

Summer training report

By

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List of abbreviations

Abbreviations	Full forms
COVID	Corona Virus Disease
COVID NET	COVID - Associated Hospitalization Surveillance Network
WHO	World Health Organization
UNICEF	United Nations International Children's Fund
PAHO	Pan America health organization
ED	Emergency department
NCIP	Novel Corona Infected Pneumonia
DLG	Disaster Leadership Group
PDS	Participatory disease surveillance
PCR	Polymerase Chain Reaction
RT- PCR	Reverse Transcription Polymerase Chain Reaction
CBNAAT	Cartridge based nucleic acid amplification test

Introduction

Coronavirus disease also known as COVID 19 is the new pandemic in 2020. It started in 2019 in Wuhan, China. It is a transmissible disease and caused by SARS cov or Cov-2 having different strains as identified to date. COVID is transmitted through animals and can be human to human transition as well. It is identified with the symptoms like dry cough or fever or patients can be asymptomatic too who can be symptomatic later on. A comparative observational study was done the public health interventions in the USA, Singapore, and India in response to COVID. Public health interventions are the steps taken by policymakers in collaboration with governmental agencies and other stakeholders to prepare a response plan to deal with any disease outbreak. A secondary research was done on the guidelines prepared by the health department of Minnesota, WHO, UNICEF for public health interventions were taken into consideration. A comparison was made to know the gaps present due to which one country failed to manage and have an increased mortality rate. Whereas, in another country, there is a low mortality rate. Collection of data was done on the strategies made related to surveillance, Screening, case management, outreach and risk communication with the response plan (RCCE) in these three countries. In this research, it was found that the USA had good surveillance plans including the agencies like CDC, NIH, FDH, and case management is also doing well. But, the country is facing a problem in outreach programs due to unstructured guidelines according to the country indicators. There is also a challenge for shortages of masks, PPE kits, ventilators with a lack of proper infrastructure. Secondly, consultation prices are also high due to which many patients were reluctant including pediatric patients to go for check-ups. Many other reasons were there ue to which country was facing high mortality rates. On the other phase, Singapore has taken early steps to make mitigating strategies in response to COVID. This country has made four zones and did case management according to the people present in these zones with dormitories surveillance. Screening was also done early with sound strategies for outreach programs. These programs supported a framework in which people are fully aware of the measures which should be taken for avoiding the spread of disease. The third country that was taken into account in India. In India, it was found that there were early mitigations steps taken and a national lockdown was declared. Though the country is facing shortages related to the masks, PPE kits, and infrastructure. But, outreach programs are going to make people aware of this disease. People having awareness about various measures like social distancing, usage of sanitizers and masks can be seen. Still, the country is facing mortality issues which is increasing day by day. Through this research, it can be concluded that COVID is a pandemic and holds a high rate of community transmission. In response to this, risk communication strategies should be strong. As therapeutic measures are not available and precautionary measures prove to be impactful at this point of time.

Objective

The rationale behind this study to know about several strategies made by governments of the USA, India, and Singapore. As COVID 19 is current pandemic and its cases are increasing exponentially all over the world. But, some countries have been successful in bringing the number down through different interventions done at the community level or at an individual level. So, an effort was made to study the guidelines for operations at the country level and coordination through states to work at ground level. The role of public health intervention is essential in managing disease but knowing the extent of strategies and methods followed by the government and what modifications had been done by various governments, is also important to know. A combined use of technology, manpower, and resources can be seen and studied in this pandemic response planning. Response planning holds an important aspect of community management programs to prevent community transmission.

These public health interventions play a role in managing other aspects of a country and to reveal certain regulations needed in the present health system. On the other edge, some other factors are also important like allocation of resources, financial crisis, and improper coordination amongst the states leading to failures in response towards disease.

Study shows that even the countries like the USA and Brazil and other developed countries have proper infrastructure related to healthcare system but lacking in the cost of health or affordability, accessibility or accessibility. Where health economics or health finances plays a role in the availability of resources with the help of proper guidelines. Just like trump government holds in his plans. The inability to plan and execute the strategies leads to failures in responsiveness towards an outbreak.

On the other hand, countries like Singapore, Korea, etc. take prompt actions to make guidelines. Being developed and proper planning with appropriate implementation proves to be at best in controlling the pandemic like COVID-19.

On the contrary, a country like India, where the health care system is not based on solid foundations in terms of accessibility, affordability, and availability. It manages to handle atrocious conditions currently in this outbreak. There have been continuous interventions to increase surveillance and screening with prompt actions with allocation of resources proved to be a supportive measure against COVID 19.

So, this study includes the details of public health intervention strategies and innovations done during the planning on a community level.

RESEARCH

Research Questions

To know the Public Health Interventions for mitigation of COVID-19 in India, USA and Singapore.

OBJECTIVE

- To know about the surveillance techniques during COVID 19 in India, USA and Singapore.
- To know about the outreach programs at community level during COVID 19.
- To know about the screening, case management at Individual level and community level.
- To know about the Risk communication of strategies during COVID 19.

METHODOLOGY

1.	Study type	Descriptive study
2.	Study area	Three countries (USA, INDIA and Singapore)
4.	Data collection techniques	Secondary data collection through various sites

PARAMETERS TAKEN FOR STUDY

- Public health interventions done by various governments.
- Surveillance
- Outreach
- Community strategy
- Response plan

METHOD OF DATA COLLECTION

Pre observational and Post observational compliances are recorded on the basis of the sources that are available and a compilation of sources, criteria, strategies, guidelines and interventions arranged accordingly in a systematic manner. Like CDC, WHO, ICMR, etc.

Presentation of Disease

Coronavirus ailment (COVID-19) is an irresistible sickness brought about by a newfound coronavirus. The instances of COVID and contaminated pneumonia are known to be begun from Wuhan, Hubei Province, China, in December 2019 and January 2020.

Coronaviruses are a huge group of infections which may cause disease in creatures or people. In people, a few coronaviruses are known to cause respiratory contaminations going from the regular virus to increasingly extreme ailments, for example, Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most as of late found coronavirus causes coronavirus sickness COVID-19.

Manifestations

COVID-19 influences various individuals in various manners. Most contaminated individuals will create gentle to direct ailment and recoup without hospitalization.

Most normal side effects:

- Fever.
- Dry cough.
- Tiredness.

Less normal side effects:

- Aches and agonies.
- Sore throat.
- Diarrhea.
- Conjunctivitis.
- Headache.
- Loss of taste or smell.
- A rash on skin, or dis-hue of fingers or toes.

Genuine side effects:

- Difficulty breathing or windedness.
- Chest agony or weight.
- Loss of discourse or development.

Cases around 80% of this sickness have a decent recuperation rate without requiring hospitalization. Be that as it may, the pollution rate is exceptionally high and an ever increasing number of individuals are getting tainted.

Transmission

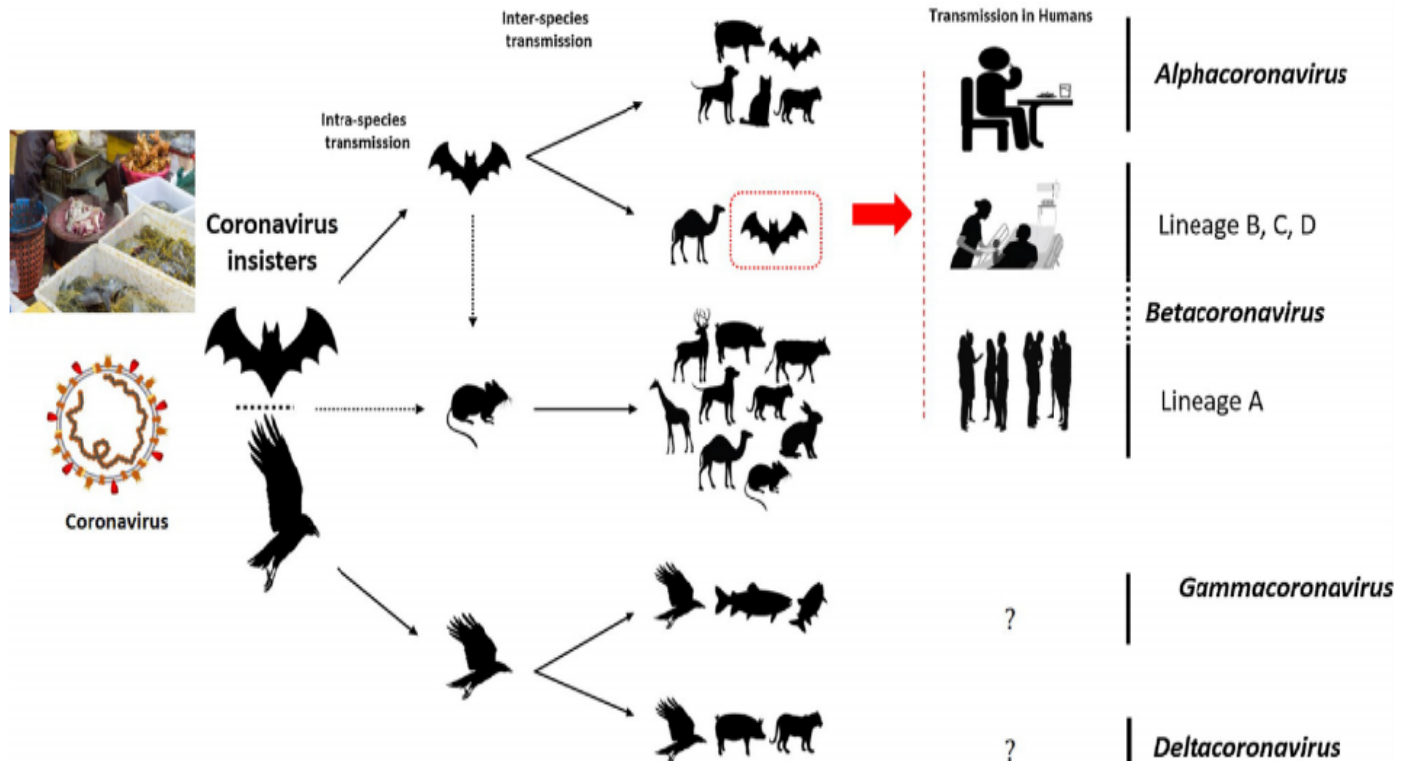


Fig 1. The key reservoirs and mode of transmission of coronaviruses (suspected reservoirs of SARS-CoV-2 are red encircled); only a and b coronaviruses have the ability to infect humans, the consumption of infected animal as a source of food is the major cause of animal to human transmission of the virus and due to close contact with an infected person, the virus is further transmitted to healthy persons. Dotted black arrow shows the possibility of viral transfer from bat whereas the solid black arrow represents the confirmed transfer.

Types of SARS- CoV

Table 1

Comparative analysis of biological features of SARS-CoV and SARS-CoV-2.

Features	SARS-CoV	SARS-CoV-2
Emergence date	November 2002	December 2019
Area of emergence	Guangdong, China	Wuhan, China
Date of fully controlled	July 2003	Not controlled yet
Key hosts	Bat, palm civets and Raccon dogs	Bat
Number of countries infected	26	109
Entry receptor in humans	ACE2 receptor	ACE2 receptor
Sign and symptoms	fever, malaise, myalgia, headache, diarrhoea, shivering, cough and shortness of breath	Cough, fever and shortness of breath
Disease caused	SARS, ARDS	SARS, COVID-19
Total infected patients	8098	123882
Total recovered patients	7322	67051
Total died patients	776 (9.6% mortality rate)	4473 (3.61% mortality rate)

Source: M.A. Shereen et al./Journal of Advanced Research 24 (2020) 91–98

Entry mechanism of human coronaviruses

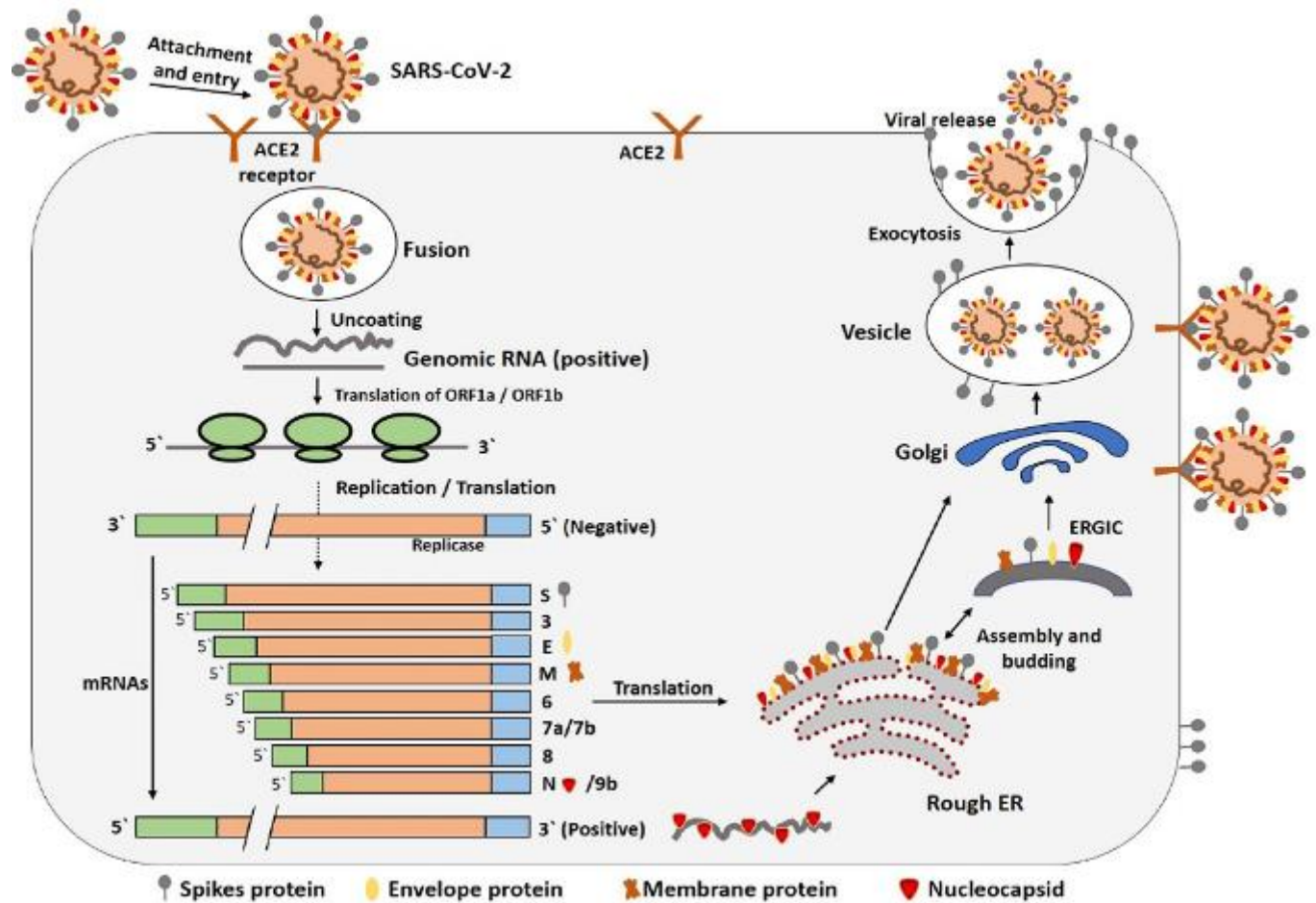


Fig 2 The life cycle of SARS-CoV-2 in host cells; begins its life cycle when S protein binds to the cellular receptor ACE2. After receptor binding, the conformation change in the S protein facilitates viral envelope fusion with the cell membrane through the endosomal pathway. Then SARS-CoV-2 releases RNA into the host cell. Genome RNA is translated into viral replicase polyproteins pp1a and 1ab, which are then cleaved into small products by viral proteinases. The polymerase produces a series of sub genomic mRNAs by discontinuous transcription and finally translated into relevant viral proteins. Viral proteins and genome RNA are subsequently assembled into virions in the ER and Golgi and then transported via vesicles and released out of the cell. ACE2, angiotensin-converting enzyme 2; ER, endoplasmic reticulum; ERGIC, ER-Golgi intermediate compartment.

Source: Shereen et al./Journal of Advanced Research 24 (2020) 91–98

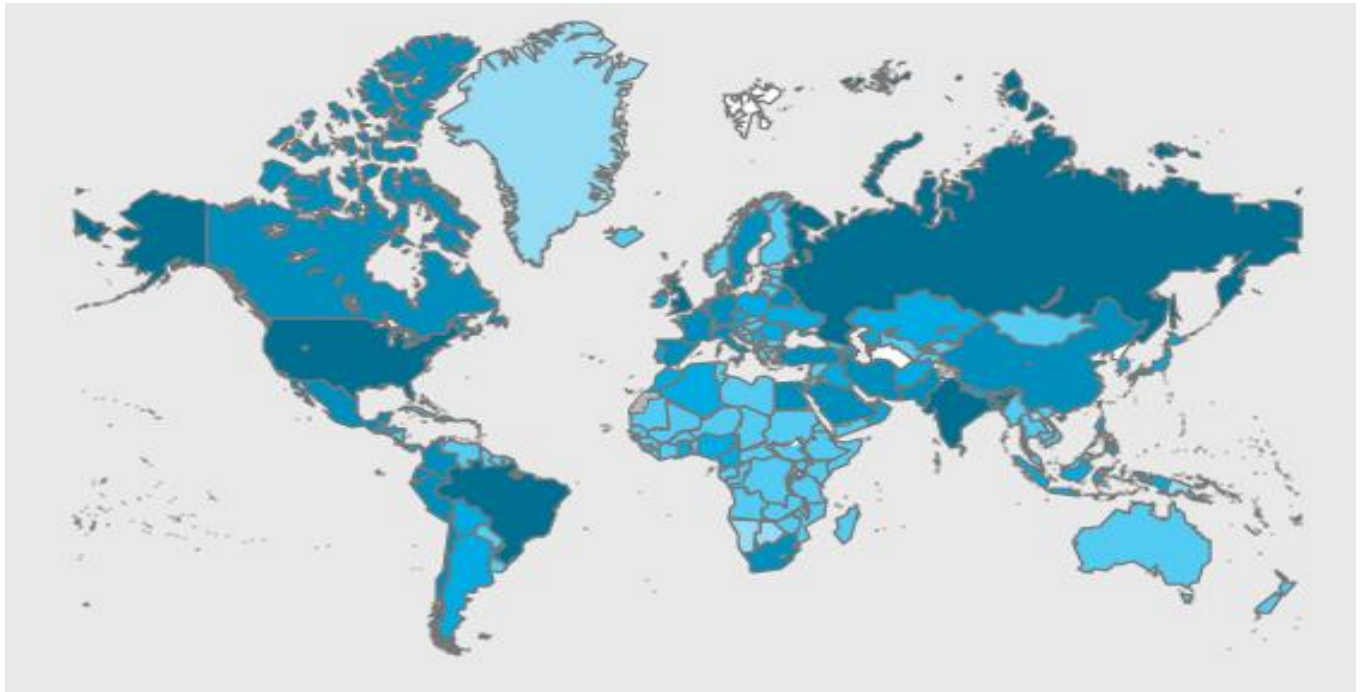
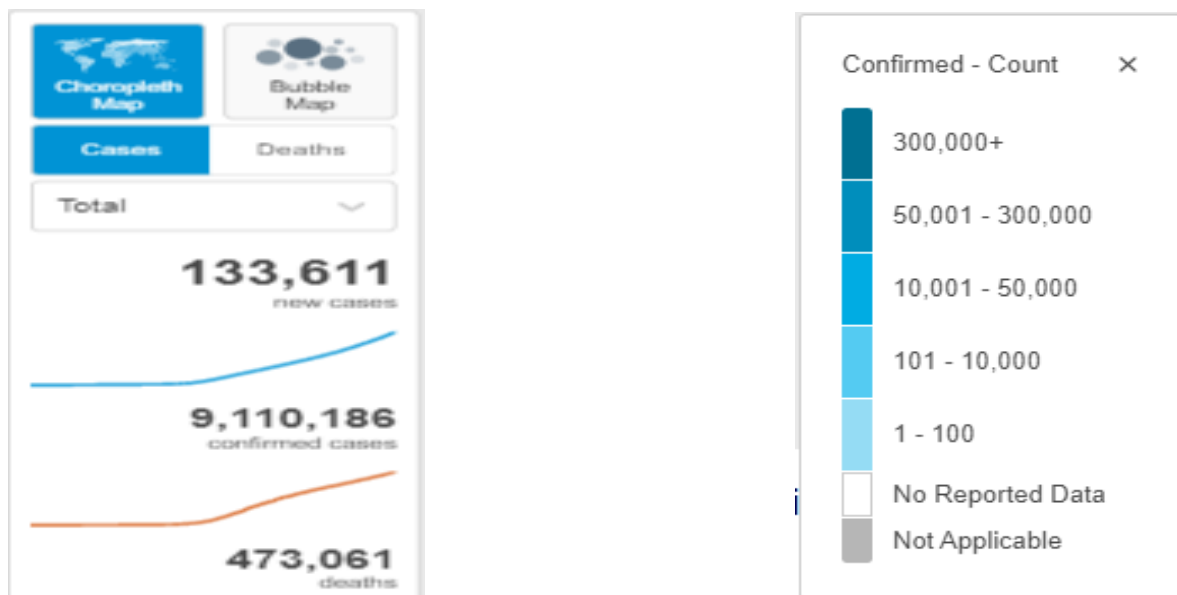


Fig 3: There are total 9,110,186 confirmed cases of CORONA virus and 473,061 deaths globally till 24th June 2020 globally by the reported time 12:08 pm CEST reported to WHO.

Source: WHO



Community transmission

Timeline of events and symptom onsets, by day of investigation, in a cluster of COVID-19 likely transmitted at two family gatherings — Chicago, Illinois, February–March 2020

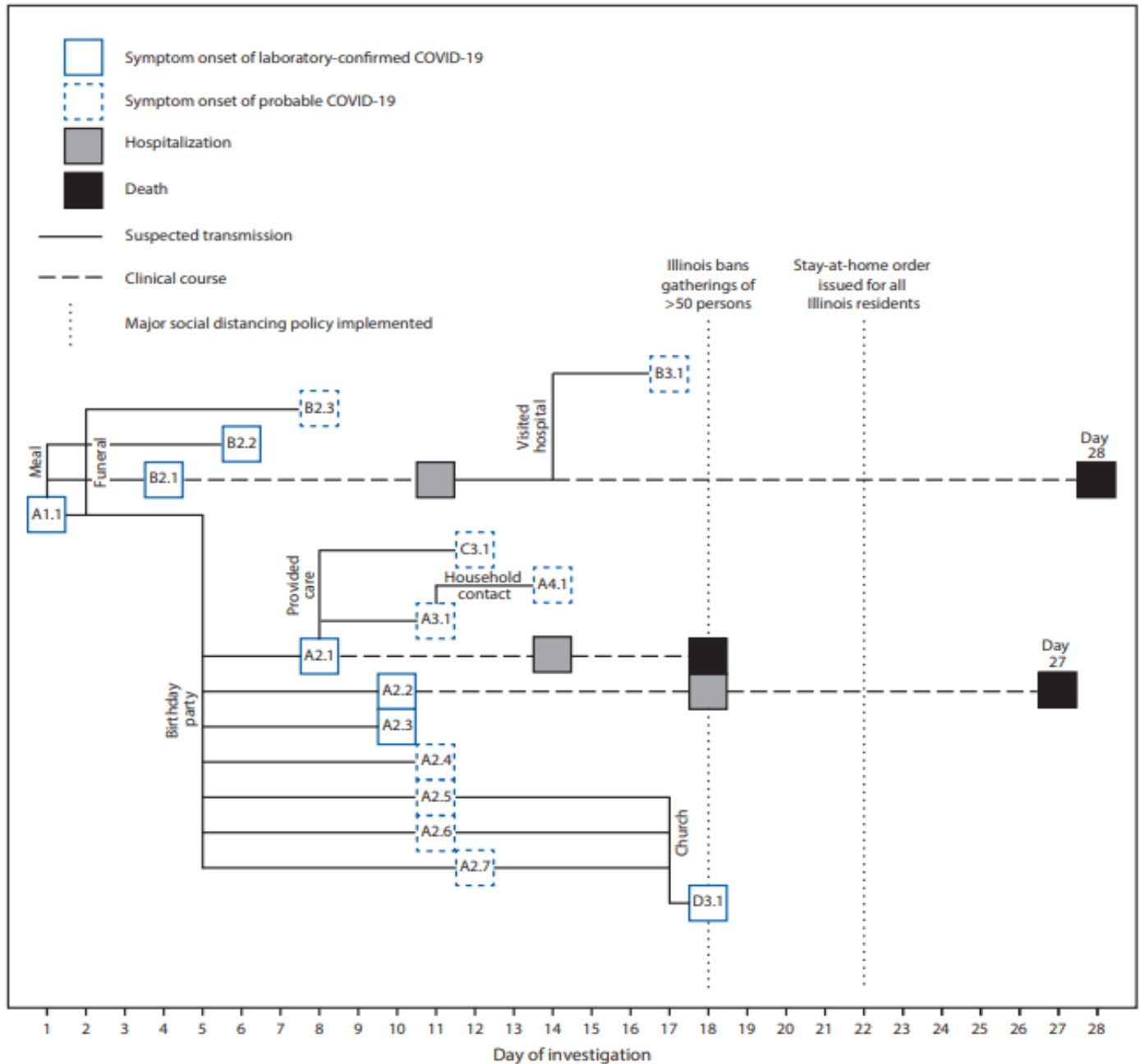


Fig 5: Community transmission demonstration strategy

Notes: Patients were designated by their family cluster letter (A or B), then by the assumed transmission generation (1–4), and finally, by sequence within each generation (1–7). Patient A2.1 died on investigation day 18; patient A2.2 died on investigation day 27; and patient B2.1 died on investigation day 28.

Public Health Interventions

Intervention is defined as a set of actions with a coherent objective to bring about change or produce identifiable outcomes. These actions may include policy, regulatory initiatives, single strategy projects or multicomponent programs.

❖ Significance

All these strategies lay down a proposed plan to promote the awareness for protection of public health of an individual or community. These strategies are different from clinical interventions. As clinical management focuses on treatment of an illness.

❖ Types : -

- Disease management
- Catastrophic care management
- Demand management
- Disability management
- Lifestyle management
- Integrated care management

Levels of Public Health Interventions depiction in a Wheel

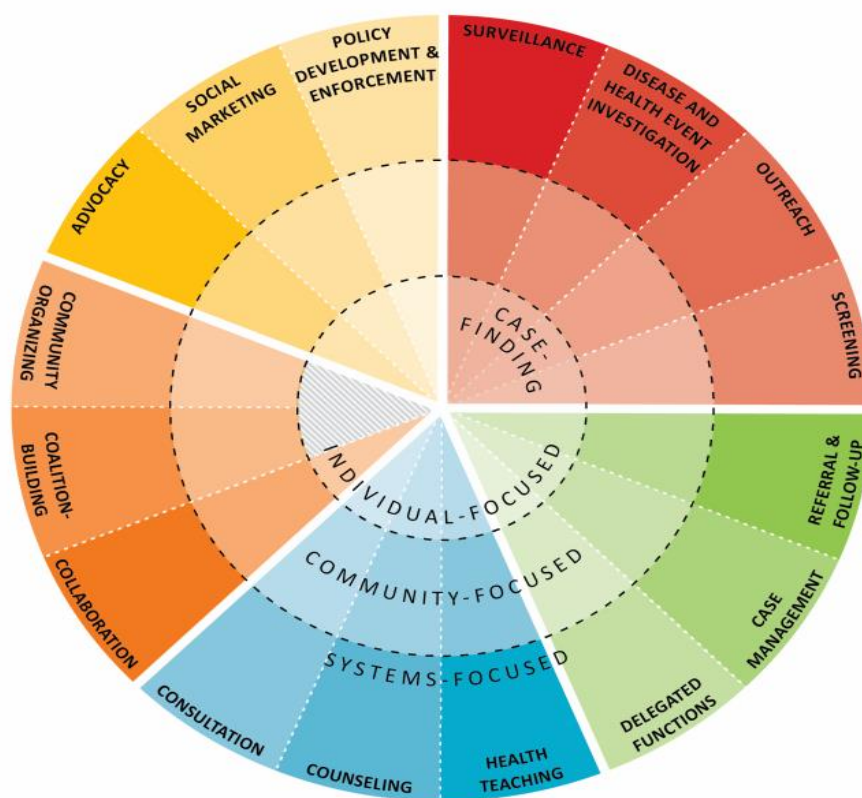


Fig 6 : Public health intervention wheel

Source : Minnesota Department of Health. (2019). Public health interventions:

Definitions

- **Surveillance** is “an ongoing, systematic collection, analysis and interpretation of health-related data essential to the planning, implementation, and evaluation of public health practice” (World Health Organization, 2018).
- **Disease and health event investigation** systematically gathers and analyzes data regarding threats to the health of populations, ascertains the source of the threat, identifies cases and others at risk, and determines control measures.
- **Outreach** locates populations of interest or populations at risk and provides information about the nature of the concern, what can be done about it, and how to obtain services.
- **Screening** identifies individuals with unrecognized health risk factors or asymptomatic disease conditions in populations.
- **Case-finding** locates individuals and families with identified risk factors and connects them to resources.
- **Referral** makes a connection to necessary resources to prevent or resolve problems or concerns. **Follow-up** assesses outcomes related to the utilization of the resources.
- **Case management** is a collaborative process of assessment, planning, facilitation, care coordination, evaluation, and advocacy for options and services to meet client needs. It uses communication and available resources to promote safety, quality of care, and cost-effective outcomes.
- **Delegated functions** include: 1) direct care tasks a registered professional nurse carries out under the authority of a health care practitioner, as allowed by law, and 2) direct care tasks a registered professional nurse entrusts to other appropriate personnel to perform.
- **Health teaching** involves sharing information and experiences through educational activities designed to improve health knowledge, attitudes, behaviors, and skills (Friedman, Cosby, Boyko, Hatton-Bauer, & Turnbull, 2011).
- **Counseling** involves establishing an interpersonal relationship at an emotional level, with the goal of increased or enhanced capacity for self-care and coping.
- **Consultation** seeks information and generates optimal solutions to perceived problems or issues through interactive problem-solving.
- **Collaboration** enhances the capacity to promote and protect health for mutual benefit and a common purpose. Collaboration involves exchanging information, harmonized activities, and shared resources (National Business Coalition on Health, 2008).
- **Coalition-building** helps promote and develop alliances among organizations or constituencies for a common purpose. It builds links, solves problems, and/or enhances local leadership to address health concerns.
- **Community organizing** is “the process by which people come together to identify common problems or goals, mobilize resources, and develop and implement strategies for reaching the objectives they want to accomplish” (Center for Community Health and Development at the University of Kansas, 2017).
- **Advocacy** is the act of promoting and protecting the health of individuals and communities “by collaborating with relevant stakeholders, facilitating access to health and social services, and actively engaging key decision-makers to support and enact policies to improve community health outcomes” (Ezeonwu, 2015, p. 123).
- **Social marketing** is a process “that uses marketing principles and techniques to change target audience behaviors to benefit society as well as the individual” (Lee & Kotler, 2016, p. 9).
- **Policy development** places health issues on decision-makers’ agendas, establishes a plan of resolution, determines needed resources, and results in laws, rules and regulations, ordinances, and policies. **Policy enforcement** compels others to comply with the laws, rules, regulations, ordinances, and policies created in conjunction with policy development.

Levels of Public health interventions

Public health interventions are population-based strategies that work on community level. These rings of management represent three models of management. At three different levels. This model is **systems-specific, community-specific, and individual/family-specific**.

- **Systems-focused population-based practice:** The focus is present on the health care systems. Amendments can be done in laws based on organizations, policies, laws, and power structures. After the amendments done in systems. It proposes to bring desired changes health in a more effective and lasting way than requiring change from every individual in a community.
- **Community-focused population-based practice:** This level of practice changes community norms, attitudes, awareness, practices, and behaviors. This practice level is directed at entire populations within the community or occasionally toward target groups within those populations. Community-focused practice is measured in terms of proportion of the population actually changes.
- **Individual/family-focused population-based practice:** Changes knowledge, attitudes, beliefs, practices, and behaviors of individuals and families. This practice level is directed at individuals, alone or as part of a family, class, or group. Individuals receive services because they are identified as belonging to a population at risk.

Role of Interventions :

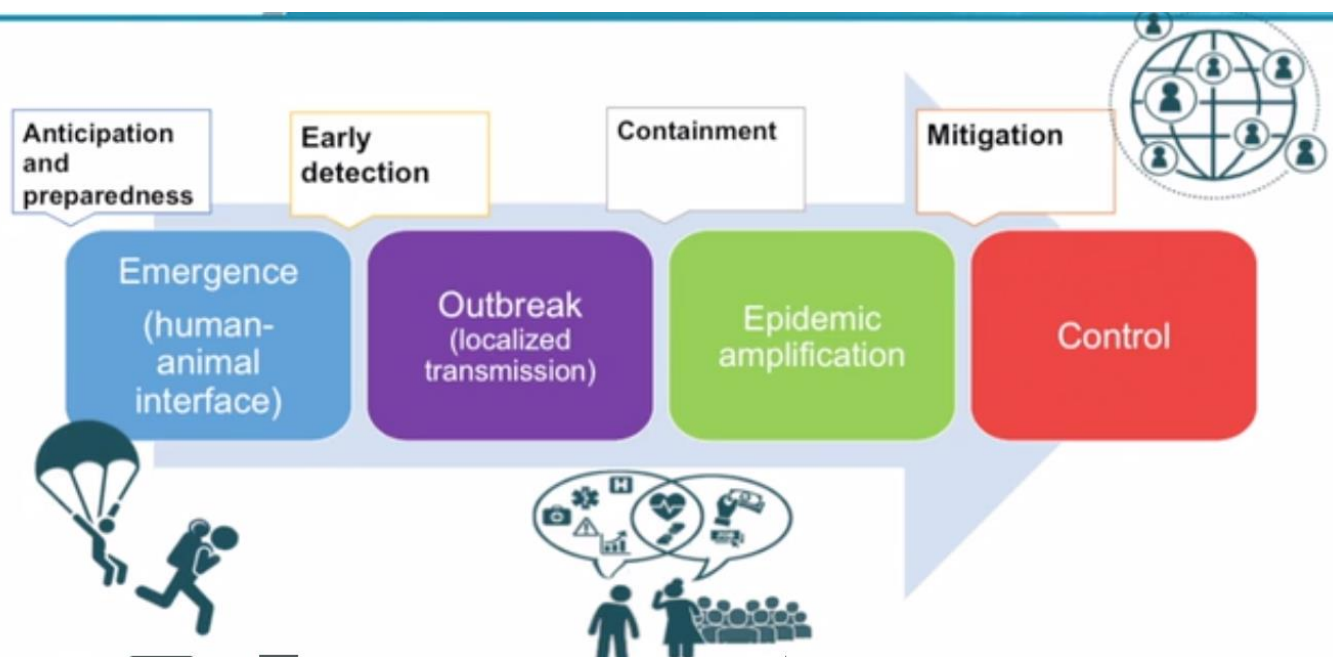


Fig 7: Role of Interventions

Source : WHO

Role of Public health interventions in COVID

COVID 19 is a profoundly spreading network transmission circumstance. Job of intercession is to forestall additionally spread in network by gathering data to more readily comprehend the infection and its effect on wellbeing of the network. This information assortment is done to help general wellbeing experts, strategy producers, and social insurance suppliers so they can screen the spread of COVID-19. Furthermore, it additionally offer the help for better comprehension of sickness, ailment seriousness, adequacy of network intercessions, and social interruptions related with COVID-19. After assortment of information and its examination and deduction made for data for illuminating higher specialists national, state, neighborhood, innate, and regional general wellbeing reactions to COVID-19.

Here, I have taken three nations to know the moderation procedures taken by the legislatures and their impacts on the network. These nations are USA, Singapore and India.

Disease surveillance strategy

(Surveillance strategies for COVID-19 human infection: Interim Guidance)

ESSENTIALS OF SURVEILLANCE

COVID 19 virus grows exponentially which is responsible for its rapid growth. Surveillance technology requires new cases identification, reporting, and data management and epidemiological analysis within 24 hours or a set pattern.

Surveillance for COVID

Reconnaissance frameworks are topographically far reaching and incorporates recognizable proof and testing everything being equal and networks in danger. This will require a blend of reconnaissance frameworks incorporating contact following in the whole medicinal services framework, at the network level, just as in shut private settings and for helpless gatherings.

The objectives of COVID-19 surveillance include:

A Rapid discovery, disconnection, testing, and the executives of suspected cases.

- Identify and catch up contacts
- Guide the usage of control measures
- Detect and contain flare-ups among defenseless populaces
- Evaluate the effect of the pandemic on human services frameworks and society
- Monitor since quite a while ago run epidemiologic patterns and advancement of COVID-19 infection
- Understand the co-flow of COVID-19 infection, flu and other respiratory infections

Rationale – This technique of surveillance helps in measuring and reporting the impact of COVID-19. This unveils the capacity of the healthcare systems presents in a country where healthcare system is made of both intense consideration medical clinics and long haul care offices and it frames a fundamental general wellbeing capacity in the pandemic reaction.

Type of Surveillance

Table 2 : Types of surveillance and how different surveillance systems.

S.NO.	Types of Surveillance
1	Immediate Case notification system
2	Contact Tracing System
3	Sentinel virus surveillance
4	Sentinel case surveillance
5	Cluster investigations
6	Special settings
7	Mortality

Contact tracing

This technique of Contact tracing and Cluster investigations are other important tools through which surveillance can be done.

Epidemiological scenarios of Contact tracing and preparedness- *It depends on the following four scenarios: -*

- 1.No cases:** a well-trained contact tracing workforce should be identified, trained and on standby ready to respond to first cases.
- 2. Sporadic cases or clusters:** This is comprehensive contact following and is basic for quickly smothering transmission.
- 3. Clusters: contact tracing** It is a method used for stifling transmission and decreasing transmission inside groups.
- 4. Community transmission:** Contact tracing might be troublesome when transmission is serious however ought to be completed however much as could reasonably be expected, concentrating on family contacts, human services laborers, high-hazard shut settings (residences, foundations, long haul care homes), and defenseless contacts, just as keeping in touch following limit in territories with littler groups of cases.

Surveillance levels

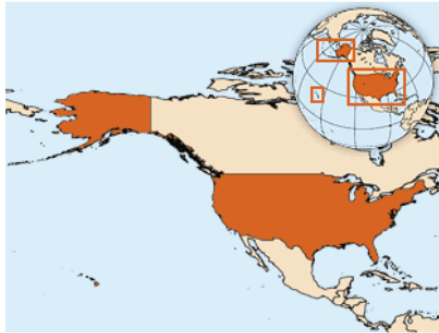
1	Surveillance at the primary care level	Where possible, testing should be available at primary care clinics; a complementary option is to establish dedicated COVID-19 community testing facilities, such as drive-through sites or fixed sites in community buildings.
2	Hospital-based surveillance	Patients with probable or confirmed COVID-19 diagnoses in hospitals should be notified within 24 hours of identification. The minimum essential data from hospital settings should include: • Age, sex/gender and place of residence • Date of onset, date of sample collection, date of admission • laboratory test result • severity on admission: admitted to intensive care unit (ICU), treated with ventilation • If case is a health care worker • outcome (discharge or death) – usually requiring a follow-up report, as outcome is generally not known within 24 hours of identification of case identification.
3	Mortality Surveillance	The number of deaths due to COVID-19 occurring in the community should ideally be reported daily or at least weekly.
4	Laboratory testing data	Data on the number of tests conducted for SARS-CoV-2 should be collected from all relevant laboratories. While surveillance systems will typically capture the number of COVID-19 cases, it is also important to collect information on the total number of laboratory tests conducted for COVID19 virus. Knowing the testing denominator can indicate the level of surveillance activity and the proportion of tests positive can indicate the intensity of transmission among symptomatic individuals.

Table 3: Key Information on the Contact Tracing Form

Type of information	Minimum data required
Contact identification (entered once)	• Contact (unique) ID • Linked source Case ID or Event ID • Full name • Address (and geolocation, where possible) • Phone number and/or other contact details • Alternative contact details (important in settings with variable telecommunications reception)
Demographic information (entered once)	• Date of birth (or age, when not known) • Sex • Occupation (to identify health care workers, transport workers, other at-risk occupations) • Relationship with the source case • Language (in settings with diverse populations)
Type of contact (entered once)	• Type of contact (household, workplace, community, health facility, other) • Date of last contact with the COVID-19 patient • Exposure frequency and duration (this may be used to classify contacts into high and low exposure in case resources are too limited to allow for tracing of all contacts) • Factors influencing contact vulnerability
Daily follow-up of signs and symptoms (daily entry fields)	• Fever (perceived or measured, and reported or observed) • Other signs and symptoms: sore throat, cough, runny nose or nasal congestion, shortness of breath or difficulty breathing, muscle pain, loss of smell or taste, or diarrhoea
Absence or loss to follow-up	• Reasons for non-reporting of daily signs and symptoms (contacts are unavailable, relocated, lost to follow-up) • New address (if known)

USA

Map



This map is an approximation of actual country borders.

Statistics

Total population (2016)	322,180,000
Gross national income per capita (PPP international \$, 2013)	53,960
Life expectancy at birth m/f (years, 2016)	76/81
Probability of dying under five (per 1 000 live births, 2018)	6
Probability of dying between 15 and 60 years m/f (per 1 000 population, 2016)	142/86
Total expenditure on health per capita (Intl \$, 2014)	9,403
Total expenditure on health as % of GDP (2014)	17.1

Latest data available from the [Global Health Observatory](#)

Americas

4,604,134
confirmed cases

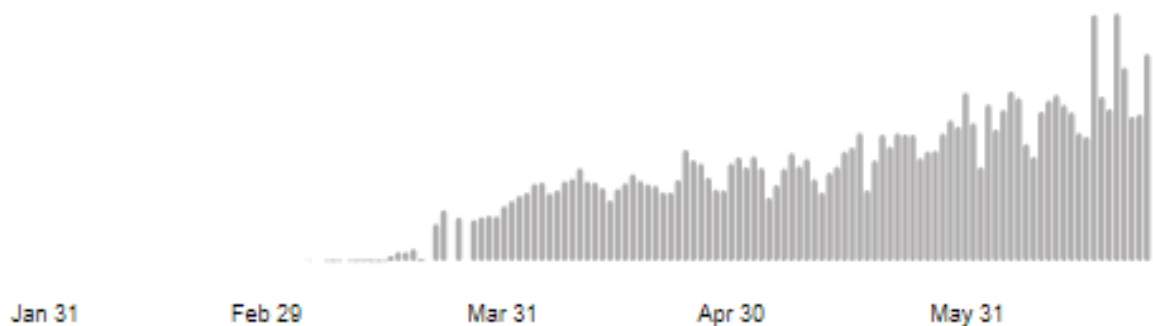


Fig 8: Daily cases in America

Source : WHO

Governmental health system-

- Major agencies working in USA is **CDC Centers for Disease Control and Prevention (CDC)** has been the principle specialist on call, following cases, conveying work force across the nation, and giving direction to state and neighborhood wellbeing divisions..
- **National Institutes of Health (NIH)** has been the principle specialist on call, following cases, conveying work force across the nation, and giving direction to state and neighborhood wellbeing divisions.
- The **Food and Drug Administration (FDA)** additionally screens likely deficiencies of different medications because of gracefully chain interruptions brought about by the coronavirus pandemic.
- The **Department of Health and Human Services (HHS)**, driven by Secretary Alex Azar, deals with the Strategic National Stockpile, a storehouse of medications, clinical supplies, and individual defensive hardware (PPE) intended to help in a general wellbeing emergency.
- WHO – World Health Organisation
- NSSP

A collective effort of above agencies and USA government providing the health services with various health interventions.

Surveillance

CDC represents Center of Disease control and it utilizes numerous observation frameworks which runs in a joint effort with state, neighborhood and regional wellbeing divisions, general wellbeing, business and clinical research facilities, indispensable measurements workplaces, human services suppliers, crisis offices and scholarly accomplices to watch COVID-19 illness in the USA.

The U.S. COVID-19 Surveillance objectives are to:

- It Monitors the spread and power of COVID-19 illness in the United States
- Understand the seriousness of and the range of disease present inside the nation.
- Understand the hazard factors for extreme illness and transmission in USA
- Monitors for changes in the infection that causes COVID-19
- Estimate the malady trouble.
- Produce information for guaging COVID-19 spread and effect.



Fig 9: Different types of surveillance techniques used by CDC.

Laboratory Surveillance

Respiratory specimens are collected each week and with the age, gender and other details of that person.

Technology used for testing is molecular assay and reporting is done to CDC by general wellbeing research centers and a subset of clinical and business labs in the United States.

All research centers are performing essential demonstrative tests and in this way the aggregate information can be acquired and in this way, the level of examples testing positive across lab types is utilized to screen the general patterns in COVID-19 action.

Availability of COVID test in USA labs

Two sorts of tests are accessible for COVID-19: viral tests and counter acting agent tests.

- A viral test lets you know whether you have a current disease.
- An antibody test tells you if you had a previous infection.

Outpatient and Emergency Department Illness Surveillance

Surveillance should be possible in out patient office and in crisis division. As patients visits in the two offices with sickness and side effects like COVID 19.

- Nationally, the degrees of ILI stay beneath standard for the ninth week and in every one of the 10 locals where observation have been occurring for as far back as seven to ten weeks. It was additionally noticed that, a couple of locales announced slight increments in level of visits for ILI and CLI.
- Tracking may have been done on late changes in human services looking for conduct of individuals as there is an expanded utilization of telemedicine. what's more, proposals got the opportunity to restrain crisis office (ED) visits for serious diseases, with expanded act of social removing, are likely influencing information detailed from the two systems, making it hard to reach inferences as of now.

Every framework screens a somewhat unique disorder, and together these frameworks give an increasingly complete image of gentle to direct COVID-19 disease than either would independently.

Hospital Surveillance

Research center affirmed COVID-19-related with hospitalization rates are observed in blend. For this COVID-NET directs all-age, population based surveillance for research facility affirmed COVID-19 related hospitalizations.

Mortality Surveillance

This information is gathered by NCHS. Week by week, mortality reconnaissance information with a mix of machine coded and physically coded reasons for death information gathered from death declarations. It was noticed that rates of passings because of PIC are higher among physically coded records than all the more quickly accessible machine coded records..

Multiple surveillance systems

CDC is utilizing numerous observation frameworks unitedly with state, neighborhood, regional, scholastic, and business accomplices to watch COVID-19 in the nation . COVID-19 surveillance draws it results from a blend of data sources utilizing existing flu and viral respiratory infection observation, syndromic surveillance, case announcing, lab revealing, the human services wellbeing framework, continuous exploration stages, and other new observation frameworks intended to respond to explicit inquiries.

Case Investigation

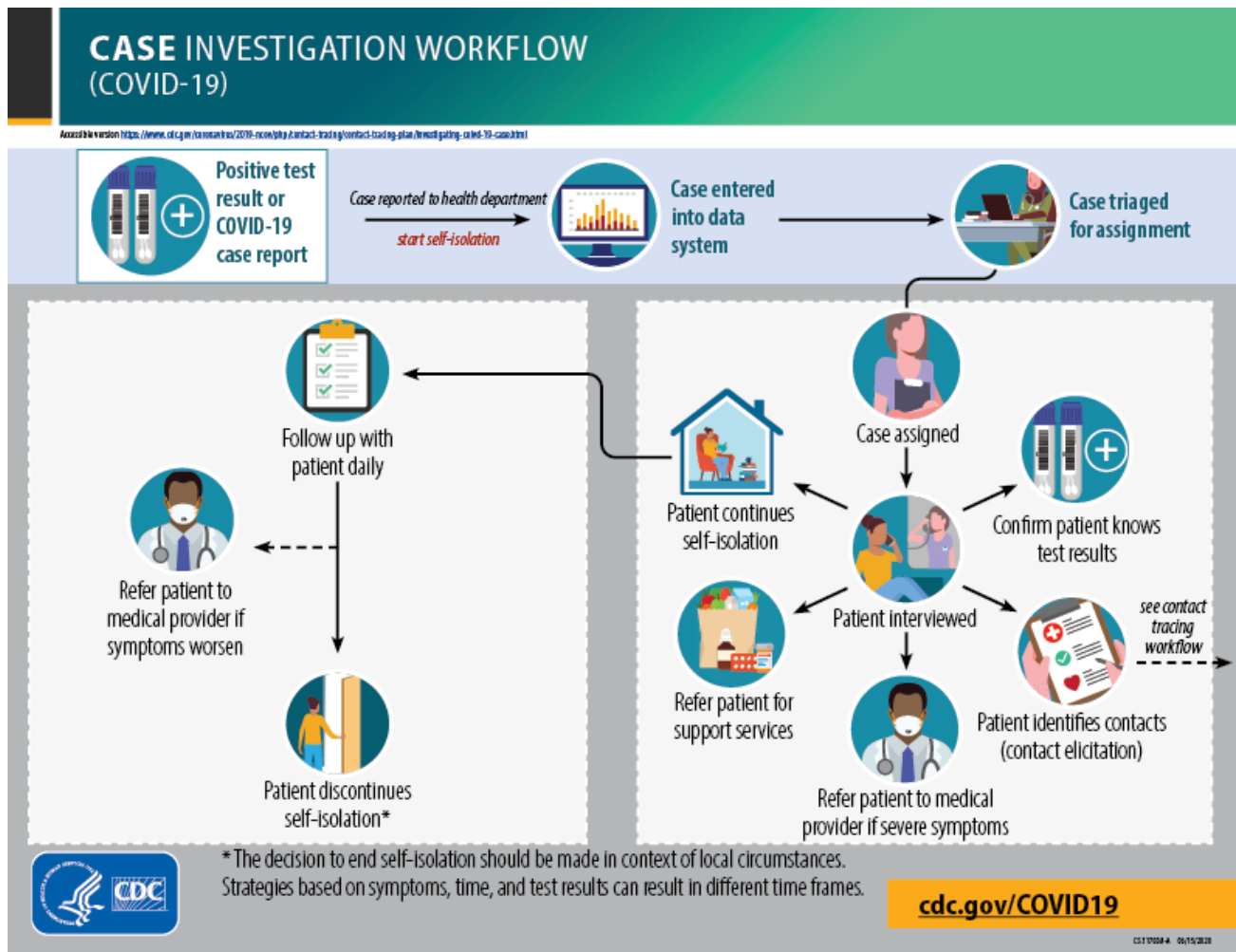


Fig 10: Case Investigation chart

PRIORITY 1

- Hospitalized patients
- Healthcare personnel (HCP)
- First responders (e.g., Emergency Medical Services (EMS) personnel, law enforcement, firefighters)
- Individuals living, working or visiting acute care, skilled nursing, mental health, and long-term care facilities
- Individuals living, working or visiting community congregate settings (e.g., correctional facilities, homeless shelters, educational institutions, mass gatherings, and crowded workplaces including production plants)
- Members of a large household living in close quarters
- Individuals known to live in households with a higher risk individual or to provide care in a household with a higher risk individual

PRIORITY 2

- Critical infrastructure workers*
- Individuals 65 years of age and older
- Individuals at higher risk for severe disease
- Pregnant women

PRIORITY 3

- Individuals **with** symptoms who do not meet any of the above categories
- Individuals who are deceased

PRIORITY 4

- Individuals **without** symptoms who do not meet any of the above categories

NSSP:

NSSP body works in conjugation with CDC, government accomplices, neighborhood and state health offices and scholarly and private segment accomplices. Working together offices gathers, examination and offer electronic patient experience information with NSSP.

Monitoring sites :-

- Patients visiting in the departments of various hospitals and suffering from cough and fever with shortness of breath or difficulty breathing or the presence of coronavirus diagnosis code..
- Data monitoring was done from the emergency departments of 47 states which includes the ILI patients.

Outreach

Communication of relevant, timely information related to disease outbreaks, disasters, events, and other health alerts is important. So, strategies were made to stay the clinicians updated to deal with pandemic and other emerging health disparities all around the world.

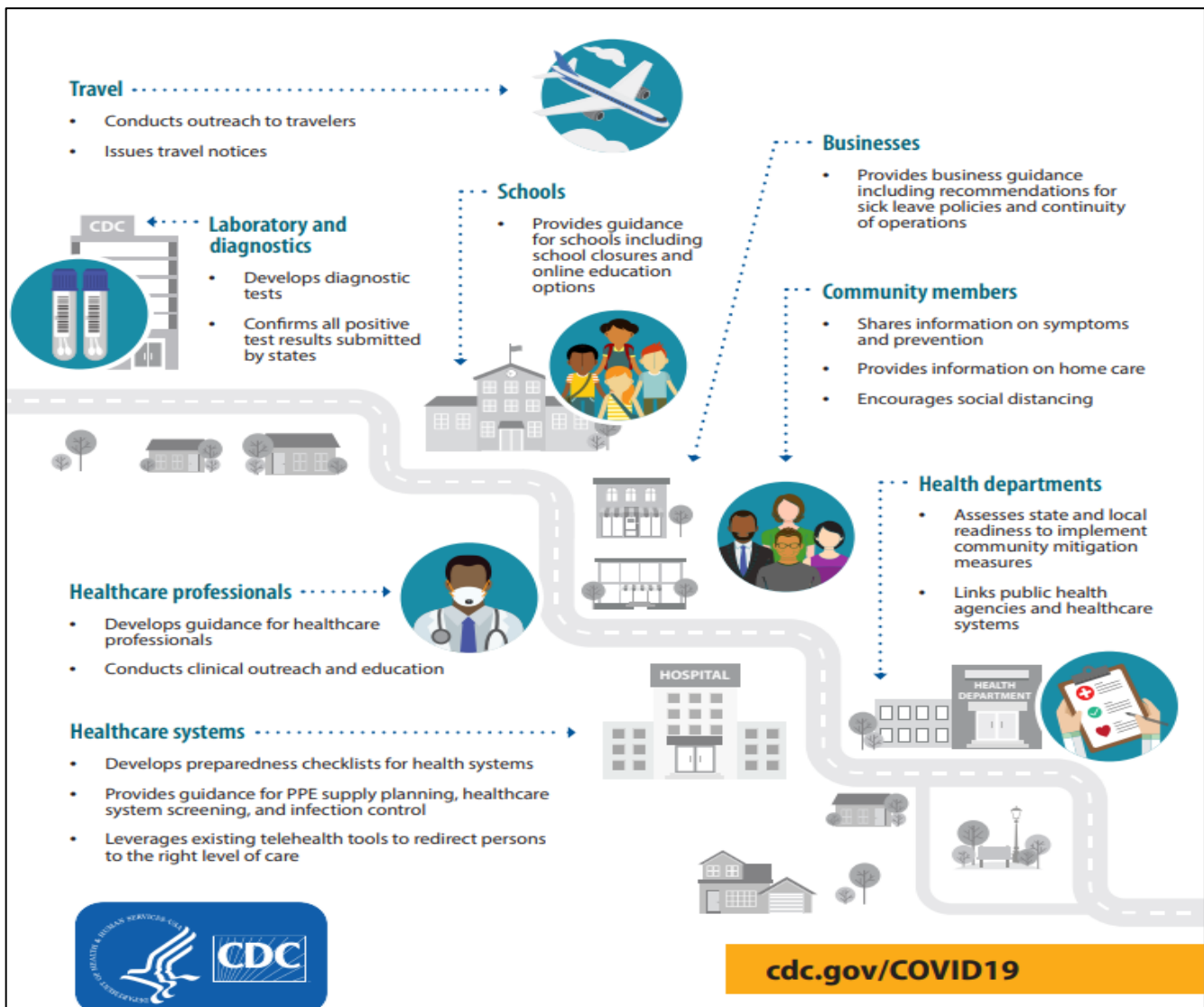


Fig 11: CDC is aggressively responding to the global outbreak of COVID-19 and community spread in the U.S

Screening –

The procedure refers to active identification of patients with signs and manifestations of COVID-19. Screening is never really back the worldwide spread of infection by distinguishing explorers who are either wiped out or presented to the sickness and keeping them from leaving the nation while they're in (leave screening) or by identifying them upon appearance and moving them to fitting consideration arrangement and development, as required (passage screening).

Stages of public screening:

- (1) **Primary screening**, It incorporates watching explorers for clear indications of sickness, estimating temperature, and gathering data on movement and introduction history;
- (2) **Secondary screening**, It fuses having a medicinal services or general human services supplier (at whatever point conceivable) direct a further general wellbeing evaluation of sick or possibly uncovered explorers distinguished through the main screening process.

Limitations of Public Health Screening at POE

- Screening is best for distinguishing obviously sick voyagers it additionally incorporates explorers who are contaminated, yet not showing indications of sickness (e.g., presymptomatic or asymptomatic) could likewise be missed during screening at POE, particularly in the event that they are doing not self-report a potential introduction.
- COVID-19 transmission from presymptomatic and asymptomatic tainted people is known to happen. This decreases the adequacy of general wellbeing screening at POE, especially leave screening, as asymptomatic voyagers could contaminate co-travelers or others inside the POE itself.

Clinical Management and Treatment USA

The National Institutes of Health distributed rules on prophylaxis use, testing, and the executives of patients with COVID-19.

Mild to Moderate Disease

Patients with a mild clinical symptoms (absence of viral pneumonia and hypoxia) may not at first require hospitalization, and they are prompted for home isolate.

There are various sorts of cases and treatment and prompts can vary likewise and same can be followed with checking. All the choices will rely without a doubt upon the clinical introduction, necessity for strong consideration, potential hazard factors for serious malady, and the capacity of the patient to self-isolate at home.

Severe Disease

A few patients will require hospitalization for the executives. As inpatient the executives requires the steady administration of the most common complication of COVID-19 which incorporates pneumonia, hypoxemic respiratory disappointment/ARDS, sepsis and septic stun, cardiomyopathy and arrhythmia, intense kidney injury, and difficulties from delayed hospitalization.

Hypercoagulability and COVID-19

A few patients with COVID-19 may create indications of a hypercoagulable state and be at expanded hazard for venous and blood vessel apoplexy of enormous and little vessels.

Lab facility –

- Mild thrombocytopenia
- Increased D-dimer levels
- Increased fibrin debasement items
- Prolonged prothrombin time

There are a few reports of hospitalized patients with thrombotic complications, most often profound venous apoplexy and pneumonic embolism and different appearances incorporate after.

- Clotting of catheters
- Myocardial injury with ST-portion height
- Large vessel strokes

COVID-19 may leads to elevated levels of incendiary cytokines⁸³ and initiation of the coagulation pathway. A few national expert affiliations give assets to cutting-edge data concerning COVID-19-related hypercoagulability, including the executives of anticoagulation. This is a quickly developing subject, with new data discharged regularly.

Pediatric Management

Illness in pediatric patient is typically mild in correlation with young adult as they are generally representing to with manifestations of upper respiratory tract disease.

In any case, serious results have additionally been accounted for in kids including COVID-19 related deaths.

Information recommend that newborn children (<12 long periods old enough) might be at higher hazard for extreme ailment from COVID-19 contrasted and more young children.

Investigational Therapeutics

Utilization of investigational interventions for treatment of COVID-19 ought to ideally be done with regards to enlistment in randomized controlled preliminaries, so advantageous medications can be recognized.

Discontinuation of Transmission-Based Precautions or Home Isolation

Patients who have clinically recouped and can release from the medical clinic however who have not been cleared from their Transmission-Based Precautions may proceed with in isolation at home.

Novel Coronavirus Daily Temperature and Symptom Monitoring Worksheet

Date of departure: _____ Date of last exposure: _____ Last date of monitoring: _____

Instructions: Persons who are being monitored for symptoms of novel coronavirus must take their temperatures twice daily, once in the morning and once in the evening, and report any symptoms they are experiencing. For each day, document the morning and evening temperature and place an X in the box next to each symptom that the person is experiencing. If the person is experiencing a symptom that is not listed, it can be written into the row labeled as 'Other' for the corresponding date and time. If the person is not experiencing any symptoms, place an X in the box labeled "No symptoms". **If the person reports a fever or any of the symptoms listed, call your healthcare provider.**

Day:	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
Date:														
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Time of check:														
Directly Observed (Y/N)														
Temperature & Symptoms														
Temperature	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F
Fever														
Cough														
Shortness of breath/Difficulty breathing														
Chest pain														
Other (specify)														
No symptoms														

Day:	Day 8		Day 9		Day 10		Day 11		Day 12		Day 13		Day 14	
Date:														
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Time of check:														
Directly Observed (Y/N)														
Temperature & Symptoms														
Temperature	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F	___°F
Fever														
Cough														
Shortness of breath/Difficulty breathing														
Chest pain														
Other (specify)														
No symptoms														

Fig 12 : Novel Coronavirus Daily Temperature and Symptom Monitoring Worksheet

RISK COMMUNICATION AND PLANNING

Risk communication, as defined by the World Health Organization, is “the exchange of real-time information, advice and opinions between experts and people facing threats to their health, economic or social well-being. It is an interactive process used in talking or writing about topics that cause concern about health, safety, security, or the environment.

There are various resources that have been used by governmental agencies to spread the awareness in the community. They include:

- Video messages with the help several cartoon figures as well.
- Audio announcements at radio stations and in the Airport.
- Flyers and posters- a digital repository has also been managed by the government which can be downloaded and printed.
- A social media tool kit is also available for the public for free of cost.

WHO guidance on risk communication

Communication for behavioural impact (COMBI). A toolkit for behavioural and social communication in outbreak response (5)

Effective media communication during public health emergencies – a WHO handbook (6)

Effective media communication during public health emergencies – a WHO field guide (7) offering practical advice

Outbreak communication: best practices for communicating with the public during an outbreak. Report of the WHO Expert Consultation on Outbreak Communications held in Singapore, 21–23 September 2004 (8)

WHO outbreak communication guidelines (9), based on the findings of the above expert consultation on outbreak communications

WHO outbreak communication planning guide, 2008 edition (10), manual based on the outbreak communications guidance developed through consultation in Mexico City in 2008

Source: *Communicating risk in public health emergencies A WHO guideline for emergency risk communication (ERC) policy and practice*



The overall goal:

Support Member States in the Region of the Americas in preparing for and responding to COVID-19 outbreaks.

Less no. of availability of testing kits

The initial tests sent in February to only a bunch of US research centers by the organization were flawed. 30 March, in any case, show just a million tests have been led/329 million individuals. limits in testing capacity that remain fundamentally as a result of deficiencies in the reagents required. as a result of pound of testing that has followed the underlying deficiencies, the labs that examine the outcomes have been overpowered, prompting postponements of possibly more than seven days before tried people can learn on the off chance that they have the infection.

And keeping in mind that general wellbeing laborers are one of the gatherings with the most elevated danger of disease, they likewise fall foul of another foundational issue in the US under the spotlight during this emergency; the way that there is no necessity for American bosses to offer paid wiped out leave. For everybody in the US, regardless of whether they are undocumented or not, there is likewise the tremendous cost associated with even simply observing a specialist.

2.Social-distancing failures

The absence of lucidity in the president's structure to end section into the US from Europe - which from the outset appeared to apply US residents just as remote nationals - prompted a devastating groups at air terminals where unscreened contaminated travelers could without much of a stretch travel the sickness to other people

On the off chance that the coronavirus is uncovering a portion of the imperfections in the US medicinal services framework - significant expenses, an absence of all inclusion and gracefully fastens that can't withstand a stun - it likewise could wind up featuring the quality of the country's exploration and medication improvement foundation. y cutting subsidizing from basic wellbeing administrations and exploration before the emergency, and later by denying its reality and its seriousness.

the president hypothesized about the utilization of disinfectants or bright radiation to execute the coronavirus inside tainted people. The president was generally reprimanded - and derided - for his spur of the moment comments, as certain states revealed an expansion in calls to harm hotline numbers.

Some social insurance offices and suppliers hurried to load up on provisions, prompting across the board deficiencies.

Political uptake

The US government spent a few billion dollars on contracts for new ventilators, and the president utilized a 70-year-old law, the Defense Production Act, to goad car producer General Motors to change to ventilator creation and smooth out flexibly chain issues for different makers.

TIMELINE

January 2, 2020

Dr. Robert Redfield, the director of the CDC, contacts the National Security Council to warn about early cases of the coronavirus in China and the potential that it could spread to the United States.

January 18, 2020

According to Dr. Rick Bright's May 5, 2020, [whistleblower complaint](#), he pushes for "senior level meetings, called Disaster Leadership Group ('DLG') meetings, to coordinate planning activities across the government for the emerging COVID-19 outbreak." Dr. Robert Kadlec, the top HHS appointee in charge of preparedness and response, rejects Bright's suggestion, saying he is "not sure if that is a time sensitive urgency."

January 20, 2020

The CDC confirms the first known case of the coronavirus in the United States.

January 24, 2020

Sen. Rick Scott (R-FL) issues a [statement](#) calling on the Trump administration to declare a public health emergency.

January 28, 2020

Several top health officials within the administration begin an email chain nicknamed "Red Dawn" in which they internally raise alarms about the risks of the coronavirus and the importance of early interventions, including school closures and social-distancing measures.
Trump holds a rally in Wildwood, New Jersey.

February 6, 2020

A coronavirus patient in California dies. Health officials do not confirm that the patient was infected until April 21, so the case is not immediately identified as the first known death from coronavirus in the United State.

Mid-February 2020

According to *The Wall Street Journal*, despite the administration's policy **banning travel** into the country from China, Chinese carriers continue to operate "about 20 weekly flights between the two countries."

February 16, 2020

President Trump takes the presidential limousine to the Daytona 500 racetrack to announce the beginning of the race as an honorary "grand marshal."

February 20, 2020

Trump [holds a rally](#) in Colorado Springs, Colorado.

February 23, 2020

Kadlec [corresponds](#) with a researcher at Georgia Tech, who confirms that asymptomatic carriers can spread the coronavirus.

February 25, 2020

Dr. Nancy Messonnier, director of the CDC's National Center for Immunization and Respiratory Diseases, [mentions](#) that "community spread" to begin in the United States and urges Americans to begin preparing for an outbreak, including by warning about potential school and business closures. President Trump's [anger](#) at Messonnier's remarks and the subsequent stock-market crash [lead to](#) the cancellation of the coronavirus task force's.

February 26, 2020

In a press briefing, Trump says that the coronavirus cases "within a couple of days is going to be down to close to zero."

February 28, 2020

Trump holds a rally in Charleston, South Carolina, where he calls criticism of his administration's coronavirus response a "hoax."

while there will "probably" be school closures due to the coronavirus, the media is only focusing on the virus because "they think this is going to be what brings down the president."

February 29, 2020

According to *The Wall Street Journal*, Azar reportedly tells that Trump said coronavirus is "under control" and the government "had never mounted a better interagency response to a crisis."

March 4, 2020

Vice President Mike Pence says that 1.5 million tests will be available by the end of the week. But only 1,895 Americans have been tested by then.

March 13, 2020

Trump declares a national emergency.

March 23, 2020

Trump tweets that "WE CANNOT LET THE CURE BE WORSE THAN THE PROBLEM ITSELF," saying that restrictions on travel and social distancing guidelines will be reassessed "AT THE END OF THE 15 DAY PERIOD," which was scheduled to end on March 28.

April 16, 2020

The White House releases guidelines for "Opening Up America Again," which fail to provide meaningful guidance on how to increase testing and treatment capacity and availability of the personal protective equipment needed to lift stay-at-home policies.

April 28, 2020

Trump falsely claims that the United States is "getting very close" to conducting 5 million coronavirus tests per day, which many medical experts consider a threshold necessary to relax social distancing guidelines. At the time of Trump's statement, the United States is conducting tests at a rate of roughly 200,000 per day and has tested fewer than 6 million people overall.

May 5, 2020

Despite scientific consensus stating that United States needs to drastically increase testing. But, Trump tells reporters, "I don't think you need that kind of testing and that much testing" to reopen the economy.

May 8, 2020

Trump says in a televised meeting, "I feel about vaccines like I feel about tests. This is going to go away without a vaccine ... It's going to go away, and we're not going to see it again, hopefully, after a period of time."

May 11, 2020

In a press briefing, Trump declares victory over the coronavirus, saying, "We have met the moment and we have prevailed." He subsequently revises his claim to say he only meant that the country had prevailed on testing. And tweeted numbers are coming down in most parts of our Country, which wants to open and get going again. It is happening, safely!"

INDIA

Statistics

Total population (2016)	1,324,171,000
Gross national income per capita (PPP international \$, 2013)	5,350
Life expectancy at birth m/f (years, 2016)	67/70
Probability of dying under five (per 1 000 live births, 2018)	37
Probability of dying between 15 and 60 years m/f (per 1 000 population, 2016)	214/138
Total expenditure on health per capita (Intl \$, 2014)	267
Total expenditure on health as % of GDP (2014)	4.7

Latest data available from the [Global Health Observatory](#)

India Situation

508,953
confirmed cases

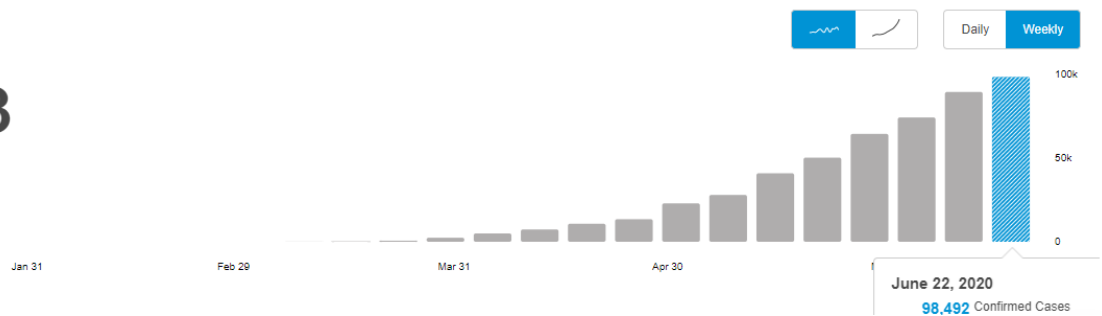


Fig 13: In [India](#), from [Jan 30](#) to [8:20am CEST, 28 June 2020](#), there have been [508,953 confirmed cases](#) of COVID-19 with [15,685 deaths](#).

- Integrated disease surveillance program (IDSP).
- National center for disease control.
- Ministry of health and family welfare
- HIV senital surveillance system
- Indian Railways

Surveillance

Main body involved here is ICMR stands for Indian Council Of Medical Research. Country is using a participatory approach towards it. This innovative technique is known as *Participatory disease surveillance (PDS)*. India is using surveillance network than mass testing.

This public health tool is used for contact tracing in communities specially in Maharaashtra region.

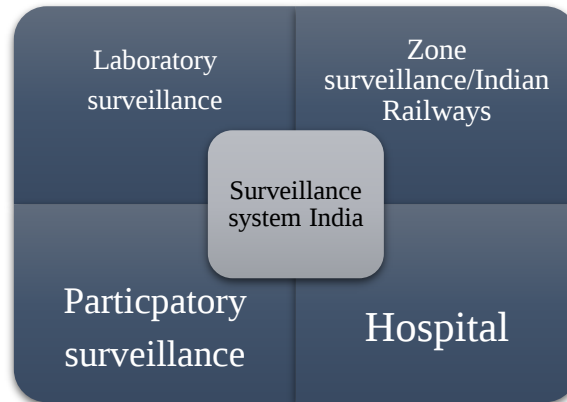


Fig 14: Surveillance components of India

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).

- **Participatory surveillance**

Government is using participatory approach by using Arogya setu app. Government is motivating people to download the app and use the app as it is following cases through contact tracing.

- **Indian railways**

Installed AI enabled COVID surveillance. Cameras that detect body temperatures and whether a person is wearing a mask. However, a crucial specification has been excluded by Indian Railways, called “black body” temperature in the COVID surveillance cameras in many cases.

Most important is tele thermographic systems, as one of the specifications for temperature accuracy from a COVID point of view in such systems.

He said, scanners with the black body are preferable, where mass transit is present and scanners without black body are acceptable for normal/controlled movement, the spokesman said.

- **Lab Surveillance and Testing –**

Existing strategies for COVID-19 testing:

1. Real Time RT-PCR
2. The TrueNat and CBNAAT s
3. Rapid Point-of-Care (PoC) Antigen Detection Test (for diagnosis along with RT-PCR):
4. Standard Q COVID-19 Ag kit i
5. IgG antibody for surveillance only.

Real Time RT-PCR

- Till now this the gold standard test for detecting cases of COVID-19.
- It takes 4 to 5hours to give results after the collection of sample.
- The main advantage is 90 samples can be run at a time all of which give accurate results.
- Because of the above reasons, this can be used as a frontline tool of detection.

The TrueNat and CBNAAT

- It is commonly and widely used for other diseases like tuberculosis and other infectious disease which is easily available at primary healthcare centers.
- This test limits the capacity as only 4 to 6 samples can be tested at a time which creates a scope for 28 to 48 samples/day according to the 90 minutes of quick turnaround time.
- The viral lysis buffer that comes with the COVID-19 cartridges inactivates the virus and poses minimum biosafety hazard.
- Safety is further augmented by the closed nature of these platforms and minimum sample handling. These features have facilitated use of these platforms at grass root level thereby increasing access to testing.

Rapid Point-of-Care (PoC) Antigen Detection Test (for diagnosis along with RT-PCR):

- Antigen-based assays tests, if reliable would be valuable at field level for early detection of infection and quick containment.
- It has moderate sensitivity but high specificity

A positive test should be considered as a true positive whereas all symptomatic individuals testing negative through the rapid antigen test should be confirmed with ³⁵ real-time PCR test.

IgG Antibody test for COVID-19 (Only for surveillance and not diagnosis):

IgG antibodies generally start appearing after two weeks of onset of infection, once the individual has recovered after infection and last for several months.

Reasons to do IgG test

All labs/hospitals initiating testing through the rapid antigen PoC testing. They need to ensure that all symptomatic negative patients should be essentially referred to a real-time RT-PCR test for COVID19. This is particularly essential as the rapid antigen PoC test has a moderate sensitivity.

- Serology surveys helps to understand the proportion of population exposed to infection with SARS-CoV-2 including asymptomatic individuals. Then, depending upon the level of seroprevalence of infection, we can know about the appropriate public health interventions. Later by planning and implementation we can go for prevention and control of the disease.
- Periodic serosurveys are useful to guide the policy makers. Specially, in high risk or vulnerable populations (health care workers, frontline workers, immunocompromised individuals, individuals in containment zones, etc. to know who has been infected in the past and has now recovered.

Hot zone – RED ZONE

- These are highly prevalent areas of infection.
- Everyone should be considered as likely COVID positive, and generalized and effective quarantine measures must be the focus.
- Low-level syndromic sentinel surveillance in health center/hospital will be required and people suffering from upper respiratory symptoms must be considered as COVID19 and subject to isolation and quarantine accordingly.
- Laboratory testing in these cases is likely to go wrong as sensitivity and specificity of available tests are still less (60-80%) than optimum.

Moderate Zone – YELLOW ZONE

- High-risk areas that can quickly turn into hot spots in the country
- Adequate and timely interventions are not instituted without delay.
- The intensity of surveillance must be maximum in these areas.
- Extensive laboratory testing of all symptomatic and even routine normal people using 'Testing Booths' will need to be instituted in these areas.
- Active surveillance using existing health infrastructure of health workers will be needed to monitor fever and pneumonia as a priority in these geographical areas

Low intensity GREEN ZONE

- Care must be taken to monitor these areas for emerging infections.
- At this point, low-intensity zones constitute the largest sections of the country involving many villages of India with poor health infrastructure for intensive surveillance.
- Technology-based surveillance of 'Fever' may need to be given higher priority than surveillance involving laboratory-based COVID testing methods on symptomatic people.
- Self-reporting thermometers and hand-held devices by health care workers in the villages.

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.

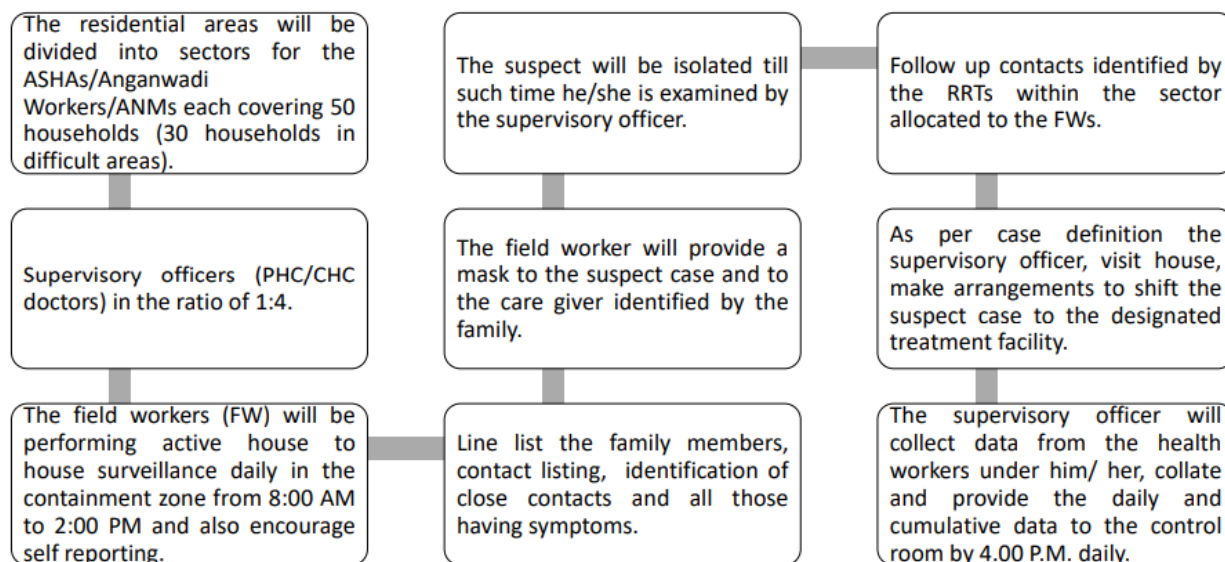


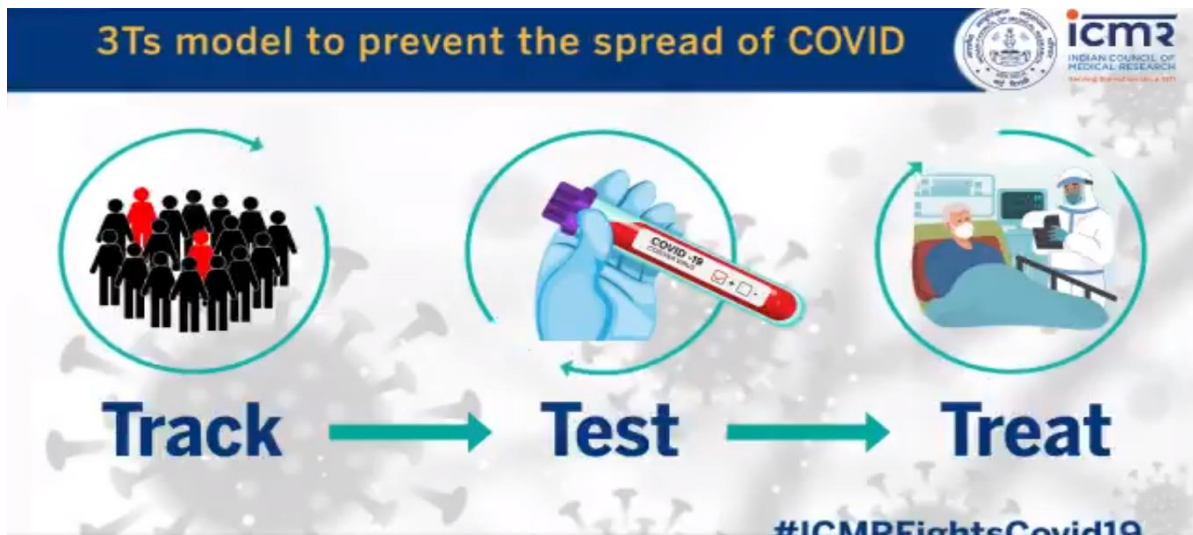
Fig 15 : Surveillance Activities and case management in Containment Zone

.Outreach

The information and broadcasting ministry is looking to utilize the reach of nearly 300 community radio stations as it aims to take the government's message on preventing the spread of Covid-19 to the remotest parts of the country. INDIA

For example - Telemedicine for a better outreach in remote areas and wearables for monitoring home-based care.

- Department of Science and Technology (DST) has decided to launch a year-long health and science awareness program
The program will aim at sharing the best practices and habits for good health and hygiene and promoting scientific temperament among the masses through community participation at the grassroots.
- This time a YASH (Year of awareness on science and health) program has also been initiated by THE NATIONAL COUNCIL OF SCIENCE AND TECHNOLOGY.
- Maruti Suzuki India Limited - several initiatives to support employees and communities around its manufacturing facilities in Haryana. These efforts are aligned with the local government guidelines and directions to fight COVID19. The Company is fully committed to use its resources to support the health challenge, as per government advisories. Various other programs like waste collection and supporting the sanitization activities in these villages with 17 Water ATMs installed across 16 villages. The access to the water ATMs is open to all and water is dispensed with strict social distancing.



SCREENING

POE- Point of entry

- Indian Nationals – Irrespective of the location of the health care facility where the suspect/confirmed case is admitted.
- 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.

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.

Coordination strategy

Mass level survey and Government tie ups.

- A mass level survey in all containment zones has been done till 30 June 2020. Government has done tie up with OLA and Uber for the arrangements of Ambulances and many other tenders have been given to various industries for manufacturing of oxygen cylinder and ventilators.
- Beds arrangement for COVID patients by Indian railways and ITBP forces of India.

RISK COMMUNICATION

Risk communication is refers to reciprocity of information passed by the authorities to public in case of health emergencies as to minimize their losses related to health, economic and social wellbeing.

Importance: It works in case of emergencies and a strategy is made from planning, messaging and several methods of behavioral change and community engagement programs as to monitor and evaluate the situation.

FOUR PHASES OF RISK COMMUNICATION



YASH will envisage specific outcomes, like improved risk understanding amongst target groups including working with local sensitivities, belief systems, traditions, and indigenous knowledge.

Strategic Pillar	Indicators	Targets (March -Dec'20)
Risk Communication & Community Engagement	Number of people reached on COVID-19 through messaging on prevention and access to services	1 billion
	Number of people engaged on COVID-19 through RCCE actions	32.6 million
Improve Infection and Prevention Control (IPC) and provide critical medical and water, sanitation and hygiene (WASH) supplies	Number of people reached with critical WASH supplies (including hygiene items) and services	278,500
	Number of healthcare workers within health facilities and communities provided with Personal Protective Equipment (PPE)	18,000
	Number of healthcare facility staff and community health workers trained in Infection Prevention and Control (IPC)	1.5 million
Support the provision of continued access to essential health and nutrition services for women, children and vulnerable communities, including case management	Number of healthcare providers trained in detecting, referral and appropriate management of COVID-19 cases	1.5 million
	Number of children and women receiving essential healthcare, including prenatal, delivery and postnatal care, essential newborn care, immunization, treatment of childhood illnesses and HIV care in UNICEF supported facilities	33 million
Support access to continuous education, social protection, child protection and gender-based violence (GBV) services	Number of children supported with distance/home-based learning	59 million
	Number of schools implementing safe school protocols (COVID-19 prevention and control)	59,000
	Number of children without parental or family care provided with appropriate alternative care arrangements	1,500
	Number of children, parents and primary caregivers provided with community based mental health and psychosocial support	85,000
	Number of UNICEF personnel and partners that have completed training on GBV risk mitigation and referrals for survivors	20,000

English (United States)

TIMELINE

22 March 2020:

Prime Minister Narendra Modi appeals nation to observe 22-hour voluntary curfew.

4 March 2020:

Government of India orders a nationwide lockdown for 21 days and movement was restricted all over the nation due to pandemic.

Confirmed cases of coronavirus affected people stood at approximately 500 cases.

4 April 2020:

III LOCKDOWN until 3 May, with a conditional relaxation after 20 April for the regions where the spread has been contained.

01 May 2020:

III EXTENDED LOCKDOWN 17 May.

Ministry of Home Affairs (MHA), on Friday 1 May 2020, post a comprehensive review of the situation, issued an Order under the Disaster Management Act, 2005, to further extend the lockdown for a further period of two weeks beyond May 4, 2020. The nation now divided into three zones — Green Zone, Red Zone, Orange Zone, with Red being the most affected and to have tightest regulations. Relaxation will be allowed accordingly. The Centre has identified at least 130 districts in the country as red zones, 284 orange zones and 319 green zones.

12 May 2020:

PM Modi announces economic relief package for Self-reliant India:

In an important announcement, extending the lockdown to its fourth phase, PM Modi announced an economic relief package worth 10 per cent of India's GDP of Rs 20 lakh crore to be released in 2020 in the wake of the global coronavirus pandemic. PM Modi gave a clarion call for a self-reliant India. He said the production of masks and PPE which was next to negligible earlier has reached a new high. The lockdown 4.0 will have a whole new set of guidelines and economic activities. The dates of the lockdown will be announced in the coming days. The fine print of the economic package will be announced by the finance minister too.

17 May 2020:

Lockdown 4.0: till May 31,

Unlock 1

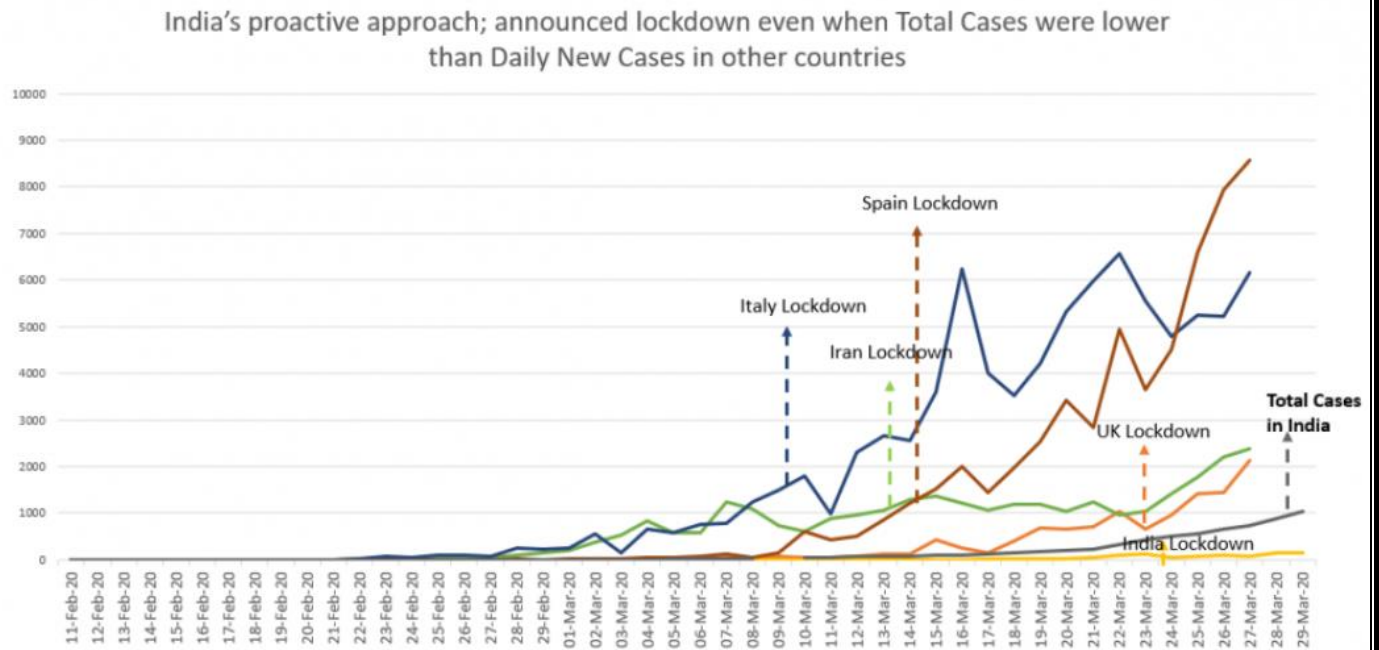
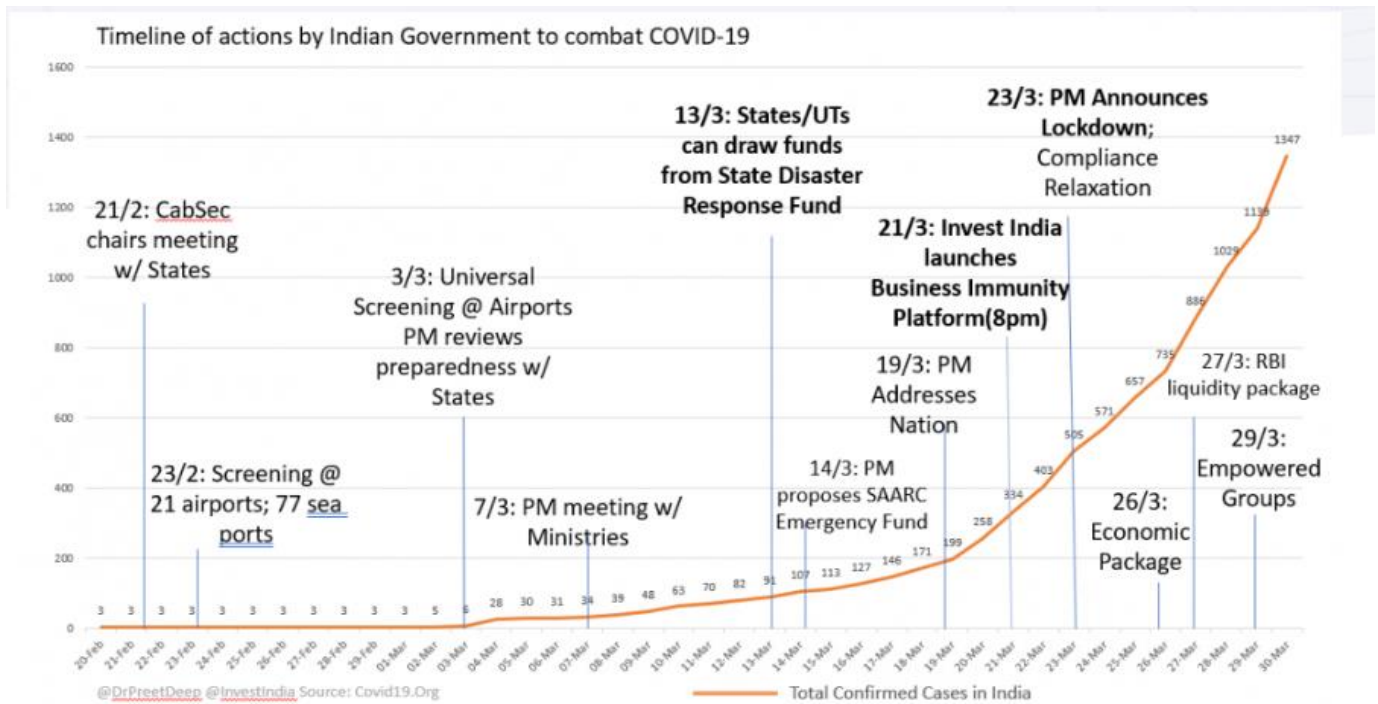


Fig 16: Timeline of actions and depiction of events and number of cases in India.

Glimpses of Indian government website for COVID 19 information.

#MyGovMythBusters
MyGov is busting all the myths related to COVID-19 for you!

Click Here



#MyGovFactCheck
MyGov is busting all the Fact Checks related to COVID-19 for you!

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1/2

Taking Care of Children With Special Needs (CWSN) in Times of COVID-19



my GOV
मेरी सरकार

-  Make predictable daily time table & do not break the routine-cycle of the child
-  Maintain a basic routine for sleep & wake up time, play time, TV time, etc. Keep the child's screen time to the minimum
-  Teach daily living skills. Involve them in doing activities like washing hands, brushing, dressing, etc.
-  Ensure that the child feels secure and not anxious, encourage activities that the child is familiar with & comfortable doing
-  Ensure adequate physical activity time. Include motor activities, play activities & structured simple home games

Help us to help you



FakeNews

A viral message claims to offer free Rs. 7500 relief fund to each citizen.



#MyGovFactCheck

(<http://relief.fund.freeinternetz.com/>)
The link shared is a Clickbait!
Please beware of such fraudulent messages & links.

#IndiaFightsCorona

Defied: 10 June, 2020

SINGAPORE

Map



This map is an approximation of actual country borders.

Statistics

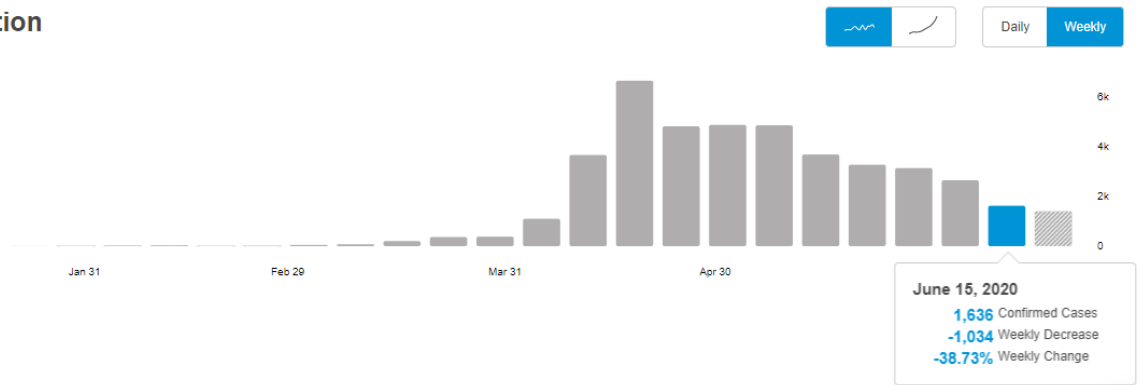
Total population (2016)	5,622,000
Gross national income per capita (PPP international \$, 2013)	76,850
Life expectancy at birth m/f (years, 2016)	81/85
Probability of dying under five (per 1 000 live births, 2018)	3
Probability of dying between 15 and 60 years m/f (per 1 000 population, 2016)	65/38
Total expenditure on health per capita (Intl \$, 2014)	4,047
Total expenditure on health as % of GDP (2014)	4.9

Latest data available from the [Global Health Observatory](#)

Singapore Situation

43,246

confirmed cases



26

deaths

Source: World Health Organization
 Data may be incomplete for the current day or week.

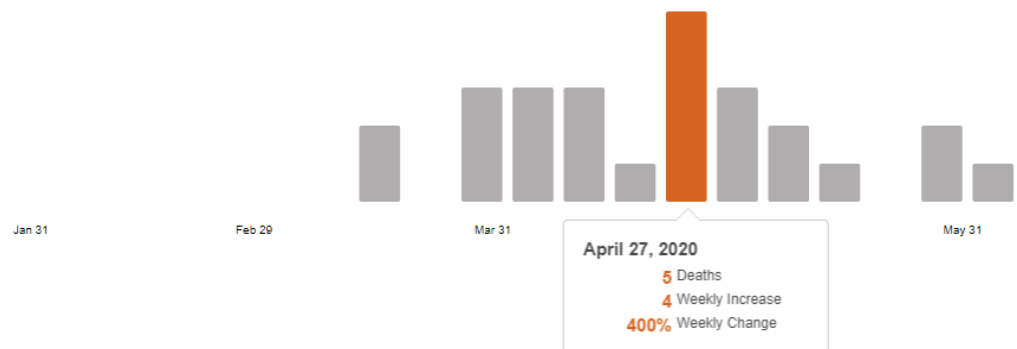


Fig 17

In **Singapore**, from **Jan 23** to **8:20am CEST, 28 June 2020**, there have been **43,246 confirmed cases** of COVID-19 with **26 deaths**.

Singapore

Singapore, a city-state in southeast Asia, developed case definitions, laboratory tests, and enhanced surveillance to detect affected individuals with COVID-19 early, to enable containment of the disease.

Singapore confirmed its first imported case of COVID-19 from Wuhan on Jan 23, 2020.

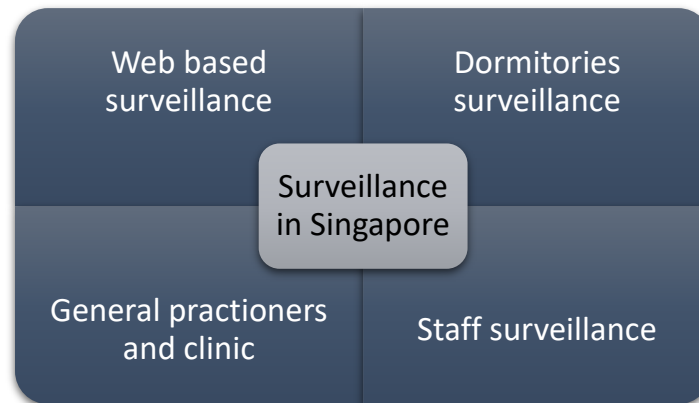


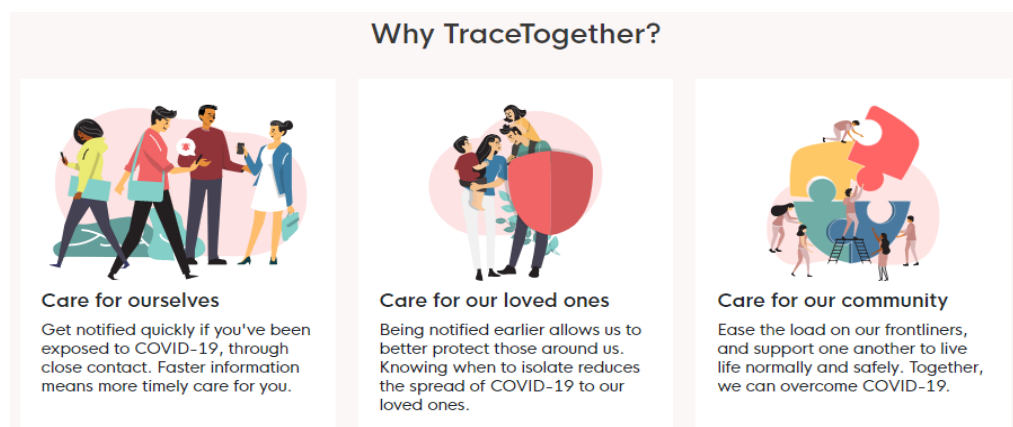
Fig 18: Surveillance strategy components of Singapore.

Government health bodies

1. Ministry of Health
2. NCID - National Centre for Infectious Diseases
3. Minister for National Development
4. Duke-NUS Medical School

• Web-based surveillance

The government developed an application name as **TraceTogether**. It uses Bluetooth signals between cellphones to see if potential carriers of the coronavirus have been in close contact with other people.



- **General Practitioners and polyclinics**

Ministry of Health (MOH) has approved more than 600 polyclinics in country and some general practitioners to test for COVID 19. These clinics have been named as (PHPCs) which stands for Public Health Preparedness Clinics. These clinics are responsible for following :-

- Dispense medications (e.g. Tamiflu, antibiotics)
- Administer vaccinations (e.g. flu vaccines)
- Provide subsidized treatment (e.g. under the HSS)

Staff at these clinics will be supplied with personal protective equipment by the ministry.

Personal Protective Equipment	• Up to 12 weeks' supply of PPE for staff at no cost. • For staff prophylaxis, up to six weeks' supply of influenza anti-virals at no cost.
Medications and Vaccines	For patient treatment, priority to receive appropriate antivirals, antibiotics, and/or vaccines from the national stockpile. PHPCs may also choose to procure the anti-virals, antibiotics and/or vaccines from commercial sources.
Training/Refresher	Guidelines, e-learning course and workshops, etc. to enable PHPC doctors and staff to familiarise themselves with MOH's guidelines, build up to skillsets and maintain skills currency. MOH E-learning portal : https://elms.moh.gov.sg

Table 5: Support from MOH(Singapore) to PHC

- **Staff surveillance**

Strategy made by hospitals to protect their staff from COVI-19 infection: -

- (1) Use of personal protective equipment
- (2) Data collected if any staff suffers from fever.
- (3) Data collected from medical support given to unwell staff.

Staff health surveillance is an important strategy because hospitals are at greater risk for NOSOCOMIAL infections specially in Eds.

- **Dormitory surveillance in Wastewater surveillance system.**

Wastewater samples were screened because the agencies believed about the proportion of viral material in wastewater. As the waste was coming from a community and hence, lays a foundation to know the levels of COVID-19 contamination level in community. It helps in triggering the necessary response plans and taking mitigation actions such as individual testing and isolation.

This surveillance is a promising method for assessing the COVID-19 situation, as infected individuals, including those with mild or no symptoms, could shed the virus in their stool.

A methodology as followed for wastewater sampling and testing for COVID-19. It had shown that wastewater testing at treatment plants could be useful for early detection of COVID-19 transmission in the community

Though the detection of this viral material or RNA in the wastewater does not suggest the presence of viable or infectious virus. Without a host, the virus will not be able to propagate over time in wastewater. As an added preventive measure, wastewater from locations with COVID-19 cases, such as hospitals, isolation facilities and dormitories, are disinfected with chlorine at the premises before discharge into the public sewers. Disinfectants like chlorine can effectively inactivate the viruses.

Case management and Testing

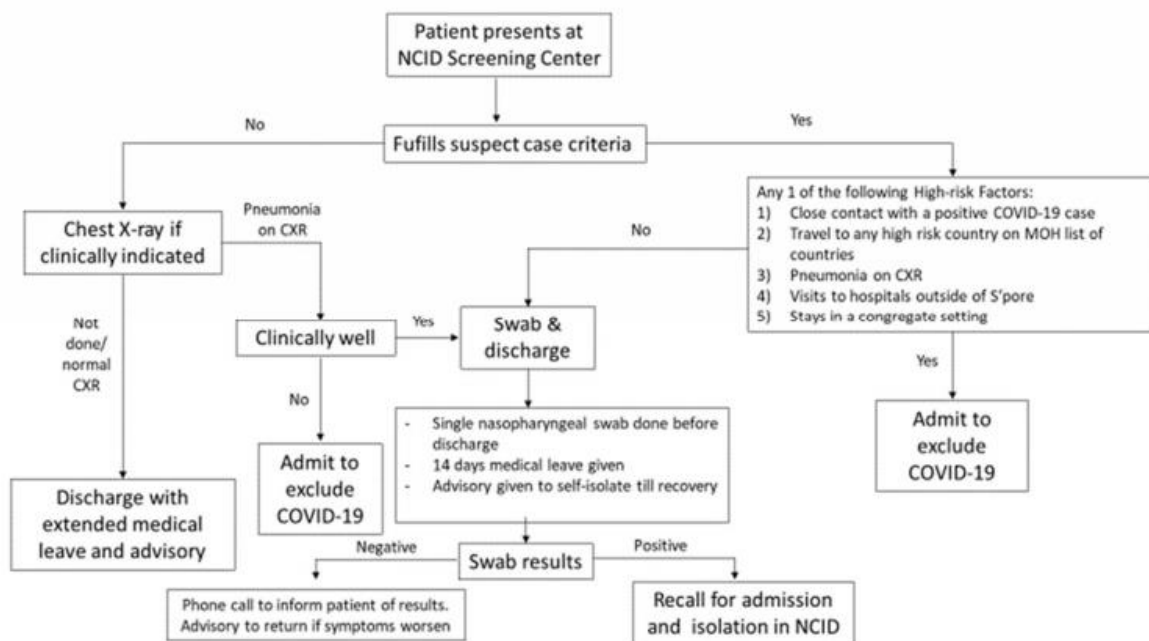


Fig 19 : Case management depiction in Singapore for COVID 19.

Contact tracing

Lab testing In Singapore, National Public Health Laboratory is the main lab that processes coronavirus tests is the Lab test includes following tests which are done to detect COVID 19.

Molecular diagnostic tests, are used to detect the presence of the virus.

Serologic tests involves reverse transcription polymerase chain reaction (RT-PCR) assay test.

DORSCON ALERT LEVELS

(Disease Outbreak Response System Condition)

	GREEN	YELLOW	ORANGE	RED
Nature of Disease	Disease is mild OR Disease is severe but does not spread easily from person to person (e.g. MERS, H7N9)	Disease is severe and spreads easily from person to person but is occurring outside Singapore. OR Disease is spreading in Singapore but is (a) Typically mild i.e. only slightly more severe than seasonal influenza. Could be severe in vulnerable groups. (e.g. H1N1 pandemic) OR (b) being contained	Disease is severe AND spreads easily from person to person, but disease has not spread widely in Singapore and is being contained (e.g. SARS experience in Singapore)	Disease is severe AND is spreading widely
Impact on Daily Life	Minimal disruption e.g. border screening, travel advice	Minimal disruption e.g. additional measures at border and/or healthcare settings expected, higher work and school absenteeism likely	Moderate disruption e.g. quarantine, temperature screening, visitor restrictions at hospitals	Major disruption e.g. school closures, work from home orders, significant number of deaths.
Advice to Public	- Be socially responsible: if you are sick, stay at home - Maintain good personal hygiene - Look out for health advisories	- Be socially responsible: If you are sick, stay at home - Maintain good personal hygiene - Look out for health advisories	- Be socially responsible: if you are sick, stay at home - Maintain good personal hygiene - Look out for health advisories - Comply with control measures	- Be socially responsible: if you are sick, stay at home - Maintain good personal hygiene - Look out for health advisories - Comply with control measures - Practise social distancing: avoid crowded areas

A SAFE SINGAPORE

Phase 1
Safe Re-opening
Gradual re-opening

Phase 2
Safe Transition
Broader re-opening

Phase 3
Safe Nation

Phase 2 from 19 June 2020

Receive only 5 visitors at a time

Up to 5 persons in a group and no mixing between groups

Always observe safe distancing measures

Keep 1 metre apart

Use contactless payment where possible

Speak softly to prevent spread of droplets

Check in and out with SafeEntry
HELP US KEEP YOU SAFE

Wear a mask at all times when outside your home

Wash your hands frequently with soap or use hand sanitizers

Monitor your temperature twice daily

Do not spread rumours
Get the latest on COVID-19 by signing up for the Gov.sg WhatsApp channel (www.gov.sg/whatsapp). The service is available in English, Chinese, Malay and Tamil.

gov.sg

Updated: 22 Jun 2020

SENIORS SHOULD STAY HOME

Avoid visiting markets get others to help

No dining outside of home

Don't go near seniors if you are sick

Don't gather in groups, at home or outside, e.g. at void decks or neighbourhood centres

Help seniors with their essential needs e.g. buying food and groceries for them

It is an offence to disobey safe distancing measures.
The health of all depends on each one of us.

All must wear a mask when outside of their homes

If you are sick

- Wear a surgical mask and see a doctor
- Stay at home and don't doctor-hop

Do not spread rumours.
Get the latest on COVID-19 by signing up for the Gov.sg WhatsApp channel (www.gov.sg/whatsapp)

gov.sg

Updated: 14 Apr 2020

Risk communication and plan

Mandatory leave of absence (LoA) for Singaporeans

Citizens of Singapore returning to their homeland from other countries were placed in Quarantine of 14 days and government allowed LOA i.e. and an annual leave entitlement. People coming from outside or China were denied to enter the Singapore. So, they stopped a to and fro movement from flights. People were asked to be in quarantine who presented with a case history and several rules were made where an imposition of heavy fine was made in order to stop the people who want to move away with quarantine.

Joint Working Group with Malaysia

A joint working committee was made to deal with the spread and take the curve down of CORONA VIRUS. This committee will share the technical details about surveillance, exchange the information on COVID and what improvements can be done for both the countries. They both will follow border screening protocols with sharing the national advisories.

A timeline has been presented in relation to the events took place

TIMELINE

22 Jan [Confirmed case: 0]

Singapore: Government set up multi-agency task force

Government set up measures such as temperature screening at airport.

23 Jan [Confirmed case: 1]

First confirmed case

The first confirmed case is a 66 year old tourist from Wuhan who arrived in Singapore on 20 Jan

27 Jan [Confirmed cases: 5]

Singapore: Authorities fight spread of fake news

Ministry of Health has instructed the office overseeing the Protection from Online Falsehoods and Manipulation Act (POFMA) to issue a general correction notice to a forum that has made a false statement.

4 Feb [Confirmed cases: 24]

Singapore: First cluster of local transmission in Singapore, Schools, senior activity centres etc. suspend big group activities.

7 Feb [Confirmed cases: 33]

Singapore: DORSCON level raised to Orange

Government raised DORSCON level to Orange after 3 cases of COVID-19 without any links to previous cases or travel history to China.

26 Feb [Confirmed cases: 93]

Singapore: Using serological tests to find the link between infection clusters

Using serological tests, Singapore managed to trace the missing cases who have already recovered from Covid-19, making Singapore the first country to use this method to find the link between infected cases.

5 Mar [Confirmed cases: 117]

Singapore: Travellers to Singapore who appear feverish or display signs of respiratory illness to undergo a nasal swab test at all checkpoints

A new kit has been developed to collect nasopharyngeal swab samples from people with fever and respiratory conditions at checkpoints. It takes 3 hours to get the result.

7 Apr [Confirmed cases: 1481] From 7th April to 4th May,

Singapore: Implementing Circuit Breaker measures for a month

all non-essential work places and schools (from 8th April onwards) will be closed. Employees are required to telecommute and students to participate in Home-Based Learning during this period. All F&B outlets can only provide take-away or delivery services. All public facilities will be closed.

21 Apr [Confirmed cases: 9125] Circuit Breaker measures are extended to 1 June

As there is a significant increase of confirmed cases among migrant workers and unlinked cases remain high, the government extends the Circuit Breaker measures to 1 June. Additionally, the number of essential service workers who are allowed to work onsite has been further restricted and the number of onsite workers drop from 20% to 15%.

9 May [Confirmed cases: 22460] Singapore: SPOT the robot dog "patrol" parks to ensure safe distancing

To lower the risk of exposure between Npark staff and the public, the Singapore's National Parks Board (NParks) deploys robot SPOT to monitor the number of park visitors and ensuring public observe safe distancing .

12 May [Confirmed cases: 24671]

Singapore: All 300,000 migrant workers will be tested for COVID-19 and the presence of antibodies
A number of 32,000 (i.e. 10% of migrant workers staying in dormitories) have been tested. However, the government will continue to test the remaining 300,000 migrant workers staying in dormitories so as to ensure that they are free from COVID-19 before they are allowed to resume work. For faster results, the migrant workers will be tested for both COVID-19 and the presence of its antibodies.

16 May [Confirmed cases: 27356]

Singapore: Develops world's first test that detects the presence of neutralising antibodies
Singapore develops the cPass serology test that can detect past infection within an hour. The test is also the world's first rapid testing that detects the presence of neutralising antibodies.

13 Jun [Confirmed cases: 40197]

Singapore: Cancellation of the Formula 1 Singapore Airlines Singapore Grand Prix 2020

The Host was unable to proceed with the race due to the prohibitions imposed on access and construction of the event venue, restriction of mass gathering and worldwide travel restrictions due to Covid-19.

9 Jun [Confirmed cases: 41615] Singapore: Phase 2 of Singapore's reopening

Shopping malls, retail, sports facilities will be opened. Eateries and hawker centres dine-in will also be allowed.

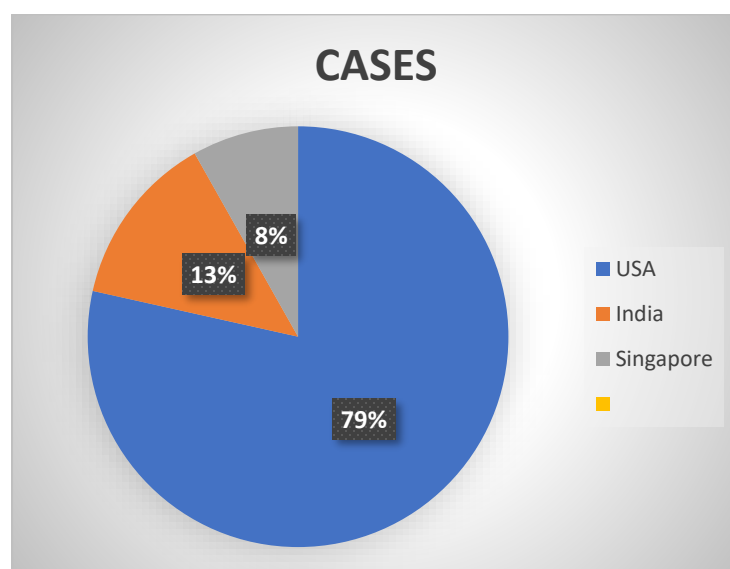


Fig 20: Rate of increasing Corona virus cases per million population in INDIA, USA and Singapore during the 1 Jan 2020 – 31 May 2020.

Conclusion

After reviewing all the inclusions in this report, It can be observed that countries like Singapore, India, and the USA followed some specific measures to control COVID. This plan is based on public health interventions and initiating the strategies from surveillance. This technique of detection and identification of cases and but also maintaining a track record of death through mortality surveillance.

India and Singapore are working on a similar mitigation strategy where they have divided the areas into zones according to the cases present in a particular demographic area. This has figured out at which rate contamination can be spread in the country and how rapidly the response plan is needed in those areas to deal with conditions.

For India, government has divided the areas into red zone, yellow zone, and green zone. Here, red is the area that is most prevalent and yellow being the moderate with green being the lowest intensity zone but can turn into red zone. There are buffer zones around these containment zones and areas are DE notified if there is no fresh case in the next 28 days.

Approaching the outreach, India has planned different strategies to work upon accordingly in various states. A good example is Rajasthan's Bhilwara model. In this model the several administrative steps were taken by the Rajasthan government in Bhilwara district of Rajasthan. In the earlier weeks of COVID 19 infection Bhilwara district was the most affected district. The government imposed a curfew with the essential services and a house to house survey was done. This includes detailed screening and contact tracing with the help of a team containing 850 members.

Further, people slightly infected were asked to be in-home quarantine. Many medicines like [hydroxychloroquine](#) (HCQ), Tamiflu, and HIV drugs and by April 3, were used for the treatment of these patients. A new initiative was also introduced by the police force as they were ensuring supplies to the public by delivering the essentials on their doorstep. Thus, a controlled number of cases and became the best model. In other parts of India, outreach steps were taken with the help of the Government of India in collaboration with ICMR with other organizations issued many messages to reach the ground level. Moving towards the operational guidelines in response to the COVID increasing cases were made and applied. Guidelines including the risk communication helps in moving towards the planned steps like lockdown done in 5 phases and participatory surveillance. Likewise, Singapore also maintained the containment zone named **DORSCON** plan where the demographic areas were divided into **GREEN, YELLOW ORANGE, and RED. Depending on the level of disease beginning from the green where disease level is mild moving towards red where disease level is rising rapidly. Imposing lockdowns and the availability of essential services were also restricted accordingly. The government moving on a national strategy and**

Implementing the steps like **Mandatory leave of absence (LoA) for Singaporeans and a joint decision with Malaysia** about sharing the technical details, exchange information on the coronavirus situation in their respective countries and follow similar border screening protocols. It will also share surveillance data and national advisories issued to the public.

So, both the countries are moving on the lockdown and other similar mitigating strategies in response to COVID 19.

Whereas the USA being the most developed country and having a strong health care system faced many challenges during COVID as government as not able to cases in comparison with India and Singapore. The country planned a lot for surveillance techniques to detect and identify the cases in various cities. They made a good surveillance system which is considered to be the first step in mitigating the cases. Despite the efforts made, there is a high exponential growth of patients and deaths.

As reviewed from the data available at various websites of CDC and the USA government with several other newspapers like the tribune and the guardian. A timeline has been presented in the report under section USA It is clear from the sources that, The USA government was reluctant to make decisions on time in response to COVID. Due to which people were unaware of the conditions and circumstances related to the viral outbreak. As there was no planning on the spread of right risk communication which further led to unawareness amongst the mass. President himself was passing the wrong information and negligent about the strategies to be made for the population.

USA having a high cost of health and consultations of doctors. This is not letting the people to go and have a checkup for COVID 19. So, differing by participatory disease surveillance approach as followed by India and Singapore. There were some similarities present if we consider surveillance and point of entry screening and case management. But, due to the lack of an effective risk communication timely. The country is facing ramifications as cases are increasing rapidly.

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PART 2

ONLINE COURSE

Summer Training Online Course

At

Coursera

Global Health Essentials

Date (2 April 2020 – 15 April 2020)

By

Himani Kulshreshtha

Under the guidance of

Mr. SP Chattopadhyay

MBA Health and Hospital management

2019-2021



1, Prabhudayal marg, Sanganer Airport, Jaipur – 302029

GLOBAL HEALTH ESSENTIALS

- Course Affiliation - Yale university,
- Mode of learning – Online at [COURSERA](#)
- Course Facilitator - [Richard Skolnik](#) (Former Lecturer, Department of Health Policy and Management, Yale School of Public Health and Lecturer in the Practice of Management, Yale School of Management,
- Duration of Course – **56 Hours**

Certificate of completion

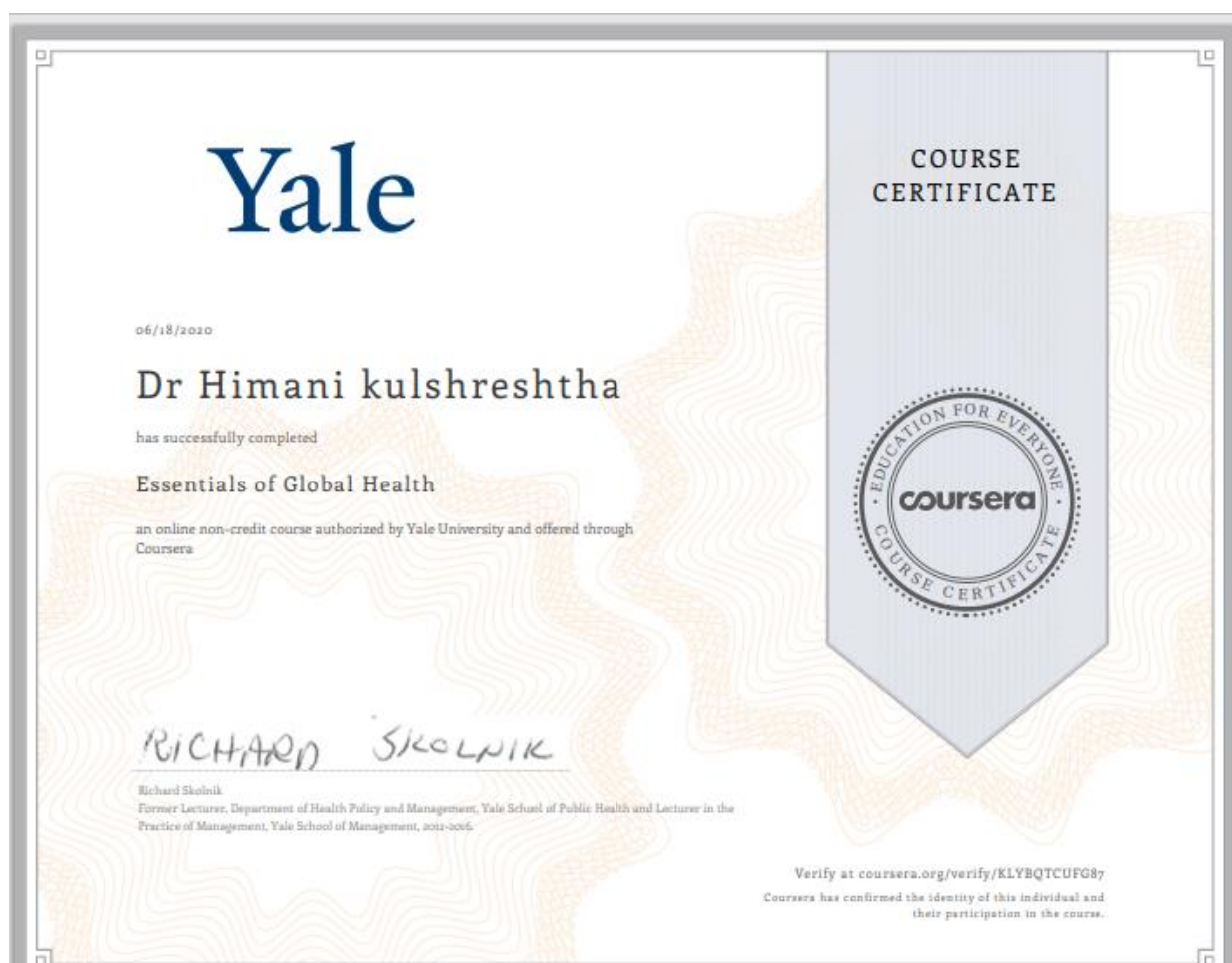


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Course Description

Section 1 – Course Outline – Global Health essentials

Global health is considered as the health of people across the world. Global health is affected by various factors including education, economy, healthcare service, climate, etc. The global health essentials course covers all the aspects related to global health and the issues, challenges, limitations in the same. The course directly or indirectly conveyed the information related to all aspects of global health and the current scenario related to this. Various underlying global issues and challenges are continuously faced by the population across the globe that are the determinants of their health. In general, there can be many determinants of health like climate, nature, economy, and other social factors. Since every region has its own merits and demerits, therefore, one solution may or may not work for another region across. However, the emergence of the problem always required cost-effective solutions by the socio-economic concern across the world. In a way to address these health challenges, many actors play roles and highlight the importance of every factor implicated. The health care system has been divided into different levels across the world and each actor supports the system in its way resulting in the formation of a network good for collaborations and generation of funds. The stakeholders work at government and non-government platform for the better health care of the population. The Govt. works by launching schemes such as National health services, National health insurance schemes, etc. That directly provide the health benefits to its population. However, the schemes can be different according to the income status of the country like middle income or low-income countries and maybe for the diseases and conditions also. As attaining health only for the poor is not the concern but disparities are also taken into account of it. Further, the Govt has taken various steps and launches programs for the complete eradication of diseases like malaria, polio, etc. However, at certain points or stages, the Govt. or the non-Govt agencies also face the problem in the implementation of the schemes for the maintenance of the health of its individual that happens in the case of COVID-19. The course global health is thus very important in this context and might be the linkages between the health care system and population by highlighting these facts in the global scenario.

Rationale of doing course

It is imperative to realize the essential social insurance framework and the determinants of wellbeing. These elements are answerable for singular wellbeing as well as for network wellbeing support. With regards to COVID – 19 Pandemic, the unmistakable limit of confided in network individuals for social commitment and conveying care where it is required is perpetually basic.

The profound comprehension of these elements and incorporations of viable suggestions for leaders to help protect networks and wellbeing laborers, to continue fundamental administrations at the network level, and to guarantee a compelling reaction to COVID-19. Utilizing this thorough and composed methodology will assist nations with fortifying the versatility of network based wellbeing administrations all through the pandemic, into early recuperation and past.

Since, when wellbeing frameworks are overpowered, both direct mortality from a scene and indirect mortality from counter acting agent preventable and treatable conditions increase radically. Nations should set troublesome choices to adjust the expectations of reacting straightforwardly to COVID-19, while all the while participating in vital arranging and facilitated activity to keep up fundamental wellbeing administration conveyance, relieving the danger of framework breakdown.

Objectives of course

- The core issues of disease present worldwide.
- Dependency on demographic dividends and demographic indicators and look for the dependency on these variables for different diseases.
- Assess key wellbeing differences, particularly as they identify with the soundness of low-salary and underestimated individuals in low-and center pay nations;
- Outline the key entertainers and associations in worldwide wellbeing and the way wherein they collaborate to address basic worldwide wellbeing concerns;
- The substance of the Operational arranging rules to help nation readiness and reaction, and gives direction on a lot of focused quick activities that nations ought to consider at national.

Course content

The course is designed into subsequent systematic modules. Each module is specific to a topic, which consists of organized set of sub- topics. A brief report of course is mentioned below.

Module 1- Introduction

- This module introduces to the course, some of the basic concepts of global health, and a number of key perspectives for considering global health issues. This module will also introduce you to the key actors in global health and the different ways in which they are organized and function.
- Graded:** Key Perspectives on Global Health
- Graded:** The Global Health Context and Who Plays.

This Module denotes

To start with, there are significant moral measurements. There is a significant relationship obviously among wellbeing and human profitability and the more advantageous individuals are, the better fed individuals are, the more noteworthy the chances are present at the point when we go from the individual level to the network level to the national level.

We additionally realize that they're significant connections not just between the wellbeing of people and their profitability, yet additionally between the wellbeing of people, the wellbeing conditions that social orders face, similar to whether or not there's a great deal of HIV or jungle fever or can resemble current conditions-COVID.



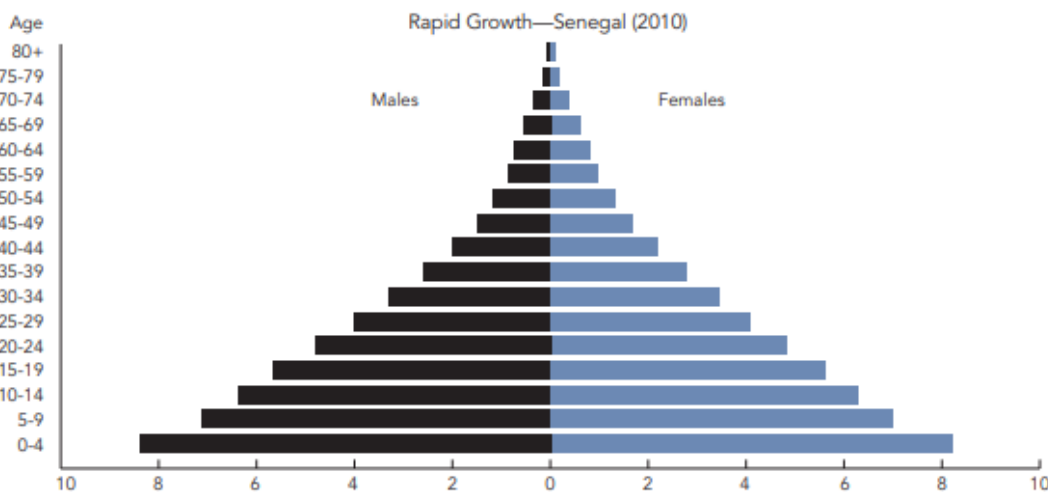
Module 2

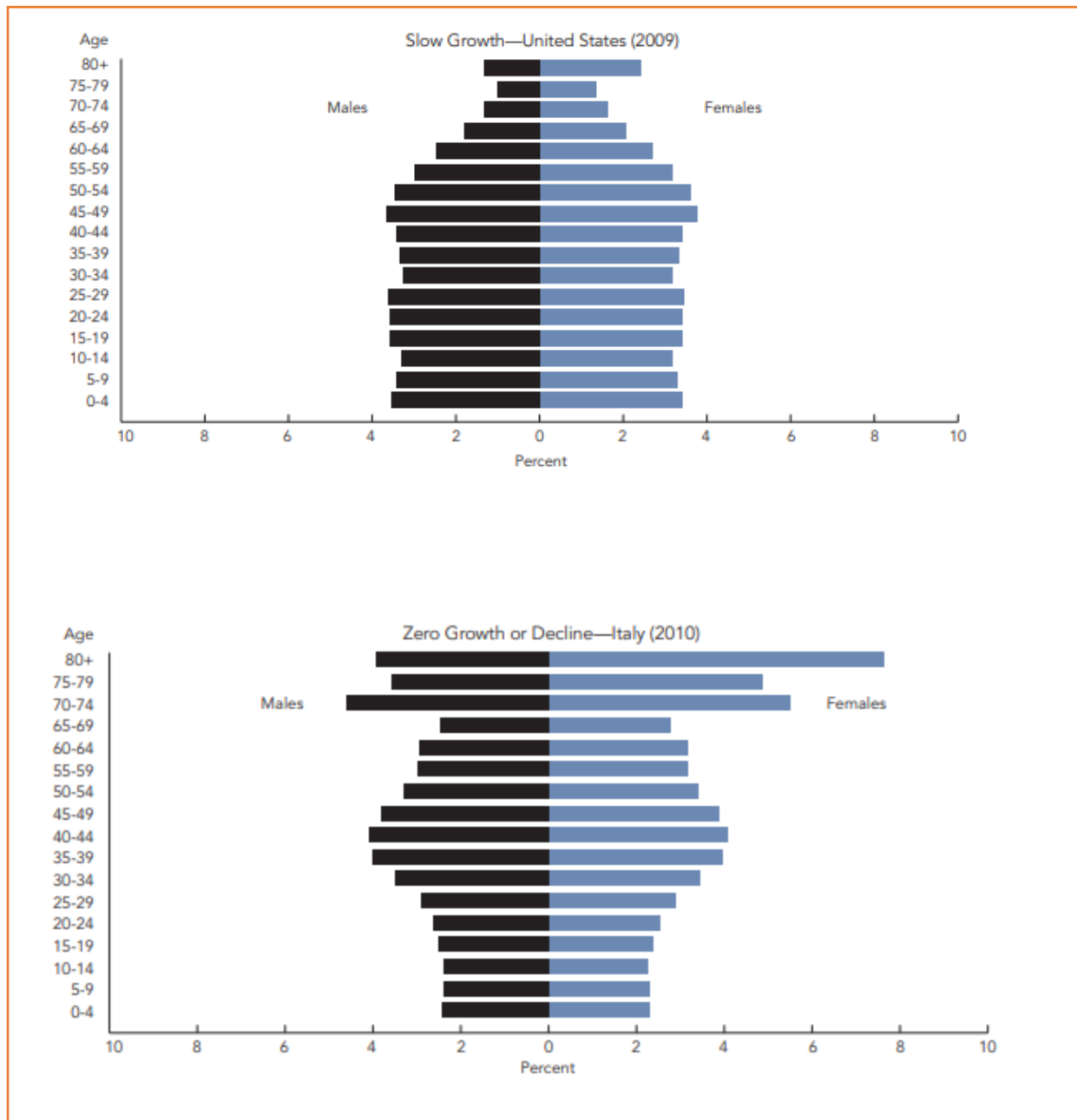
Module 2- The Burden of Disease

- Module 2 focuses on the “burden of disease”. It first examines the state of the world’s health. It then introduces you to key demographic factors and how they relate to global health. It concludes with several sessions that examine what people get sick, disabled and die from and to what risk factors and determinants these conditions can be attributed.
- **Graded:** The State of the World’s Health
- **Graded:** Demography and Global Health
- **Graded:** The Burden of Disease – The DALY
- **Graded:** What Do People Get Sick, Disabled, and Die From?
- **Graded:** Key Risk Factors for Deaths and DALYs

Age Structure and Population Growth Along with the birth rate, age structure that drives or retards populace development. In many creating nations, huge extents of youngsters for all intents and purposes ensure that populace will keep on developing during times of declining fruitfulness and for a long while after richness drops to "substitution level" (2.1 kids per lady). The impact of a high birth rate upon age structure can be found in Nigeria, where ladies have a normal of six kids each. In 2010, there were about 8.2 million individuals ages 35 to 39 in Nigeria; yet 25.8 million under age 5, and 22.0 million ages 5 to 9.

Population Pyramids: Senegal, United States, and Italy





Population pyramids representation

MOST POPULOUS COUNTRIES, 2015 AND 2050

COUNTRY, 2015	POPULATION (MILLIONS)	COUNTRY, 2050	POPULATION (MILLIONS)
China	1,372	India	1,660
India	1,314	China	1,366
United States	321	United States	398
Indonesia	256	Nigeria	397
Brazil	205	Indonesia	366
Pakistan	199	Pakistan	344
Nigeria	182	Brazil	226
Bangladesh	160	Bangladesh	202
Russia	144	Congo, Dem. Rep.	194
Mexico	127	Ethiopia	165

9.8
BILLION

Projected 2050 world population, up 2.5 billion from 2015.

3,339

Population per square kilometer of arable land in South Korea.

12

Infant mortality rate per 1,000 live births in Kosovo, the highest rate in Europe.

52%

The percentage of married women ages 15-49 in Peru who use modern contraception.

28

The number of maternal mortality deaths per 100,000 live births in the United States, up from 12 in 1990.

15.5%

The percentage of women in Swaziland ages 15-24 infected with HIV/AIDS, vs. 7.2% for men in same age group.

4.4

The total fertility rate (lifetime births per woman) in Yemen.

58%

The percentage of Rwanda's parliament members who are women—the world's highest percentage.

WORLD POPULATION HIGHLIGHTS

Demographic Indicators also include Age, sex, Fertility rates, Marriage rates, DALY measurements etc.

Module 3

Module 3: Health Systems and Value for Money in Health

- Module 3 focuses on health systems. It first examines the notion of “value for money” in considering investments in health. It then reviews how health systems in different parts of the world are organized; some of the issues they face in effectively and efficiently providing appropriate services of acceptable quality; and what we are learning can be done to address those issues in cost-effective ways.
- **Graded:** Value for Money in Global Health
- **Graded:** The Organization and Aims of Health Systems
- **Graded:** Health Expenditure, the Quest for UHC, and Pharmaceuticals

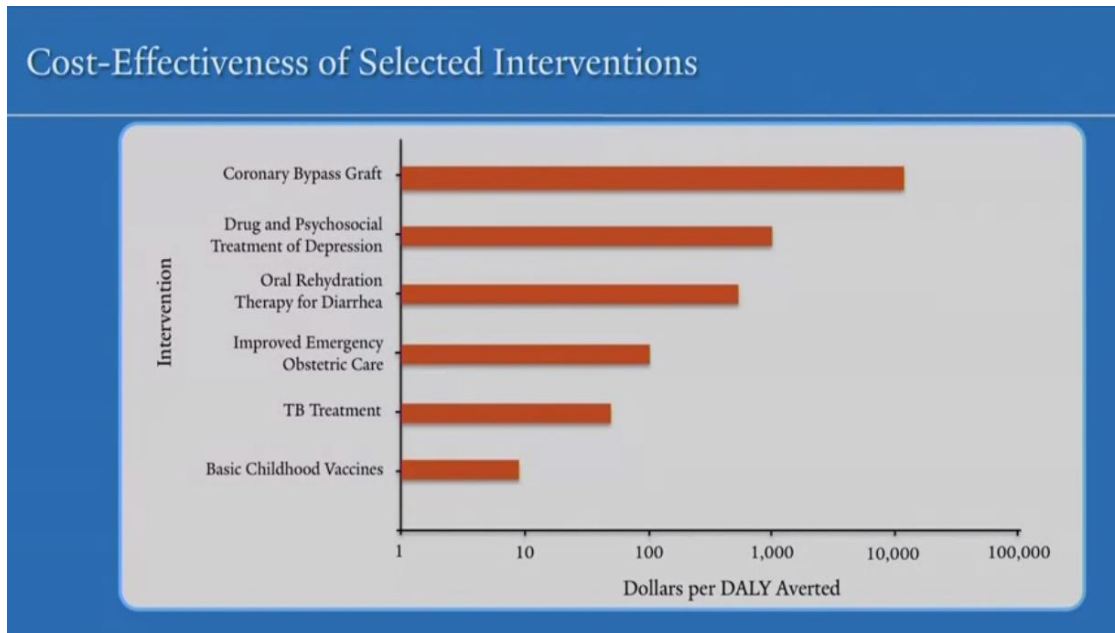
Value for money” in considering investments in health.

All legislatures need to set needs, and one device that they may use to set those needs is called cost adequacy investigation.

Definition

This can be defined in simple terms as a method for comparing the cost of an investment with the amount of health that can be purchased with that investment. The cost is the price of the investment.

Interventions in healthcare and their cost



Application of techniques of cost effectiveness analysis. So, we can look on the following: -

- Equity consideration
- Burden of disease
- Extent to which investment serves as a society.
- Impact it laid on the provisions of Insurance .

Module 4 and 5

Module 4: Cross-Cutting Themes in Global Health - Part I

- **Graded:** Health Disparities
- **Graded:** The Environment and Health and Climate Change and Health
- **Graded:** Nutrition and Global Health

Module 4: Cross-Cutting Themes in Global Health - Part II

- **Graded:** Women's Health
- **Graded:** Child Health
- **Graded:** Childhood Immunization

Module 4: Cross-Cutting Themes in Global Health - Part III

- **Graded:** Adolescent Health
- **Graded:** Complex Humanitarian Emergencies

Module 5: Critical Causes of Illness and Death - Part I

- **Graded:** Emerging and Reemerging ID and Anti-microbial Resistance
- **Graded:** HIV
- **Graded:** Tuberculosis (TB)
- **Graded:** Malaria

Module 5: Critical Causes of Illness and Death - Part II

- **Graded:** Neglected Tropical Diseases
- **Graded:** Overview of Non-Communicable Diseases, Cardiovascular Diseases, and Diabetes
- **Graded:** Cancer and Diabetes

Module 5: Critical Causes of Illness and Death - Part III

- **Graded:** Alcohol and Tobacco
- **Graded:** Mental Health
- **Graded:** Injuries

These include the relationship between the environment and health, complex humanitarian emergencies and natural disasters and health, and nutrition and health. They also include an assessment of the health of women, children, and adolescents.

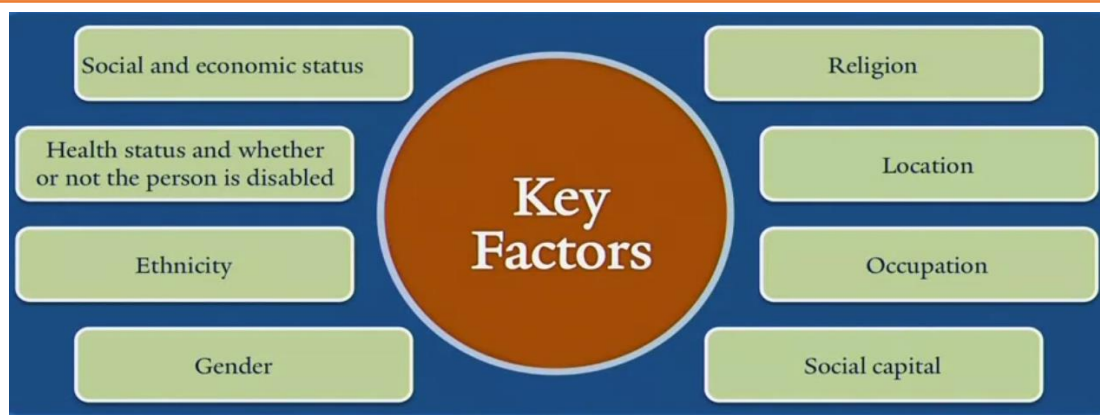
EQUITY-

Equity includes fairness, concerns about achievement of health, and the capability to achieve good health, not just to distribution of health care. Inequality concerns differences in health status, or in the distribution of health determinants between different population groups.

Health and Healthcare disparities-

Health and health care disparities refer to differences in health and health care between groups that are closely linked with social, economic, and/or environmental disadvantage.

Disparities occur across many dimensions, including race/ethnicity, socioeconomic status, age, location, gender, disability status, and sexual orientation.



Key factors of health disparities

Burden of disease-

The accompanying techniques were utilized for evaluating and summing up the burden of disease attributable to the earth, educated by earlier efficient surveys of the writing, arranged by need:

(1) Comparative hazard evaluation techniques utilizing point by point introduction and presentation chance data for all populaces; these strategies are commonly founded on the most elevated levels of proof and most thorough information.

(2) Calculations dependent on increasingly restricted epidemiological information, which require more suspicions for certain populace gatherings or geological locales.

(3) Certain ailments were completely ascribed to the earth as indicated by the data about their transmission pathways.

(4) Expert studies on populace inferable divisions, in view of a blend of the proof of the earth sickness connection or fractional CRA results.

Role of Environment

Out of 133 ailments or wounds, or their groupings, considered, 101 had noteworthy connections with nature, 92 of which have been evaluated, in any event mostly. Half of the earth inferable illness trouble was evaluated utilizing CRA strategies. The principle joins among maladies and wounds and the earth, and likely territories for intercession, are summed up in Table ES2.

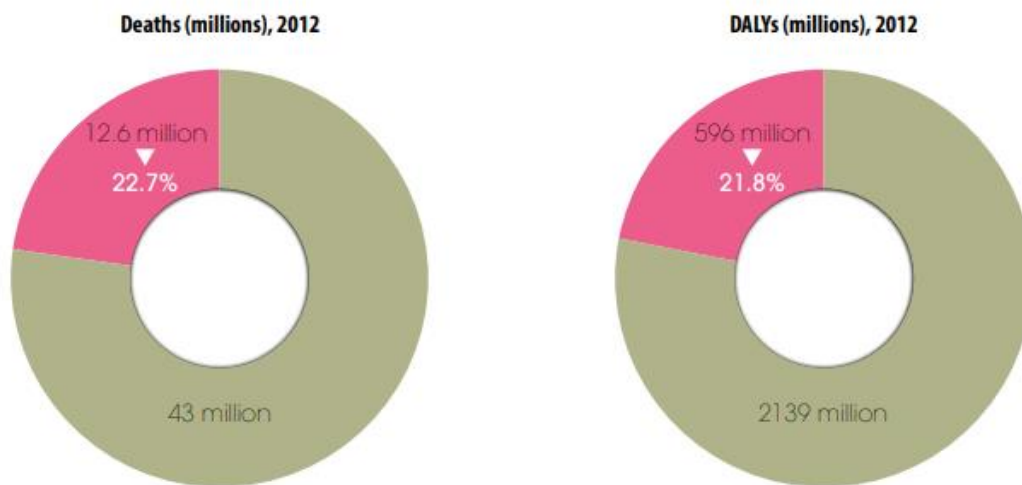
Table ES2. Diseases and injuries and key environmental interventions

Disease or injury	Main intervention areas
Infectious and parasitic diseases	
Respiratory infections	Household and ambient air pollution, second-hand tobacco smoke, housing improvements.
Diarrhoeal diseases	Water, sanitation and hygiene, agricultural practices, climate change.
Intestinal nematode infections	Water, sanitation and hygiene, management of wastewater for irrigation.
Malaria	Environmental modification and environmental manipulation to reduce vector breeding sites and reduce contact between humans and disease vector, contextually mosquito-proof drinking-water storage, livestock distribution.
Trachoma	Access to domestic water supplies, latrines, fly control, personal hygiene.
Schistosomiasis	Excreta management, safe water supply, safe agricultural practices, worker protection.
Chagas disease	Management of peri-domestic areas.
Lymphatic filariasis	Modification of drainage and wastewater ponds, freshwater collection and irrigation schemes.
Onchocerciasis	Water resource management projects (particularly dams).
Leishmaniasis	Housing, cleanliness of the peri-domestic environment, worker protection.
Dengue	Management of water bodies around the house, removing standing water.
Japanese encephalitis	Management of irrigation areas and distribution of farm animals, personal protection.
HIV/AIDS and sexually transmitted diseases	Occupational transmission in sex workers and migrant workers.
Hepatitis B and C	Occupational transmission in sex workers and migrant workers for hepatitis B; accidental needlestick injuries in health-care workers for hepatitis B and C.
Tuberculosis	Exposure of miners and other occupational groups to airborne particles such as silica or coal dust; possibly exposure to household fuel combustion smoke and second-hand tobacco smoke; exposure in settings such as prisons, hospitals and overcrowded housing conditions.
Neonatal and nutritional conditions	
Neonatal conditions	Household air pollution, mothers' exposure to second-hand tobacco smoke, poor water and sanitation in birth settings.
Protein-energy malnutrition	Water, sanitation and hygiene, climate change acting on food insecurity.
Noncommunicable diseases	
Cancers	Household and ambient air pollution, second-hand tobacco smoke, ionizing radiation, UV radiation, chemicals, worker protection.
Mental, behavioural and neurological disorders	Occupational stress; disasters such as floods, earthquakes and fires (linked to housing, flood management, climate change); forced resettlements in the context of development projects; occupations in the entertainment or alcohol industry; head trauma (for epilepsy); chemicals (for certain neurological diseases); noise (for insomnia); bright lights, poor air quality and odours (for headaches). Physical activity fostered by supportive environments can reduce certain disorders.
Cataracts	UV radiation, household air pollution.
Hearing loss	Occupational exposure to high noise levels.
Cardiovascular diseases	Household and ambient air pollution, second-hand tobacco smoke, exposure to lead, stressful working conditions, shift work.
Chronic obstructive pulmonary disease	Household air pollution, ambient air pollution, exposure to dusts in the workplace.
Asthma	Air pollution, second-hand tobacco smoke, indoor exposure to mould and dampness, occupational exposure to allergens.
Musculoskeletal diseases	Occupational stressors, prolonged sitting at work and poor work postures; need to carry large quantities of water over significant distances for domestic use.
Congenital anomalies	Mothers' exposure to second-hand tobacco smoke, chemicals.
Risk factors for noncommunicable diseases in other areas but related to the environment	
Physical inactivity	Workplace activity, prolonged sitting at the workplace, travel modes, transport infrastructure and land-use patterns, availability of suitable parks and open spaces.
Obesity	Environmental factors favouring physical activity.

Natural dangers represent an enormous part of the worldwide weight of ailment. An impressive number of passings are inferable from modifiable ecological dangers, with 23% (95% CI: 13–34%) all things considered, and 22% (95% CI: 13–32%) of the ailment trouble in DALYs – a joined proportion of time periods of life lost because of mortality and because of incapacity (Figure ES1).

Figure ES1. Fraction of deaths and DALYs attributable to the environment globally, 2012

■ Attributable to the environment
■ Not attributable to the environment



MODULE 6

Module 6: Looking Forward

- **Graded:** Recet pandemics
- **Graded :**WORK PLAN

Critical
preparedness

Surveillance
rapid response

Country level
co-ordination,
monitoring and
planning.

Risk
communication

Maintaining
essential health
services

Critical preparedness

Four transmission scenarios for COVID-19:

1. Nations without any cases (No cases);
2. Nations with at least 1 cases, imported or privately recognized (Sporadic cases);
3. Nations encountering cases bunches in time, geographic area or potentially normal introduction (Clusters of cases);
4. Nations encountering bigger episodes of neighborhood transmission (Community transmission).

Surveillance and rapid response

When methodically applied, contact following will break the chains of transmission of an irresistible sickness and is consequently a fundamental general wellbeing apparatus for controlling irresistible illness flare-ups. This archive gives direction on the most proficient method to set up contact following limit with respect to the control of COVID-19.

- Immediate Case notification system
- Contact Tracing System
- Sentinel virus surveillance
- Cluster investigations

Country level co-ordination, monitoring and planning

To be effective, any public health measure must be implementable and designed in a way that will promote willingness to comply. Urban authorities should:

- Adopt a coordinated multisectoral, whole-of-government and whole-of society approach;
- Promote coordination and coherence in measures across governance levels.
- Identify existing hazards and vulnerabilities.
- Identify and equitably protect vulnerable subpopulations.
- Consider diverse social and cultural interactions with health issues, norms and perceptions;
- Consider the extent of reliance on the informal sector or economy.
- Consider the most appropriate means of communication of information.
- Ensure continued provision of essential services.
- Ensure that health facilities are prepared for COVID-19 and identify and mobilize additional resources.

In addition to the COVID-19 strategic preparedness and response plan (SPRP)¹ and the COVID-19 strategy there are four key areas that local authorities of cities and urban settlements should focus on in ensuring preparedness for a robust response to COVID-19:

- Coordinated local plans in preparation for effective responses to health risks and impacts.
- Risk and crisis communication and community engagement that encourage compliance with measures.
- Contextually appropriate approaches to public health measures, especially physical distancing, hand hygiene and respiratory etiquette.
- Access to health care services for COVID-19 and the continuation of essential services.

Risk communication

- Ensure that the highest levels of government include RCCE in preparedness and response activities and are ready to release information to protect the public's health in a rapid, transparent, and accessible manner.
- Review existing RCCE plans and consider whether adjustments are needed for an outbreak of COVID-19.
- Agree on procedures to ensure the timely release of information, such as clearance procedures for messages and information products.
- Keep clearance chains short. Prepare a budget for communication (including scale up).
- Set up an RCCE team and define members' roles and responsibilities.

COVID-19 pandemic, the particular limit of confided in network individuals for social commitment and conveying care where it is required is perpetually basic.

- Preventing transferable sickness through conveyance of antibodies, chemoprevention, vector control and treatment.
- Avoiding intense intensifications and treatment disappointments by keeping up set up treatment regimens for individuals living with incessant conditions.
- Taking explicit measures to ensure helpless populaces, including pregnant and lactating ladies, small kids and more seasoned grown-ups.
- Managing crisis conditions that require time-delicate intercession and keeping up working referral frameworks.

Operational rules

- Designate a point of convergence for basic wellbeing administrations as an individual from the COVID-19 IMT.
- Establish channels of coordination and correspondence among the COVID-19 IMT, basic wellbeing administration customized administrators and open and private division specialist organizations.
- Establish (or adjust) systems and conventions to oversee the conveyance of basic wellbeing administrations as a team with reaction conventions, including for fortifying contamination anticipation measures.
- Establish triggers or limits for staged reallocation of limit from routine exhaustive administrations towards basic administrations, and for the re-extension and change of administrations as the pandemic advances.
- Establish components to screen the continuous conveyance of basic wellbeing administrations and join information into IMT dynamic.
- Establish or keep up coordination systems among fund and wellbeing specialists to guarantee financing for fundamental wellbeing administrations and encourage responsive adjustment, reclamation and change of administrations

Learning Methodology

- **Digital learning resources**

Mix of media - combine multimedia elements including text, image, video and audio to present information.

- **Discussion Boards –**

Where learners can post the questions or doubts after watching the sessions and reading the articles.

- **Evaluation**

Quizzes per module ensured that learners have actually understood the topic.

- **Readings**

A set of module is present to cover each and every topic.

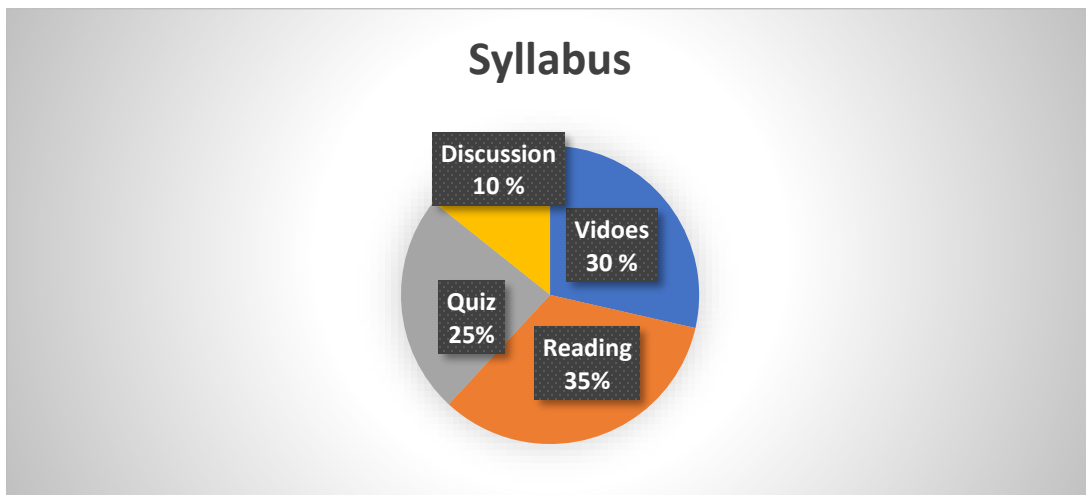


Figure 1 : Illustration of the contents of syllabus

Course module/subjects/hours of study/references /test during the end of the module if any etc. and final evaluation details;

Essentials of Global Health Yale

★★★★★ 4.8 534 ratings • 124 reviews

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About this Course

537,483 recent views

Essentials of Global Health is a comprehensive introduction to global health. It is meant to introduce you to this topic in well-structured, clear and easy to understand ways. Much of the course will focus on five questions: What do people get sick, disabled and die from; Why do they suffer from these conditions? Which people are most affected? Why should we care about such concerns? What can be done to address key health issues, hopefully at least cost, as fast as possible, and in sustainable ways? The course will be global in coverage but with a focus on low-

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Learner Career Outcomes

- 44% started a new career after completing these courses
- 45% got a tangible career benefit from this course
- 25% got a pay increase or promotion

- 100% online**
Start instantly and learn at your own schedule.
- Flexible deadlines**
Reset deadlines in accordance to your schedule.
- Approx. 56 hours to complete**
- English**
Subtitles: English

Figure 2 : Introductory details of course

coursera Explore What do you want to learn? Himani

Overview

Grades

Notes

You passed this course! Your grade is 86.90%

Item	Status	Due	Weight	Grade
Key Perspectives on Global Health	Passed	May 4	3%	100%

Figure 3 : Graded details

Learnings of Module

1. For global health solutions we require to understand the Countries having cases clusters in time, geographic location and/or common exposure (Clusters of cases).
2. The local transmission and the type of preparedness we need to have during local transmissions and epidemiological conditions.
3. Detection needs to be very precise in terms of following:
 - Emergency response mechanisms.
 - Risk communication, contact tracing and management.
 - Case Finding and tracing.
 - Public health measures.
 - Case management strategies
 - Societal responses
4. The interventions we need to have to prevent the situations.
5. There should be good assessment of public health and the calculation of DALY to know about the disease effectiveness.
6. Workplaces should develop action plans for prevention and mitigation of COVID-19 as part of the business continuity plan and according to the results of the risks assessment and the epidemiological situation.
7. Universal health coverage ensures everyone has access to the health services they need without suffering financial hardship as a result.
8. The health sector regulates the quality and safety of food and pharmaceutical products. But there should be regulation of the marketing, by satellite TV, of unhealthy lifestyles, including diets.

Recommendations & Conclusion

Recommendations to the learners can be given because of following reasons: -

1. It gives an insight about how to access the global disease conditions.
2. The responsible factors and the rationale of taking them into consideration.
3. Measurement and analyses of provided data in terms of DALY etc.
4. Learners will also come to know about the basics of strategies which should be made to deal with global health issues

ANNEXURE- References used during the course

S.NO.	ARTICLES
1.	<u>Koplan JP, et al. "Towards a Common Definition of Global Health." <i>The Lancet</i> 373:9679 (2009).</u>
2.	<u>Dick B, et al. "Health for the World's Adolescents: A Second Chance in the Second Decade." World Health Organization, 2014.</u>
3.	<u>Global Health 101, Chapter 11- "Adolescent Health"</u>
4.	<u>Buluswar S, et al. <i>50 Breakthroughs: Critical Scientific and Technological Advances Needed for Sustainable Global Development</i>. Berkeley, CA: Institute for Globally Transformative Technologies, Lawrence Berkeley National Lab, 2014.</u>
5.	<u>UNICEF. <i>Progress for Children: Achieving the MDGs with Equity</i>. New York: UNICEF, 2020.</u>
6.	<u>World Health Organization. <i>World Health Report 2020- Health Systems: Improving Performance</i>. Geneva: World Health Organization, 2020.</u>
