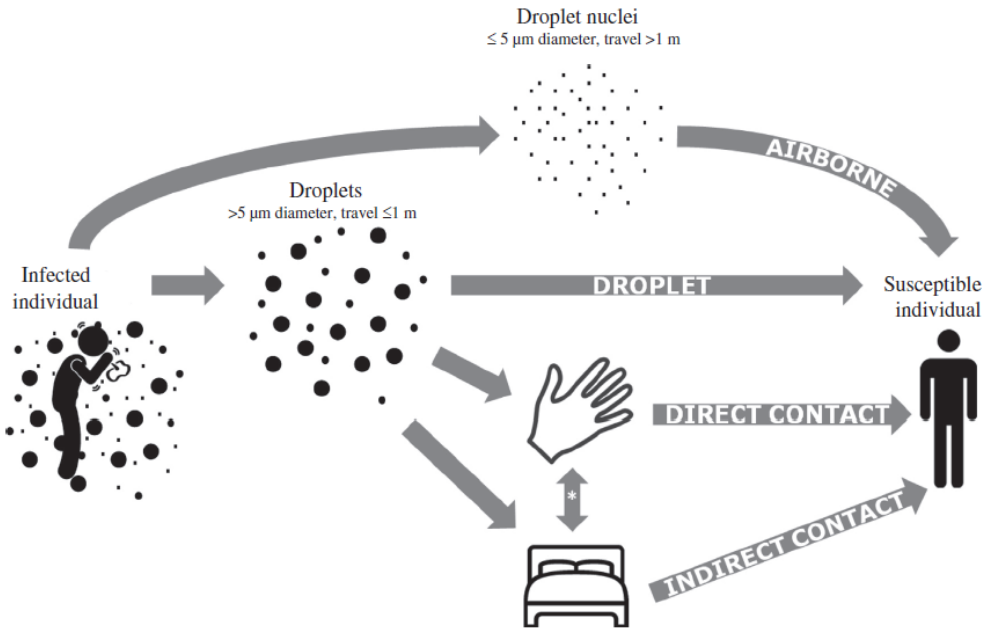
- Phylogeny – Closest genetic similarity was found in a coronavirus that had been isolated from bats
  - CoVZC45 (MG772933.1) and
  - BM48-31/BGR/2008(GU190215.1) branches



Source: WHO

Coronavirus –Transmissibility

- Infected droplets
  - >5µm, travel <1m
- Aerosols
  - <5µm, travel>1m
- Contact
  - Hands, surfaces



* Transmission routes involving a combination of hand & surface = indirect contact.

Figure 1. Transmission routes: droplet, airborne, direct contact, and indirect contact. (Indirect contact: routes involving a combination of hand and surface.) Definitions of 'droplet' and 'droplet nuclei' are from Atkinson *et al.*[5]

Coronavirus –Transmissibility

Survivability outside body:

- 1-2 days on nonporous surfaces
- 8-12 hours on porous surfaces
- Currently this information on 2019-nCoV not clear

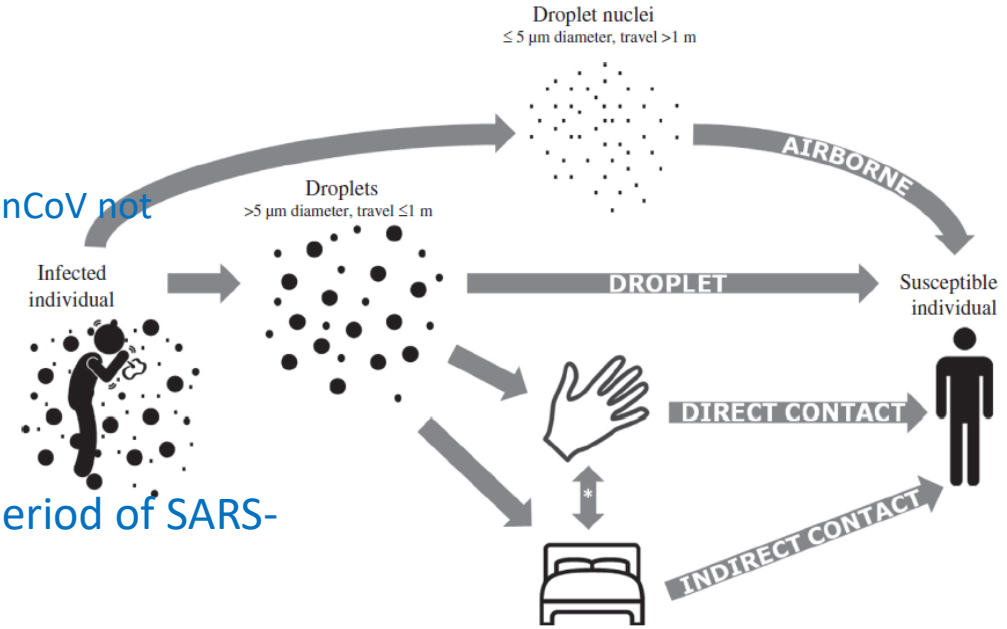


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Figure 1. Transmission routes: droplet, airborne, direct contact, and indirect contact. (Indirect contact: routes involving a combination of hand and surface.) Definitions of 'droplet' and 'droplet nuclei' are from Atkinson *et al.*[5]

Incubation period:

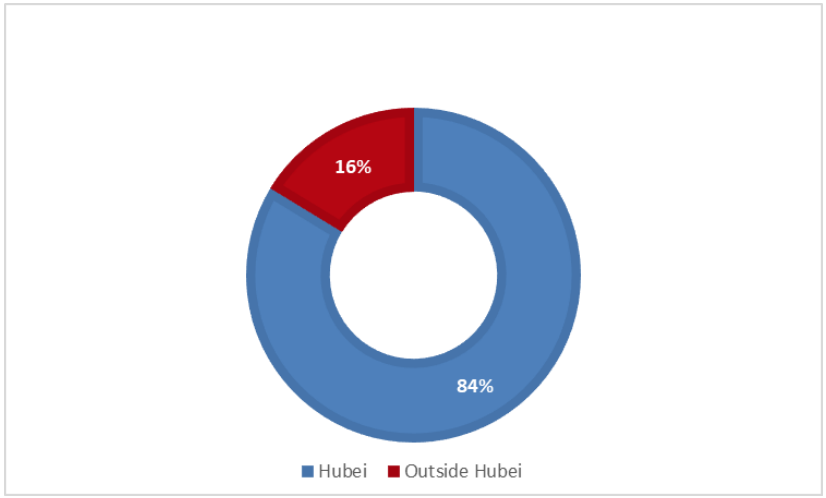
Current estimates of the incubation period of SARS-CoV-2 range from 2-14 days.

Cases and Deaths–China

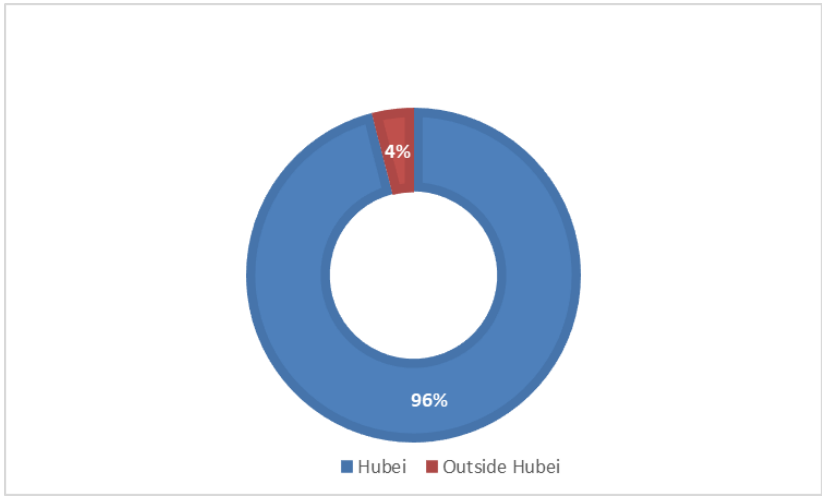
	Cases	Deaths	CFR (%)
Hubei	67,332	2,871	4.2
Outside Hubei	13,090	113	0.8
China	80,422	2,984	3.7

Source: WHO
As on 04 March, 2020

Comparison of Cases and Deaths in China–Hubei and other Provinces



Cases



Deaths

Source: WHO
As on 04 March, 2020

Distribution of Cases – Outside China

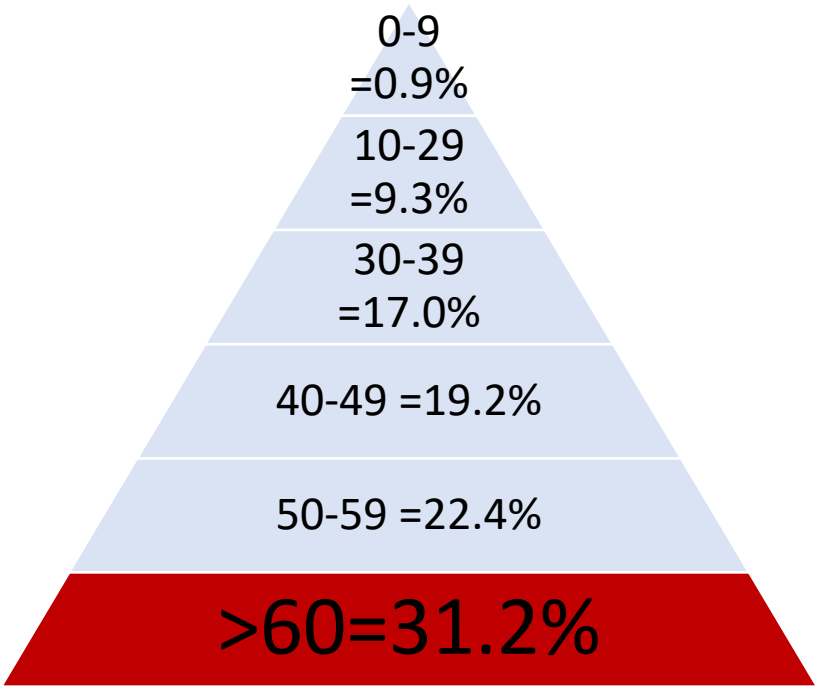
Number of Countries reporting*	77
Cases	12,668
Deaths	214
CFR %	1.7
Local Transmission %	42

Source: WHO
As on 04 March, 2020

* Includes one international conveyance

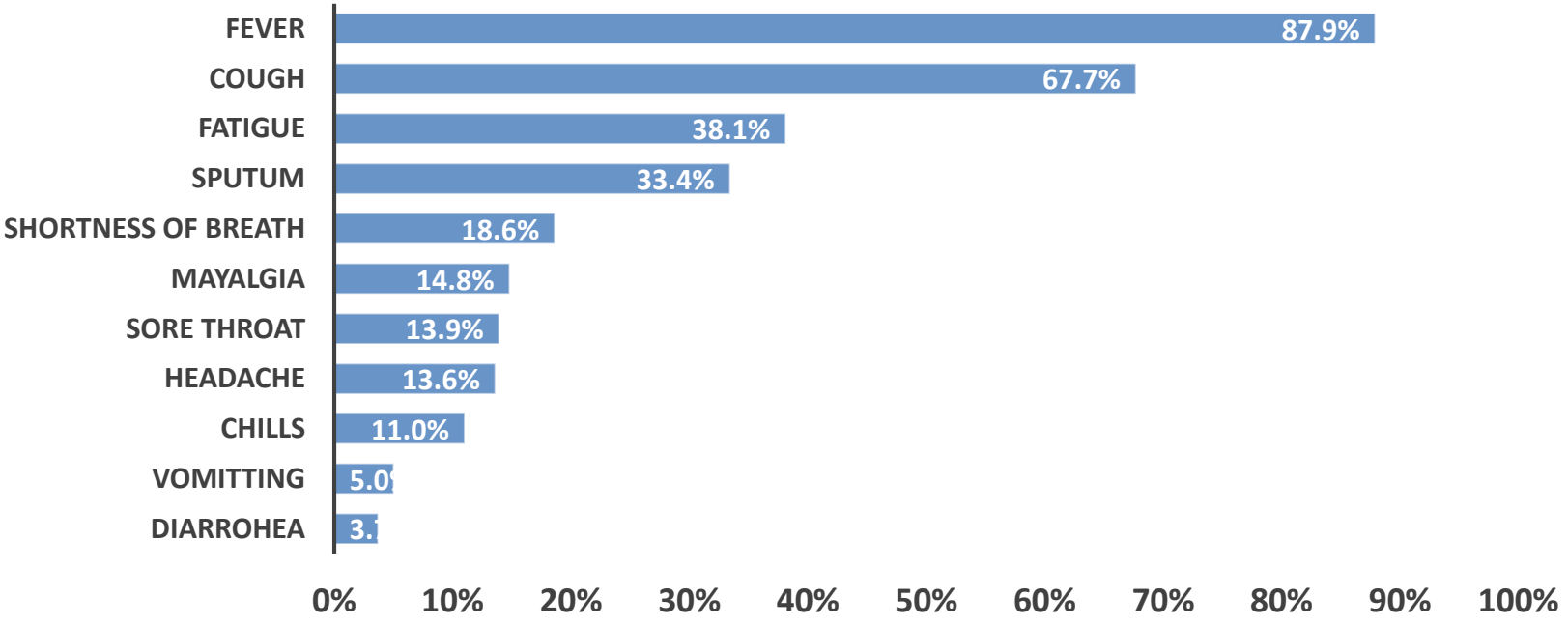
Age Distribution of Cases in China, Surveillance Data (n=72,314)

- Median age: 51 years
- Interquartile range=39-63 years
- Range= 2 days-100 years
- Males: 51%
- Health care workers: 3.8%
  - 88% reported from Hubei



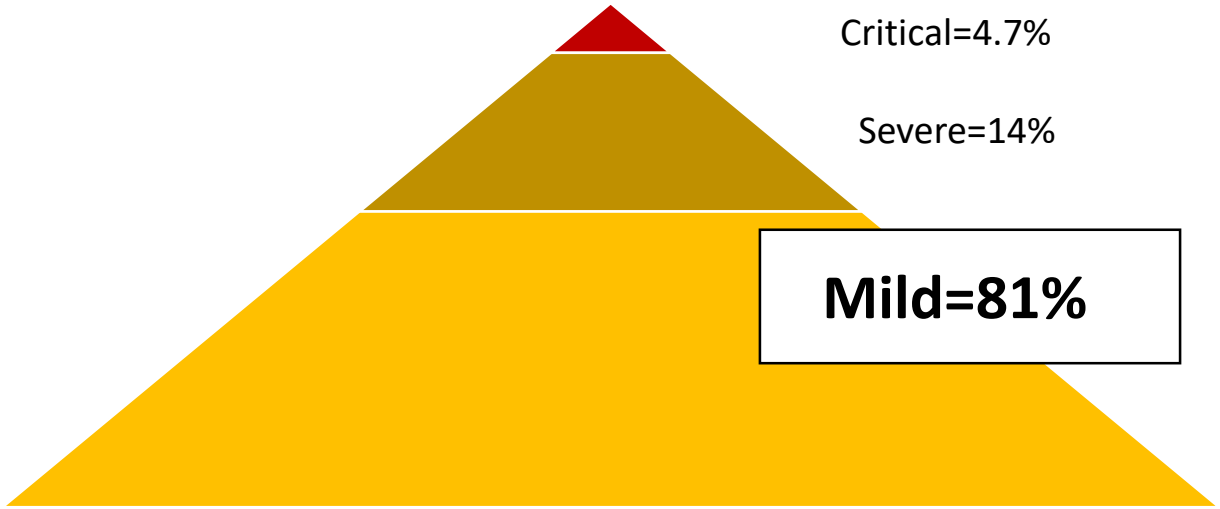
China CDC Weekly Vol2 (8)

Signs and Symptoms of Cases in China



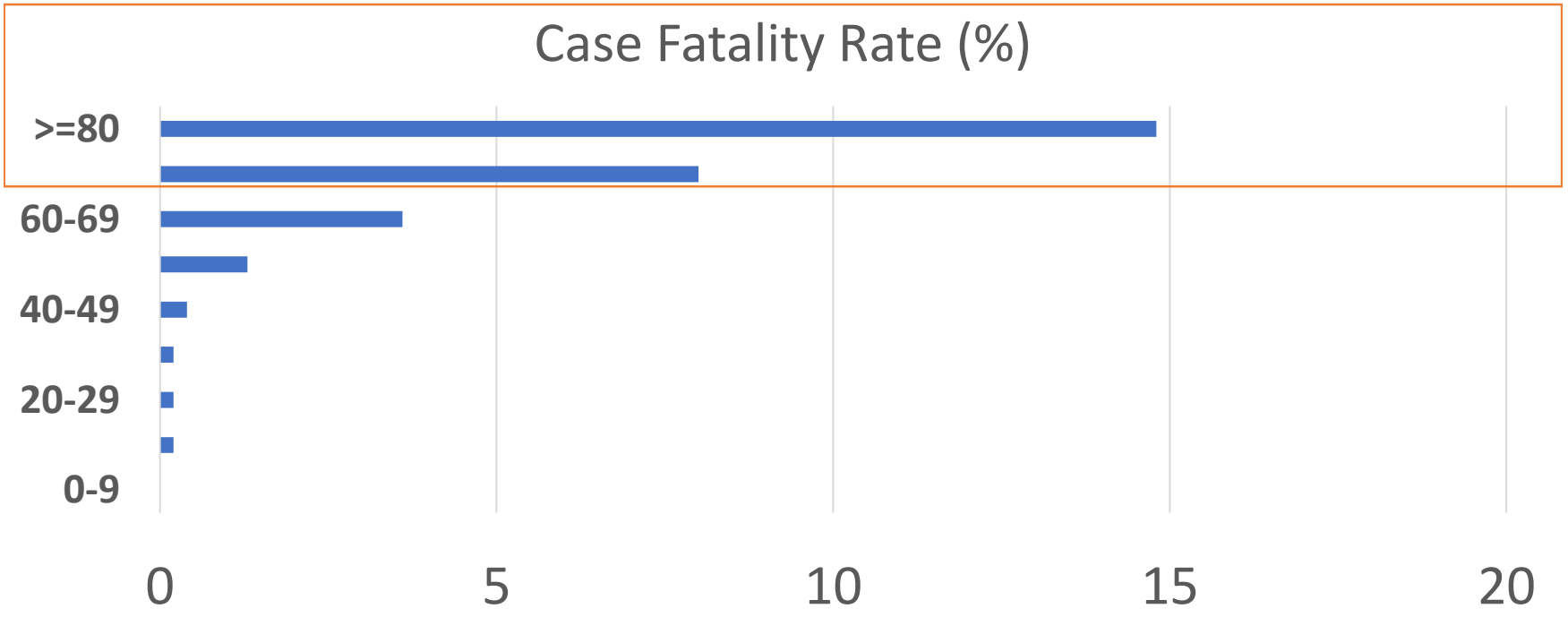
Report of WHO China Joint Mission, Feb 2020

Epidemiology–Presentation of Illness (n=72,314)



China CDC Weekly Vol2 (8)

Epidemiology–Severity of Illness (n=72,314)



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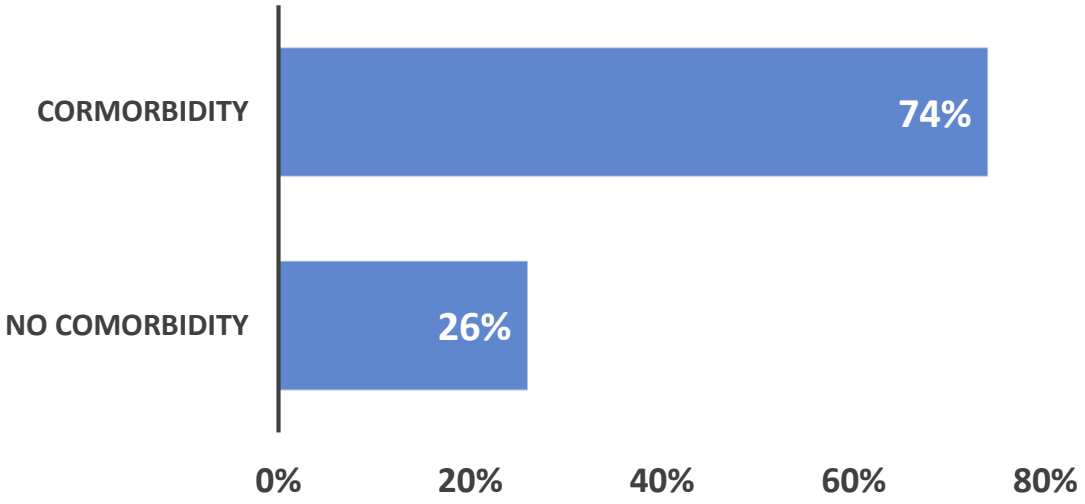
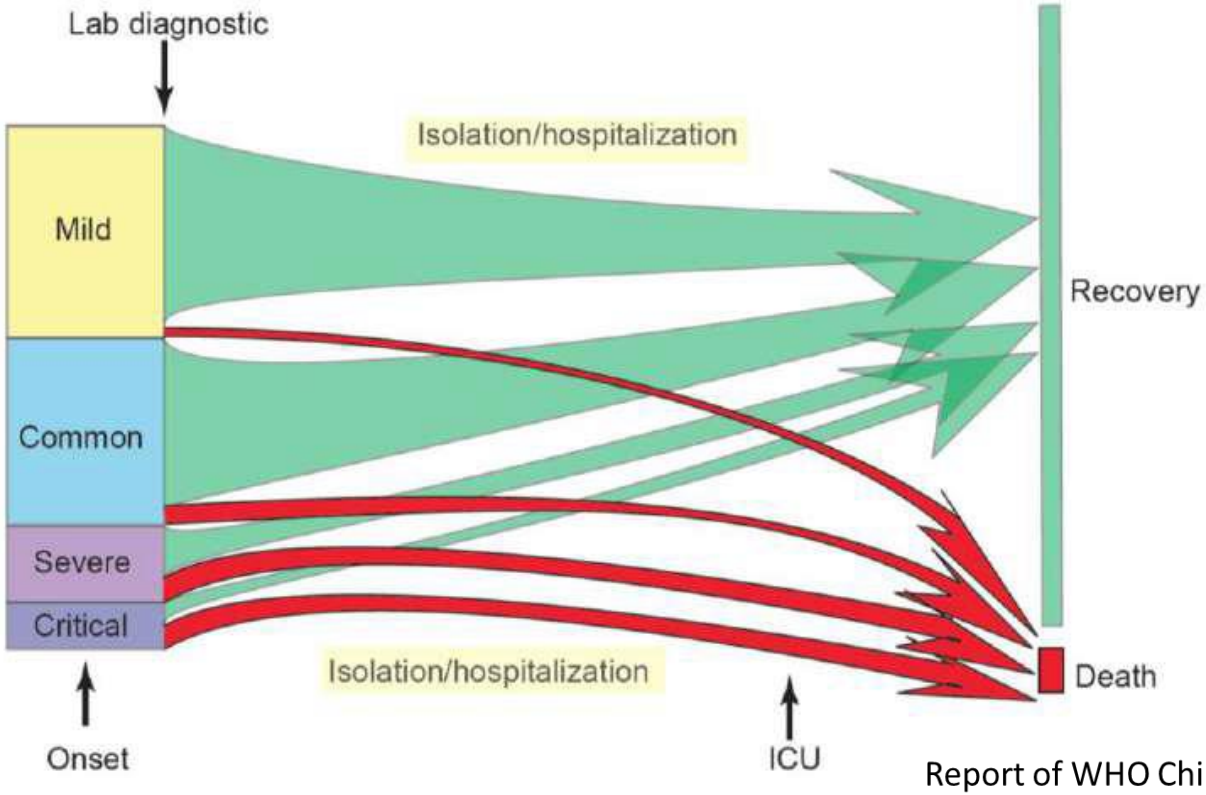


China CDC Weekly Vol2 (8)

Pattern of Disease Progression



Report of WHO China Joint Mission, Feb 2020

Comparison of Severity and Transmissibility of Human Infection with Coronavirus and Influenza virus

Virus	Transmissability (R_0)	Severity (CFR %)
COVID-19[i]	2.00	3.00
SARS	3.00	9.00
MERS	1.05	36.00
IFL-S[ii]	1.27	NA
IFL-P	1.45	0.02
HCoVs[iii]	1.00	NA

Source: Communicable Disease Manual

Comparison of Severity and Transmissibility of Human Infection with Coronavirus and Influenza virus

- Source: Communicable Disease Manual

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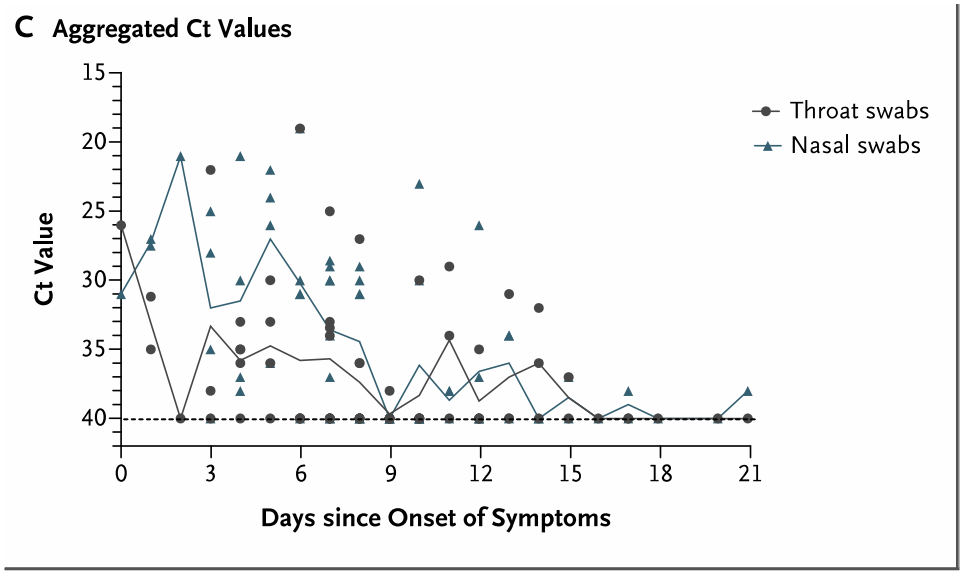
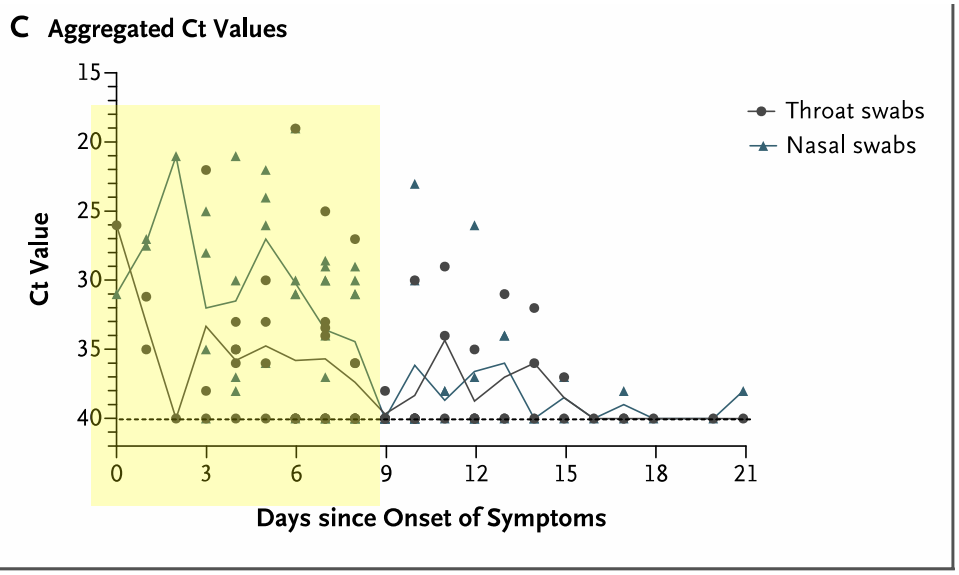
Source: Communicable Disease Manual

Risk of Disease Transmission in COVID-19 Patients following Onset of Illness (n=18)



(NEJM, DOI 10,1056)

Risk of Disease Transmission in COVID-19 Patients following Onset of Illness (n=18)



(NEJM, DOI 10,1056)

- High viral load detected soon after symptom onset upto day 21 of illness onset
- More in nose than throat
- Viral shedding similar to Influenza as opposed to SARS

Asymptomatic Stage in COVID-19

- China Surveillance record of 72,314 cases shows 1.2% asymptomatic cases

- Diamond Princess ship with 3712 crew and staff reported 2.9% asymptomatic cases

Role of Asymptomatic COVID-19 Cases in Disease Transmission

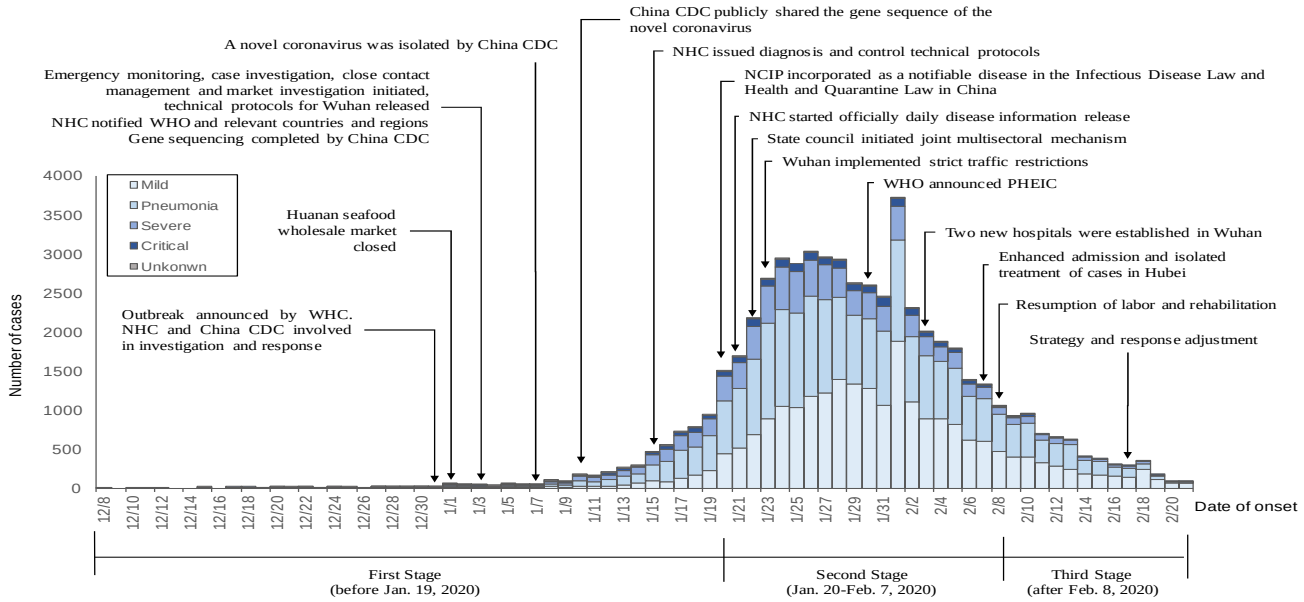
Findings from two case reports indicate possibility of transmission in asymptomatic stage

A familial cluster of 5 patients in Anyang, China, had contact before their symptom onset with one asymptomatic family member who had traveled from the epidemic center of Wuhan. Asymptomatic patient turned PCR positive 20 days after contact with index case (JAMA, Feb 21,2020)

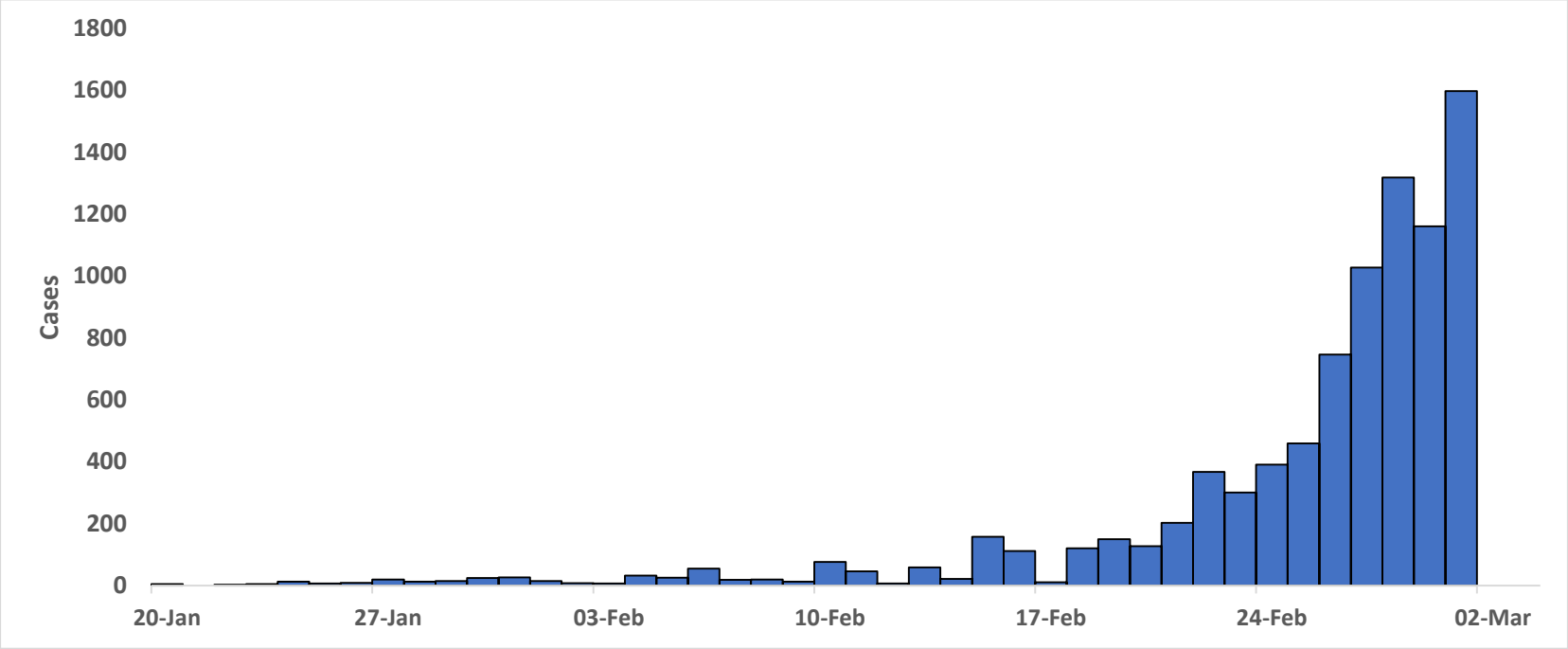
Two family cluster of 18 cases in Guangdong were examined for viral load in specimens, one asymptomatic contact turned PCR positive 7 days after contact (NEJM, DOI10,1056)

Possible viral shedding and role of asymptomatic cases in driving transmission by in community

COVID-19 Epidemic Curve and Major Interventions implemented in China

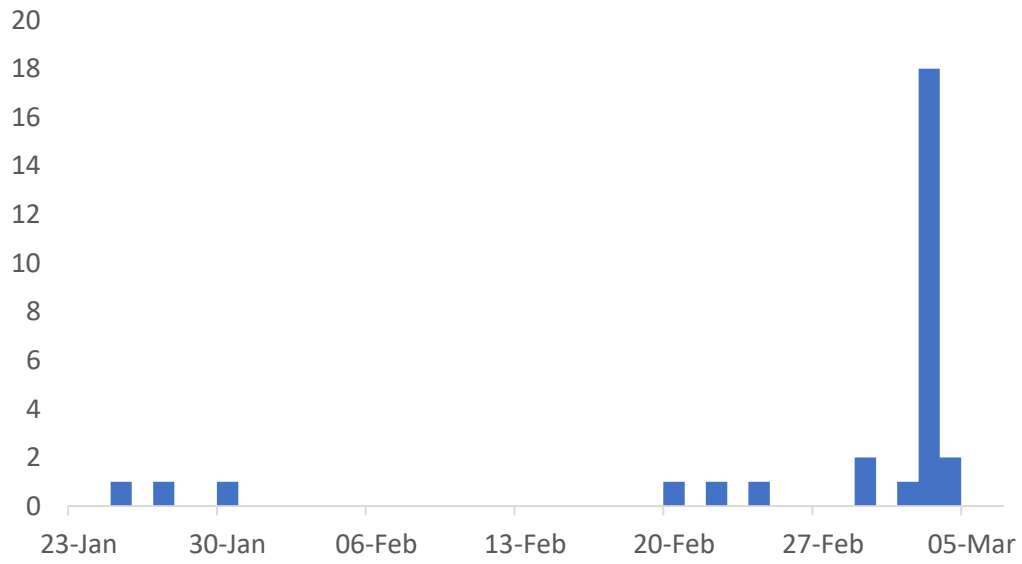


COVID-19 Epidemic Curve outside China



Source: WHO Sitrep

COVID-19 Epidemic Curve, India (n=29)



COVID-19 Epidemic Curve, India (n=29)

- Median age: 37 years
- Range: 20-77 years
- Males: 59%
- Proportion with history of travel: 83%

Conclusions

- COVID-19 respiratory pathogen, easily transmissible from person to person
- Elderly and co-morbid are high risk
- Cases rising outside China, including India, with limited local transmission
- Containment for elimination possible
  - Case management
  - Contact tracing
  - Health system strengthening (isolation wards, medical supplies)
  - Public risk communication

State ToT on

NOVEL CORONAVIRUS (COVID-19)

Rapid Risk Assessment

Dr S Neelima,
Assistant Professor, Community Medicine, O/o DME
09.03.2020

Content

1. Definition and rationale for Rapid Risk Assessment (RRA)
2. Risk assessment methods, tools and process
3. Risk assessment components, risk matrix
4. Risk assessment outputs
5. Examples of risk questions for India

Risk = likelihood and consequences

Definition and rationale for RRA

What is risk assessment?

A systematic process for gathering, assessing and documenting information to assign a level of risk

Why to conduct risk assessment?

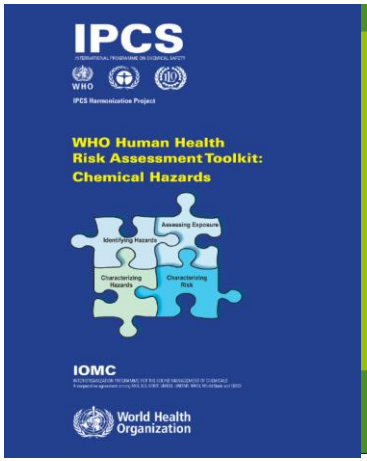
- Characterize the risk (low-moderate-high-very high)
- Support and direct decision-making
- Implement appropriate and timely control measures
- Support effective operational and risk communication
- Improve preparedness

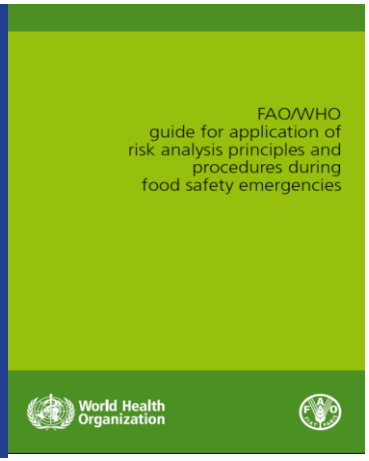
Risk assessment methods, tools and process

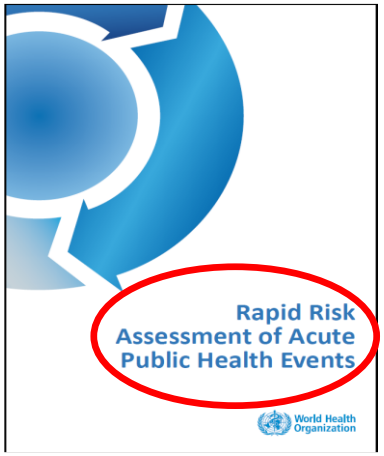
Methods & Tools for Rapid Risk Assessment

SMART goals: simple, measurable, achievable, relevant and time-bound

- Minimum number of methods for common understanding
- Simple but not simplistic
- Appropriate to the people undertaking the risk assessment
- Appropriate to the timeframe required for action
- Examples of methods/tools for acute public health events.







Rapid Risk Assessment Process

- Assembling Risk Assessment team (multidisciplinary team)
- Formulating risk questions
- Undertaking Risk Assessment (components)
  1. Assess hazard/threat
  2. Assess exposure(s)
  3. Assess context (vulnerabilities and threat-specific factors that increase or decrease risk)
- Assigning level of risk.

Risk assessment components, risk matrix

Risk assessment components

Hazard/threat

- Hazard can be known or unknown
- If unknown, prioritise potential hazards (biological, chemical, physical and radionuclear hazards)

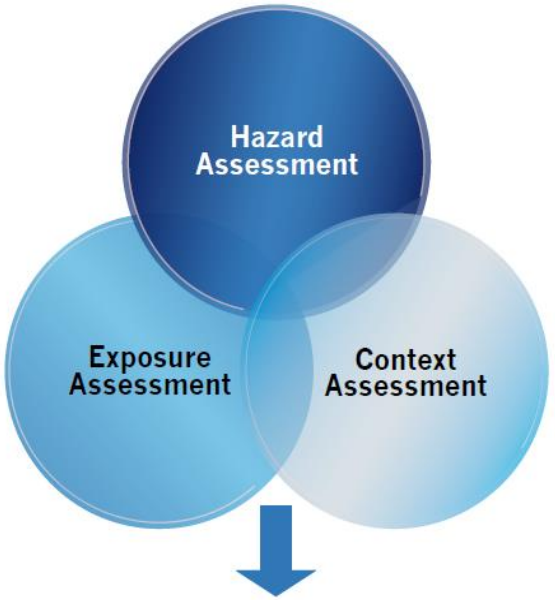
Exposure

- Number of people likely to have been exposed
- Number of people exposed likely to be affected

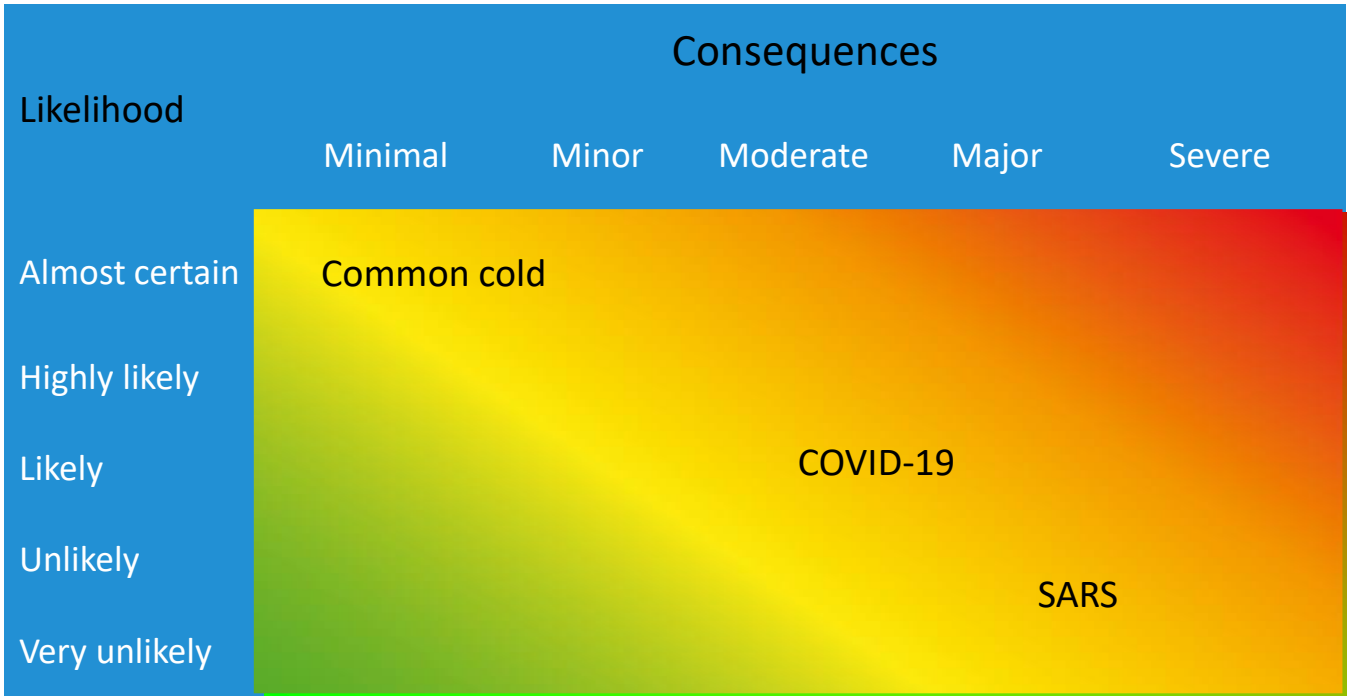
Context (capacity and control)

- Factors associated with social, health status, behaviour (population density and movement)
- Factors associated with health system (Surveillance, diagnosis, treatment)
- Context (political, conflict, economical)

Documented evidence



Risk Matrix


Consequences
Likelihood
Minimal
Minor
Moderate
Major
Severe
Almost certain
Highly likely
Likely
Unlikely
Very unlikely
Common cold
COVID-19
SARS

Risk assessment – characterizing risk

	Risk level	Level of management to be undertaken
Green	**Low**	Manage through routine procedures.
Yellow	**Moderate**	Routine procedures may not be sufficient. Management responsibility must be specified; specific monitoring or procedures required.
Orange	**High**	Local capacity surpassed requiring next level of management, and perhaps government to assist. Establish command and control structure.
Red	**Very high**	Local capacity overwhelmed requiring highest level of management and government to assist (perhaps international). Activate Emergency Operations Centre (EOC).

Outputs of risk assessment

Risk statement and limitations of RRA

Risk statement

- Make a concise statement about the level of risk and give evidence-based reasons using key information on likelihood of the event occurring and the impact the event will have

Limitations

- Make a brief statement about limitations of the risk assessment
- These limitations should be documented as they will also assist in decisions and follow-up actions

Recommendations

- Communicate timely and regularly
- Acknowledge uncertainty
- Understand stakeholders' perceptions
- Translate science into non-expert language

Limitations and level of confidence

Incomplete information can lead to low confidence in the outcome

BUT

decisions for intervention still have to be made

- As data improves confidence increases
- At all stages of an event the most reliable data available should be used and key limitations should be documented
- This is a cyclical process

Examples of risk questions for India

In scenario of first cases and clusters

- What is the risk of infection for Indian citizens travelling in areas with/without ongoing community transmission?
- What is the risk of introduction of COVID-19 in state X?
- What is the risk of health care associated transmission?
- What is the risk of clusters associated with COVID-19 occurring in other states of India in the coming weeks?

In scenario of community transmission

- What is the risk associated with COVID-19 infection for people in state/city X?
- What is the risk of widespread and sustained transmission in India in the coming weeks?
- What is the risk for healthcare systems capacity in India in the coming weeks?
- What is the risk of severe impact on the Indian society?

Key messages

Risk assessment:

1. Supports defendable and proportional decision making, especially where information is limited and the level of uncertainty high
2. Is a continuous process – should occur many times during an event
3. Helps to predict, plan and understand what levels of risk to accept
4. Helps communicate levels of risk and rationale for decision making to a technical and wider audience

State ToT on

NOVEL CORONAVIRUS (COVID-19)

Strengthening Community Surveillance For Covid-19

Dr Savitri,
Addl. Director/SSO
09.03.2020

Epidemiology of COVID-19

- Agent - Corona viruses belong to a large family of viruses, some causing illness in people and others that circulate among animals, including camels, cats, bats etc.
- The etiologic agent responsible for present outbreak of COVID-19 is SARS-CoV-2 which **is a novel coronavirus**.
- Transmission of coronaviruses can occur via **respiratory secretions**. Nosocomial transmission has been documented in COVID-19.
- Current estimates of the incubation period of 2019-nCoV range from **2-14 days**.
- Most common symptoms include **fever, fatigue, dry cough and breathing difficulty**. Upper respiratory tract symptoms like sore throat, rhinorrhea, and gastrointestinal symptoms like diarrhea and nausea/ vomiting are seen in about 20% of cases.

Case definitions – Suspect case

- A patient with **acute respiratory illness** {fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness of breath)}, **AND** a **history of travel** to or residence in a country/area or territory reporting local transmission (See NCDC website for updated list) of COVID-19 disease during the 14 days prior to symptom onset;

OR

- A patient/Health care worker with **any acute respiratory illness** **AND** having been in ***contact*** **with a confirmed** COVID-19 case in the last 14 days prior to onset of symptoms;

OR

- A patient with **severe acute respiratory infection** {fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness breath)} **AND** **requiring hospitalization** **AND** with **no other etiology** that fully explains the clinical presentation;

OR

- A case for whom **testing** for COVID-19 **is inconclusive**.

Case definitions – Laboratory confirmed case

- A person with **laboratory confirmation** of COVID-19 infection, irrespective of clinical signs and symptoms.

Definition of Contact

A contact is a person that is involved in any of the following:

- Providing direct care without proper personal protective equipment (PPE) for COVID-19 patients
- **Staying in the same** close environment of a COVID-19 patient (including **workplace, classroom, household, gatherings**).
- Traveling together in **close proximity** (1 m) with a **symptomatic person** who later tested **positive** for COVID-19.

Types of contacts

High Risk

- Touched body fluids of the patient (Respiratory tract secretions, blood, vomit, saliva, urine, faeces)
- Had direct physical contact with the body of the patient including physical examination without PPE.
- Touched or cleaned the linens, clothes, or dishes of the patient.
- Lives in the same household as the patient.
- Anyone in close proximity (within 3 ft) of the confirmed case without precautions.
- Passenger in close proximity (within 3 ft) of a conveyance with a symptomatic person who later tested positive for COVID-19 for more than 6 hours.

Low Risk

- Shared the same space (Same class for school/worked in same room/similar and not having a high risk exposure to confirmed or suspect case of COVID-19).
- Travelled in same environment (bus/train/flight/any mode of transit) but not having a high-risk exposure.

Key considerations – Surveillance

- Surveillance period is for 28 days – (14 days quarantine at home or hospital or a designated facility and next 14 days is for self reporting).
- Testing –
  - All high risk contacts to be tracked, quarantined and lab-tested as per the protocol.
  - For low risk contacts – lab-test only when the person under surveillance develops symptoms.
- Sample – Throat swab (Details in the session on lab)
- Treatment – No drug(s) or vaccine recommended presently.

Key considerations – Surveillance (Contd.)

- Indian Nationals – Irrespective of the location of the health care facility where the suspect/confirmed case is admitted, it will be included in the line list of the State where the case resided during the last 14 days (prior to or after the onset of the symptoms).
- In case of any conflict, the States may discuss the matter amongst themselves and take a decision.
- Foreign Nationals - An individual or a group of foreign nationals if found positive and admitted in a designated health facility in a particular State, that state to include such foreigners in its line list.

Key consideration – Contact Tracing

- A positive case may have contacts in multiple States/UTs.
- Tracking of all the contacts located in a particular State/UT will be the responsibility of that State/UT.
- In case of any high risk contact found in the particular State/UT, sampling to be carried out by respective State/UT along with Home/Hospital quarantine of the said contact.
- Sampling to be carried out strictly in accordance with the guidelines.

Cluster containment Strategy

Scenarios:

- Travel related cases reported in India
- Local transmission of COVID-19 (Single Cluster)
- Large outbreaks of COVID-19 disease (Multiple cluster)
- India becomes endemic for COVID-19
    - IDSP, will be involved in community surveillance in all of the above mentioned scenarios.

Containment zone

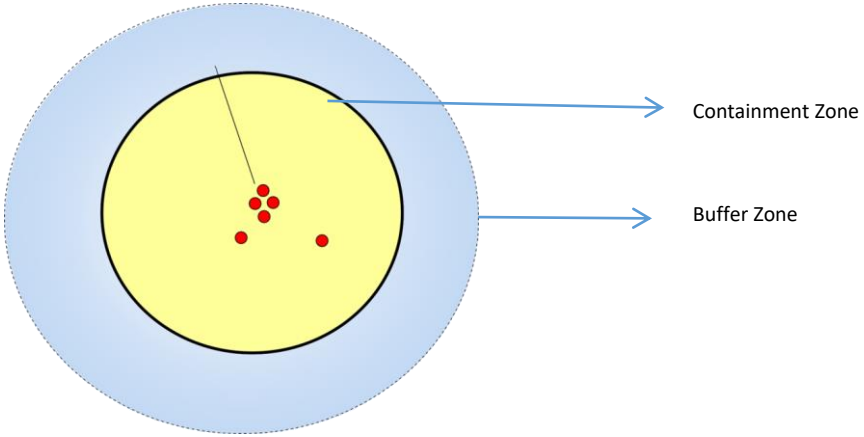
- A Central RRT will help the State/ District administration in mapping the Containment Zone.
- The containment zone will be defined based on
  - The index case / cluster, which will be the designated epicenter.
  - Geographical distribution of cases around the epicenter.
  - Local administrative boundaries of urban cities /town
- A scenario based approach (e.g. a small cluster in a closed environment or single cluster in a residential colony) while deciding the perimeter of containment zone.
- The decision on perimeter of the containment zone **is to be guided by continuous real time risk assessment.**

Containment zone Cont…

- Implementation of strict perimeter control is vital for the containment of COVD-19.
- Perimeter control is primarily an administrative measure – Enhanced surveillance within the perimeter is a part of the larger administrative response.
- Rapid Response Teams (RRTs) needs to be oriented on the enhanced surveillance & contact tracing.

Buffer Zone

- Buffer Zone is an area around the Containment Zone, where new cases most likely to appear.
- There will not be any perimeter control for the buffer zone.



Surveillance Activities in Containment Zone

The residential areas will be divided into sectors for the ASHAs/Anganwadi Workers/ANMs each covering 50 households (30 households in

Supervisory officers (PHC/CHC doctors) in the ratio of 1:4.

The field workers (FW) will be performing active house to house surveillance daily in the containment zone from 8:00 AM to 2:00 PM and also encourage self reporting.

Line list the family members, contact listing, identification of close contacts and all those having symptoms.

The field worker will provide a mask to the suspect case and to the care giver identified by the family.

The suspect will be isolated till such time he/she is examined by the supervisory officer.

The supervisory officer will collect data from the health workers under him/ her, collate and provide the daily and cumulative data to the control room by 4.00 P.M. daily.

As per case definition the supervisory officer, visit house, make arrangements to shift the suspect case to the designated treatment facility.

Follow up contacts identified by the RRTs within the sector allocated to the FWs.

Travel related cases reported in India

Containment Zone	Buffer Zone
• Isolation & management of case • Quarantine of contacts • Enhanced IEC • Active ARI/ILI Surveillance • Enhanced self reporting • Enhanced personal hygiene, hand hygiene & cough etiquettes	• Enhanced Passive ARI/ILI Surveillance • Enhanced Self reporting

Local transmission – Single cluster

Containment zone

- Isolation & management of case
- Quarantine of contacts
- Enhanced IEC
- Active ARI/ILI Surveillance
- Enhanced self reporting
- Enhanced personal hygiene, hand hygiene & cough etiquettes
- Establish control room in the local health facility
- Ban local mass gathering
- Lockdown of identified cluster for e.g. Schools/residential building/Hotel

Buffer zone

- Enhanced Passive ARI/ILI Surveillance
- Enhanced Self reporting.
- Enhanced media surveillance
- Trainings on case definitions and contacts

Large outbreak – Multiple clusters

Containment zone

- Isolation & management of case
- Quarantine of contacts
- Enhanced IEC
- Active ARI/ILI Surveillance
- Enhanced self reporting
- Enhanced personal hygiene, hand hygiene & cough etiquettes
- Ban local mass gathering
- Closure of schools, offices, colleges
- Environment disinfection
- Refrain from leaving home + Border measures
- Establishment of control room at the block and district level
- Enhanced media surveillance in and surrounding blocks/districts
- Monitoring of rumour register
- Mobile specimen collection units

Large outbreak – Multiple clusters

- Buffer zone

- Isolation & management of case
- Quarantine of contacts
- Enhanced IEC
- Active ARI/ILI Surveillance
- Enhanced self reporting
- Enhanced personal hygiene, hand hygiene & cough etiquettes
- Border measures
- Ban all mass gatherings in buffer zone
- Media surveillance
- Mobile specimen collection units

Endemic

- Isolation & management of cases as per guidelines
- Enhanced IEC
- Routine Lab ARI/ILI Surveillance
- Enhanced self reporting
- Enhanced personal hygiene, hand hygiene & cough etiquettes
- Categorisation & Treatment
- Other Lab tests/Serological tests as per availability
- Research
- Vaccination as per availability
- Media scanning and verification
- Rumour register monitoring

Border measures

- Refrain from leaving their homes and moving around from the containment zone for at least 14 days
- Refrain participating in events held in indoor venues when fever or respiratory symptoms are detected.
- Employers to cooperate for leaves or absence without a written diagnosis
- Enhanced entry screening for travellers from containment zone
- Involvement of all concerned departments.

IEC/BCC activities

- Education department
- Women and Child Development Department
- Transport Department
- Food safety Department
- DADF
- Tourism Department
- Other stakeholders like medical associations, nursing associations, hotel association etc.

Surge capacities – (Human resource, Hospitals Logistics etc.)

- Triage for hospitalization of cases.
- Additional workforce may be mobilised from neighbouring Districts/Medical colleges/private hospitals/NGOs/Trained Volunteers to cover household in containment zone.
- Nursing students/other paramedical workers may be oriented in advance for proper mobilisation of the staff during the containment procedures.
- Adequate logistics to be maintained at State and District levels.
- Mobile specimen collection teams (Involving medical and paramedical students) may be identified and oriented.
- Identification of Govt./Non Governmental buildings to be designated as quarantine centres or isolation wards at a short span of time.

State level ToT on

NOVEL CORONAVIRUS (COVID-19)

Environmental cleaning, disinfection and bio-medical waste management

Dr Prashanthi,
Associate Professor, Micro Biologist,
GMC, Guntur on 09.03.2020

Learning Objectives

- Environmental cleaning and Disinfection
  - Environmental decontamination
  - Cleaning of medical equipment
  - Cleaning soiled bedding, towels and clothes from patients with COVID-19
  - Cleaning and disinfection of occupied patient rooms
  - Cleaning and disinfection after patient discharge and transfer
  - Prevent environment contamination: contain respiratory secretions
- Bio-medical waste management

Environmental Cleaning and Disinfection

Environmental Decontamination (1)

General Principles

- Healthcare environment contains a diverse population of microorganisms, but only few are significant pathogens
- Microbiologically contaminated surfaces can serve as reservoirs of potential pathogens
- Contaminated surfaces not directly associated with transmission of infections to either staff or patients
- Transfer of microorganisms from environmental surfaces to patients is mostly via hand contact with the surface
- Hand hygiene is important to minimize the impact of this transfer
- Cleaning and disinfecting environmental surfaces is fundamental in reducing healthcare-associated infections

Environmental Decontamination (2)

- COVID-19 virus can potentially survive in the environment for several hours/days
- Premises and areas potentially contaminated with the virus to be cleaned before their re-use
- Products containing antimicrobial agents known to be effective against coronaviruses may be used
- Established cleaning strategies to be used
  - Remove the majority of bioburden, and
  - Disinfect equipment and environmental surfaces

Environmental Decontamination (3)

- Housekeeping surfaces can be divided into two groups
  - Those with minimal hand contact (e.g. floors and ceilings)
  - “High touch surfaces” – those with frequent hand-contact
- High touch housekeeping surfaces in patient-care areas should be cleaned and/or disinfected more frequently
  - Doorknobs
  - Bedrails
  - Light switches
  - Wall areas around the toilet in the patient’s room
  - Edges of privacy curtains

Cleaning/disinfection of medical equipment (1)

- Wear gloves when handling and transporting used patient care equipment
- Before removing equipment from patients room, medical equipment must be disinfected
- Non-critical medical equipment:
  - E.g., stethoscopes, blood pressure cuffs, dialysis machines and equipment knobs and controls
  - Usually only require cleansing followed by low- to intermediate-level disinfection, depending on the nature and degree of contamination

Cleaning/disinfection of medical equipment (2)

- In absence of manufacturer instructions regarding cleaning/disinfection of equipment
  - Ethyl alcohol or isopropyl alcohol (60%–90%, v/v) often used to disinfect small surfaces (rubber stoppers of multiple-dose medication vials, and thermometers) and occasionally external surfaces of equipment (stethoscopes and ventilators)
- Alcohol causes discoloration, swelling, hardening and cracking of rubber and certain plastics after prolonged and repeated use
  - Cover mattresses for easier disinfection

Cleaning/disinfection of medical equipment (3)

- Barrier protection of difficult to clean surfaces and equipment is useful, especially if these surfaces are
  - Touched frequently by gloved hands during the delivery of patient care
  - Likely to become contaminated with body substances, or
- Impervious-backed paper, plastic or fluid-resistant covers are suitable for use as barrier protection
- Remove and discard coverings with gloved hands
- Perform hand hygiene after ungloving
- Cover these surfaces with clean materials before the next patient encounter

Cleaning/disinfection of medical equipment (4)

Area/Items	Inputs	Process	Method/ procedure
Stethoscope	Alcohol-based rub/Spirit swab	Cleaning	○ Should be cleaned with detergent and water ○ Should be wiped with alcohol based rub/spirit swab before each patient contact
BP cuffs & covers	Detergent Hot water	Washing	○ Cuffs should be wiped with alcohol- based disinfectant and regular laundering is recommended for the cover
Thermometer	Detergent and water Alcohol rub Individual thermometer holder	Cleaning	○ Should be stored dry in individual holder ○ Clean with detergent and tepid water and wipe with alcohol rub in between patient use ○ Store in individual holder inverted ○ Preferably one thermometer for each patient
Injection and dressing trolley	Detergent and water Duster Disinfectant (70% alcohol)	Cleaning	○ To be cleaned daily with detergent and water ○ After each use should be wiped with disinfectant

Cleaning soiled bedding, towels and clothes from patients with COVID-19 (1)

- Clean the laundry and surfaces in all environments in which COVID-19 cases receive care – at least once a day and when a patient is discharged
- Hospital disinfectants:
  - 70% ethyl alcohol for small areas – reusable dedicated equipment (e.g. thermometers)
  - Sodium hypochlorite at 0.5% (equivalent 5000 ppm) for surface disinfection
- Individuals/staff dealing with soiled bedding, towels and clothes from patients with COVID-19 should:
  - Wear appropriate PPE – heavy duty gloves, mask, eye protection (goggles/face shield), long-sleeved gown, apron (if gown is not fluid resistant), and boots or closed shoes
  - Never carry soiled linen against body; place soiled linen in a leak-proof bag or bucket
  - Perform hand hygiene after blood/body fluid exposure and after PPE removal

Cleaning soiled bedding, towels and clothes from patients with COVID-19 (2)

- Soiled linen should be placed in clearly labelled, leak-proof bags or containers, carefully removing any solid excrement and putting in covered bucket to dispose of in the toilet or latrine
- Washing machine
  - Wash at 60-90°C with laundry detergent followed by soaking in 0.1% chlorine for approximately 30 minutes and dried
- No machine washing
  - Soaked in hot water with soap/detergent in a large drum
  - Use a stick to stir and avoid splashing
  - Empty the drum and soak linen in 0.1% chlorine for approx. 30 minutes
  - Rinse with clean water and let linens dry fully in the sunlight

Cleaning and disinfection of occupied patient rooms

- Designate specific well-trained staff for cleaning environmental surfaces
- Cleaning personnel should wear PPE and must be trained on proper use of PPE and hand hygiene
- Define the scope of cleaning to be done each day
- Use a checklist to promote accountability for cleaning responsibilities
- Keep cleaning supplies outside the patient room

Cleaning of Housekeeping surfaces and eating utensils

- Housekeeping surfaces:
  - Require regular cleaning and removal of soil and dust
  - Personal protective equipment (PPE) used during cleaning and housekeeping procedures
  - Need to be cleaned only with soap and water or a detergent/disinfectant, depending on the nature of the surface and the degree of contamination
- Dishes and eating utensils used by a patient with known or suspected infection
  - No special precautions other than standard precautions
  - Wear gloves when handling patient trays, dishes and utensils

Spill management

- Worker assigned to clean the spill should wear gloves and other personal protective equipment
- Most of the organic matter of the spill to be removed with absorbent material
- Surface to be cleaned to remove residual organic matter
- Use disinfectant: hypochlorite
  - 1% for small spills
  - 10% for large spills

Cleaning and disinfection after patient discharge or transfer

- Clean and disinfect all surfaces that were in contact with patient or may have become contaminated during patient care
- Do not spray or fog occupied or unoccupied rooms with disinfectant – potentially dangerous practice that has no proven benefits

Prevent environment contamination: contain respiratory secretions (1)

Ensure early recognition and prevention of transmission of the respiratory virus at the initial encounter with a healthcare setting

- Post **visual alerts** (in appropriate languages) at the entrance to outpatient facilities (e.g., emergency departments, physicians' offices, outpatient clinics) instructing patient and the persons who accompany them to:
  - Inform healthcare personnel of symptoms of a respiratory infection when they first register for care, and
  - Practice respiratory hygiene/cough etiquette

Respiratory hygiene/cough etiquette

- All persons with signs and symptoms of a respiratory infection (regardless of presumed cause) must follow respiratory hygiene/cough etiquette
  - Cover the nose/mouth when coughing or sneezing
  - Use tissues to contain respiratory secretions
  - Dispose of tissues in the nearest waste receptacle after use
  - Perform hand hygiene after contact with respiratory secretions and contaminated objects/materials

Prevent environment contamination: contain respiratory secretions (2)

Ensure availability of materials for adhering to respiratory hygiene/cough etiquette in waiting areas for patients and visitors:

- Provide tissues and no-touch receptacles (i.e. waste container with foot-operated lid or uncovered waste container) for used tissue disposal
- Provide conveniently located dispensers of alcohol-based hand rub
- Provide soap and disposable towels for hand washing where sinks are available

Prevent environment contamination: contain respiratory secretions (3)

Masking and separation of persons with symptoms of respiratory infection

- During periods of increased respiratory infection in the community, offer triple-layer masks to persons who are coughing
- Encourage coughing persons to sit at least 3 feet (1 metre) away from others in common waiting areas

Droplet precautions

- Healthcare workers should practice droplet precautions, in addition to standard precautions, when examining a patient with symptoms of a respiratory infection
- Droplet precautions should be maintained until it is determined that they are no longer needed

Biomedical Waste Management

Bio-Medical Waste Management Rules 2016, amended 2018 & 2019

- Environment (Protection) Act, 1986
- Apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle any bio-medical waste
- "**Occupier**" means a person having administrative control over the institution and the premises generating bio-medical waste
- Responsibility of every occupier – safe and proper identification, handling, storage and disposal of biomedical waste from laboratories and related facilities

Segregation, packaging, transportation and storage

- Untreated bio-medical waste should not be mixed with other wastes
- Bio-medical waste shall be segregated into containers or bags at point of generation (as per BMWM Rules 2016)
- Bio-medical waste containers or bags should be prominently labelled with biohazard symbol (and other details as per Rules)
- Untreated bio-medical waste must not be stored >48 hrs
- Ensure no spillage occurs during handling and transit of bio-medical waste

Yellow bag

- Anatomical waste – human, animal body parts & tissue
- Soiled waste – items contaminated with blood or body fluids – like dressings, cotton swabs and bags containing residual blood/blood components
- Chemical waste – chemicals used in production of biologicals
- Microbiology, biotechnology and other clinical laboratory waste (to be pre-treated by autoclaving before discarding):
  - Blood bags
  - Laboratory cultures
  - Stocks or specimens of microorganisms
  - Live or attenuated vaccines
  - Human and animal cell cultures
- Discarded linen contaminated with blood or body fluid including mask and gown

Red Bag

- Contaminated recyclable waste
- Waste from disposable items:
  - Tubing and bottles
  - Intravenous tubes and sets
  - Catheters and urine bags
  - Syringes (without needles), vacutainers
  - Gloves
- Plastic petri-plates containing infectious material to be pre-treated by autoclaving and discarded in red bags

Translucent white box

- Puncture, leak and tamper proof
- Sharps waste (used, discarded and contaminated metal sharps)
  - Needles
  - Syringes with fixed needles
  - Needles from needle tip cutter or burner
  - Scalpels
  - Blades
- Any other contaminated sharps

Blue box

- Or containers with blue coloured marking
- Puncture and leak proof boxes
- **Glassware**
  - Broken or discarded glass including medicine vials & ampoules (except those contaminated with cytotoxic waste)
  - Broken or discarded contaminated glass

Labelling of BMW bags

Label should be non-washable and prominently visible

Waste category Number ..... **Waste quantity.....** **Sender's Name and Address:** **Phone Number .....** **Fax Number .....** **Contact Person .....** **In case of emergency please contact :** **Name and Address :** **Phone No.**	**Day ..... Month .....** **Year .....** **Date of generation .....** **Receiver's Name and Address:** **Phone Number:.....** **Fax Number.....** **Contact Person .....**

Disposal of BMW

Category	Type of bag/container	Type of waste	Treatment disposal options
Yellow	Non chlorinated colour coded bags in coloured bins Separate collection system leading to ETP	• Human anatomical waste • Animal anatomical waste • Soiled waste • Expired or discarded medicines • Chemical waste • Micro, biotech & clinical lab waste • Chemical liquid waste	Incineration/deep burial
Red	Non chlorinated plastic bags in coloured bins/ containers	Contaminated waste (recyclable) tubing, bottles, urine bags, syringes (without needles) and gloves	Auto/micro/hydro and then sent to recycling
White	Translucent, puncture, leak & tamper proof	Waste sharps including metals	Auto/dry heat sterilization followed by shredding /mutilation/encapsulation
Blue	Water proof card board boxes/containers	Glassware waste	Disinfection or auto/micro /hydro then sent to recycling

*Disposal by deep burial is permitted only in rural or remote areas where there is no access to common bio-medical waste treatment facility. This will be carried out with prior approval from the prescribed authority

Conclusion

- Cleaning and disinfecting environmental surfaces is fundamental in reducing healthcare-associated infections
- Established cleaning strategies to be used
- Cleaning staff must be protected by use of standard precautions including use of appropriate PPE
- Prevent environment contamination by containing respiratory secretions
- Manage biomedical waste as per existing Biomedical waste management Rules

State ToT on

NOVEL CORONAVIRUS (COVID-19)

Infection Prevention and Control

Dr Prashanthi,
Associate Professor, Micro Biologist,
GMC, Guntur on 09.03.2020

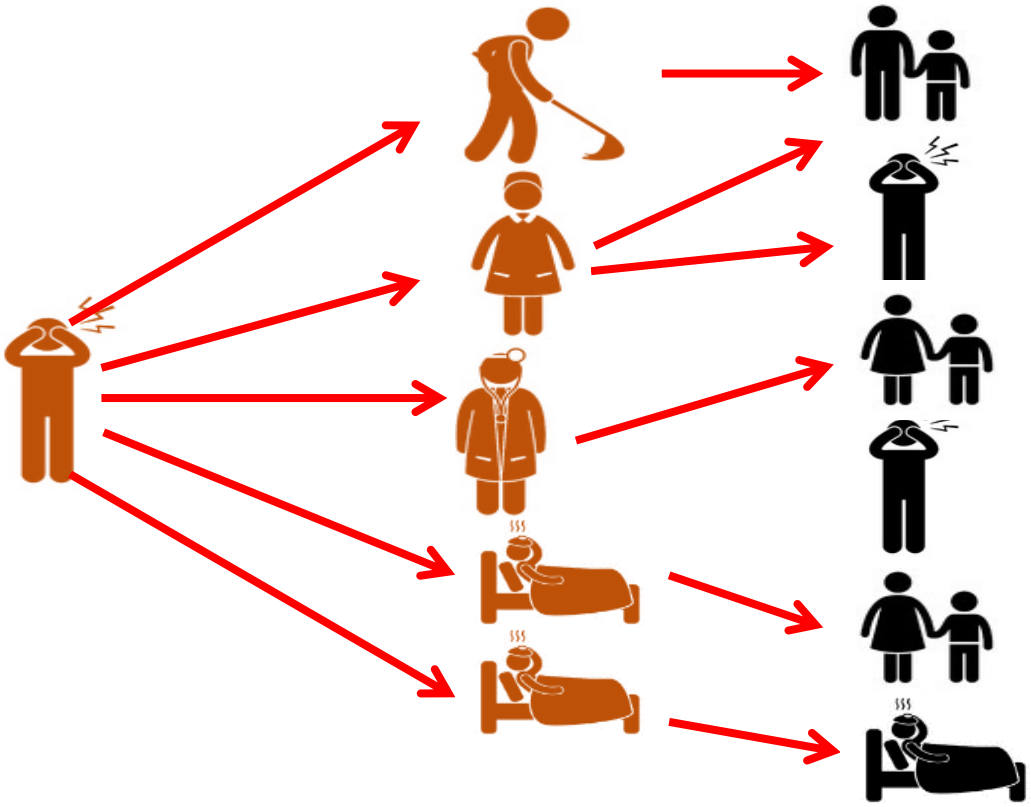
What is infection prevention and control?

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

- Source: WHO Infection Prevention and control web pages;; https://www.who.int/gpsc/ipc/en/

Who is at risk of infection?



Benefits of IPC

Protecting yourself

Protecting your patients

family, community & environment

- WHO2015 Safe & Quality Health Services Package

IPC goals in outbreak preparedness

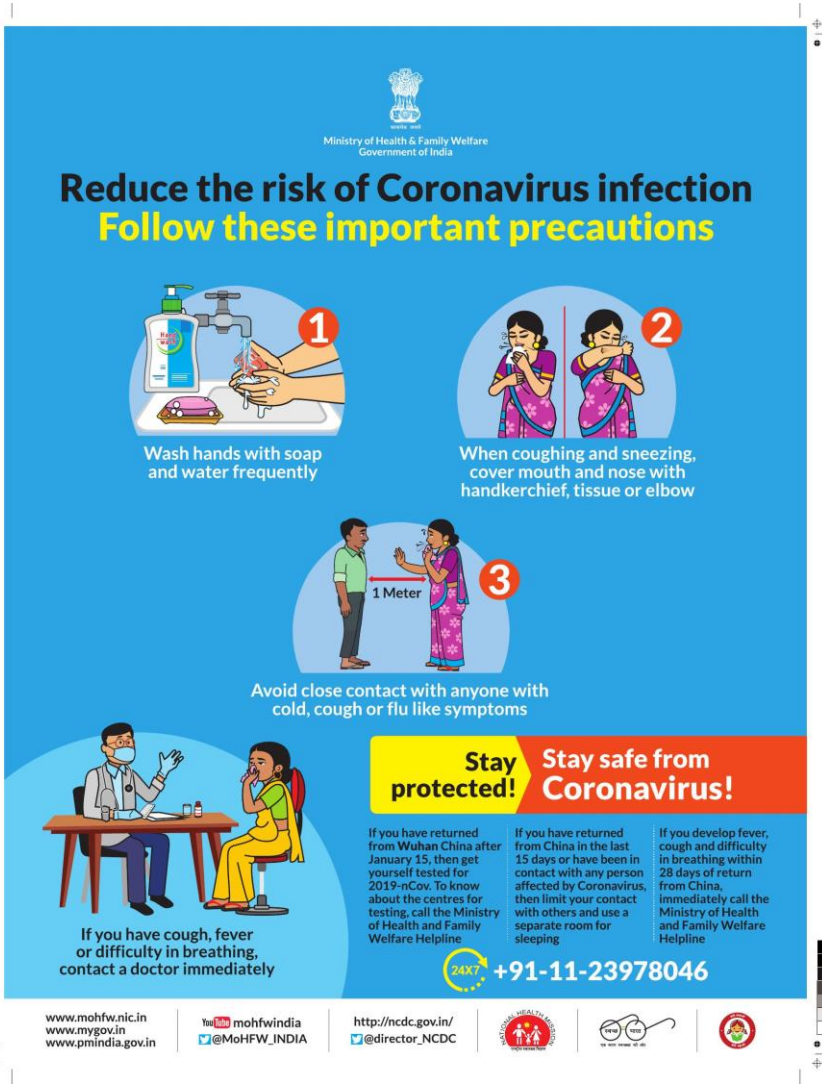
1. To reduce transmission of health care associated infections
2. To enhance the safety of staff, patients and visitors
3. To enhance the ability of the organization/health facility to respond to an outbreak
4. To lower or reduce the risk of the hospital (health care facility) itself amplifying the outbreak

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



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

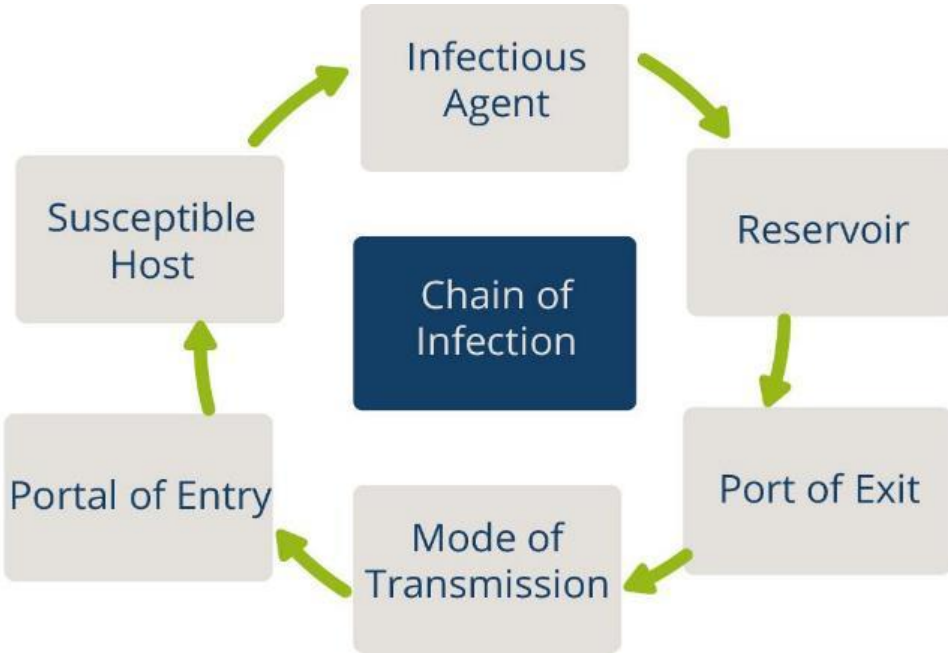
- The *basic level of IPC precautions*, to be used for **ALL** patients at **ALL** times regardless of suspected or confirmed status of the patient

- **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

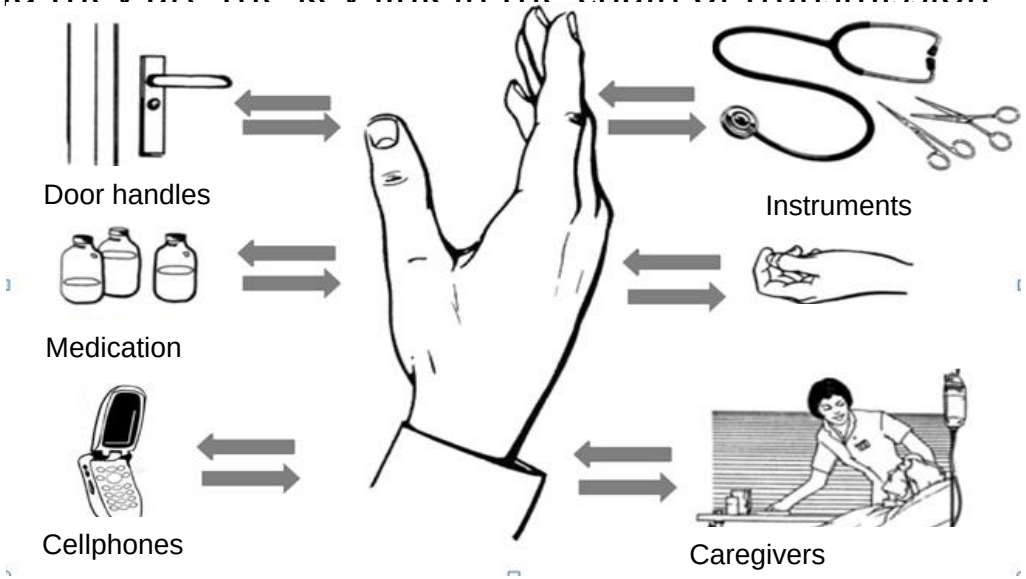


- For an infection to spread, <u>all links must be connected</u>

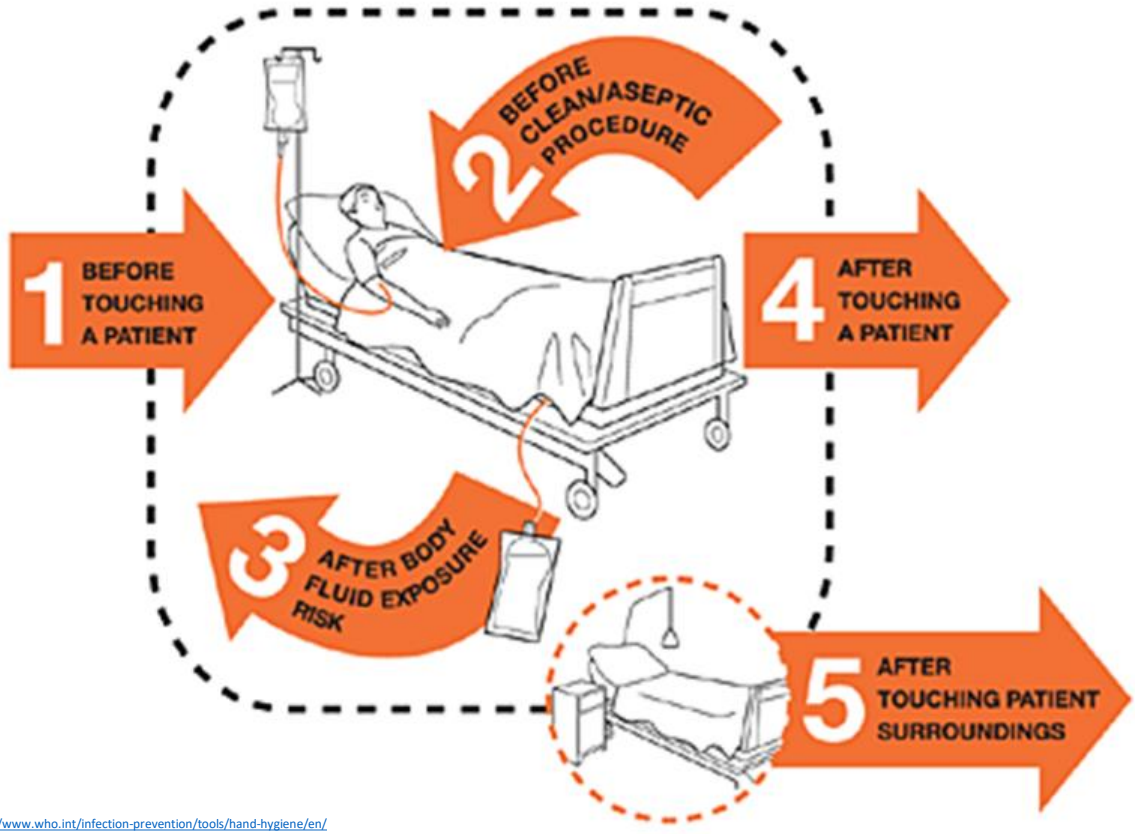
- <u>Breaking any one link,</u> will stop disease transmission!

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

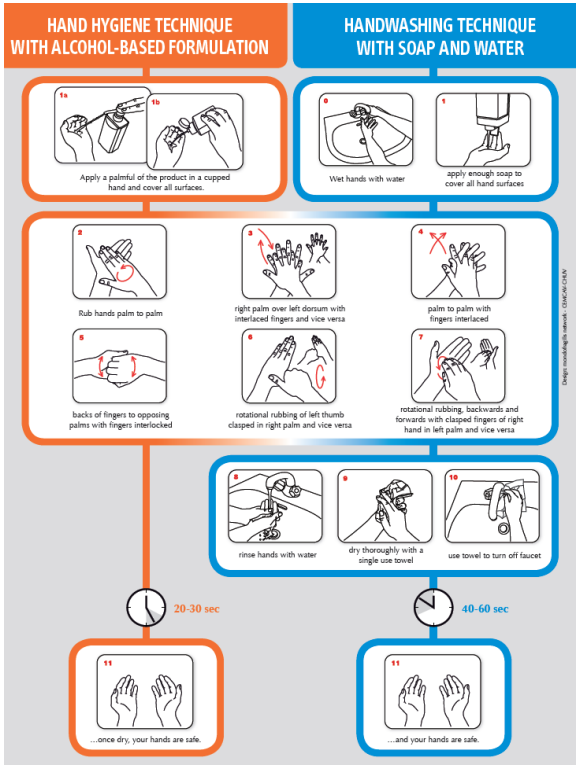


Hand hygiene: WHO 5 moments



- https://www.who.int/infection-prevention/tools/hand-hygiene/en/

Hand hygiene: HOW



https://www.who.int/infection-prevention/tools/hand-hygiene/en/

- 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!**

https://www.who.int/infection-prevention/tools/hand-hygiene/en/

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

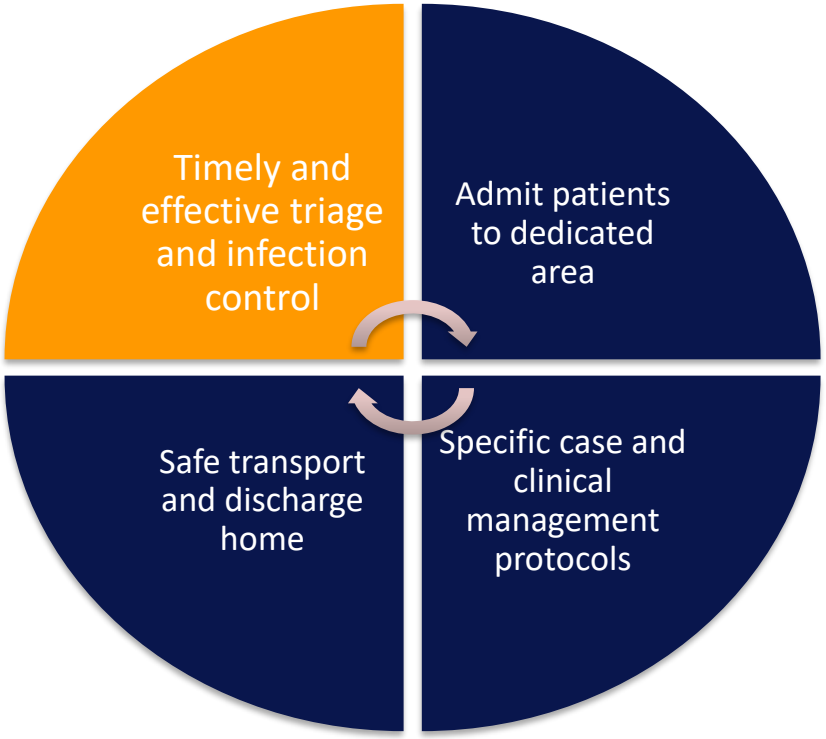
https://www.who.int/infection-prevention/tools/injections/training-education/en/

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.

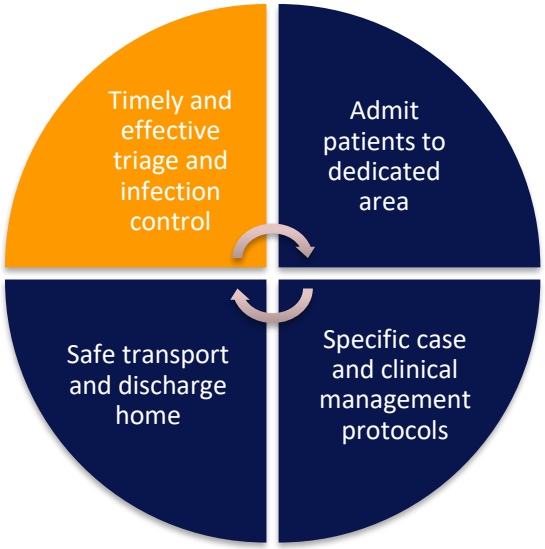
Triage, early recognition, and source control

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:

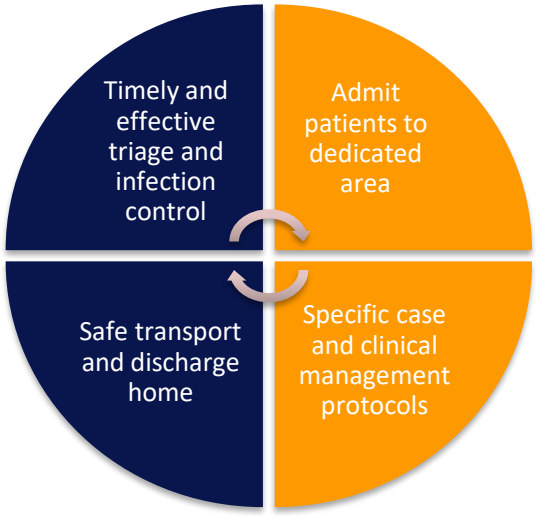
- Screening questionnaire
- Algorithm for triage
- Documentation papers
- PPE
- Hand hygiene equipment and posters
- Infrared thermometer
- Waste bins and access to cleaning/disinfection
- Post signage in public areas with syndromic screening questions to instruct patients to alert HCWs.

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)

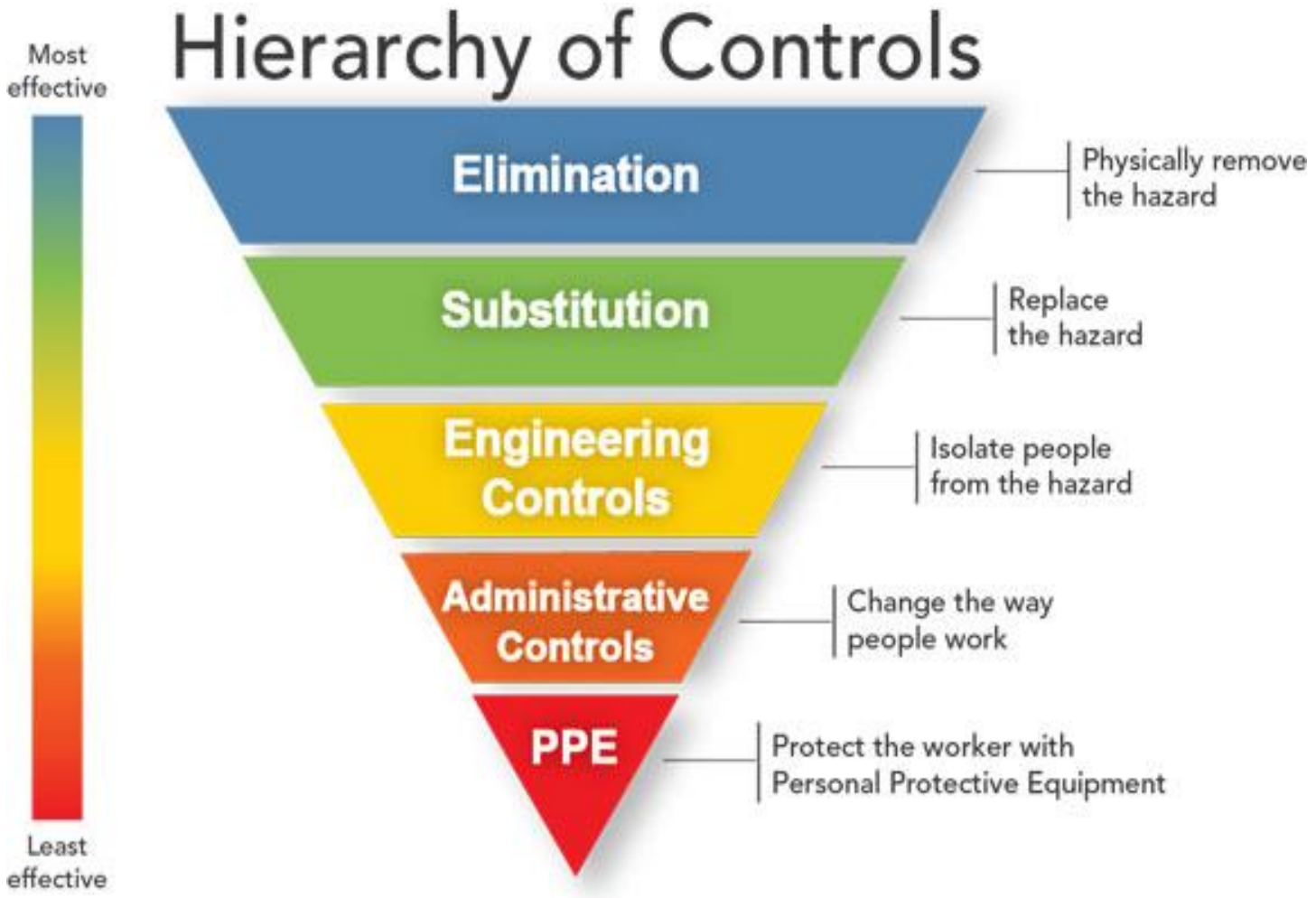
- Equipment should be single use when possible, dedicated to the patient and disinfected between uses
- Avoid transporting suspected or confirmed cases – if necessary, have patients wear masks. HCW should wear appropriate PPE.
- Routine cleaning of the environment is crucial
- Limit the number of HCW, 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
Elimination
Physically remove the hazard
Substitution
Replace the hazard
Engineering Controls
Isolate people from the hazard
Administrative Controls
Change the way people work
PPE
Protect the worker with Personal Protective Equipment

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.

file:///C:/Users/Mala%20Chhabra/Downloads/WHO-nCov-IPC_Masks-2020.1-eng.pdf

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

Ministry of Health & Family Welfare
Government of India

World Health Organization
India

Thank you

Wash your hands

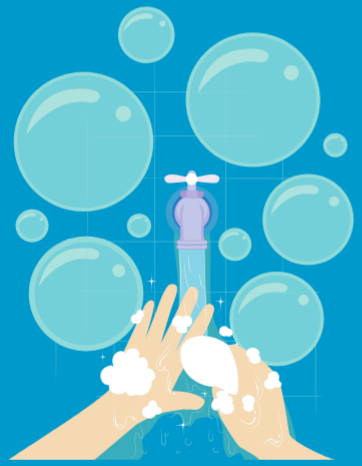
Wash your hands with soap and running water when hands are visibly dirty

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

World Health Organization

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

World Health Organization

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

World Health Organization

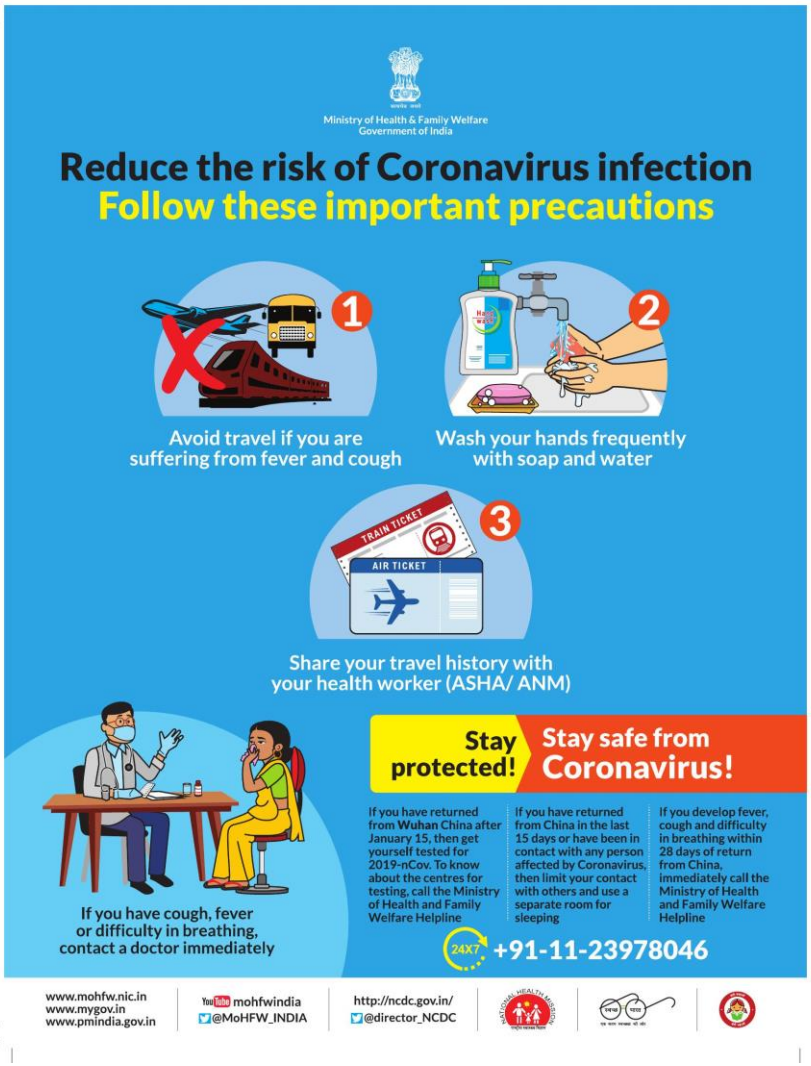
Protect others from getting sick

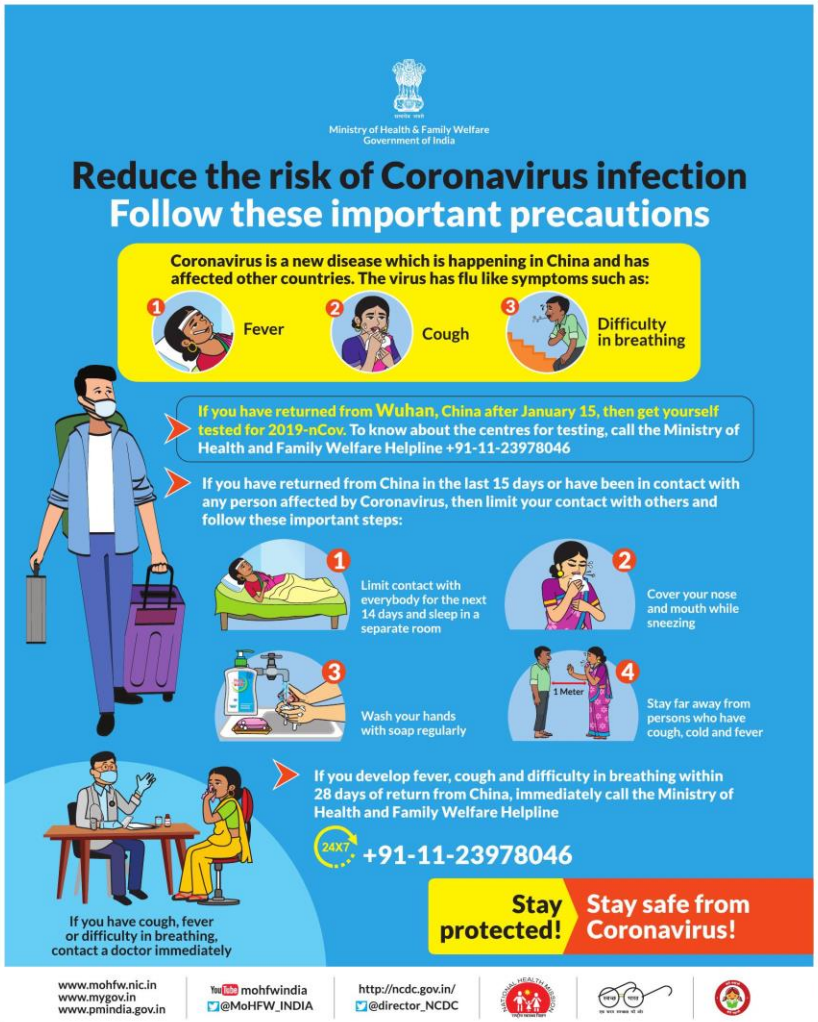
Avoid close contact when you are experiencing cough and fever

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

World Health Organization


Ministry of Health & Family Welfare
Government of India
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
TRAIN TICKET
AIR TICKET
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
24X7 +91-11-23978046
www.mohfw.nic.in
www.mygov.in
www.pmindia.gov.in
mohfwindia
@MoHFW_INDIA
http://ncdc.gov.in/
@director_NCDC


Ministry of Health & Family Welfare
Government of India
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:
1
Fever
2
Cough
3
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:
1
Limit contact with everybody for the next 14 days and sleep in a separate room
2
Cover your nose and mouth while sneezing
3
Wash your hands with soap regularly
1 Meter
4
Stay far away from persons who have cough, cold and fever
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
24X7
+91-11-23978046
If you have cough, fever or difficulty in breathing, contact a doctor immediately
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www.mohfw.nic.in
www.mygov.in
www.pmindia.gov.in
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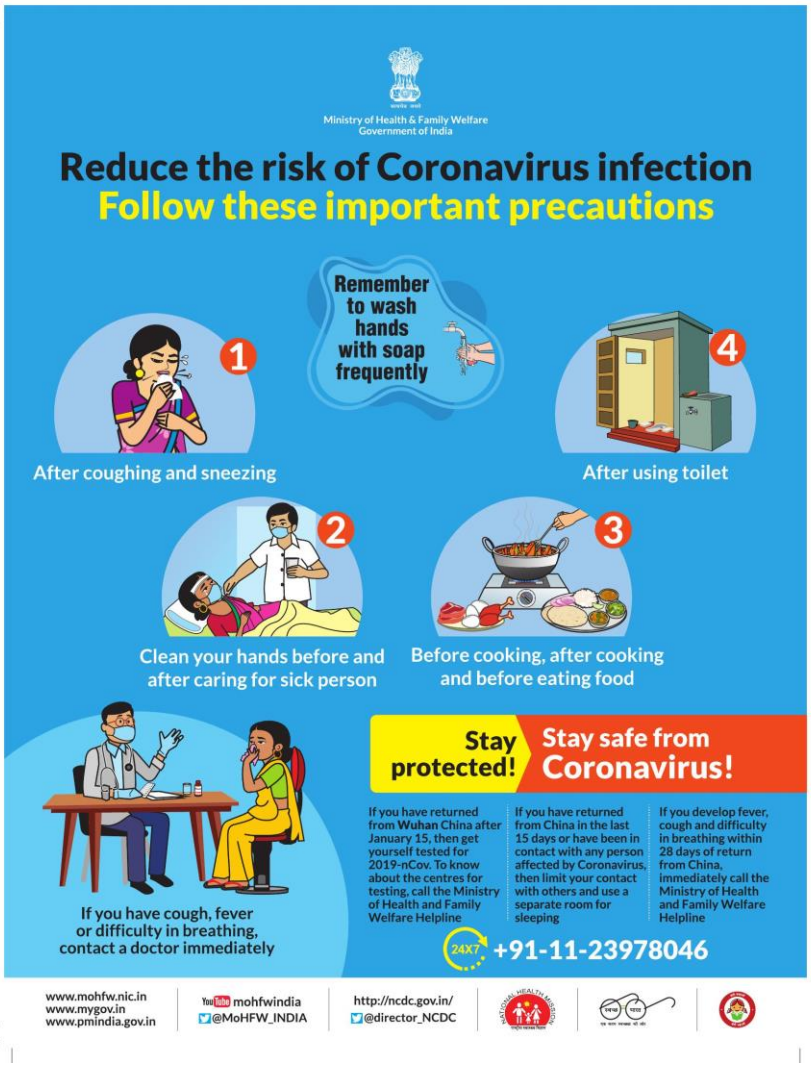
http://ncdc.gov.in/
@director_NCDC


Ministry of Health & Family Welfare
Government of India
Reduce the risk of Coronavirus infection
Follow these important precautions
Remember to wash hands with soap frequently
1
After coughing and sneezing
4
After using toilet
2
Clean your hands before and after caring for sick person
3
Before cooking, after cooking and before eating food
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
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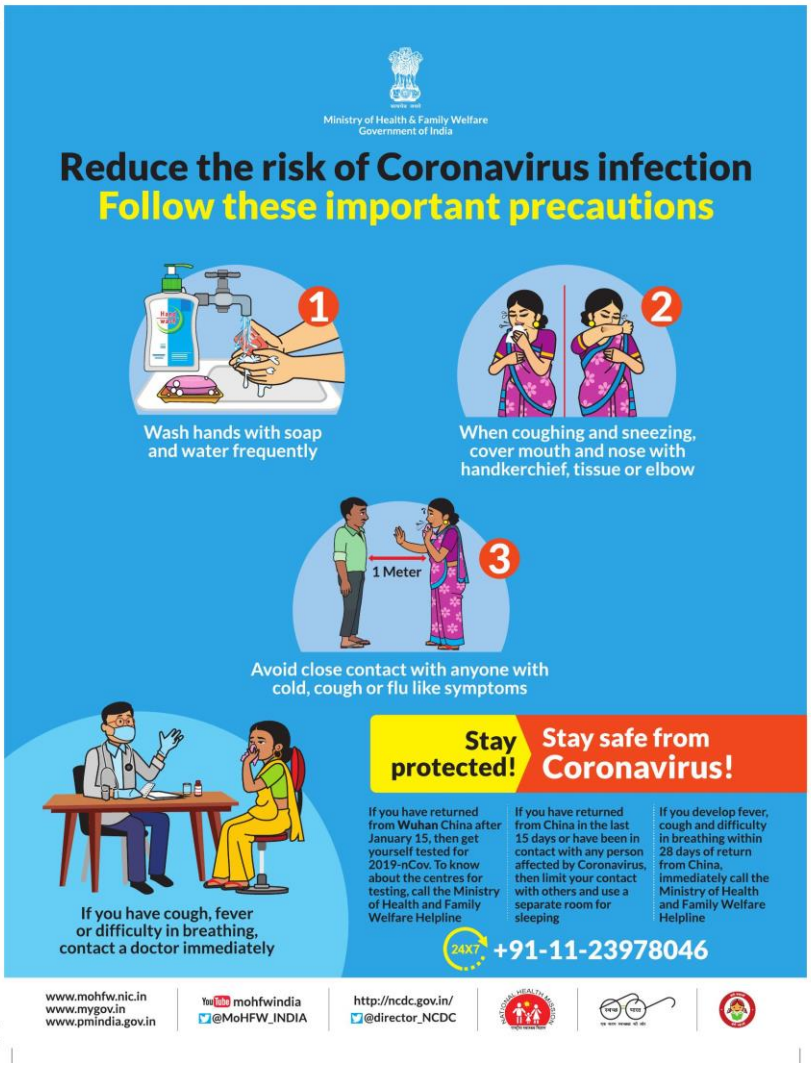
@director_NCDC


Ministry of Health & Family Welfare
Government of India
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
1 Meter
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
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@MoHFW_INDIA
http://ncdc.gov.in/
@director_NCDC

State ToT on

NOVEL CORONAVIRUS (COVID-19)

Information Management

Mr Jagan Mohan Rao,
IDSP Training Consultant
09.03.2020

Rational for Data and Information

for COVID-19 preparedness and response

- For tracking of cases and contacts and to provide care and treatment
- For rapid detection of new cases where the SARS-CoV-2 is not circulating;
- To provide epidemiological information to conduct risk assessments at all levels; and
- To provide epidemiological information to guide preparedness and response measures at all levels.

Types of Data and Information

needed for COVID-19 preparedness and response

- List and details of cases and contacts
- Location and details of health facilities
- Location and details of laboratories
- List of health workforce (all cadre)
- List of contacts of partners

- List of information products (line lists, situation reports)
- Data dictionary with metadata
- Up-to-date case definitions

Characters of Data and Information

needed for COVID-19 preparedness and response

Essential attributes

- Timely
- Accurate
- Reliable
- Complete
- Private
- Confidential
- Secure

Ministry of Health & Family Welfare
Government of India

World Health Organization
India

Special Surveillance Information System

for managing COVID-19

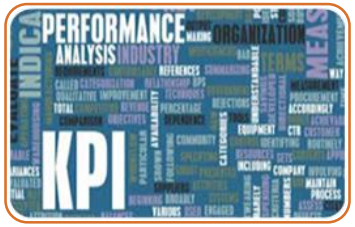
National web-enabled information platform

Special Surveillance Information System

for managing COVID-19

To have near to real time Single Integrated Portal to access information on 2019 nCoVs (a single source of truth) data

Bird-eye-visualization to support data based Decision making



National-level monitoring and Status of implementation, To provide better care in terms of availability of equipments and Preparedness Healthcare

Special Surveillance Information System

for managing COVID-19

URL: http://ncdc.nhp.gov.in/

Login Credentials will be shared separately

The Application mainly build for two level users:

Data entry and dashboard at State level

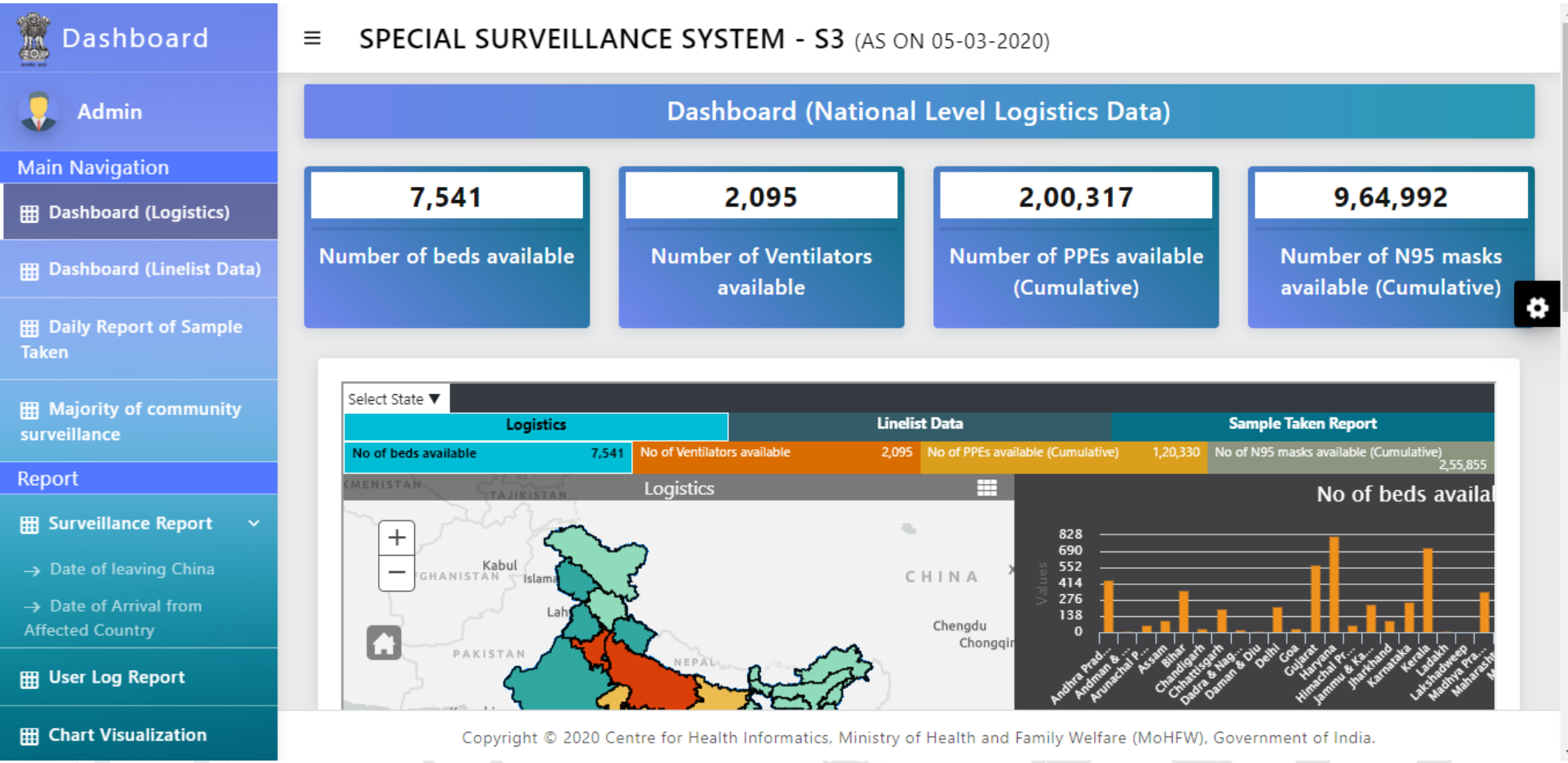
(all data entry officers will be provided with credentials of this application for making entries)

Dashboard for data viewing at both State and National Level

Special Surveillance Information System

for managing COVID-19

National Level User's Dashboard: Logistics



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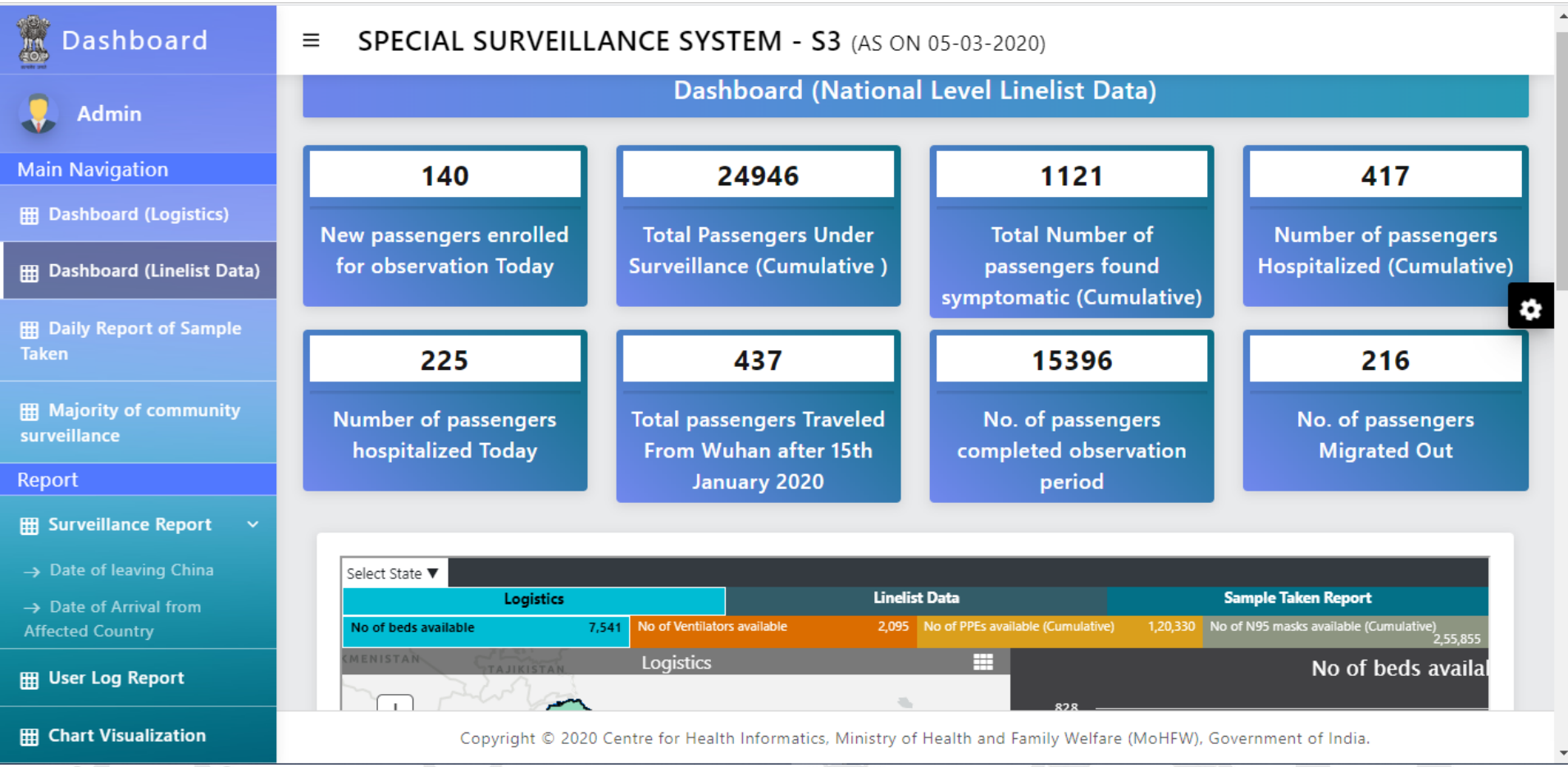
Special Surveillance Information System

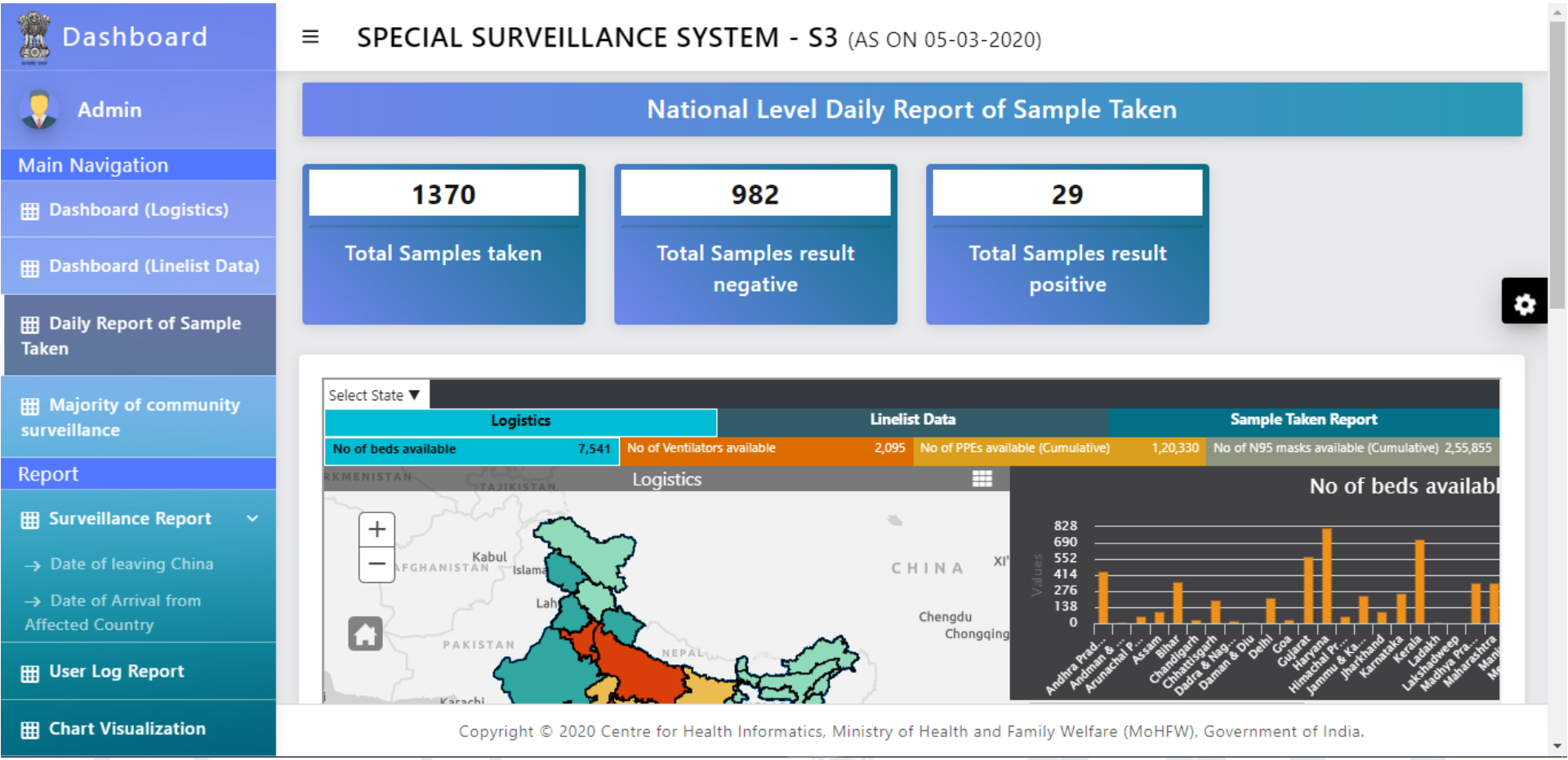
for managing COVID-19 **National Level User's Dashboard: Line listing of Passengers**



Special Surveillance Information System

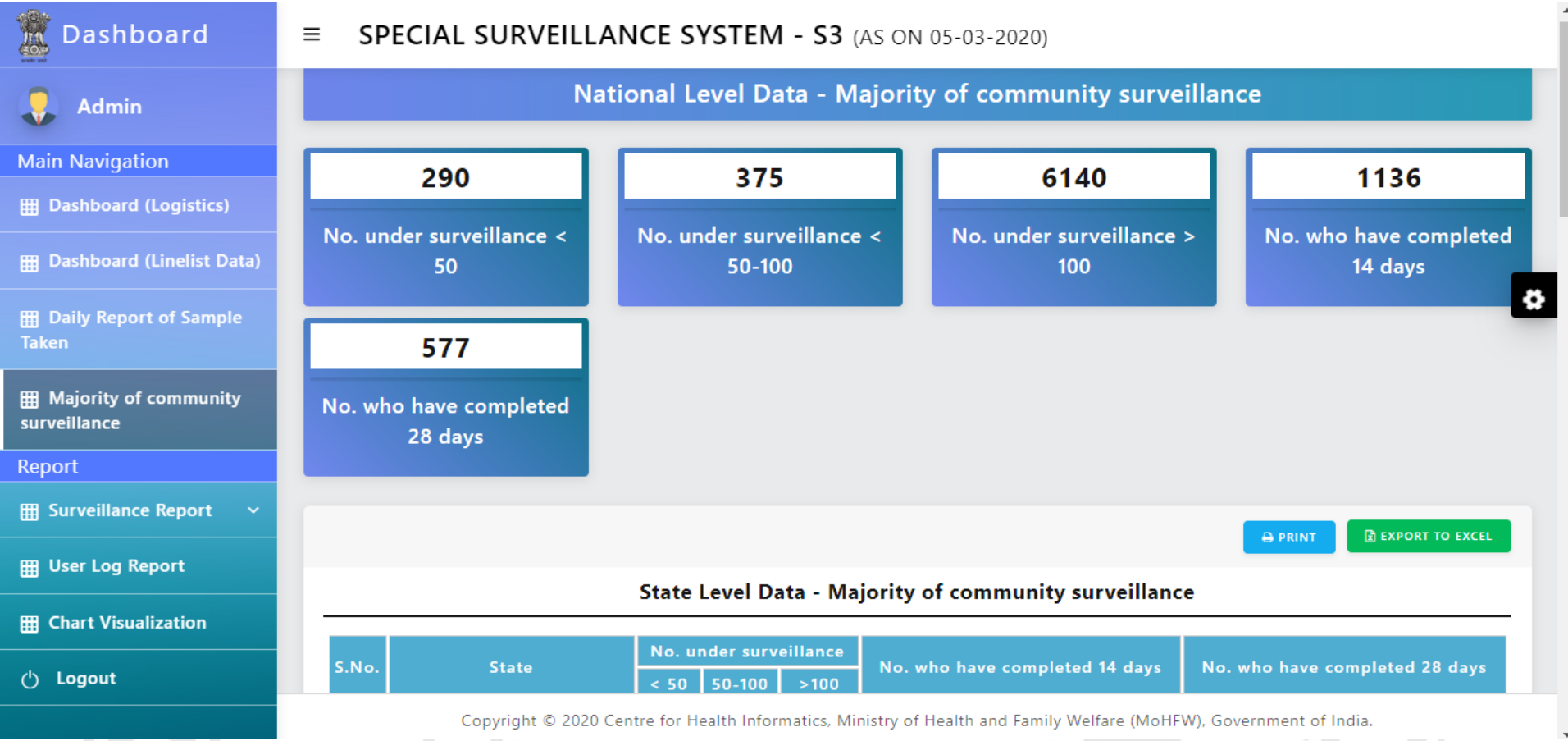
for managing COVID-19

Daily Report of Sample Taken



Special Surveillance Information System

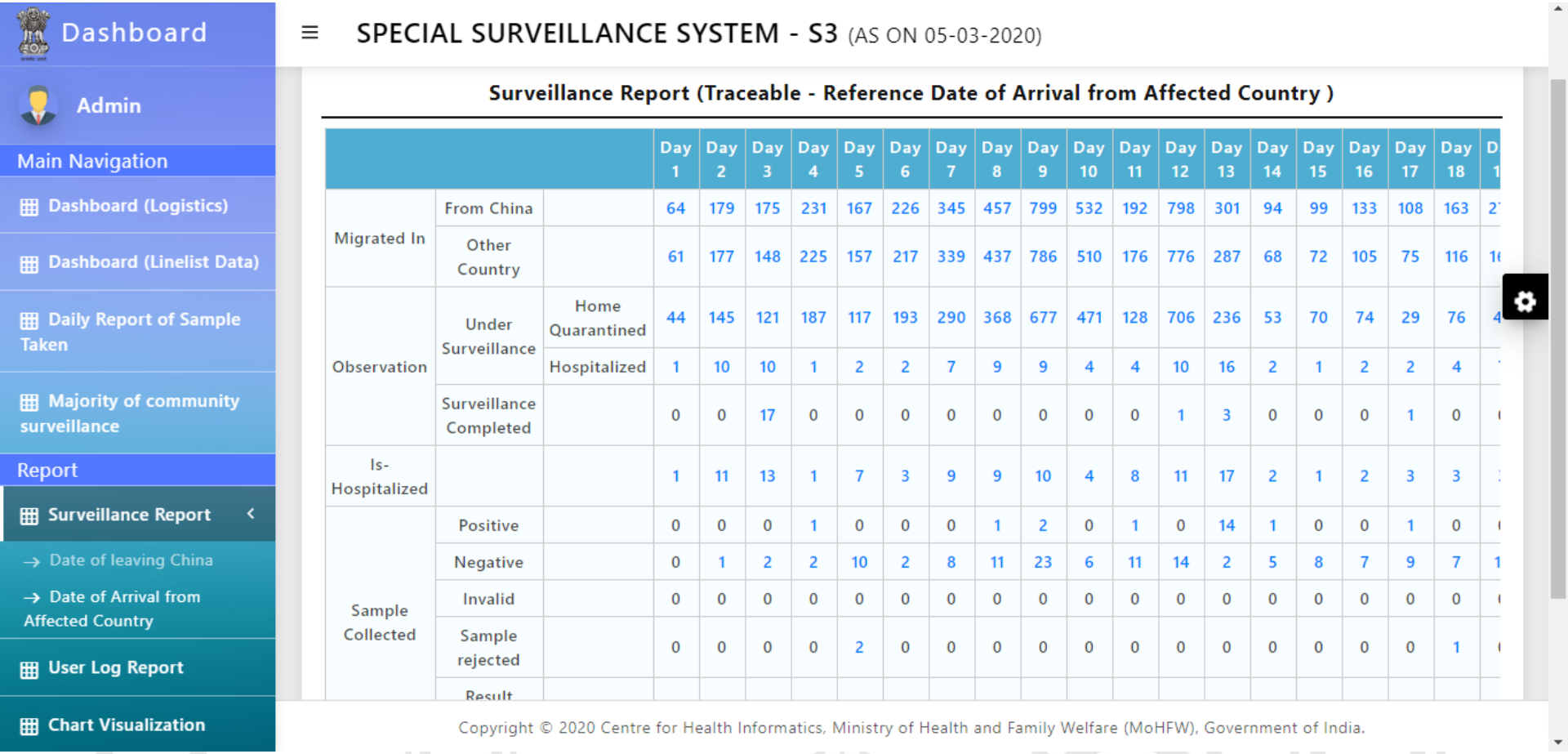
for managing COVID-19 **National Level User's Dashboard: Community Surveillance**



Special Surveillance Information System

for managing COVID-19

National Level User's Dashboard:
Surveillance Report (Date of Arrival from Affected Country)



Dashboard

Admin

Main Navigation

- Dashboard (Logistics)
- Dashboard (Linelist Data)
- Daily Report of Sample Taken
- Majority of community surveillance

Report

- Surveillance Report
  - → Date of leaving China
  - → Date of Arrival from Affected Country
- User Log Report
- Chart Visualization

≡ SPECIAL SURVEILLANCE SYSTEM - S3 (AS ON 05-03-2020)

Surveillance Report (Traceable - Reference Date of Arrival from Affected Country)

			Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	D 1
Migrated In	From China		64	179	175	231	167	226	345	457	799	532	192	798	301	94	99	133	108	163	2
	Other Country		61	177	148	225	157	217	339	437	786	510	176	776	287	68	72	105	75	116	1
Observation	Under Surveillance	Home Quarantined	44	145	121	187	117	193	290	368	677	471	128	706	236	53	70	74	29	76	4
		Hospitalized	1	10	10	1	2	2	7	9	9	4	4	10	16	2	1	2	2	4	
	Surveillance Completed		0	0	17	0	0	0	0	0	0	0	0	1	3	0	0	0	1	0	
Is-Hospitalized			1	11	13	1	7	3	9	9	10	4	8	11	17	2	1	2	3	3	
Sample Collected	Positive		0	0	0	1	0	0	0	1	2	0	1	0	14	1	0	0	1	0	
	Negative		0	1	2	2	10	2	8	11	23	6	11	14	2	5	8	7	9	7	1
	Invalid		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sample rejected		0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	
	Result																				

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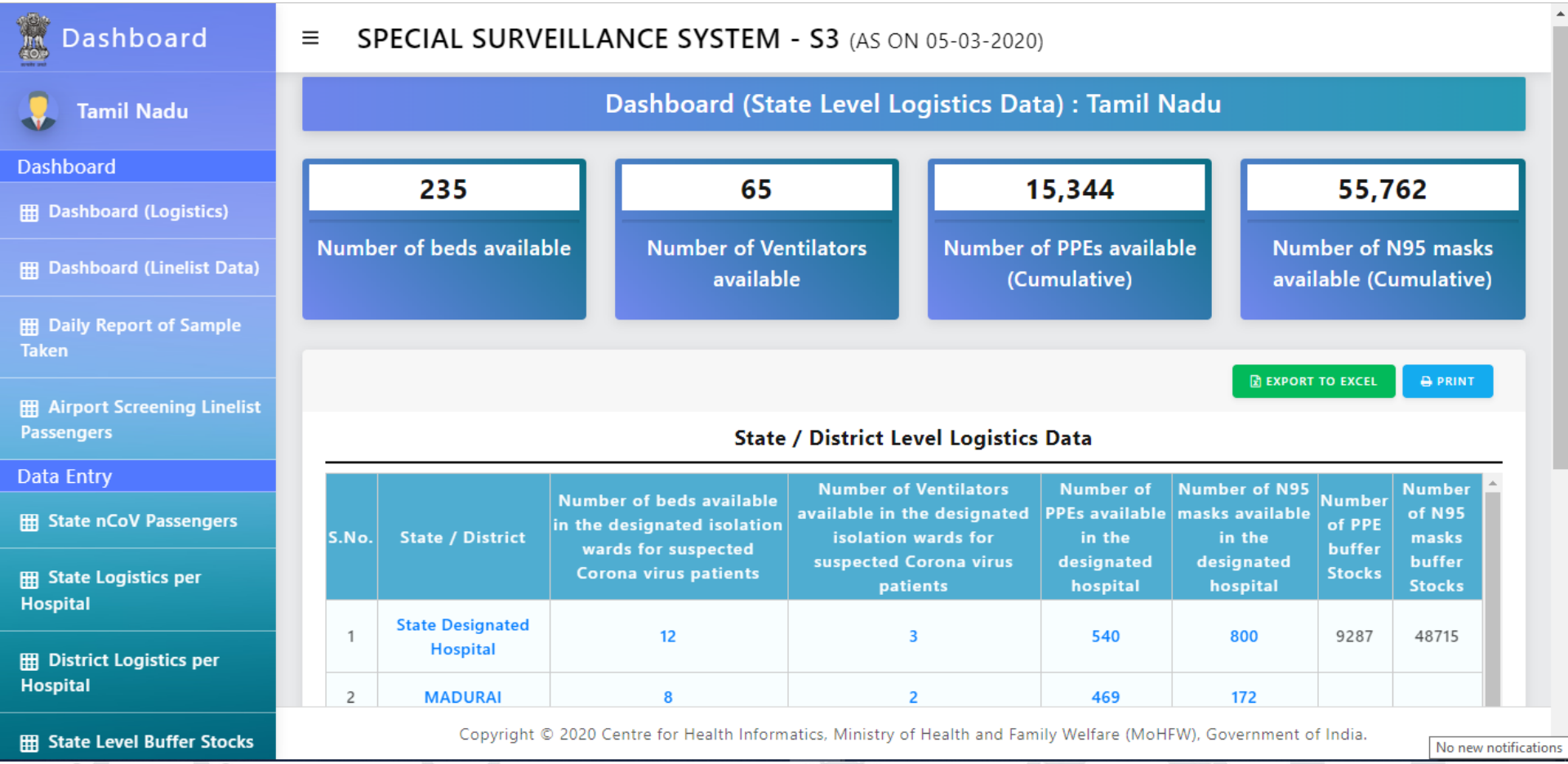
Special Surveillance Information System

for managing COVID-19

State Level User's Dashboard



Special Surveillance Information System

for managing COVID-19

State Level Users: Data Entry pages

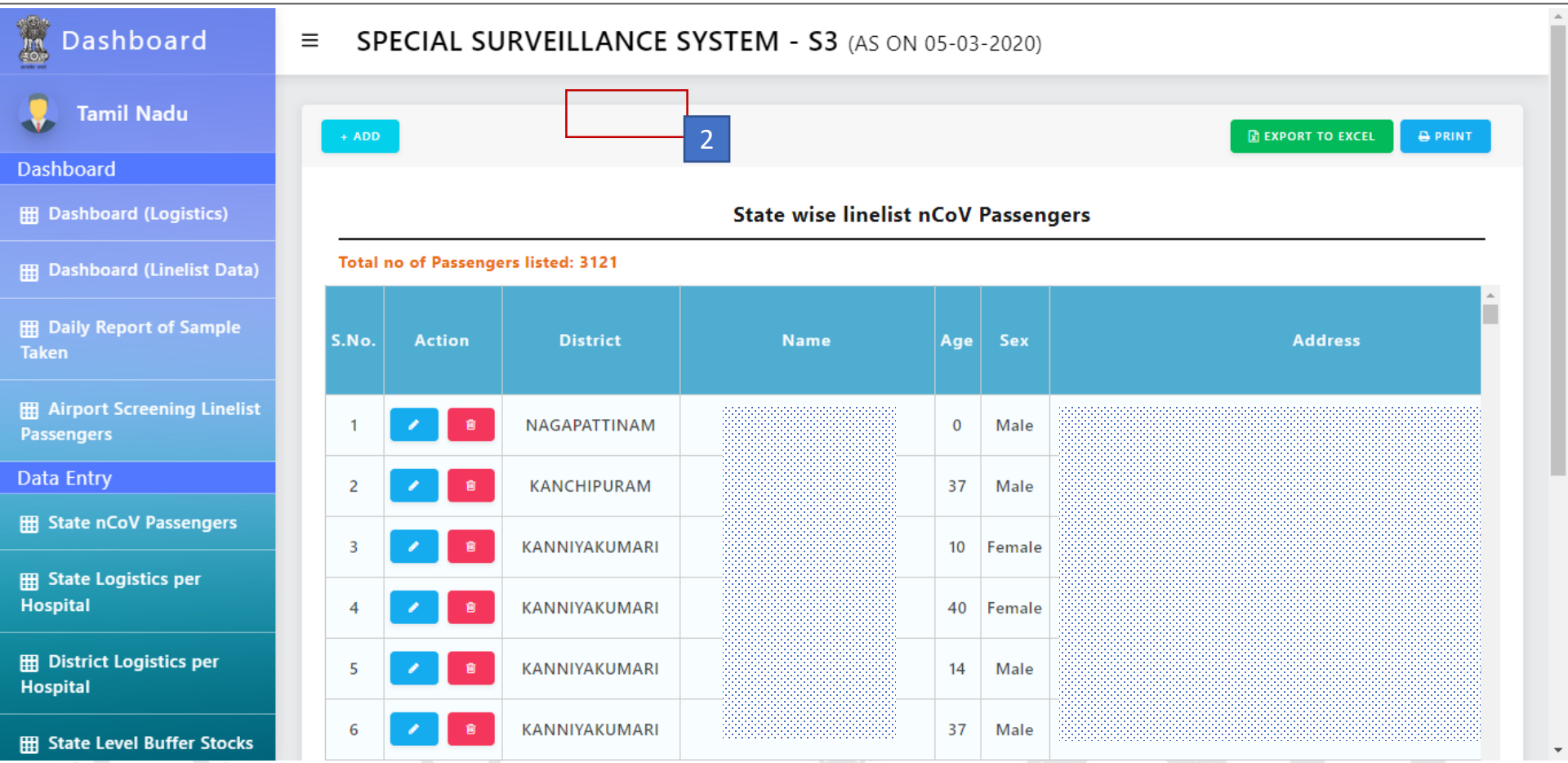
Data entry forms

- State nCoV Passengers
- State Logistics per Hospital
- District Logistics per Hospital
- State Level Buffer Stocks
- District Level Buffer Stocks

Special Surveillance Information System

for managing COVID-19

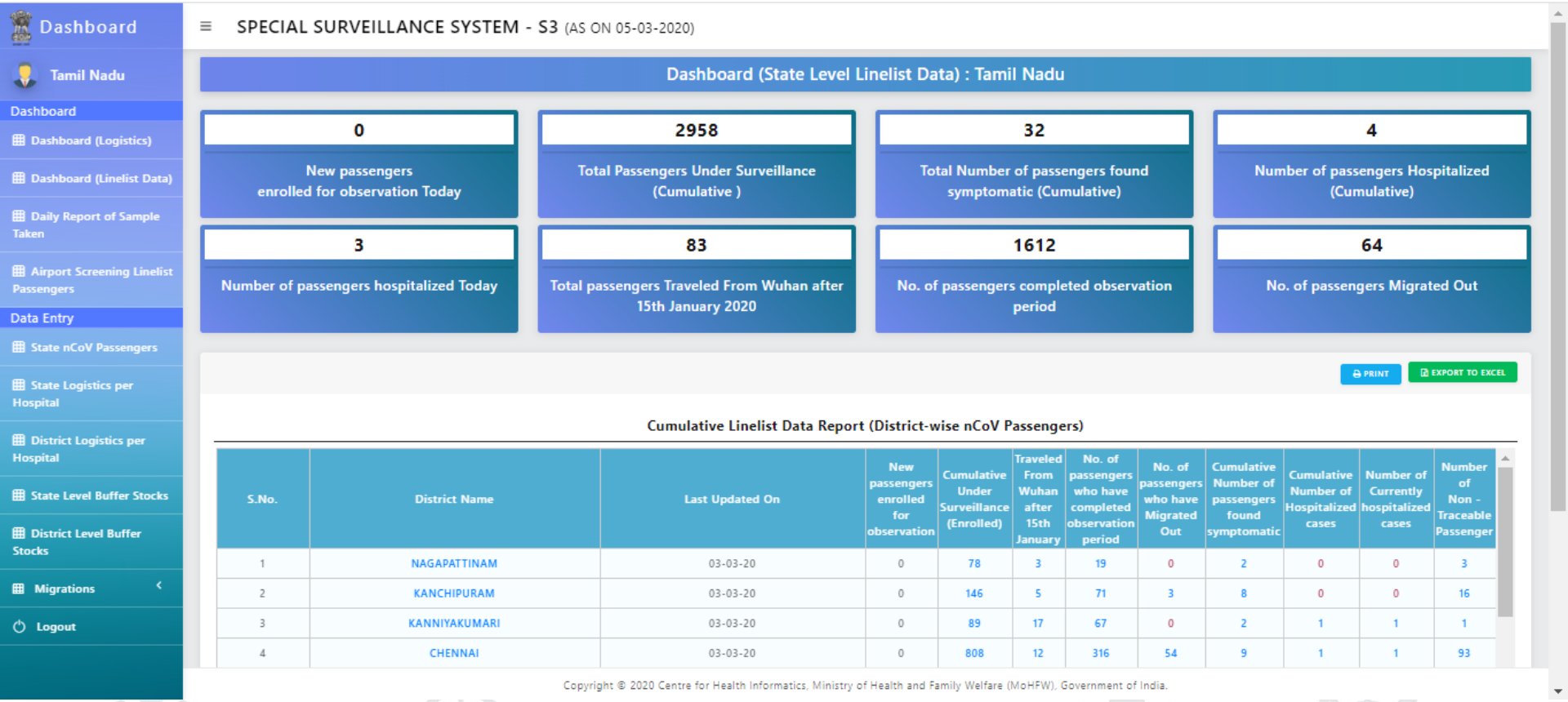
State Level User: State nCoV Passengers (line listing)



Special Surveillance Information System

for managing COVID-19

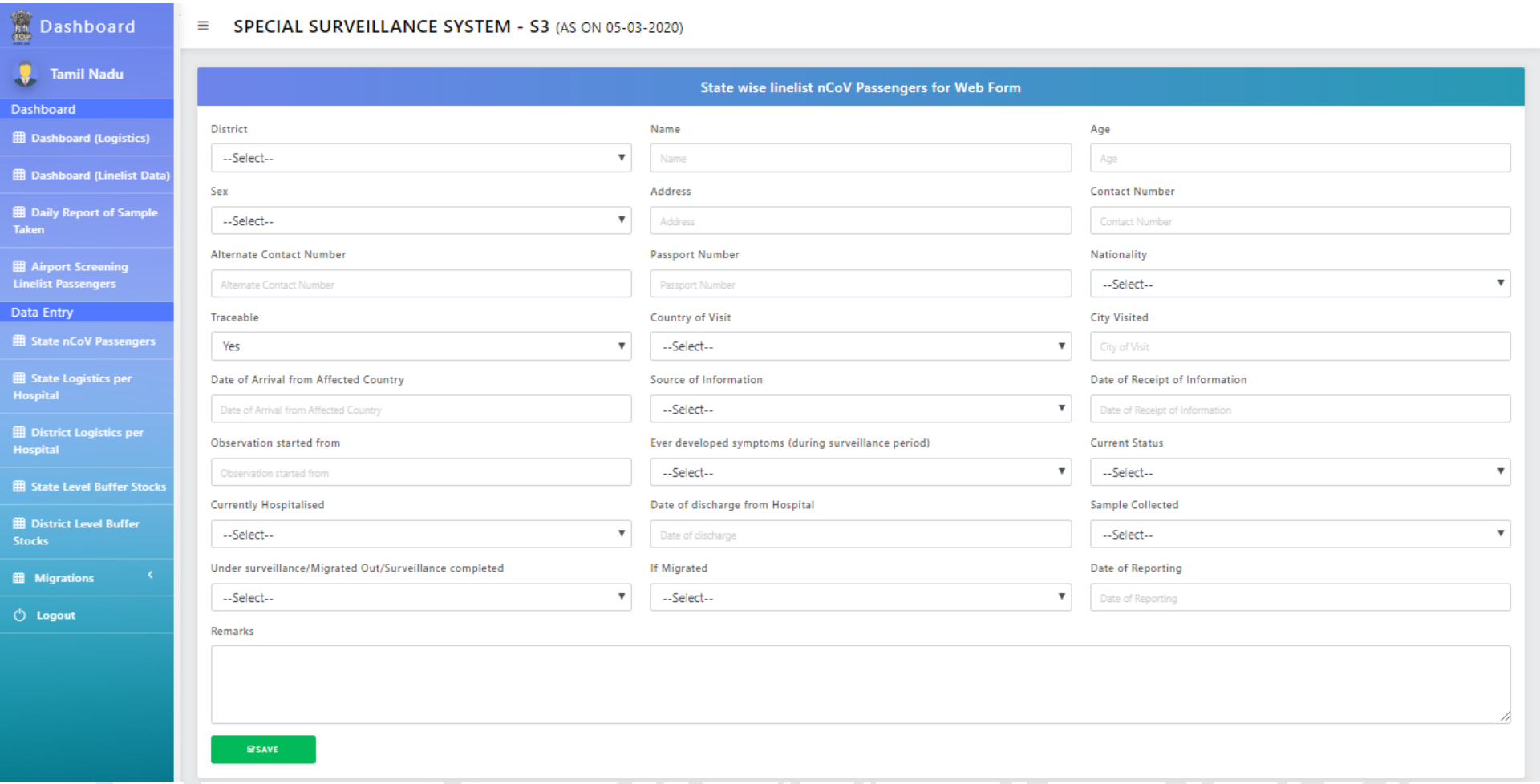
State Level User: State Line list Dashboard



Special Surveillance Information System

for managing COVID-19

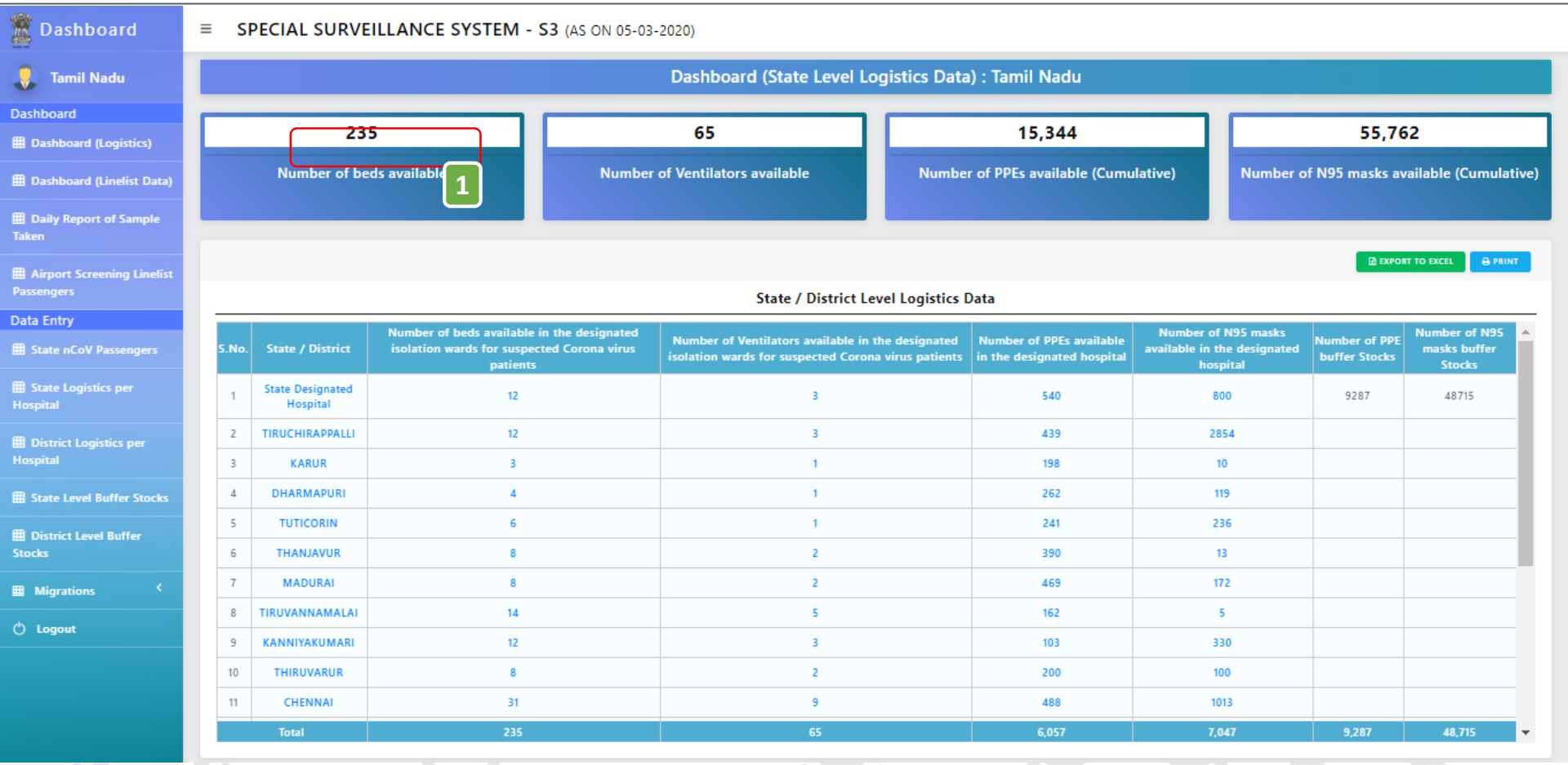
State Level User : State nCoV Passengers (data entry)



Special Surveillance Information System

for managing COVID-19

State Level User: State Logistic Dashboard

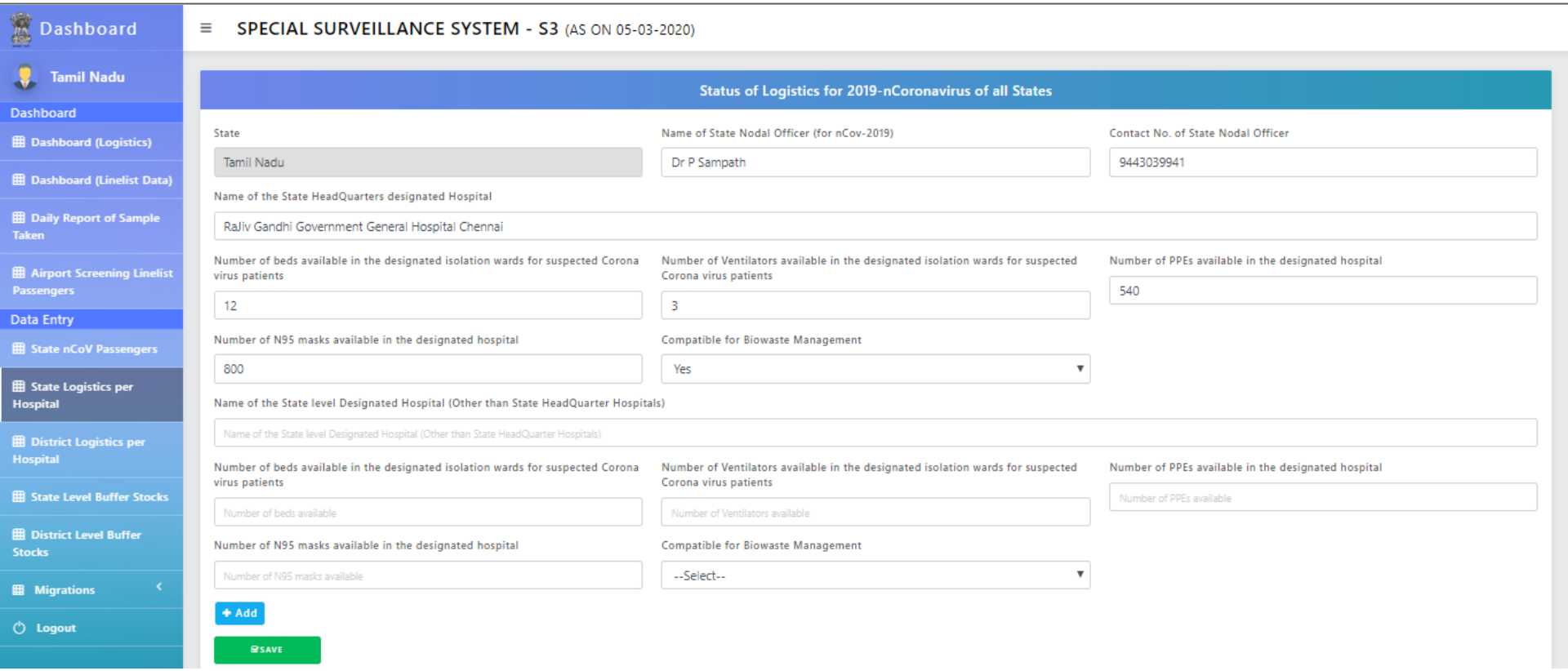


S.No.	State / District	Number of beds available in the designated isolation wards for suspected Corona virus patients	Number of Ventilators available in the designated isolation wards for suspected Corona virus patients	Number of PPEs available in the designated hospital	Number of N95 masks available in the designated hospital	Number of PPE buffer Stocks	Number of N95 masks buffer Stocks
1	State Designated Hospital	12	3	540	800	9287	48715
2	TIRUCHIRAPPALLI	12	3	439	2854		
3	KARUR	3	1	198	10		
4	DHARMAPURI	4	1	262	119		
5	TUTICORIN	6	1	241	236		
6	THANJAVUR	8	2	390	13		
7	MADURAI	8	2	469	172		
8	TIRUVANNAMALAI	14	5	162	5		
9	KANNIYAKUMARI	12	3	103	330		
10	THIRUVARUR	8	2	200	100		
11	CHENNAI	31	9	488	1013		
	Total	235	65	6,057	7,047	9,287	48,715

Special Surveillance Information System

for managing COVID-19

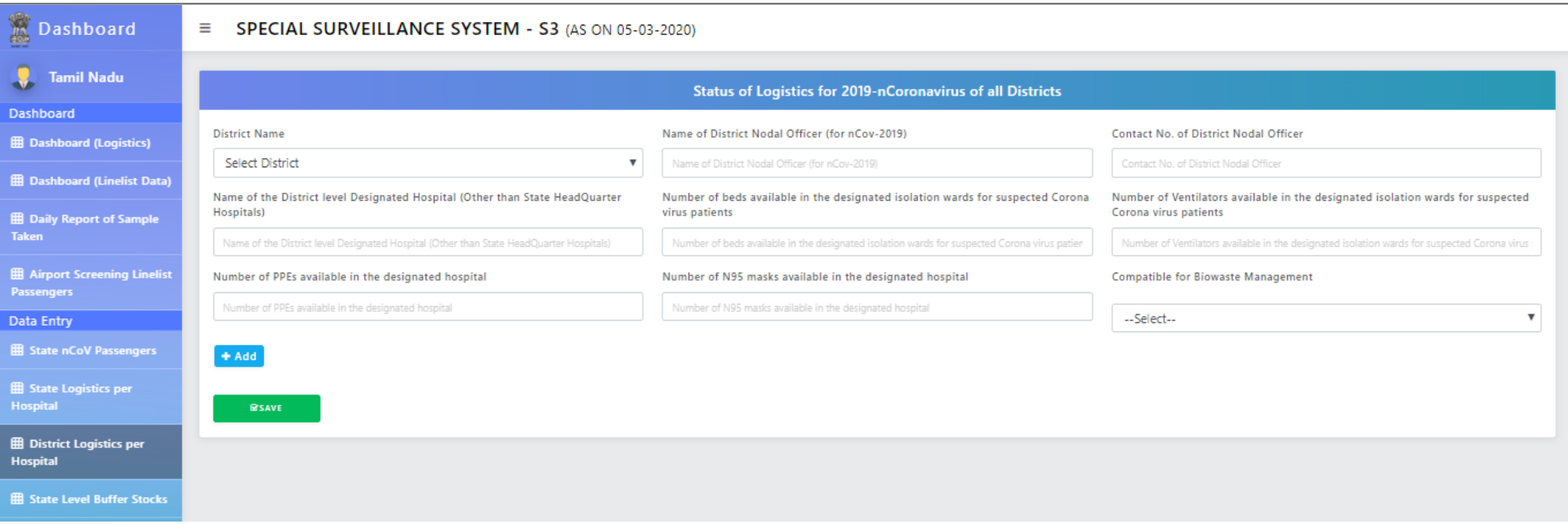
State Level User : State Logistic Hospitals Form



Special Surveillance Information System

for managing COVID-19

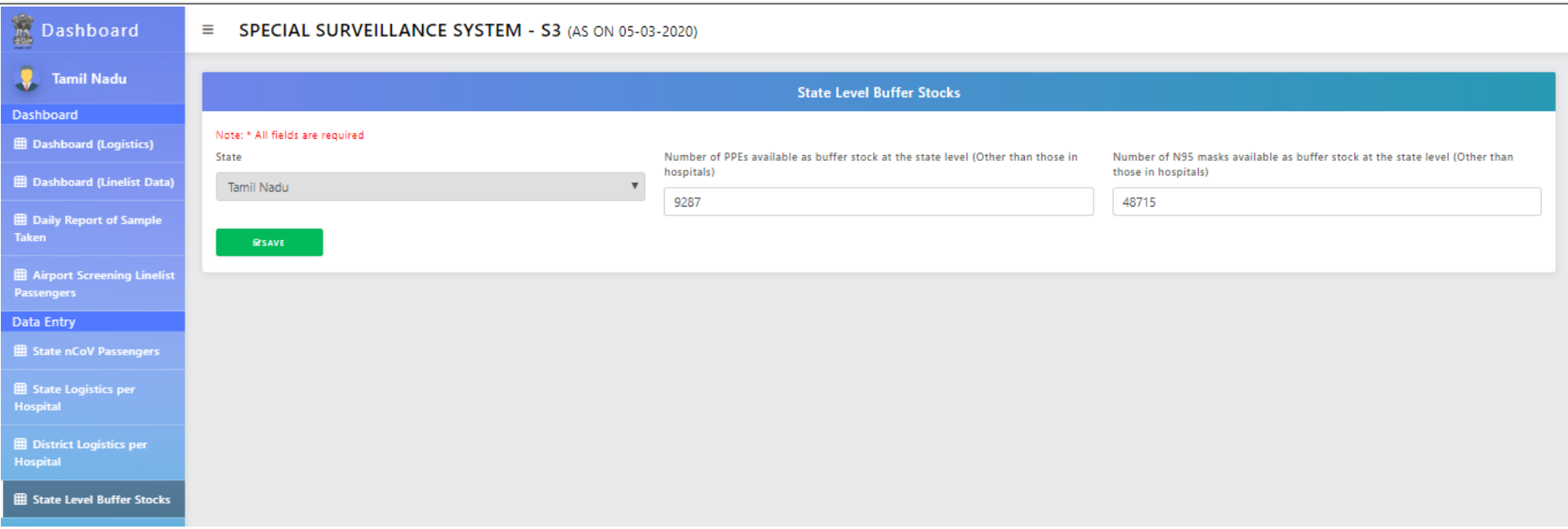
State Level User : District Logistic form for Hospitals



Special Surveillance Information System

for managing COVID-19

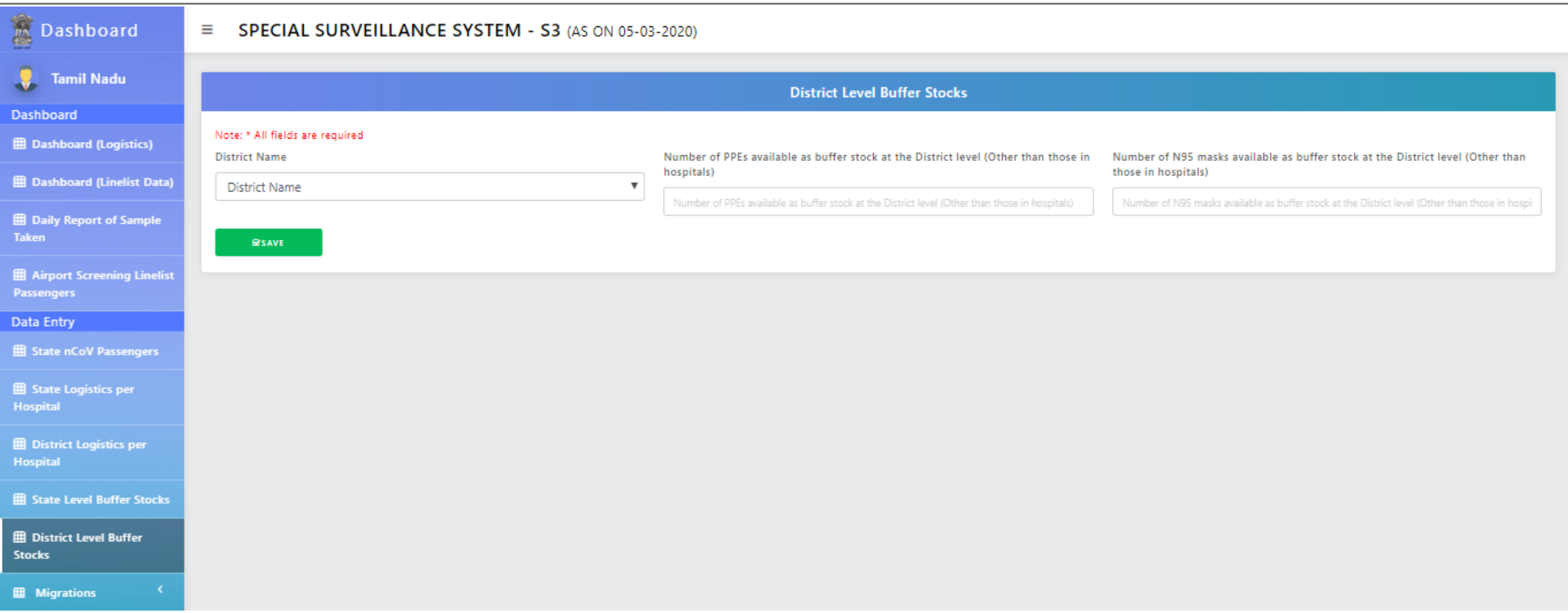
State Level User : State Logistic Buffer Stocks



Special Surveillance Information System

for managing COVID-19

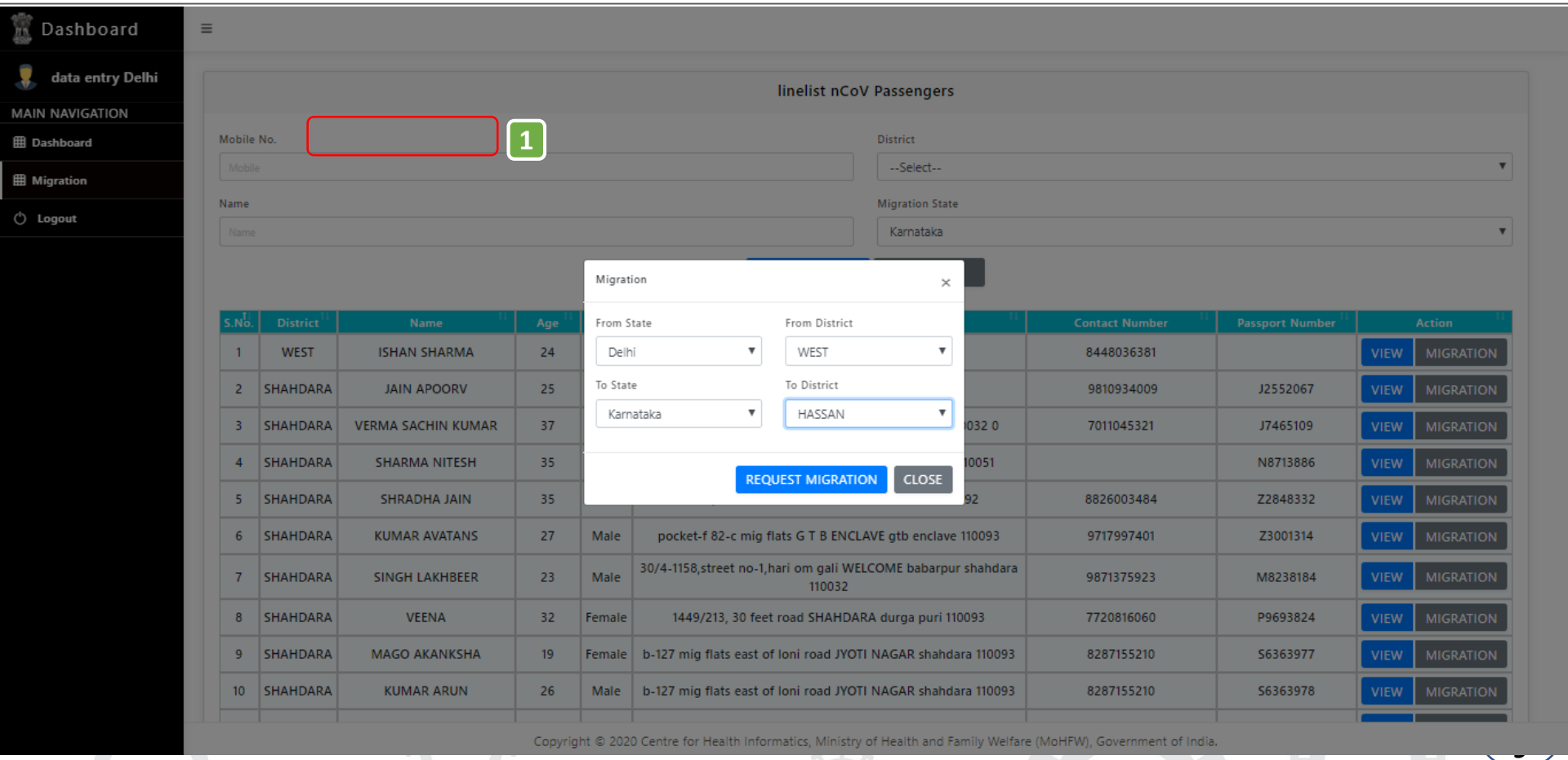
State Level User : District Logistic Buffer Stocks



Special Surveillance Information System

for managing COVID-19

State Level User: Line list Migration Request form

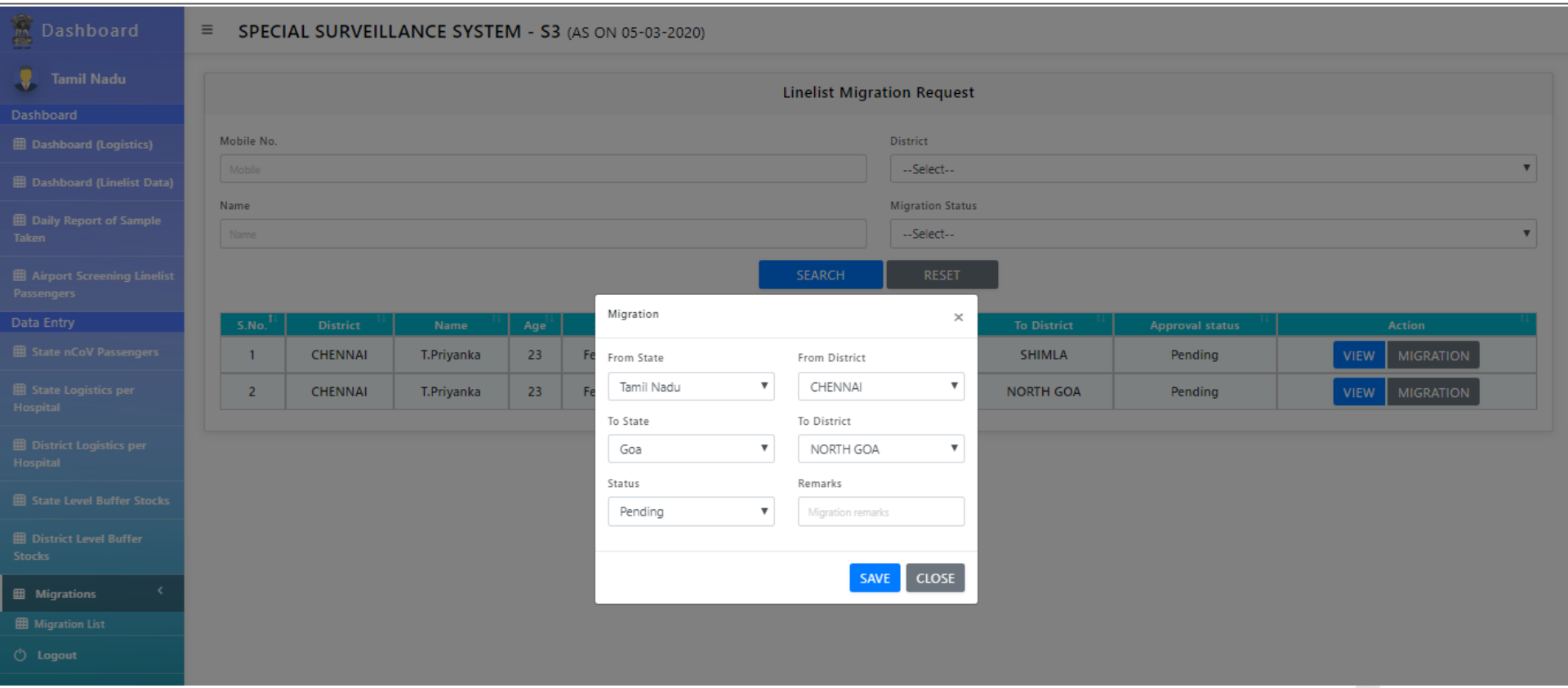


From State and From District, To State and To District.

Special Surveillance Information System

for managing COVID-19

State Level User: Line list Migration Approval form



Special Surveillance Information System

for managing COVID-19

Additional Features:

Export to Excel

Print

Logout

State ToT on

NOVEL CORONAVIRUS (COVID-19)

Laboratory Surveillance including Sample Collection, Packaging, Transport and Testing

Dr D S Murthy,
Associate Professor, Micro Biology, RMC Kakinada
09.03.2020

Samples to be collected

- Essential samples:
  - Throat swab (oropharyngeal swab).
  - Nasal swab (Nasopharyngeal swab)
- Other preferred samples:
  - Bronchoalveolar lavage
  - Tracheal aspirate
  - Sputum

  } Wide mouth sterile plastic containers
- In lab confirmed patients:
  - Blood
  - Stool and urine - Wide mouth sterile plastic containers

Personal protective equipment

Table 1. Recommended type of personal protective equipment (PPE) to be used in the context of COVID-19 disease, according to the setting, personnel and type of activity[a]

Setting	Target personnel or patients	Activity	Type of PPE or procedure
Healthcare facilities			
Inpatient facilities			
Patient room	Healthcare workers	Providing direct care to COVID-19 patients.	Medical mask Gown Gloves Eye protection (goggles or face shield).
		Aerosol-generating procedures performed on COVID-19 patients.	Respirator N95 or FFP2 standard, or equivalent. Gown Gloves Eye protection Apron
	Cleaners	Entering the room of COVID-19 patients.	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
	Visitors[b]	Entering the room of a COVID-19 patient	Medical mask Gown Gloves
Other areas of patient transit (e.g., wards, corridors).	All staff, including healthcare workers.	Any activity that does not involve contact with COVID-19 patients.	No PPE required

WHO interim guidance document for Rational use of personal protective equipmentfor coronavirus disease 2019 (COVID-19)

Collection of OP and NP swabs

- Optimal timing:

- Within 3 days of symptom onset and no later than 7 days.
- Preferably prior to initiation of antimicrobial chemoprophylaxis or therapy.

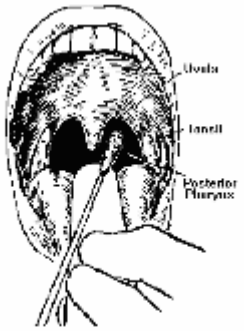
Collection of Oropharyngeal swab

Materials:

- Sterile Dacron/Nylon flocked swab
- Viral Transport Medium (3 ml sterile VTM)

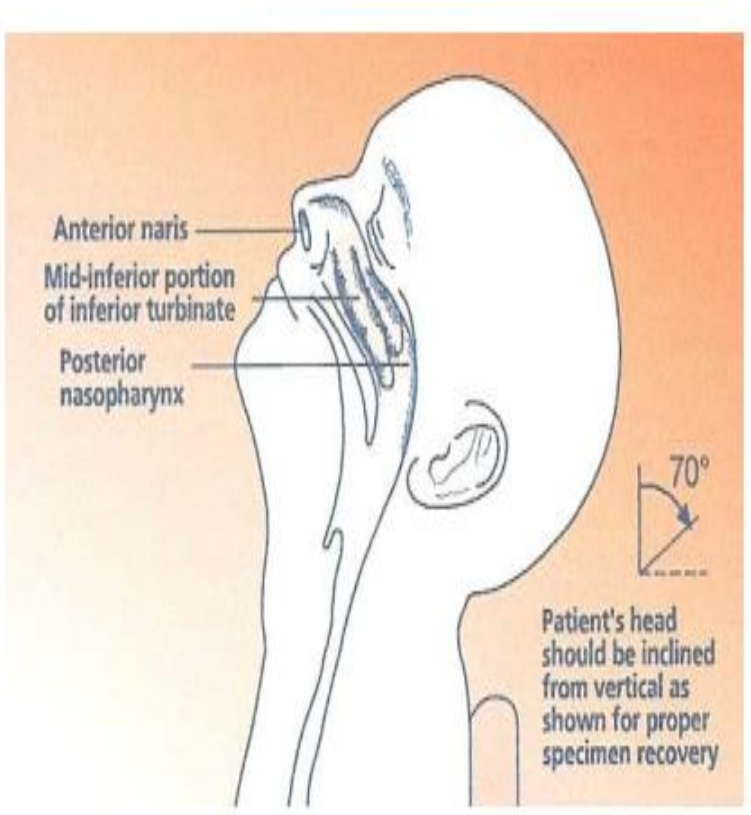
Procedure:

- Hold the tongue out of the way with a tongue depressor.
- Use a sweeping motion to swab posterior pharyngeal wall and tonsillar pillars
- Have the subject say “aahh” to elevate the uvula.
- Avoid swabbing soft palate and do not touch the tongue with swab tip.
- Put the swab in VTM



Collection of Nasopharyngeal swabs

- Materials
  - Sterile Dacron/Nylon flocked swab
  - Viral Transport Medium (3 ml sterile VTM)
- Procedure
  - Tilt patient's head back 70 degrees
  - Insert swab into nostril (Swab should reach depth to distance from nostrils to outer opening of the ear
  - Leave swab in place in place for several seconds to absorb secretions
  - Slowly remove swab while rotating it
  - Place tip of swab into VTM and snap/cut off the applicator stick



Blood collection from positive cases

- Blood sample collection from all positive cases
- Plasma sample collection in EDTA vials
- Resin separator tubes for serum sample collection

Guidance for specimen Collection

- A BSL2 containment level is required to handle suspected samples.
- Consider all specimens as POTENTIALLY HAZARDOUS / INFECTIOUS.
- Handle all specimens with gloves in a secure manner.
- Place each specimen into a separate container labeled with the patient's name and identification number, the collection site, the date of collection and the time of the collection.
- Do not contaminate the outside of the specimen container.
- Do not handle laboratory requisition forms with gloves.

Storage of Specimen

- Keep refrigerated (2-8 °C) if it is to be processed (or sent to a reference laboratory) within 48 hours.
- Keep frozen (-10 to -20 °C) if it is to be processed after the first 48 hours or within 7 days.
- Keep frozen (-70 °C) if it is to be processed after a week. The sample can be preserved for extended periods.

Guidelines followed for sample packaging & transport

- **WHO Guidelines for Transport of Infectious Substances:**

  - Guidance on regulations for the Transport of Infectious Substances 2009–2010.

https://www.who.int/csr/resources/publications/biosafety/WHO_HSE_EPR_2008_10.pdf

- **IATA guidelines**

Classification of Infectious Substances

- Category A: *An infectious substance which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals.*

  - UN 2814 for Infectious substances which cause disease in humans or both in humans and animals.

  - UN 2900 for Infectious substances which cause disease only in animals

Classification of Infectious Substances

- **Category B:** ***An infectious substance which does not meet the criteria for inclusion in Category A.***

  - **Infectious substances in Category B shall be assigned to UN 3373**

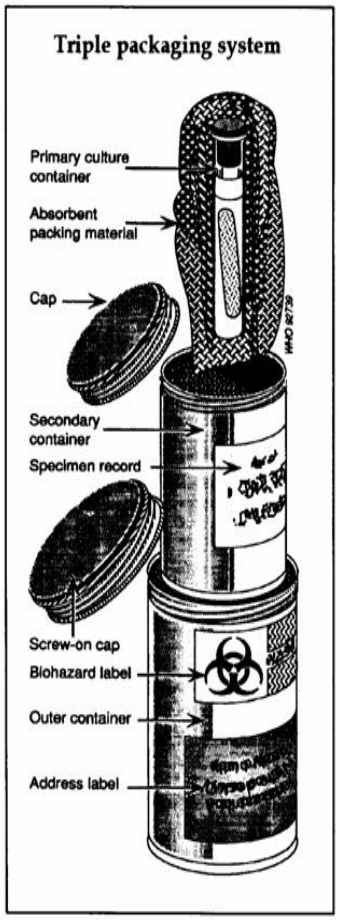
SARS-CoV-2 virus infectious/potentially infectious material falls under category B

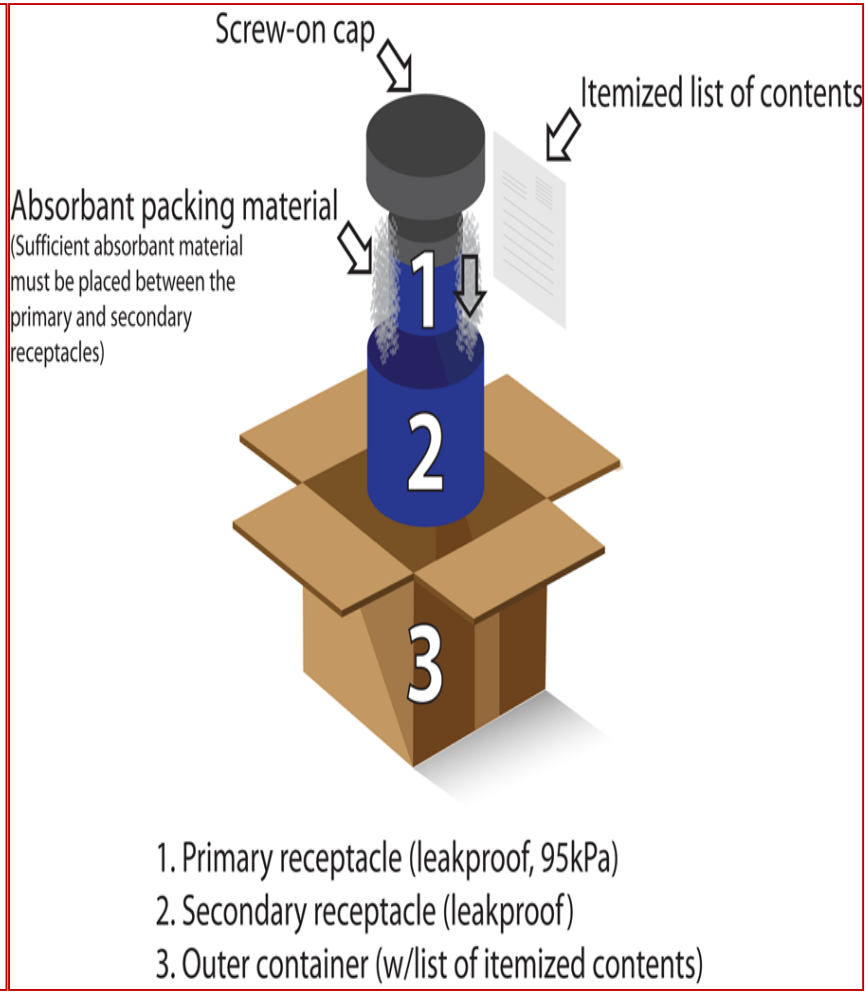
Packaging System

- The original samples should be packed, labeled and marked, and documented as Category B.
- Standard triple packing for Category B to be followed.
- Samples to be sent on dry ice (if possible). However using cold packs is acceptable.
- Sender should provide prior intimation about shipment of samples to the nearest certified laboratory.

Triple packaging system

Primary Container	Secondary Container	Outer Container/ Packaging Box
• Watertight and leak proof • Cap correctly and securely closed. • Keep in upright position during transport	•Watertight •Several clinical specimens may be placed into one secondary container • Containers have to be cleansed and disinfected if they are to be re-used E.g.: Disposable, zip-lock plastic bags; Large centrifuge tubes (50 ml) with screw caps	•Made of strong material that can be cleansed and disinfected •Should have the Biohazard warning label •A content list in a sealed plastic bag inside the transport box may also be included


Triple packaging system
Primary culture container
Absorbent packing material
Cap
Secondary container
Specimen record
Screw-on cap
Biohazard label
Outer container
Address label


Screw-on cap
Itemized list of contents
Absorbant packing material
(Sufficient absorbant material must be placed between the primary and secondary receptacles)
1
2
3
1. Primary receptacle (leakproof, 95kPa)
2. Secondary receptacle (leakproof)
3. Outer container (w/list of itemized contents)

Transport Precautions

- Adequate cushioning materials inside the box to absorb shocks during transport
- Adequate absorbing material to absorb any spillage should it occur
- Do not stick the request form on the specimen
- Specimen request forms should be put into a separate plastic bag
- The outer container, secondary containers and specimen racks for transport should be thoroughly cleansed and disinfected periodically (i.e. at least daily) and when contaminated.

Labeling of Package

- Sender's, name, address and telephone number
- Whom to contact in case of emergency with telephone number
- Receiver's name, address and telephone number
- Proper shipping name (e.g. "BIOLOGICAL SUBSTANCE, CATEGORY B")
- UN number e.g. 3373
- Temperature storage requirements
- Quantity of dry ice inside the container
- Arrow mark to indicate upright direction

Responsibility of Sender

- Make advance arrangements with the carrier

  -that the shipment will be accepted for appropriate transport

  - that the shipment (direct transport if possible) is undertaken by the most direct routing

- Prepare necessary documentation, including permits, dispatch and shipping documents

- Notify the receiver in advance of transportation arrangements and expected date of delivery of shipment

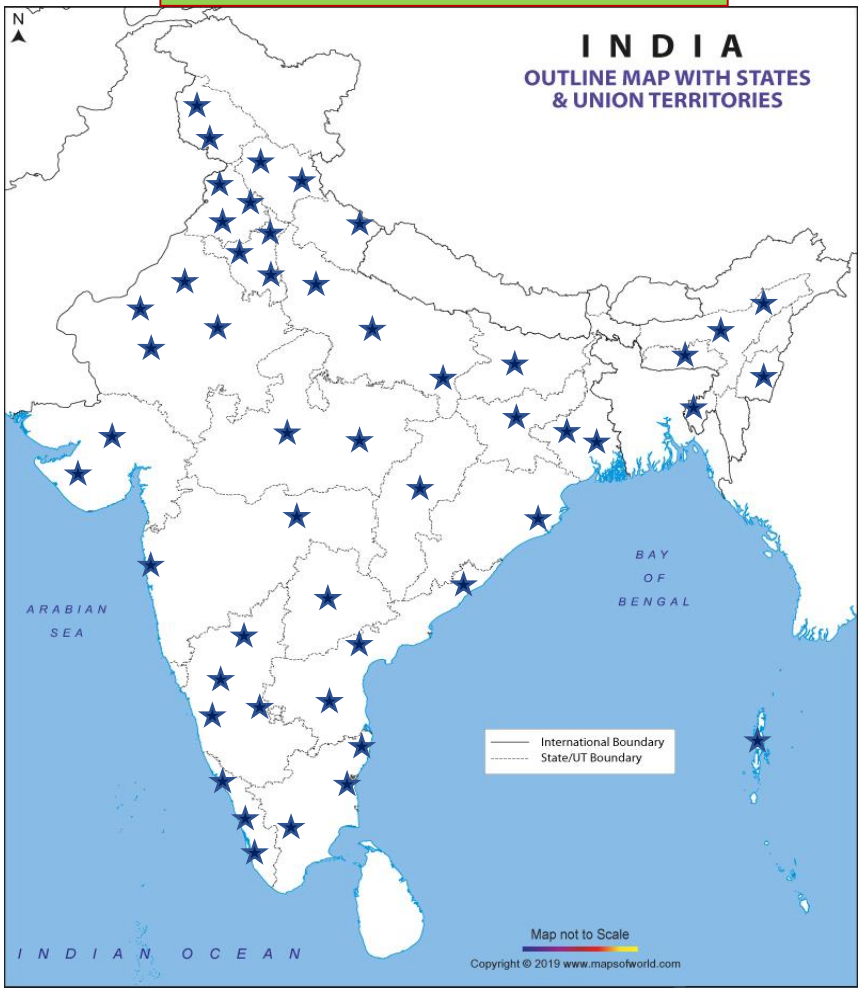
Responsibility of Receiver

- Acknowledge receipt of specimen
- Verify the integrity of packaging
- Box to be opened by personnel wearing adequate PPE.
- Open within Biosafety cabinet
- Check the specimens with the data sent
- Apply acceptance and rejection criteria

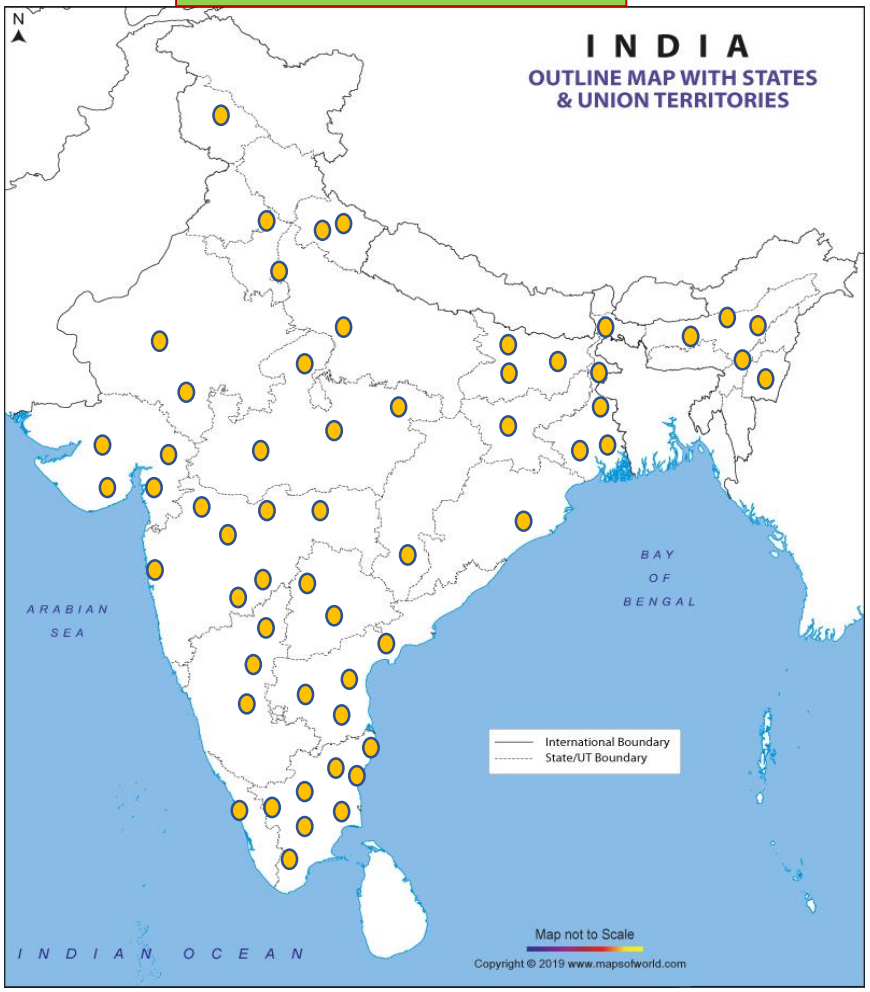
Types of Tests

- No validated serological tests
- Only molecular diagnosis
  - PCR based test aims at detection of the virus.
- Real time PCR platform is required.

51 VRDLs doing SARS-CoV-2 testing



56 VRDLs as collection sites



Tests for SARS-CoV-2

- No validated serological tests are available.
- Only Molecular tests available.
- Laboratory protocols designed on the basis of WHO guidance and sequences available in GISAID.
- First line screening assay: E gene.
- Confirmatory assays: RdRp and ORF 1b.
- SoPs and testing protocol shared with all testing laboratories.

State ToT on

NOVEL CORONAVIRUS (COVID-19)

Clinical Case Management

Dr K Ram Babu,
Professor, General Medicine, AMC Vishakapatnam and
State Nodal Officer, COVID 19
09.03.2020

Case Definition

- **SARI**: ARI with history of fever or measured temperature ≥38 C° and cough; onset within the last ~10 days; and requiring hospitalization. However, the absence of fever does NOT exclude viral infection.

Surveillance case definitions for nCoV

- Severe acute respiratory infection (SARI) in a person, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation **AND** any of the following:
- a)A history of travel to Wuhan, Hubei Province China in the 14 days prior to symptom onset; **or**

Surveillance case definitions for nCoV

- A person with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures:
- a)close physical contact with a confirmed case of nCoV infection, while that patient was symptomatic; **or**
- b)a healthcare facility in a country where hospital-associated nCoV infections have been reported

Surveillance case definitions for nCoV

- b)the disease occurs in a health care worker who has been working in an environment where patients with SARI are being cared for, without regard to place of residence or history of travel; or
- c)the person develops an unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation

Close Contact

- Health care associated exposure, including providing direct care for nCoV patients, working with health care workers infected with nCoV, visiting patients or staying in the same close environment of a nCoV patient
- Working together in close proximity or sharing the same classroom environment with a with nCoV patient
- Traveling together with nCoV patient in any kind of conveyance
- Living in the same household as a nCoV patient
- The epidemiological link may have occurred within a 14-day period before or after the onset of illness in the case under consideration

Uncomplicated Illness

- Fever, cough, sore throat, nasal congestion, malaise, headache, muscle pain or malaise
- The elderly and immunosuppressed may present with atypical symptoms. These patients do not have any signs of dehydration, sepsis or shortness of breath

Mild pneumonia

- Patient with pneumonia and no signs of severe pneumonia
- Child with non-severe pneumonia has cough or difficulty breathing + fast breathing: fast breathing (in breaths/min): <2 months,≥60; 2–11 months, ≥50; 1–5 years, ≥40 and no signs of severe pneumonia

Severe Pneumonia

- **Adolescent or adult**: fever or suspected respiratory infection, **plus** one of respiratory rate >30 breaths/min, severe respiratory distress, **or** SpO2 <90% on room air
- **Child** with cough or difficulty in breathing, plus at least one of the following: central cyanosis or SpO2 <90%; severe respiratory distress (e.g. grunting, very severe chest indrawing); signs of pneumonia with a general danger sign: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions. Other signs of pneumonia may be present: chest in-drawing, fast breathing (inbreaths/min): <2 months, ≥60; 2–11 months, ≥50; 1–5 years, ≥40. The diagnosis is clinical; chest imaging can exclude complications

Acute Respiratory Distress Syndrome

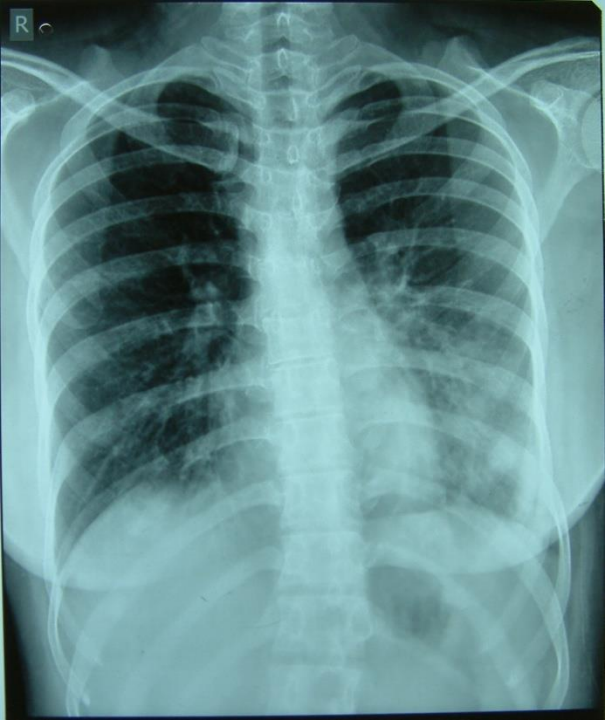
- **Onset**: new or worsening respiratory symptoms within one week of known clinical insult. Chest imaging (radiograph, CT scan, or lung ultrasound): bilateral opacities, not fully explained by effusions, lobar or lung collapse, or nodules
- **Origin of oedema**: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g.echocardiography) to exclude hydrostatic cause of oedema if no risk factor present.

Oxygenation

- Mild ARDS: 200 mmHg < PaO2/FiO2 ≤ 300 mmHg (with PEEP or CPAP ≥5 cmH2O, or non-ventilated)
- Moderate ARDS: 100 mmHg < PaO2/FiO2 ≤200 mmHg with PEEP ≥5 cmH2O, or non-ventilated)
- Severe ARDS: PaO2/FiO2 ≤ 100 mmHg with PEEP ≥5 cmH2O, or non-ventilated)
- When PaO2 is not available, SpO2/FiO2≤315 suggests ARDS (including in non-ventilated patients)

Oxygenation

- Bilevel NIV or CPAP ≥5 cmH2O via full face mask: PaO2/FiO2≤ 300 mmHg or SpO2/FiO2≤264
- Mild ARDS (invasively ventilated): 4 ≤ OI < 8 or 5 ≤ OSI < 7.5
- Moderate ARDS (invasively ventilated): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3
- Severe ARDS (invasively ventilated): OI ≥ 16 or OSI ≥ 12.3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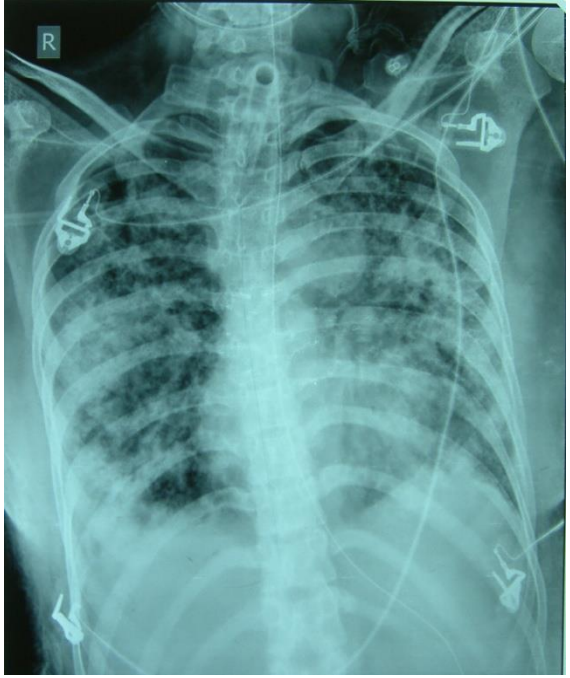
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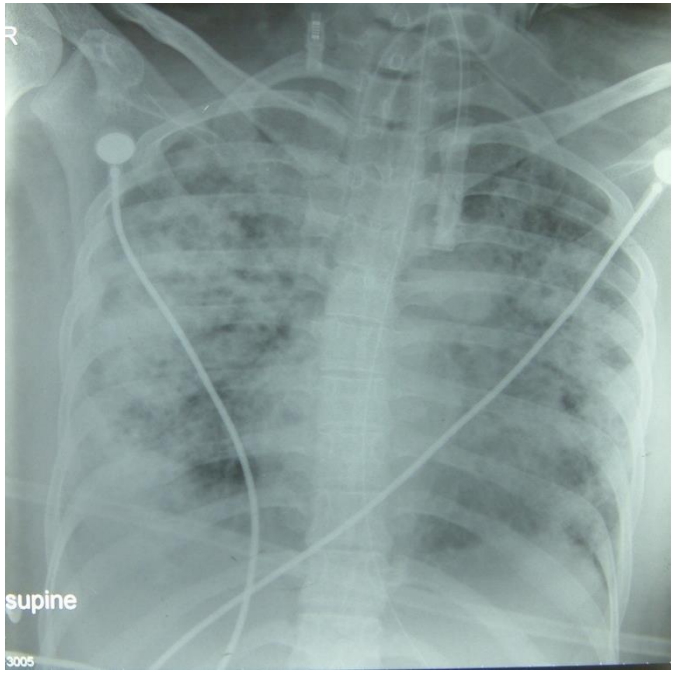
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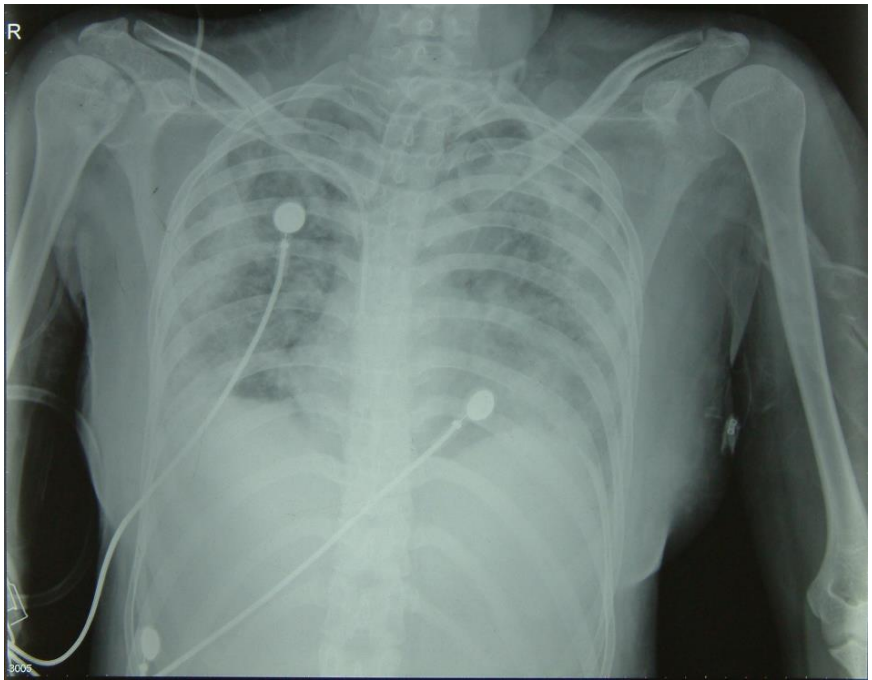
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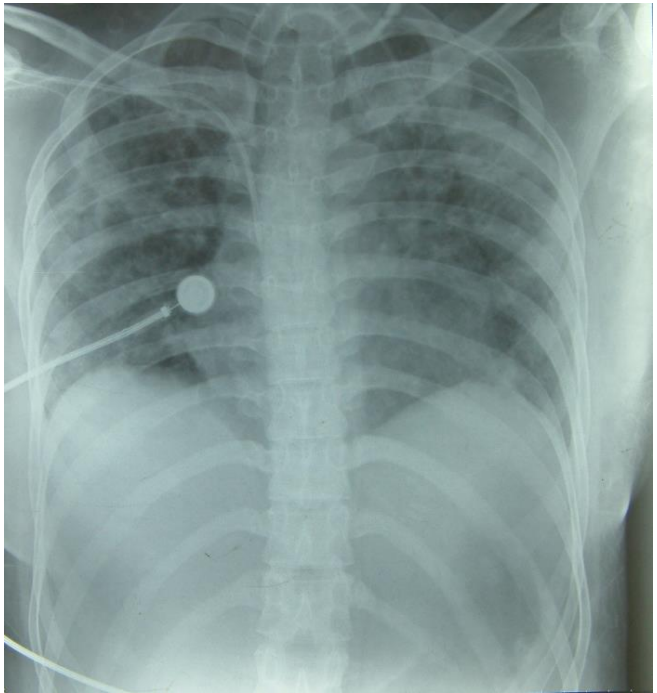
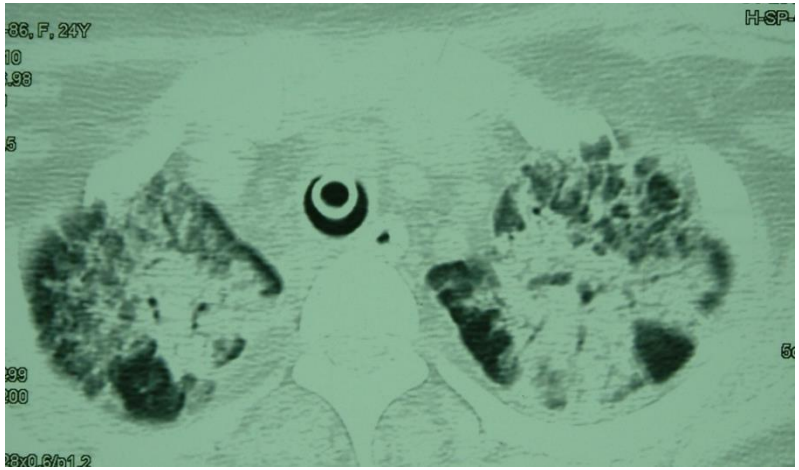
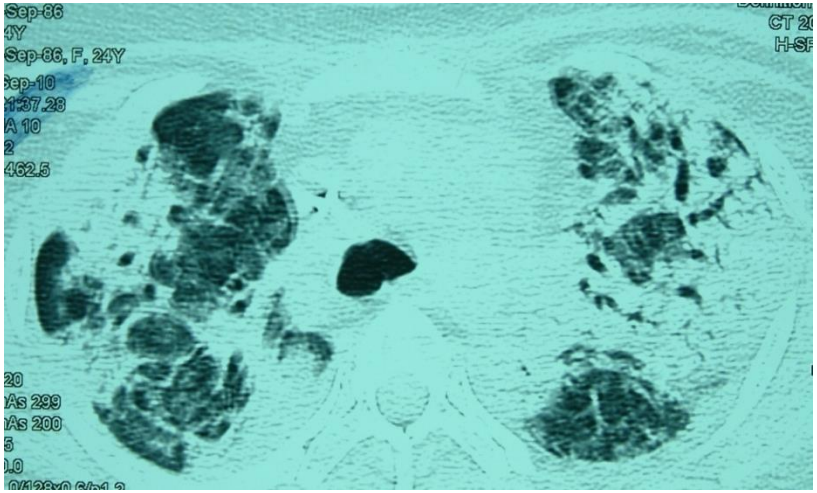
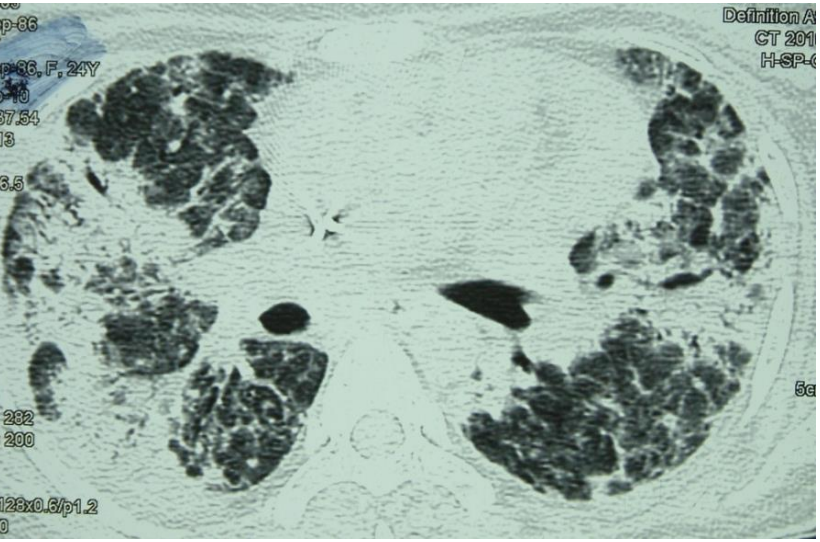
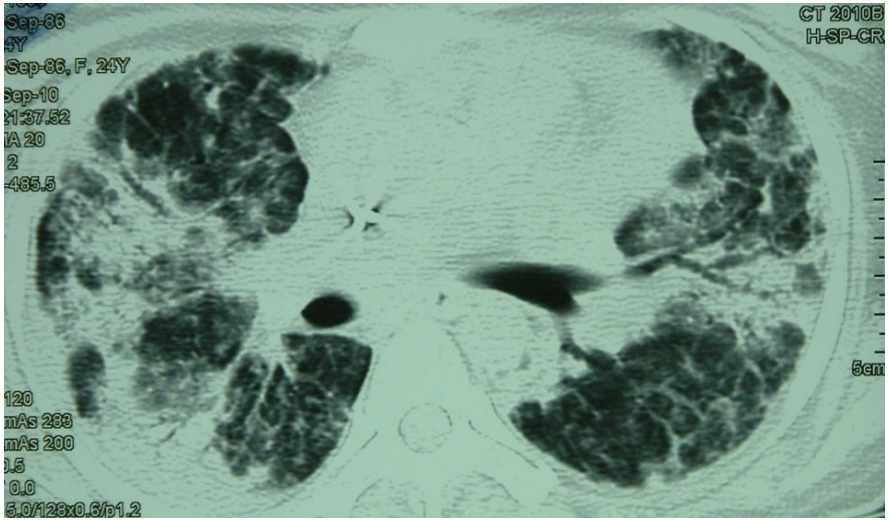










Sepsis

- Adults: life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection, with organ dysfunction.
- Signs of organ dysfunction include: altered mental status, difficult or fast breathing, low oxygen saturation, reduced urine output, fast heart rate, weak pulse, cold extremities or low blood pressure, skin mottling, or laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate or hyper-bilirubinemia.
- Children: suspected or proven infection and ≥2 SIRS criteria, of which one must be abnormal temperature or white blood cell count

Septic Shock

- **Adults**: persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP ≥65 mmHg and serum lactate level >2 mmol/L
- **Children:** any hypotension (SBP <5th centile or >2 SD below normal for age) or 2-3 of the following: altered mental state; tachycardia or bradycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpmin children); prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses; tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia

Infection prevention and control

- Medical mask and direct patient to separate area
- At least 1meter distance between suspected patients and other patients
- Cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others
- Hand hygiene after contact with respiratory secretions

Droplet Precautions

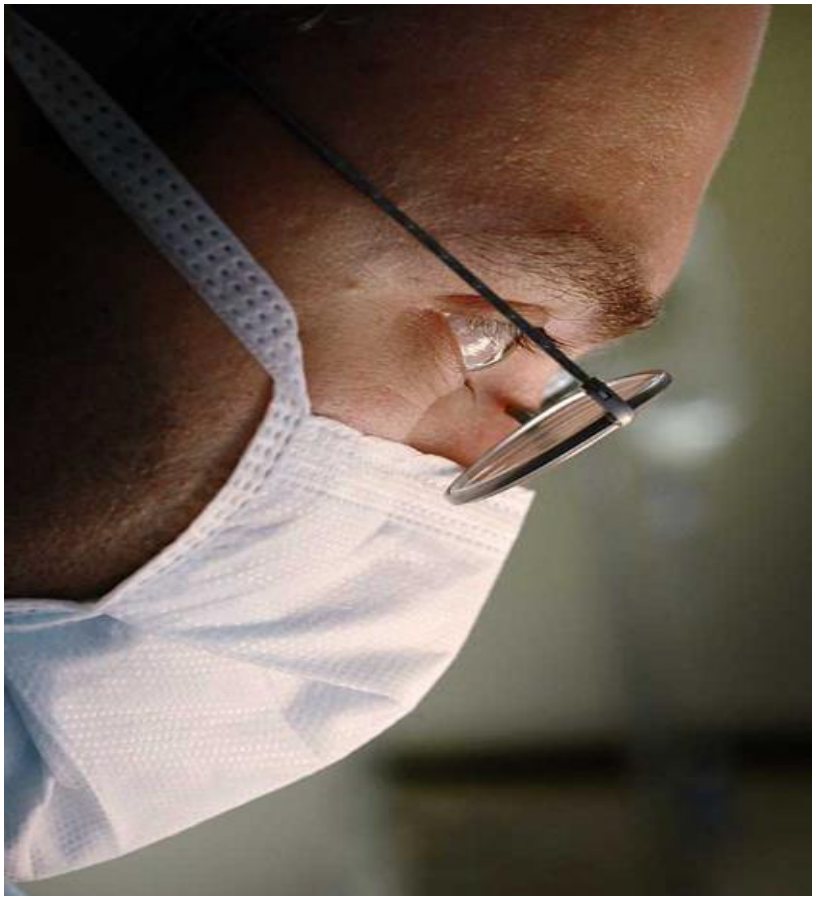
- Medical mask if working within 1-2 metres of the patient
- Place patients in single rooms, or group together those with the same etiological diagnosis
- Group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation
- Use eye protection (face-mask or goggles)
- Limit patient movement within the institution
- Ensure that patients wear medical masks when outside their room

Cover your mouth and nose

- Cover your mouth and nose with a tissue when coughing or sneezing.
- It may prevent those around you from getting sick

Cover Your Cough/Sneeze!

Droplet precautions: Surgical Masks



Contact precautions

- Use PPE (medical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving
- Use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers)
- If needs to be shared clean and disinfect between each patient use
- Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches). Ensure adequate room ventilation. Avoid movement of patients or transport. Perform hand hygiene

Airborne precautions when performing an aerosol generating procedure

- Ensure that healthcare workers performing aerosol-generating procedures (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation) use PPE, including gloves, long-sleeved gowns, eye protection,and fit-tested particulate respirators (N95 or equivalent, or higher level of protection).

Airborne precautions when performing an aerosol generating procedure

- Whenever possible, use adequately ventilated single rooms when performing aerosol-generating procedures, meaning negative pressure rooms with minimum of 12 air changes per hour or at least 160 litres/second/patient in facilities with natural ventilation.
- Avoid the presence of unnecessary individuals in the room
- Care for the patient in the same type of room after mechanical ventilation commences

Section Separator

Early supportive therapy and monitoring

- Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target SpO2≥90% in non-pregnant adults and SpO2 ≥92-95 % in pregnant patients
- Children with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive oxygen therapy during resuscitation to target SpO2≥94%; otherwise, the target SpO2is ≥90%

Early supportive therapy and monitoring

- Use conservative fluid management in patients with SARI when there is no evidence of shock
- Patients with SARI should be treated cautiously with intravenous fluids, because aggressive fluid resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation

Early supportive therapy and monitoring

- Give empiric antimicrobials to treat all likely pathogens causing SARI
- Give antimicrobials within one hour of initial patient assessment for patients with sepsis: Although the patient may be suspected to have nCoV, administer appropriate empiric antimicrobials within ONE hour of identification of sepsis
- Empiric antibiotic treatment should be based on the clinical diagnosis (community-acquired pneumonia, health care-associated pneumonia [if infection was acquired in healthcare setting], or sepsis), local epidemiology and susceptibility data, and treatment guidelines

Early supportive therapy and monitoring

- Empiric therapy includes a neuraminidase inhibitor for treatment of influenza when there is local circulation or other risk factors
- Empiric therapy should be de-escalated on the basis of microbiology results and clinical judgment

Early supportive therapy and monitoring

- Do not routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS outside of clinical trials unless they are indicated for another reason: (avascular necrosis, psychosis, diabetes, and delayed viral clearance)

Early supportive therapy and monitoring

- Closely monitor patients with SARI for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis, and apply supportive care interventions immediately
- Application of timely, effective, and safe supportive therapies is the cornerstone of therapy for patients that develop severe manifestations of nCoV

Early supportive therapy and monitoring

- Understand the patient's co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis
- During intensive care management of SARI, determine which chronic therapies should be continued and which therapies should be stopped temporarily
- Communicate early with patient and family
- Communicate proactively with patients and families and provide support and prognostic information
- Understand the patient's values and preferences regarding life-sustaining interventions

Collection of specimens for laboratory diagnosis

- Collect blood cultures for bacteria that cause pneumonia and sepsis, ideally before antimicrobial therapy.
- DO NOT delay antimicrobial therapy to collect blood cultures
- Collect specimens from BOTH the upper respiratorytract (URT; nasopharyngeal and oropharyngeal) AND lower respiratory tract (LRT; expectorated sputum, endotracheal aspirate, or bronchoalveolar lavage) for nCoV testing by RT-PCR
- Clinicians may elect to collect only LRT samples when these are readily available (for example, in mechanically ventilated patients)

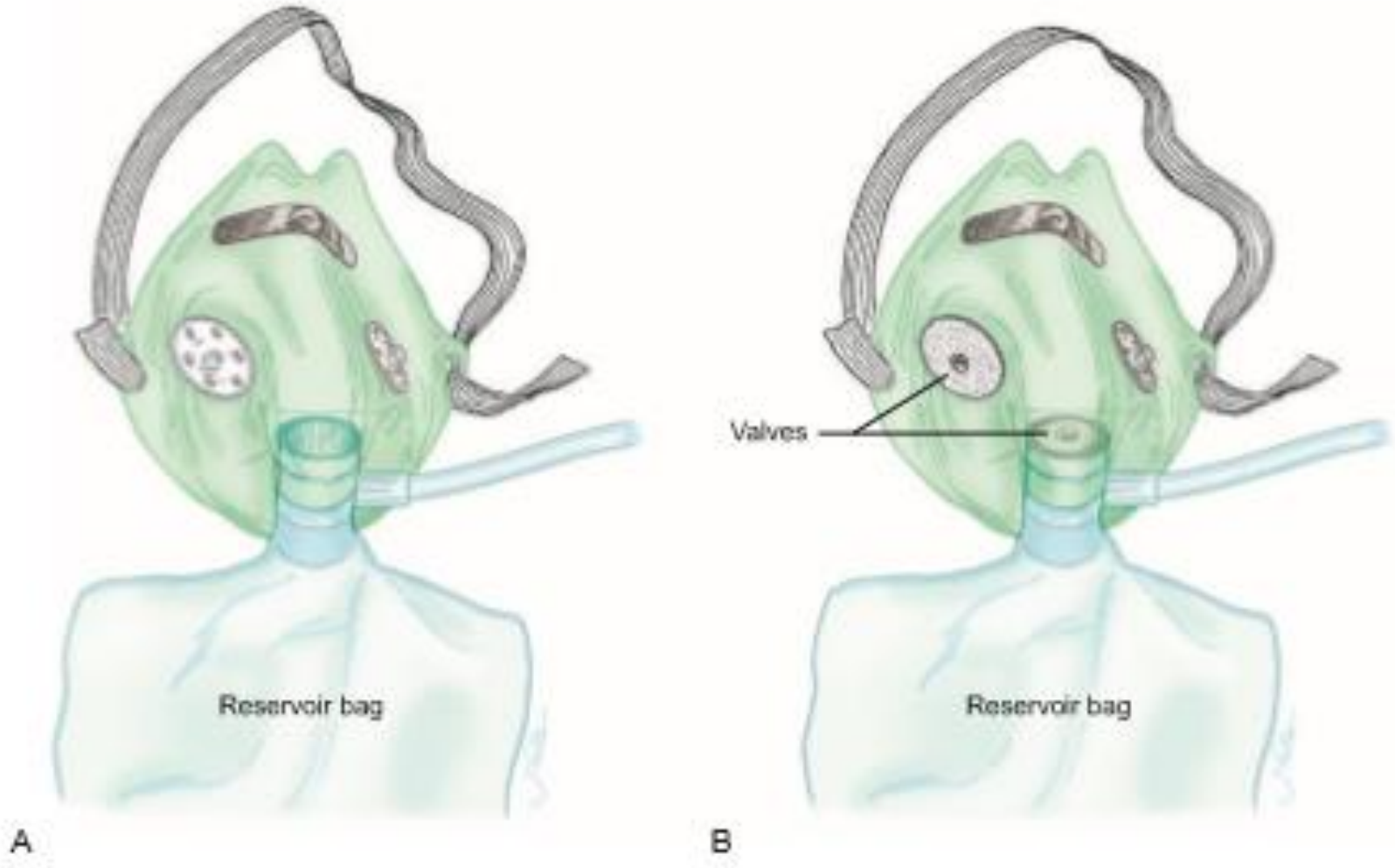
Section Separator

Management of hypoxemic respiratory failure and ARDS

- Facemask with reservoir bag (flow rates of 10-15 L/min, which is typically the minimum flow required to maintain bag inflation; FiO2 0.60-0.95)
- High-flow nasal oxygen (HFNO)or non-invasive ventilation (NIV) should only be used in selected patients with hypoxemic respiratory failure.

Partial Rebreathing Mask

Non Rebreathing Mask



Oxygen mask with reservoir bag

“Venturi” Device with mask

Venturi System Varieties

HFNC

Respir Care 2013;58(1):98–120.

Management of hypoxemic respiratory failure and ARDS

- Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions
- Implement mechanical ventilation using lower tidal volumes (4–8 ml/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure <30 cmH2O)

Management of hypoxemic respiratory failure and ARDS

- Hypercapnia is permitted if meeting the pH goal of 7.30-7.45
- Ventilator protocols are available. The use of deep sedation may be required to control respiratory drive and achieve tidal volume targets.
- In patients with severe ARDS, prone ventilation for >12 hours per day is recommended

Management of hypoxemic respiratory failure and ARDS

- Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion
- In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested
- A related intervention of recruitment manoeuvres (RMs) is delivered
- Neuromuscular blocking agents may be used in severe ARDS

Management of hypoxemic respiratory failure and ARDS

- In settings with access to expertise in extracorporeal life support (ECLS), consider referral of patients with refractory hypoxemia despite lung protective ventilation
- Avoid disconnecting the patient from the ventilator, which results in loss of PEEP and atelectasis
- Use in-line catheters for airway suctioning and clamp endotracheal tube when disconnection is required (for example, transfer to a transport ventilator)

Management of septic shock

- Recognize septic shock in adults when infection is suspected or confirmed **AND**
- Vasopressors are needed to maintain mean arterial pressure (MAP) ≥65 mmHg **AND**
- Lactate is ≥2 mmol/L, in absence of hypovolemia

Management of septic shock

- Recognize septic shock in children with any hypotension (systolic blood pressure [SBP] <5th centile or >2 SD below normal for age) **or** 2-3 of the following:
- altered mental state
- tachycardia or bradycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpm in children)
- prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses
- tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia.

Management of septic shock

- Standard care includes early recognition and the following treatments **within 1 hour** of recognition: antimicrobial therapy and fluid loading and vasopressors for hypotension.
- The use of central venous and arterial catheters should be based on resource availability and individual patient needs
- At least 30 ml/kg of isotonic crystalloid in adults in the first 3 hours
- Do not use hypotonic crystalloids, starches, or gelatins for resuscitation.

Management of septic shock

- Administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP ≥65 mmHg in adults and age-appropriate targets in children
- Vasopressors (i.e. norepinephrine, epinephrine, vasopressin, and dopamine) are most safely given through a central venous catheter at a strictly controlled rate, but it is also possible to safely administer them via peripheral vein and intra-osseous needle

Prevention of complications

- Days of invasive mechanical ventilation
- Incidence of ventilator associated pneumonia
- Incidence of venous thromboembolism
- Catheter related blood stream infection
- Pressure ulcers
- Stress ulcers and gastrointestinal bleeding
- ICU-related weakness

State ToT on

NOVEL CORONAVIRUS (COVID-19)

Risk Communication and Community Engagement

Dr Rajendra Prasad, JD,
Tribal Health and Trainings

Presentation Outline

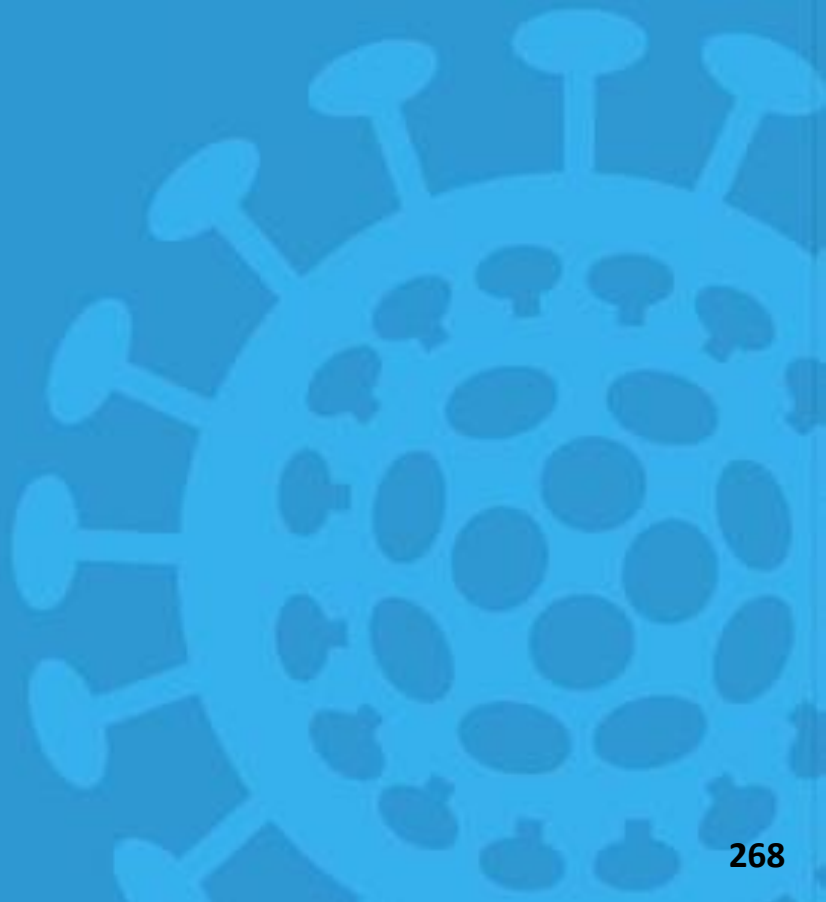
1. Risk Communication and Communication Engagement (RCCE)-Understanding the concept

2. National COVID-19 Risk Communication and Communication Engagement Approach

3. **RCCE Resource Packages** (Community, Health Service Providers and Workplace) and **Communication Planning tool** (for State Government Planning)

4. List of key RCCE focal persons

Risk Communication and Community Engagement

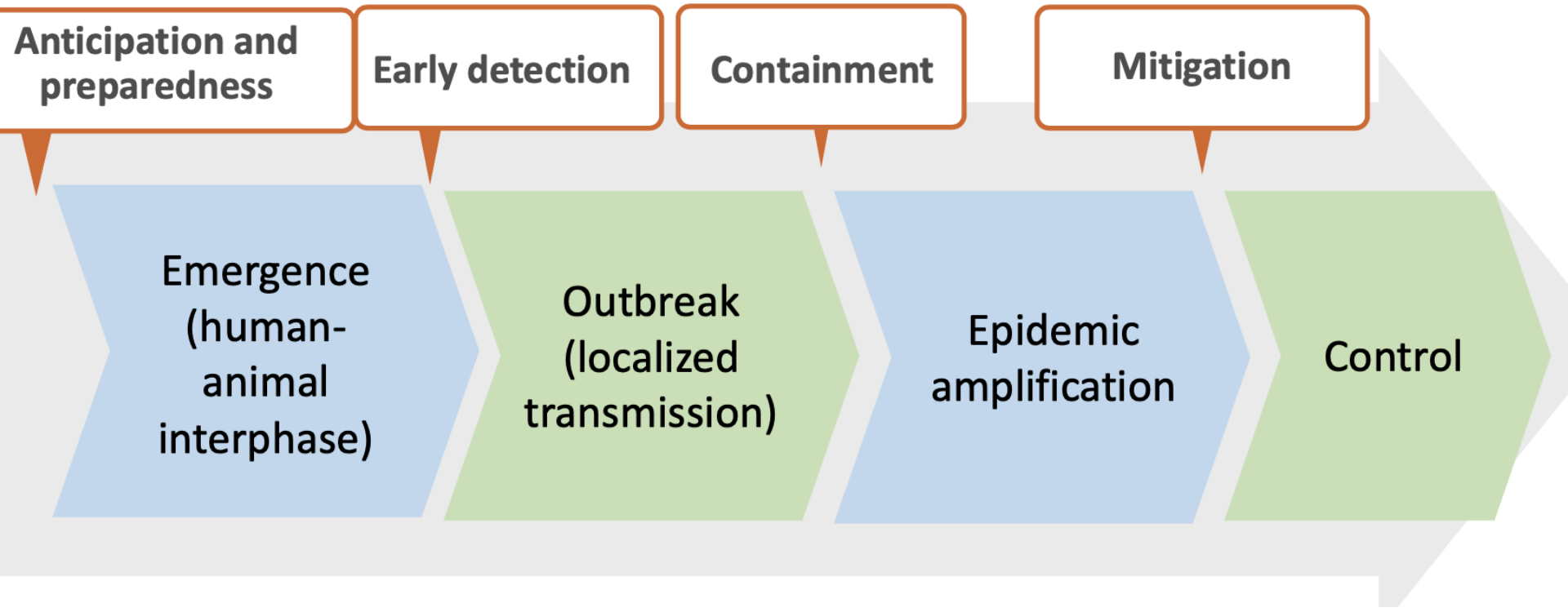


Risk Communication-what is it?

A real-time dialogue **(a two-way exchange of information advice and opinions) between experts/officials and the people facing a threat (from a hazard) to their health or economic or social well being.**

Why? So everyone at risk are able to make informed decisions to mitigate the effects of the threat –such as COVID-19 Outbreak – and take protective and preventive measures

What are the Risk Communication intervention points in epidemics and pandemics?



Why Risk Communication intervention during in epidemics and pandemics are important?

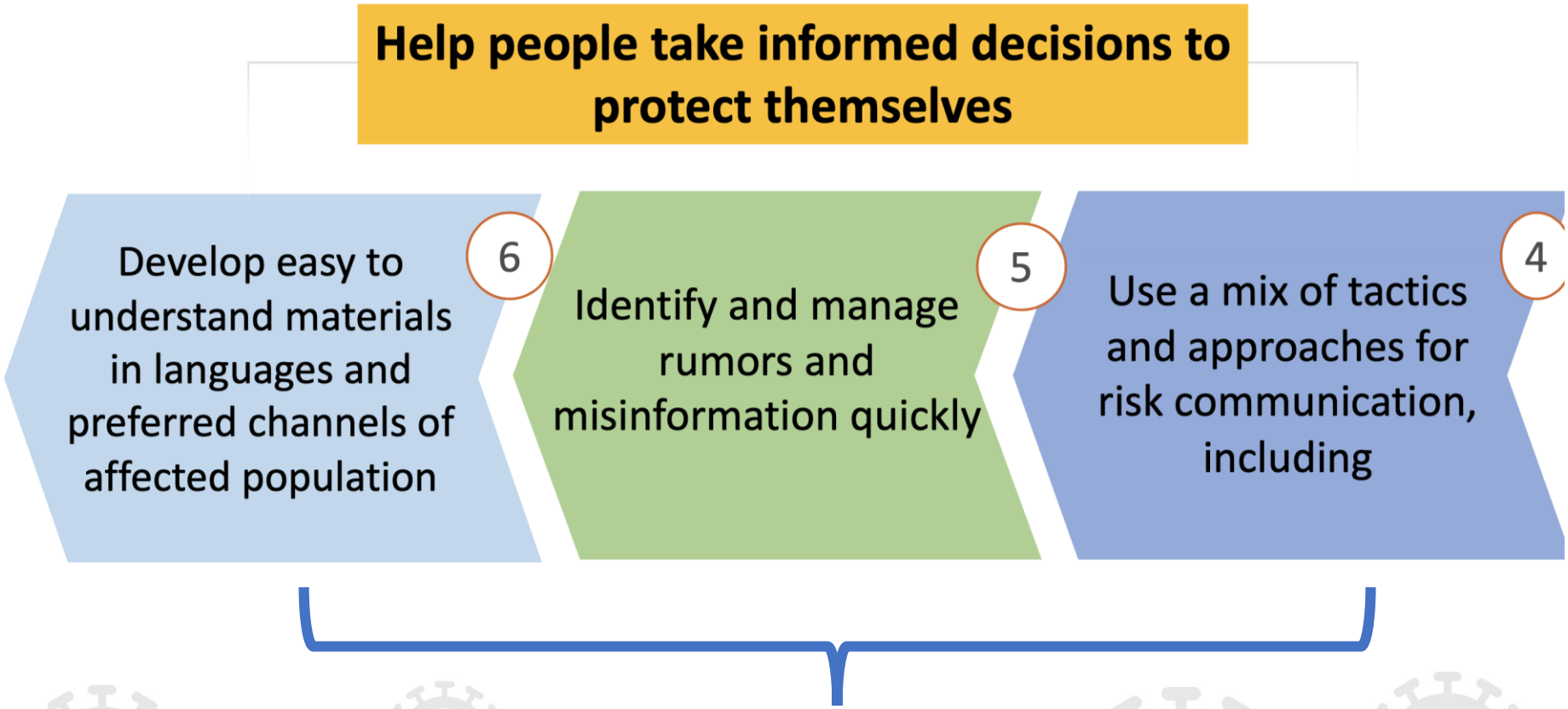
1. Cultural practices and harmful social norms hamper uptake of preventive measures and safe behaviours (Fever is not seen as a threat, limited handwashing etc)
2. Concerns related to spread of COVID-19 due to direct close contact with suspected or confirmed patients (Close living quarters, taking care of sick family members)
3. Possibility of cross-infection in hospitals caring for patients with COVID-19 Infection
4. Access to limited trusted and correct information
5. New virus with an evolving aetiology - lack of knowledge on how disease is transmitted

Risk Communication and Communication Engagement for epidemics and pandemics (COVID-19)

Be first, be fast, be frequent

1. Early first announcement essential to build and maintain public trust
2. Awareness of the disease and the situation is key, especially among health care workers and the populations at risk
3. Be proactive in information dissemination with frequent updates

Risk Communication and Communication Engagement for epidemics and pandemics (COVID-19)?



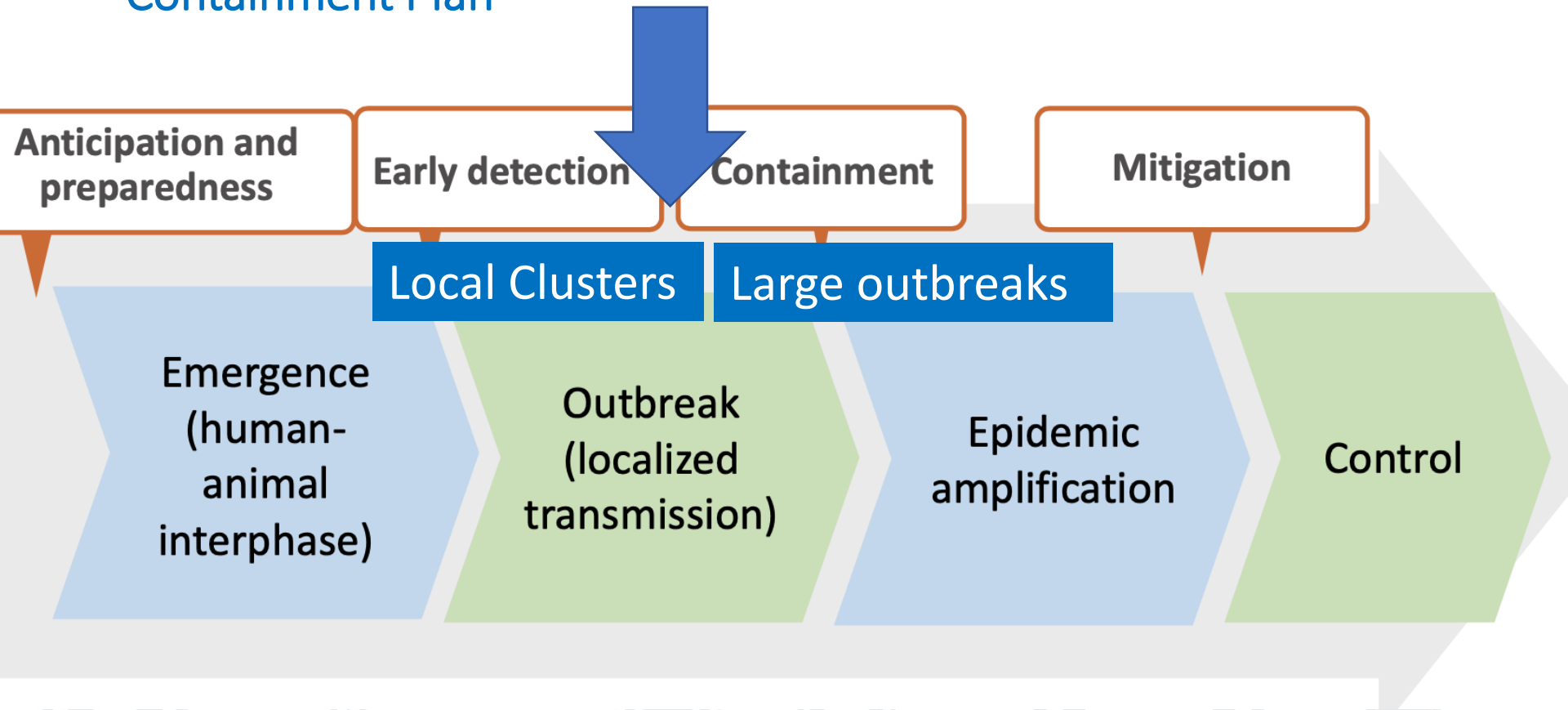
Risk Communication and Community Engagement (RCCE)-How?

1. Ensure RCCE is part of National Outbreak/State Preparedness and Response Plan
2. Develop a national RCCE plan with state guidance, clear objectives, outcomes and resource requirement
3. Establish RCCE coordination mechanism for information sharing, addressing rumours and fast-track mechanisms for release of information
4. Establish a mechanism for monitoring media, social media and rumours, for timely management of misinformation

National COVID-19 Risk Communication and Community Engagement (RCCE) Approach

National COVID-19 Risk Communication and Community Engagement Approach

Aligned with Ministry of Health Family and Welfare Cluster Containment Plan



National COVID-19 Risk Communication and Community Engagement Approach-Guiding Principles

1. Phased approach for RCCE
2. KAP in the affected states and regular community monitoring and listening
3. RCCE (MoHFW/State Department of Health) institutional mechanisms for planning and implementation and monitoring
4. **Respect geographic diversity, social and cultural practices** including local customs.
5. **Keep it simple and sensible** and to be based on the social data, media habits for effective and relevant content and communication

National COVID-19 Risk Communication and Community Engagement Approach-Guiding Principles

- COVID-19 virus is creating fear

✓Communication needs to be direct, transparent & consistent

- Potential of Panic is very high

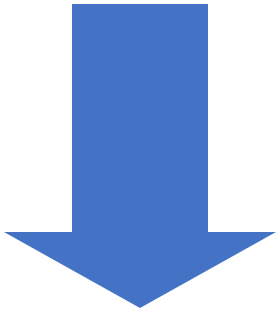
✓Positive tone, a sense of reassurance as 81% of cases are mild

- Prevention is crucial, provides meaningful rationale

✓Enhance understanding of risks/risk factors among general public and high risk groups

✓Everyone has a role to play

Overall Role for COVID-19 RCCE



Response and Control

2 Communication Components

1 Clusters of Novel Coronavirus Disease

- **Encourage early health seeking behavior focused self reporting and monitoring especially in those with recent travel history or history of potential contacts**
- **Augment hand hygiene and respiratory etiquettes** among general public as a routine/regular practices against everyday respiratory illness/respiratory tract infections

2 Widespread Community Transmission

To reassure the public reinforce the critical need to protect themselves, their families and others-**social distancing measures, continued focus on hand-hygiene, respiratory etiquettes and early heath seeking behaviours** (especially among high risk groups)

Therefore, National COVID-19 Risk Communication and Community Engagement:

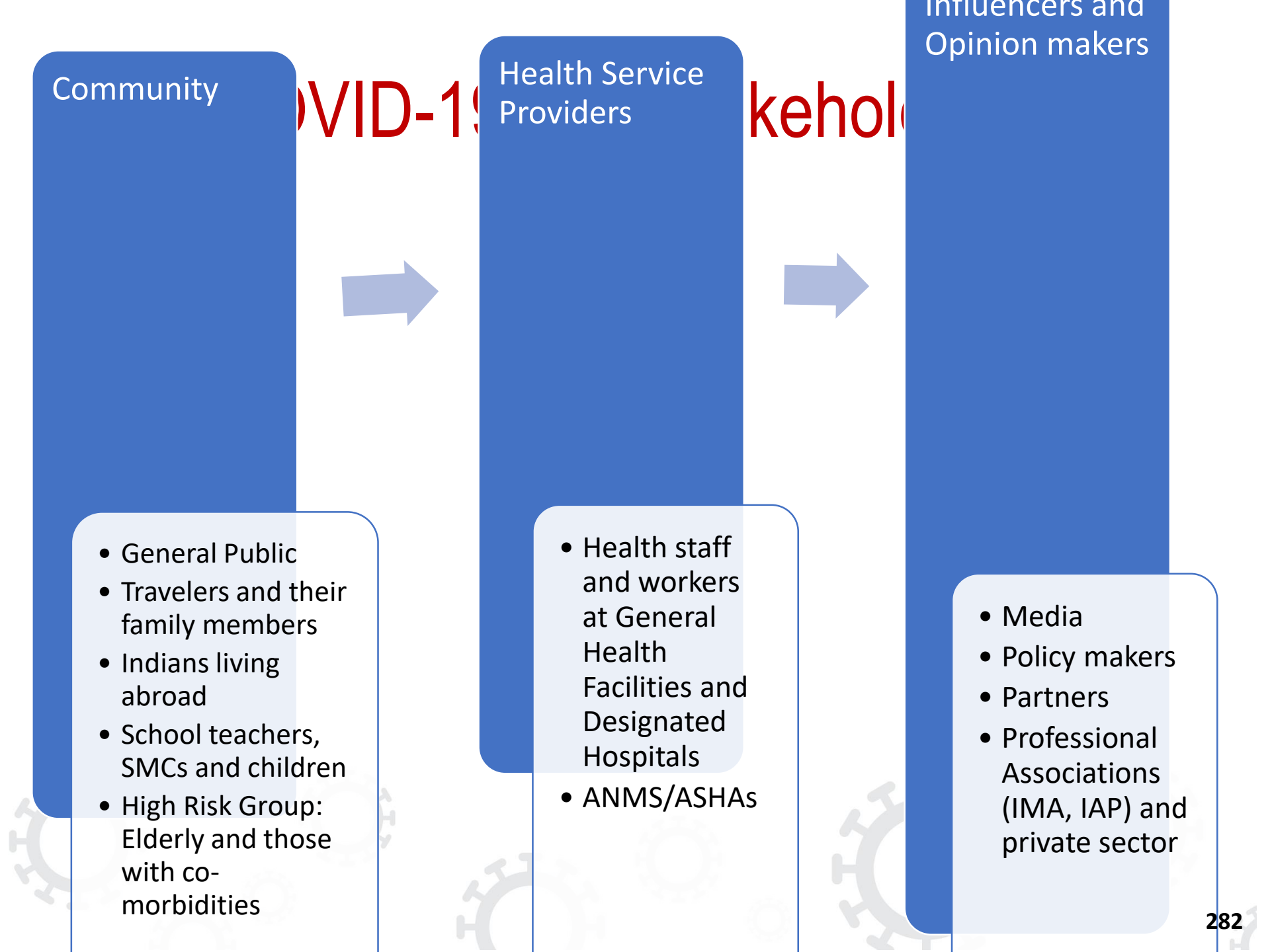
- Ensure population at risk, is adequately protected from the infection of COVID-19 by creating awareness and knowledge on prevention behaviours and limits its impact by their improving hygiene and health seeking behavior

- Build capacities and strengthen Inter-personal skills of the frontline workers (ANM/ASHAs/AWWs), local health service providers and networks to ensure effective response of treatment and services

- Create an enabling environment at the national, state, and district level through strengthened coordination with partners, sustain political commitment and

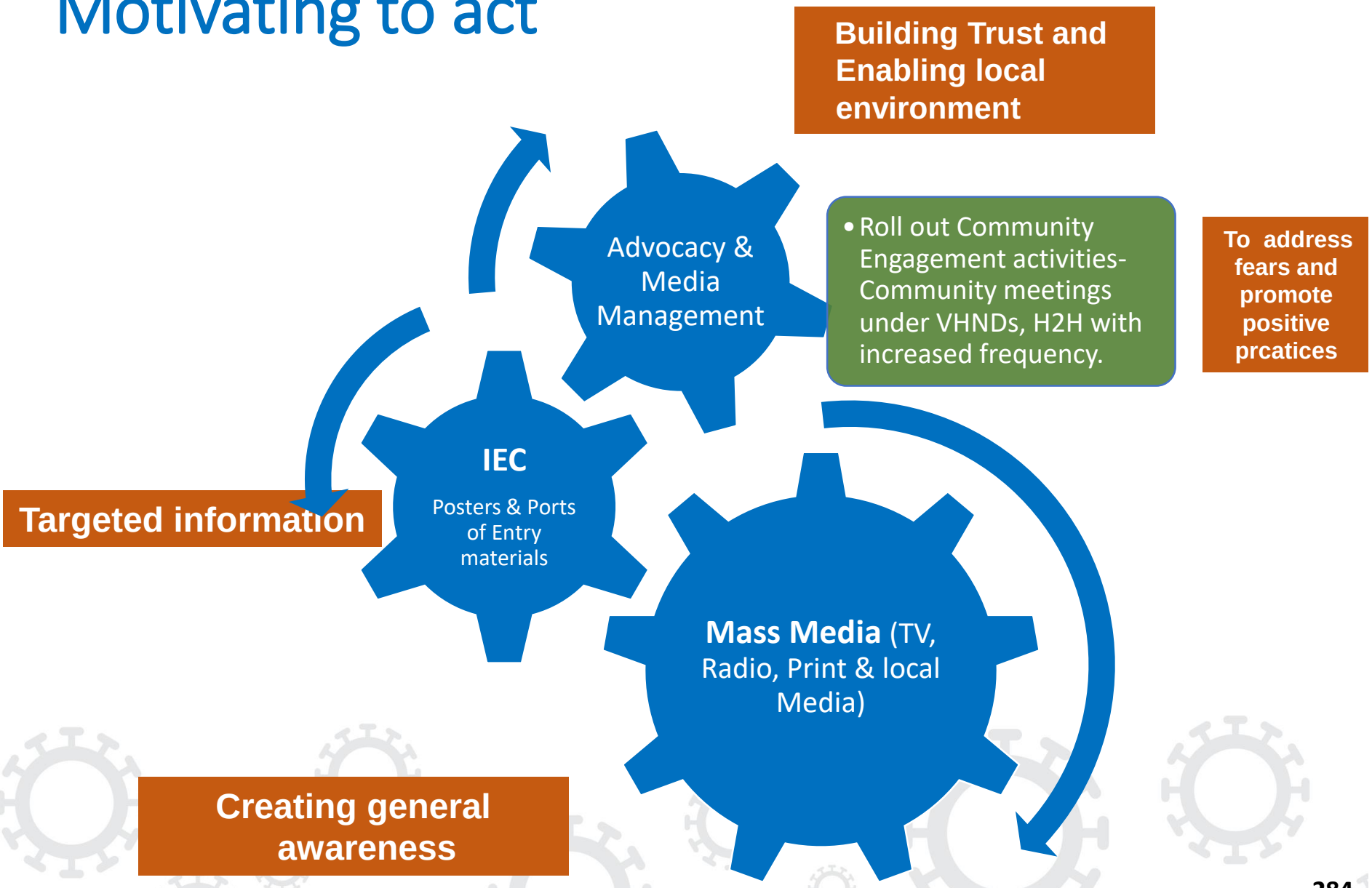
- Effective advocacy for mass mobilization and minimize social disruption

(Possible objectives)


Community
VID-19
Health Service Providers
kehol
Influencers and Opinion makers
• General Public
• Travelers and their family members
• Indians living abroad
• School teachers, SMCs and children
• High Risk Group: Elderly and those with co-morbidities
• Health staff and workers at General Health Facilities and Designated Hospitals
• ANMS/ASHAs
• Media
• Policy makers
• Partners
• Professional Associations (IMA, IAP) and private sector

COVID-19 Preventive Measures

COVID-19 Intervention Framework: Motivating to act



Interventions by MOHFW and partners for COVID-19

- MoHFW collaboration with WHO, UNICEF and other key partners for RCCE
- Letters written to all Chief Secretaries towards disseminating do's and don'ts
- Intensive content posting-travel advisory, preventive measures on MOHFW social media handles
- Regular press conference and press releases-interaction with Hon'ble Minister and Senior Officials
- Community resource package with Posters, print ads AV products shared across ministries, states and social media platform
- Toolkit for Health Service Providers developed. Meeting with Private Sector Hospital conducted.

Internal and partner Coordination, Public Communication, Community Engagement, Capacity Building, Addressing Uncertainty, perceptions and managing mis-information

Creating Community Monitoring and Listening System

To address rumors, fake news and harmful practices and norms

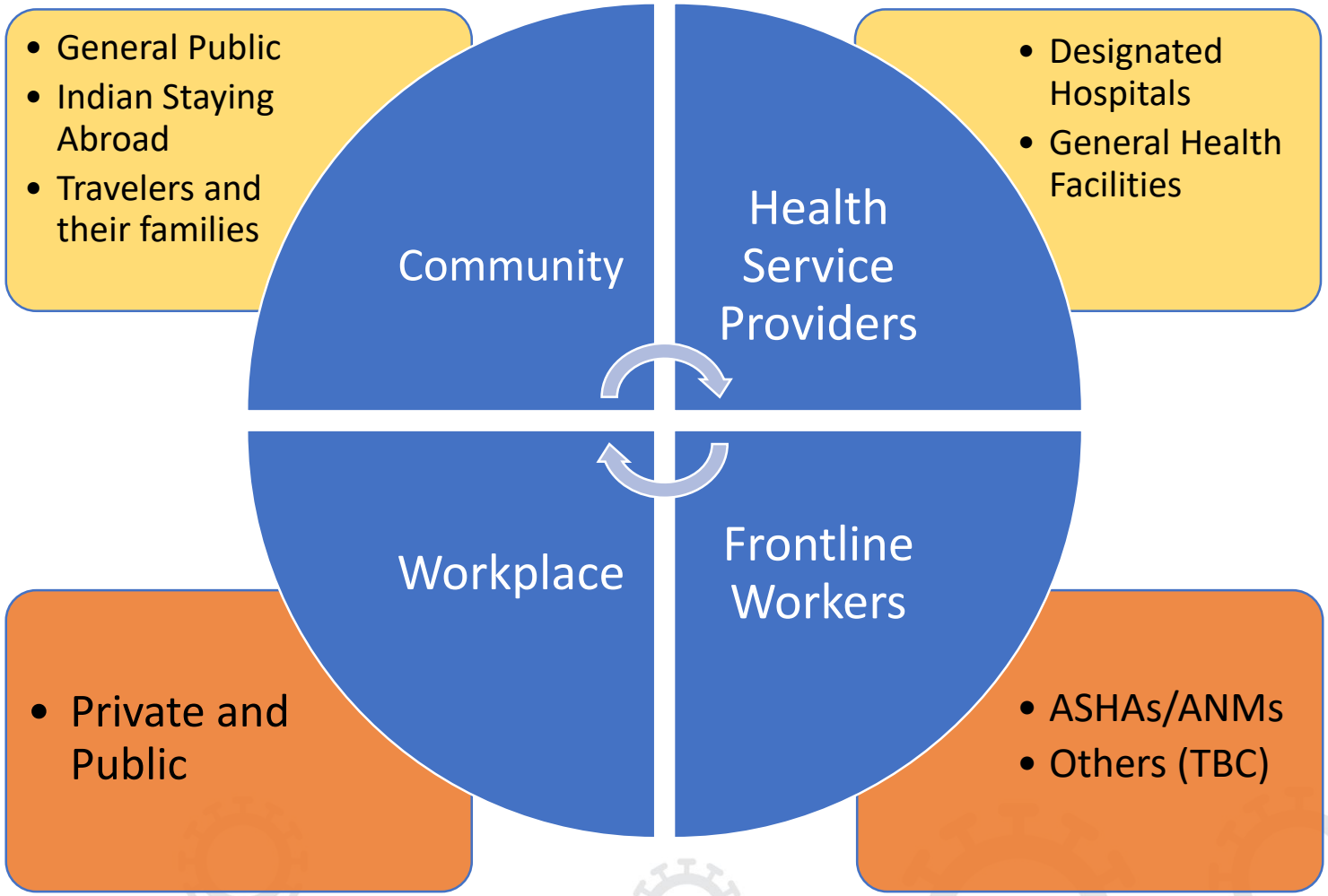
- Partnership with Facebook and Google
- Rumour and fake news tracking
- Myth-busters on all social media and community platforms-to provide correct information from trusted sources

Resource Packages and RCCE Planning tool

(Risk Communication and Community Engagement)

Communities, Health Service Providers including ASHAs/ANM and Workplace

Resource Packages



Developed and Shared

Under Development

Community Resource Package

Print Materials

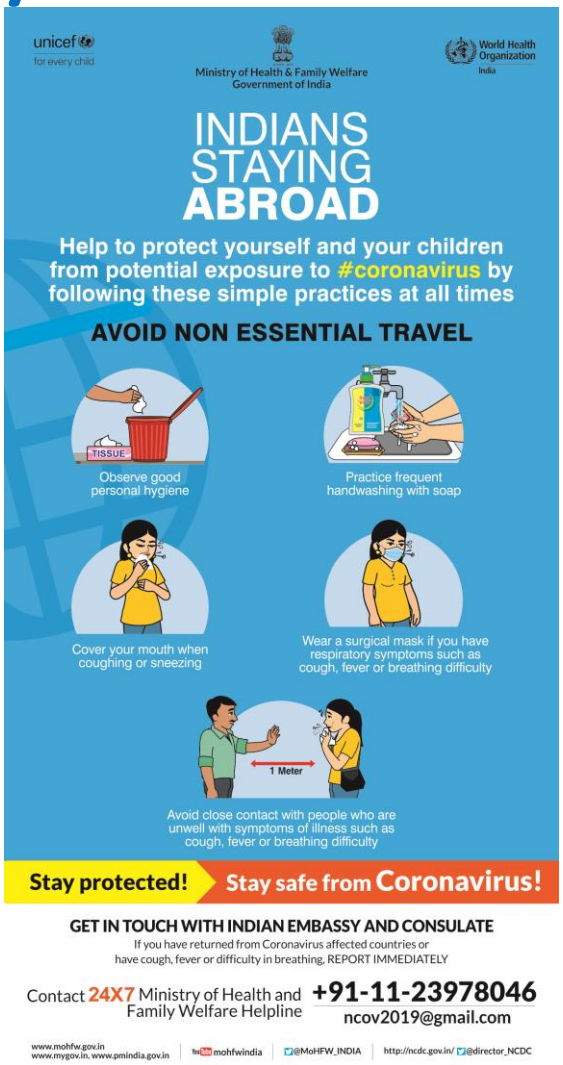
- **Press Ads** (MoHFW)
- **Posters**-Dos and Donts, 5 key Behaviours, Home Quarantine (only when there is community transmission)
- **Standee for Indian Consulates for Indians Abroad**

TV and Radio Materials

- **4 TV Spots**-Cover your mouth, stay at home, hand washing and seek treatment
- **2 Radio Spots**

Community Resource Packages

Press Ad-Hindi and Eng)



Standee for Indians living Abroad- Yet To be approved PMO

Poster: Home Quarantine-To be used when there is community transmission (Yet to be approved by PMO)

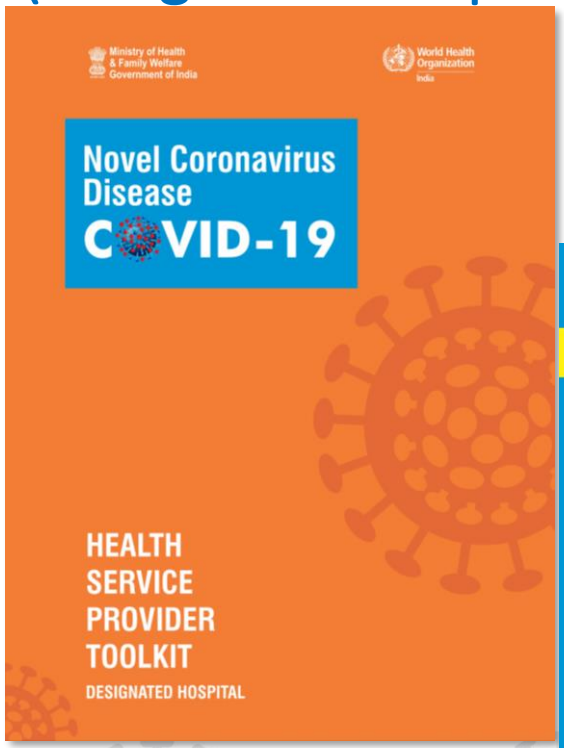
Community Resource Package

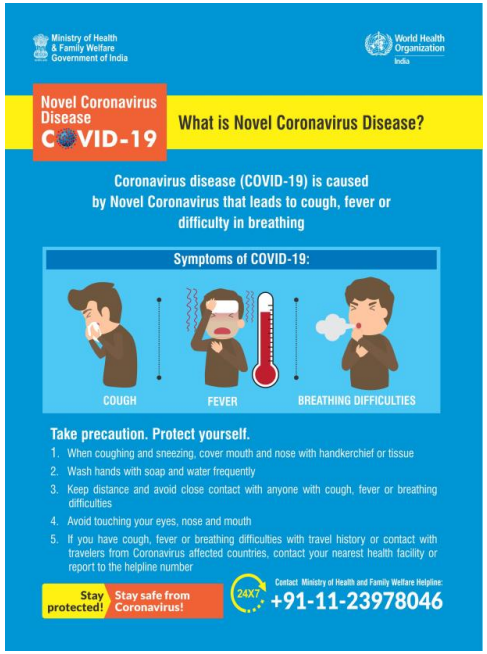
TV Spots: English and Hindi

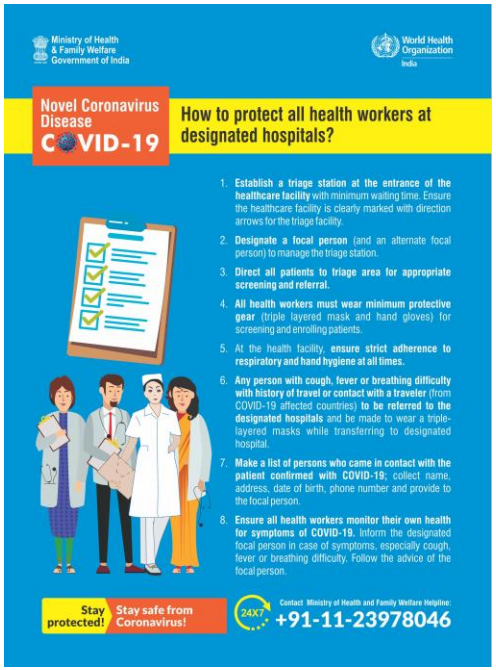
Health Service Provider Toolkit

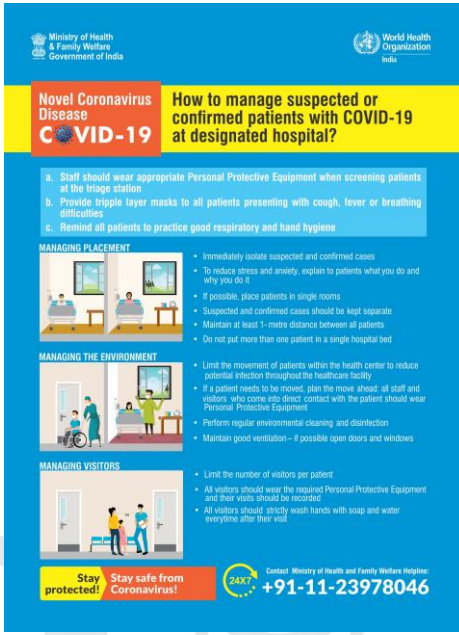
Items	General Health Facility	Designated Hospital
Poster 1: What is Novel Coronavirus Disease	Yes	Yes
Poster 2: Is your healthcare facility ready to manage patients with COVID-19?	Yes (with referral message)	Yes
Poster 3: Hand Hygiene	Hand Rub	My moments of Hand Hygiene
Poster 4: How to manage suspected or confirmed patients with COVID-19 at designated Hospitals?	x	Yes
Poster 5: How to protect all health workers at designated hospitals?	x	Yes
Community Information Leaflets (2)	Yes	Yes
Letter from Health Minister	Yes	Yes

Health Service Provider Toolkit (Designated Hospital)

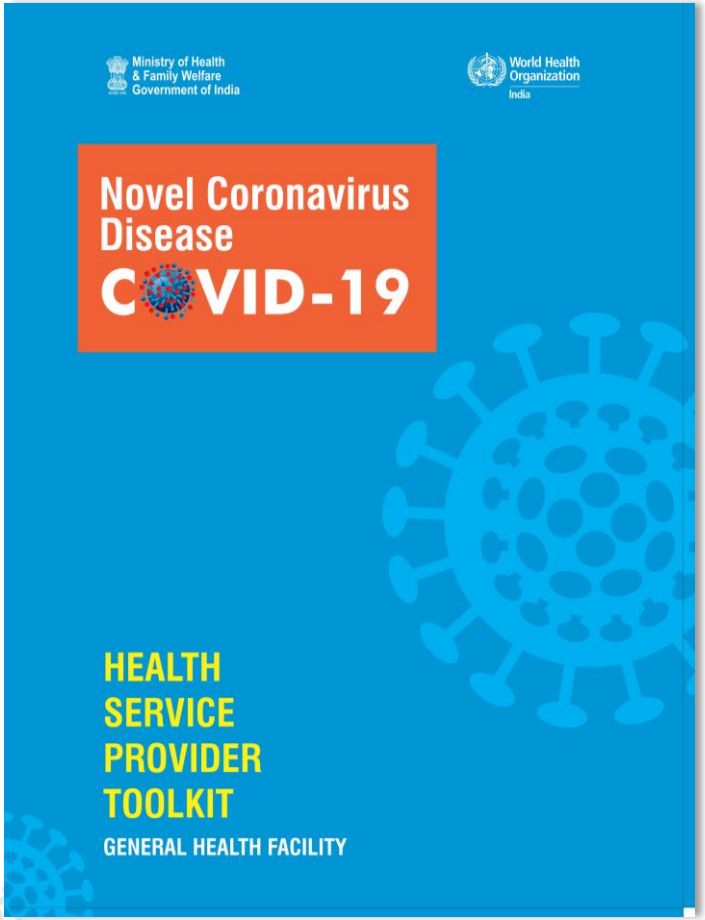


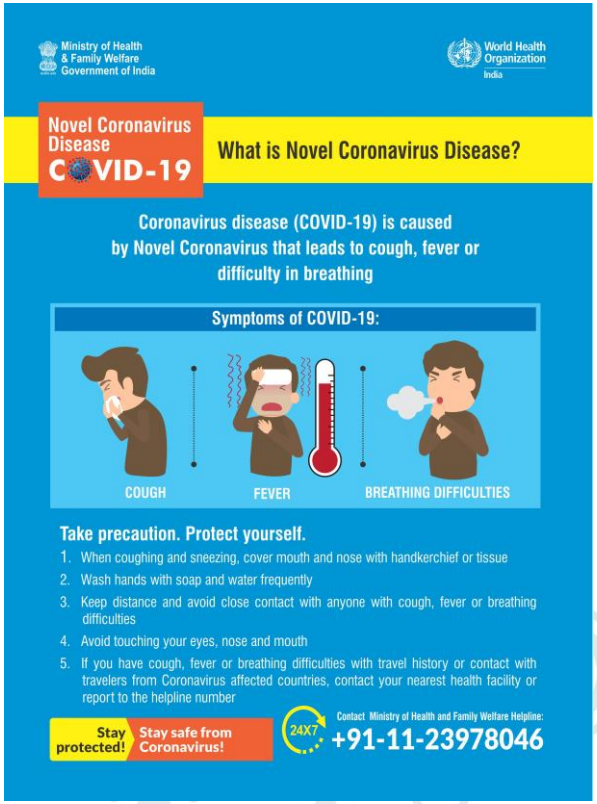






Health Service Provider Toolkit
(General Health Facility)





Workplace and Frontline Workers package being developed

State level Risk Communication and Community Engagement Plan (Reccommended)

State level communication plan (Form No. 17B)												
Name of the state:			Name of District:						District IEC/ Media officer:			
	Advocacy	State RCCE group meeting	Date…… Responsible person……			Date…… Responsible person……			Date…… Responsible person……			
Advocacy Meetings		Orientation of RCCE group members	Date…… Responsible person……			Date…… Responsible person……			Date…… Responsible person……			
		Orientation of CSO partners, including religious leaders and community influencer groups)	Date…… Responsible person……			Date…… Responsible person……			Date…… Responsible person……			
		Networking with school for supporting community mobilization	Date…… Responsible person……			Date…… Responsible person……			Date…… Responsible person……			
		State media orientation workshop	Date…… Responsible person……									
		Any Other	Date…… Responsible person……			Date…… Responsible person……			Date…… Responsible person……			
Capacity building	Capacity Building	Training of block level health officers and FLWs	Date…… Responsible person……									
Social Media	Social Media	Constitution of social media committee	Members…… Frequency……									
		WhatsApp messaging	Members…… Frequency……									
		Facebook messaging	Members…… Frequency……									
		Any other	Members…… Frequency……									
			District	Block 1	Block	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8	Total
Social mobilization activities	Advocacy	District RCCE meeting										
		Meeting with Schools (Govt and Pvt.)										
		Microplanning meeting (For risk communication planning and operation)										
		Meeting with key CSO, religious leaders/influencers at block level										
		Sensitization meeting with govt. line department staff i.e. ICDS, Edu,										
		Any other										
	Capacity Building	Orientation of ANMs on RCCE and Microplanning review										
		Orientation of ASHAs/AWWs on RCCE										
		Orientation of ASHAs/AWWs on mobilization for risk communication										
	Social Mobilization	Mother's meetings										
		Community/Influencer's meeting										
		Community meetings (VHSNC, SHGs, Mahila mandals)-Dedicated meetings on COVID-19										
		Govt. school teachers orientation/coordination meeting										
		Parent Teachers Meetings										
		Community dialogues	Date……									
		Announcements at all religious places										
		Inter Personal Communication sessions										
Mid-media activities	Mid media	Posters in community										
		Posters in Schools										
		Hoardings										
		Leaflets for community										
		Leaflets for Schools										
		Leaflets for ANM, ASHA and AWW										
		Leaflets for MOs										
		Miking/Local announcements										
		Any other activity										

Note I-This template will be completed by State and District MEIO/IEC officer/consultant. If there is no one dedicated for IEC activity, then District IEC Officer will be responsible to compile with consultations of Block MOIC/BEE/IEC consultant. One copy needs to be with concerned person who is responsible for IEC/communication and one copy needs to be submitted to Chief District Medical Officer/CMO/CDMO before the District Training start Risk Communication and Community Engagement

RCCE Planning tool

Contact details of RCCE Key Persons

- Ms. Padmaja Singh, JS-IEC MOHFW
- Dr. Ritu Chauhan, Team Health Security and Emergencies, WHO India
- Mr. Elnur Aliyev, Communication for Development, UNICEF India

State ToT on

NOVEL CORONAVIRUS (COVID-19)

Hospital Preparedness for COVID - 19

Dr Narasimhulu

Outline of Presentation

- Why hospital preparedness?
- Objectives of hospital preparedness
- Hospital Planning for COVID-19
- Infection Prevention and Control Practices
- Surge capacity to deal with large number of patients of COVID-19

Why Hospital Preparedness?

- COVID -19 is highly infectious, main driver being direct transmission through droplet and contact.
- Several Nosocomial infections with COVID-19 have been reported.
- Hospitals may itself become the hub of transmission.
- Large number of cases may have to be managed

Objectives

- Provide prompt clinical care to cases of COVID-19.
- Manage large number of cases in the context of a major outbreak
- Adequately train and equip healthcare staff for managing the cases
- Prevent the spread of respiratory diseases including COVID-19 within the facility
- Provide timely and regular information to the surveillance system
- Establish mechanism for external communication with public

Hospital Planning for COVID-19

Emergency Planning - Incident Management System/ Committees

- The hospital will review its DM plan and exercise this plan, identify gaps if any.
- Review the Incident Response System and/or the Committee system whichever the hospital is following.
- Ensure that there is clear role and responsibilities for the hospital functionaries

Hospital Planning for COVID-19 (Cont.)

OPD Planning

- Designate a nursing officer (and an alternate officer) to manage the triage station and direct the patients.
- Identify areas for initial screening and triage.
- Separate OPD: Flu like illness/ SARI.
- Keep provision of triple layer surgical masks for the patients and bio-hazard bags for their disposal.
- Provide hand sanitizer at the entry and in doctor's chambers/stations. Alternatively provision for hand wash.
- Ensure prominent display of messages on signs & symptoms and preventive measures for COVID-19/run videos to create awareness among patients.

Hospital Planning for COVID-19 (Cont.)

Indoor patient care planning

- Patients needs to be isolated in negative pressure rooms or separate isolation rooms (in alignment with the strategic approach)
- In resource constrained settings, use separate isolation ward for cohorting suspect and confirmed cases, with a waiting area for the visitors.
  - Such wards should have good ventilation and natural lighting
- Ensure facilities for ventilator and critical care management with trained manpower
- Its desirable to have ECMO facility for critical care in tertiary institutions and it's linkage to designated hospitals
- Provision for hand sanitizer with every bed/hand washing facility in the ward
- Provide triple layer surgical masks to all patients
- Ensure proper cleaning and disinfection of environmental surfaces and equipment in patient's room

Hospital Planning for COVID-19 (Cont.)

Patient transportation within hospital and referral

- Minimize the movement of patients within the health center
  - Limited to medically essential purposes
- If a patient needs to be moved, plan the move ahead:
  - provide a mask to the patient
  - Disinfection of the environmental surfaces of the patient care area
- Earmarked ambulances for patient transport and referral
- Ambulance staff should use appropriate PPE
- Facility for disinfection of patient's room after discharge
- Facility for disinfection of the ambulances

Hospital Planning for COVID-19 (Cont.)

Infection Prevention and Control Practices

- Restrict visitors access and their movement within the facility
- Provide triple layer surgical masks to visitors attending the patient
- Provision for hand sanitizer/hand wash with soap and water whenever leaving the isolation wards
- Perform regular environmental cleaning and disinfection
- Maintain good ventilation, if possible, open doors and windows

Hospital Planning for COVID-19 (Cont.)

Surge Capacity

- In large outbreaks/community wide transmission, large number of beds needs to be created.
- The surge capacity can be enhanced by:
  - Reverse triage
  - Addition of existing but non-essential beds to isolation facilities
  - Creating new wards
  - Temporary hospitals
  - Mobilize manpower from neighboring districts
  - Leverage services of healthcare workers in non-critical departments
  - Earmarking beds in private hospitals

Hospital Planning for COVID-19 (Cont.)

- Information management
- Facility should train identified persons on data management
- Daily logging and reporting would be done to IDSP on (daily and cumulative):
  - Total number of suspect cases
  - Total number of confirmed cases
  - Total number of critical cases on ventilator
  - Total number of deaths

Hospital Planning for COVID-19 (Cont.)

Logistic management

- Material logistics
  - Stock adequate quantities of PPE Kits, N-95 masks, triple layer surgical masks, gloves etc.
  - Hand sanitizers and disinfectants
  - Sample collection kits, VTMs and packaging and transportation arrangements
  - Ventilators and other critical care equipment
  - Drugs, IV Fluids and other medical consumables

Hospital Planning for COVID-19 (Cont.)

- Business continuity
- Rostering
- Prevent burn-out
- Maintain positive environment

Hospital Planning for COVID-19 (Cont.)

Training and exercises

- Sensitize healthcare workers on:
  - COVID-19 disease
  - IPC practices
  - Correct use of PPEs
  - Rational use of PPEs: Risk profiling and appropriate use of PPE
- Conduct exercises on IPC practices, patient transport, sampling etc.

Alignment of hospitals with strategic approach

Scenario	Strategy	Hospital facility	Activity
Travel related cases	Prevention of further spread in community	Designated hospitals attached to airports/ports/land border crossings	Isolation in individual isolation rooms of all suspect and confirmed cases
Reporting of cluster	Prevention of further spread through cluster containment	Nearest hospital identified to the cluster	Isolation in individual isolation rooms of all suspect and confirmed cases
Large outbreaks	Mitigation using ABC categorization	OPD Triage facility, surge capacity for indoor isolation in wards/temporary hospitals Admission policy as per risk categorization	Home care for mild and moderate cases and hospital admission only for high risk cases and those requiring critical interventions
Disease becomes endemic	Programmatic approach	As above	As above

State ToT on

NOVEL CORONAVIRUS (COVID-19)

Non-pharmaceutical Interventions (NPI) for COVID - 19

Dr Narasimhulu

Session Outline

Non-pharmaceutical Interventions (NPI)

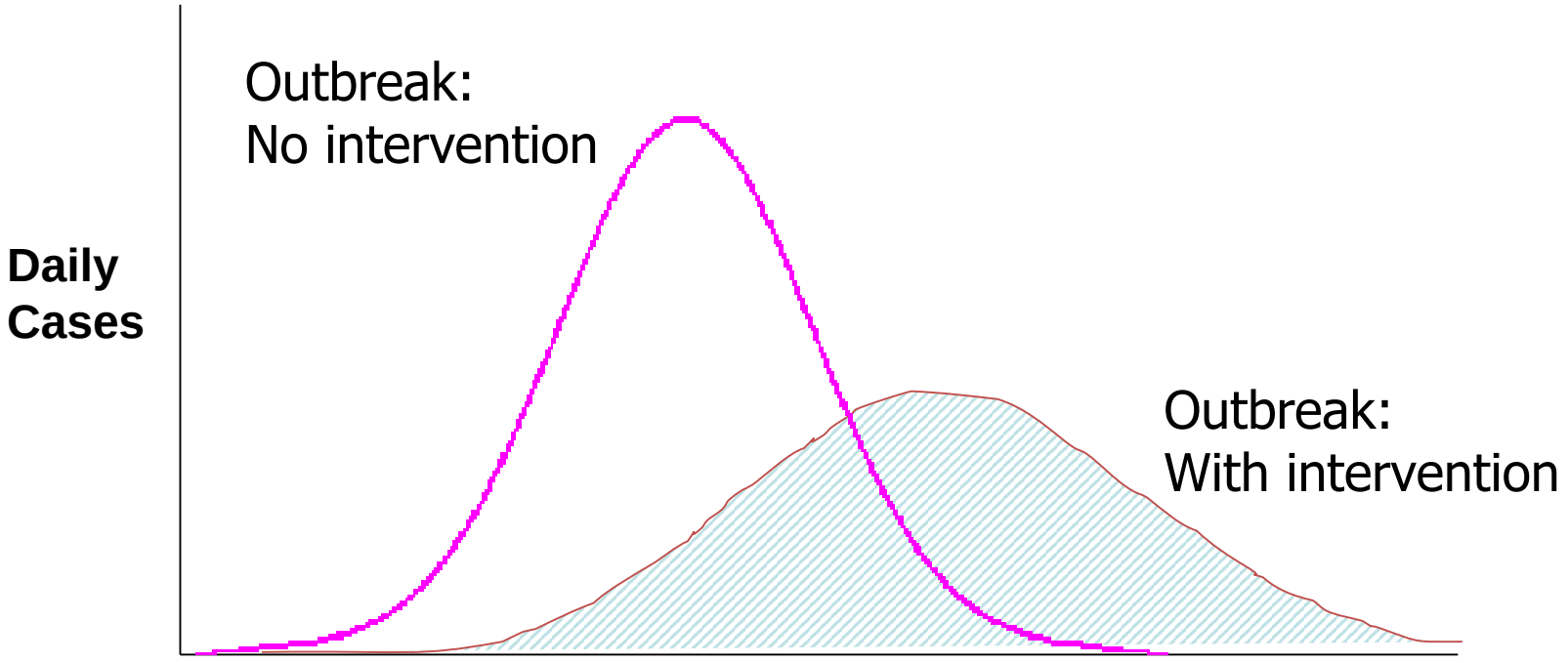
- Concept and application
- Components and levels of interventions
- NPI in the context of COVID - 19.
- Implementation of NPI
- Evaluation

Potential Tools in Our Toolbox

- Vaccine – best countermeasure is not readily available
- Antiviral drug could improve outcomes but no clarity yet.
- Antiviral prophylaxis not available hence no effect on reducing transmission
- Non-pharmaceutical interventions may reduce transmission and diminish overall health impact.

Non-pharmaceutical Interventions

1. **Delay disease transmission and outbreak peak**
2. **Reduce peak burden on healthcare infrastructure**
3. **Diminish overall cases and health impacts**



Isolation

- Separation and restricted movement of **ill** persons
- Would apply to even PUI
- Isolation in a hospital –ideally in a Bio-containment facility;
- if not available in an isolated room not sharing air-circulation with other rooms.
- Follow hospital infection prevention and control Recommendations

Quarantine

- refers to separation and restriction of movement or activities.
- Persons who, while not yet ill, have been exposed to an infectious agent and therefore may become infectious.
- Often at home
- Follow infection control practices for home care settings

Individual level

- Isolation
- Quarantine
- Infection control through simple public health measures
  - Hand washing
  - Respiratory etiquettes
  - Stay away
  - Use of PPE

Community level

- Quarantine of groups/sites
- Community wide quarantine-Cordon Sanitaire
- Measures to increase social distance
  - School closures
  - Business and market closure
  - Cancellation of events
  - Movement restrictions

National/ International level

- Non essential travel deferred
- Provide information to travelers
- Self recognition of illness and self reporting
- Entry screening (Passive)
- Exit Screening at Airports of affected countries
- Airport Quarantine
- Ban of flights/ ships originating from affected area

NPI for COVID - 19

- Individual level
  - Isolation
    - Hospital setting
  - Quarantine
    - Home, POE and hospital settings
  - Simple public health measures for infection control (Hand washing, Hygiene, Sanitation, Respiratory etiquettes)
    - Home, school, workplace, hospitals, markets
  - Use of masks and gloves (for care provider)
    - Home care, POE and hospital settings

NPI for COVID - 19 cont'd

- Community level
  - Quarantine of site (Hospital) in case of Nosocomial infection involving HCWs
  - Social distancing measures / community wide quarantine not advocated.
- National/ International level
  - Non essential travel to be deferred.
  - No need to restrict trade or Travel
  - No import of bush meat or products of similar nature.
  - Need to inform travelers on the risk

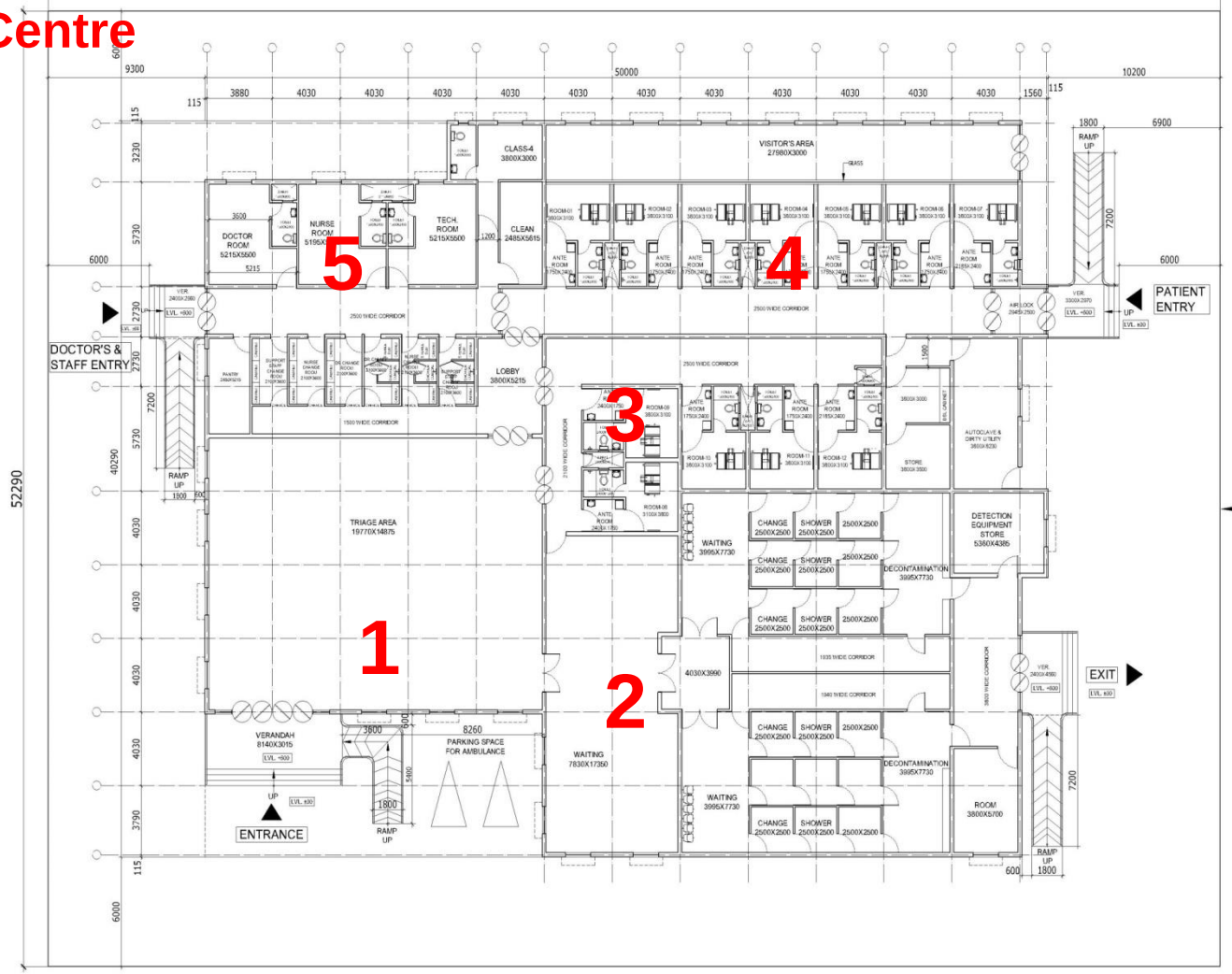
Bio Safety and Clinical Requirements

- Ideally requires Bio - Containment Treatment Facilities.
- These patients often requires intensive care that is not possible in many of our district level hospitals.
- Identified facilities also require high level of critical care management.
- It also need to have a laboratory to support investigations required to manage critical patients.
- Adequate Infection Prevention Control Practices.

Ideal Bio Containment Patient Care Unit

- Negative air flow system with greater than 12 air exchanges per hour
- High-Efficiency Particulate Air (HEPA) filtration system of exit air.
- Secured access, double door air lock main entrance
- Separate staff entrances and exits
- Staff decontamination shower
- Pass through autoclave to disinfect materials leaving the unit
- Dunk tank to decontaminate lab specimens leaving the unit
- Video phone for patient communication
- Dedicated laboratory to process the clinical samples.

Layout- Secondary Level CBRN Medical Management Centre



1. Triage
2. Decon
3. Treatment area
4. Biocontainment
5. Staff area

NOTE:-

1. BUILDING FOOT PRINT - 50 X 40 SQ.M. (APPROX.)
2. APPROXIMATE PLOT SIZE REQUIRED - 60 X 70 SQ.M.

TOTAL BUILTUP AREA =2000 SQ.M. (APPROX.)

GROUND FLOOR PLAN

CONCEPTUAL LAYOUT FOR SECONDARY LEVEL CBRN CENTRE

RAJEEV KANAUJIA SENIOR ARCHITECT	IMRAN KHAN ASSTT. ARCHITECT	SCALE: NTS	DATED JUNE 2019	JOB NO.	DWG. NO. 01
SACHIN MAHINDRU ARCHITECT	SANGEETA CAD OPERATOR	CENTRAL DESIGN BUREAU FOR MEDICAL AND HEALTH BUILDINGS, MOH&FW, NIRMAN BHAWAN, NEW DELHI			

Suggested modalities for Isolation Facilities

Isolation facilities for managing COVID - 19

- Single room with attached washroom, away from main patient care areas.
- The room needs to be kept closed.
- No visitor should be allowed except through tele/ video conference.
- Preferably maintain the room at negative pressure
- Health care workers attending on him should wear full complement of PPE.

Pressure Monitors

Air Filtration Systems

Portable units

Infection control :Home care settings for Quarantine / Isolation

- Requirements
  - The ill person should have his or her own bed preferably in a separate room.
  - Adequate air-ventilation
  - Basic amenities
  - Toilet facilities that preferably only the ill person use.
  - Identified primary caregiver for medications and care.
  - Care giver should be briefed adequately on infection control practices.

Health Monitoring

- Regular health monitoring of HCW in hospital settings/ Care givers in home care settings
- Self health monitoring advisory to other at-risk persons.
- Reporting to nearest health facility
- Details of accessible identified health facility.

Risk Communication

- Communicate the risk in clear consistent messages
- Convince public why the NPI measures are important and how they will protect the public.
- Wide spread dissemination through media
- One source for official information
- Prevention of incorrect information
- Allays psychological fear

Implementation requires:

- Clear understanding of roles and responsibilities at all levels
- Coordinated planning by many partners
  - Public health authorities, health-care providers, emergency response teams, law enforcement, transportation, civil aviation, shipping authorities
- Trust and participation of the general public
  - Effective risk communication, support and coordination with community groups

Evidence Base

- Limited scientific evidence about NP interventions currently exists.
- Historical and contemporary observations, anecdotal evidence
- Some evidence through mathematical models
- More Research is required

Summary

- NPI likely to be useful in delaying and reducing disease transmission, and may decrease health impact
- NPI should be used in coordination with other interventions, and early implementation is crucial
- All measures should be implemented within context of local situation.
- Limited scientific evidence. Need for further research

Thank you