Covid 19 Pandemic: Some Background

By Dr. Dileep Mavalankar Director IIPHG
Pneumonia of Unknown origin started in Wuhan City (pop 1.1m) of Hubei Providence of China in Nov-Dec 2019
Some connection to Wuhan wet market – selling all kind of meat – bats
Wuhan market linked cluster, Dr. Li Wenliang – first reported

Chinese police had targeted Li for “spreading rumours” in late December 2019 after he posted a warning on social media about a cluster of cases of a flu-like disease that had been treated at his hospital. Seven patients were in quarantine and the disease symptoms reminded him of Sars (severe acute respiratory syndrome), he said. He urged colleagues to wear protective clothing at work.
Time line of Covid in Wuhan China Nov - Dec 2019-Jan 2020

Dec 30, 2019
Cluster of cases of pneumonia of unknown origin reported to China National Health Commission

Jan 7, 2020
Novel coronavirus isolated

Jan 11, 2020
First fatal case reported

Jan 1, 2020
Huanan Seafood Wholesale market closed

Jan 13, 2020
First case in Thailand reported

Jan 12, 2020
Named as 2019-nCoV; whole genome sequence shared with WHO

Jan 19, 2020
First case in Korea reported; two cases in Beijing and one case in Guangdong province reported

Jan 16, 2020
First case in Japan reported

Jan 20, 2020
Infection in health-care workers caring for 2019-nCoV patients

Jan 24, 2020
835 cases reported in China (549 from Hubei province, 286 from the other 31 provinces, municipalities, or special administrative regions)
Detailed Covid epidemic graph in Wuhan –

- A novel coronavirus was officially announced as the causative pathogen of the outbreak by China CDC.
- China CDC Level 2 emergency response activated.
- Huanan Seafood Wholesale Market closed.
- Outbreak announced by WHC; NHC and China CDC involved in investigation and response.
- Case-finding activated.
- Pneumonia cases linked to the Huanan Seafood Wholesale Market.
- China CDC publicly shared the gene sequence of the novel coronavirus; completed PCR diagnostic reagent development and testing.
- PCR diagnostic reagents provided to Wuhan.
- First confirmed case from Wuhan reported outside China (in Thailand).
- China CDC emergency response level upgraded to Level 1 (the highest level); national technical protocols for 2019-nCoV released by NHC.
- Strict exit screening measures activated in Wuhan, people with body temperature ≥37.3°C were restricted from leaving.
- First confirmed case reported in another province in China (in a person who had traveled from Wuhan); China CDC issued test reagent to all provinces in China.
- NCIP incorporated as a notifiable disease in the Infectious Disease Law and Health and Quarantine Law in China.
- Reagent probes and primers shared with the public by China CDC.
Corona virus (SARS CoV-2) – agent of Covid-19 pandemic
Mode of transmission of coronavirus

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

**Figure 1.** Transmission routes: droplet, airborne, direct contact, and indirect contact. (Indirect contact: routes involving a combination of hand and surface.) Definitions of 'droplet' and 'droplet nuclei' are from Atkinson et al.5
Biology and Physics of Covid transmission - Heavy droplets fall fast and close fine particles go farther – so 6 feet is better than 3 feet – airborne infections like measles and TB can go further.
Old city have congested markets – congested new slums – social distancing very difficult – Major spread in cities – rural areas less
Session 3: Approaches to Health Recovery – Presentation on preparedness, response and recovery of the health Sector

Dr. Dileep Mavalankar Director, IIPH Gandhinagar

Residential Workshop on “Approaches to Socio-Economic Recovery from COVID-19” Date: 01-04 March 2023 Venue: SAARC Disaster Management Centre (IU), Gandhinagar
What was the impact of covid pandemic in your country?

• Say in just one sentence by each participant -
Impact of covid in India and world

• On health and health system

• On family social life

• On economy & employment

• On government

• Other sectors – education
preparedness, response - speed of spread

• Rapidly spreading pandemic – so very little time for preparedness


• Feb 2020 spread to Europe and south east Asia

• March April spread in other countries

• March 24\textsuperscript{th} Lock down in India – for 1 month to 3 months.
Purpose of the lockdown - Impact of lockdown

• To stop spread

• To prepare the health system – people, beds, medicines,….

• To flatten the epidemic curve

• Diseases severity and consequences unknown –

• Impact of lockdown - Major disruptions
Pandemic course in India

• First wave in April – June 2020 - original strain ( moderate severity)  

• Second wave in April June 2021 - Delta strain ( very severe) 

• Third wave in Dec 2021- Jan 2022 - Omicron strain ( mild )  

• Minor waves in between also came
Health system response

• Testing development and scale up

• Treatment facilities in hospitals - isolation wards.

• Isolation and quarantine. At airports and stations...

• Guidelines and training of staff

• Recruitment / deployment of additional staff at all levels.

• Equipment and supplies – ventilator, PPE kits,

• Monitoring and strategy modification
Whole of Government Response: Health system response – governance system

- PM – national coordination system

- ICMR / DHR / AIIMS / Niti Ayog .... Technical guidance WHO / Unicef..... UNDP

- State level:
  - CM – core committee of ministers and secretaries

- Health dept committee

- Technical advisory committee / task force

- Other departmental coordination and mobilization - eg. Police, FDA...
How response change over time

• As epidemic characteristics changed and understanding evolved – guidelines changed – response changed

• Hospital to home isolation – many drugs to only simple drugs and oxygen treatment

• Reducing fear and stigma

• Increase vaccinations - hesitation to mass acceptance
Use of IT, Mass media and social media

• Lot of data collection using it

• Swasthya setu app – ITIHA system...

• Cowin app for vaccination

• Info-demic – correct and wrong information ... Whatsapp University !!!

• Role of TV and radio – social media.....
IT for communication and work

• Work from Home

• Education on-line

• Home ordering ..... 

• Zoom meetings and webinars.....
Major medical & Scientific response and future preparedness

• Building of temporary hospitals

• Ramping up of medicine production – Ramdesevir and other

• Rapid development, testing and approval of vaccine and production ramp up –

• Mass vaccination drives – using IT platform and health care staff mobilization
Recovery phase from sept 2022 on wards

• Cases and mortality down – fear down.

• Restrictions reduced life back to normal.

• Business limping backs to normal
Recovery Framework – first steps
Disruption of health services

• Normal health services affected – primary care affected

• Vaccination and MCH and other services neglected

• Chronic disease screening – BP, diabetes, cancer neglected

• Even routine surgery stopped – eg cataract, knee replacement... hernia.... Complications and suffering

• These services need to be restored and backlog cleared.
second step - Effect of health human resources for health & Recovery of HRH –

- Assessment of effect on HRH and its recovery
- Deaths and early retirements of health staff
- Some left govt services to work in private sector
- Some left working – esp nursing and para medics who can do other work or be at home..
- On other hand – health staff got great experience and high level of morale and confidence to tackle emergencies.
Step three: Future pandemic readiness as part of recovery as part of recovery frame work

• Strengthening public health and epidemic control measures - strengthening Essential Public Health Functions

• Epidemic / pandemic intelligence service – Daily / Weekly mortality and morbidity tracking

• Improving surveillance in humans and animals – syndromic and laboratory surveillance

• International cooperation and rapid information exchange – not hiding information

• Capacity development of public health workforce – increasing public health and clinical staff

• Epidemic modeling and prediction services and capacity – mathematical modeling
Step 4: Preparedness of hospital sector for future pandemics

• Spare capacity in the hospital and health sector

• Ability to set up temporary hospitals and health centers and testing centers....

• Management capacity to death with large scale pandemics / disasters

• Modification of Insurance and health program PMJAY....

• Home care facilities - Mobile care facilities – tele medicine
Step 5: Recovery and preparedness of Pharma & allied sectors

- Rapid capacity to manufacture needed drugs
- Masks, sanitizers and PPE Kits and other materials
- Vaccines development and rapid approval
- Vaccine deployment and vaccine equity.
- Strategic storage of PPE kits and key medicines
Step 6: Services for Long covid and long term health problems following covid

• Many countries mortality remains high – heart attacks, & other illnesses

• Chronic fatigue, and other health conditions have increased

• Effects of economic disruptions and social disruptions

• Special care for covid orphans, widows, disabled people, etc.

• Social and mental health support, Physiotherapy
Step 7: Control of info-demic and giving correct information

• Reducing fear and wrong information

• Providing reliable and scientific information

• Stopping rumors and panic

• Ensuring information & communication to increase compliance with “SMS” sanitation, Mask and Social distancing for covid.
Step 8: Research and social factors for disease

• increasing research and labs – setting up BSL 3- & 4 labs

• Research for Vaccines and new antiviral agents – repurposing old drugs and capacity for rapid trials to be conducted

• Increasing understating of social factors for disease transmission and control
Step 9: Increase in priority and budget for health and social sectors

- Additional budgets needed for dealing with health and social and economic impact of covid

- Especially for vulnerable people.

- Rebuilding public health system
Step 10: Recovery from indirect impacts of pandemic

- Economy, inflation, job loss & poverty
- education and child development
- mental and family relationships
- governance and management
- Nutrition
Thanks - questions ...