



INDIAN
INSTITUTE OF
PUBLIC HEALTH
GANDHINAGAR

First Public Health University

Covid 19 Pandemic: Some Background

By Dr. Dileep Mavalankar Director IIPHG

Pneumonia of Unknown origin started in Wuhan City (pop 1.1m) of Hubei Province 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.

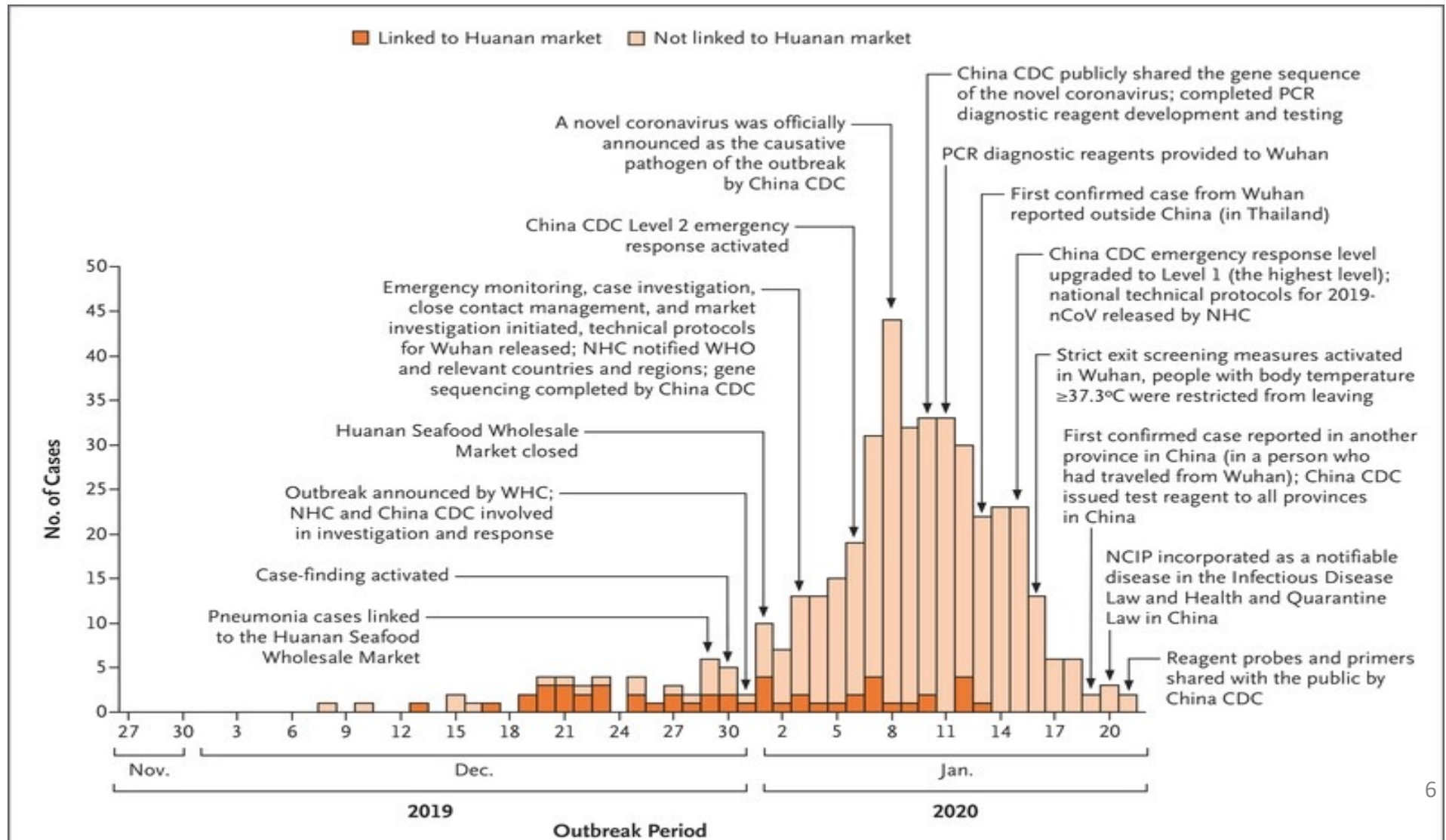
Seven patients were in quarantine and the disease symptoms reminded him of Sars (severe acute respiratory syndrome), he said. He urged colleagues to wear protective clothing at work.



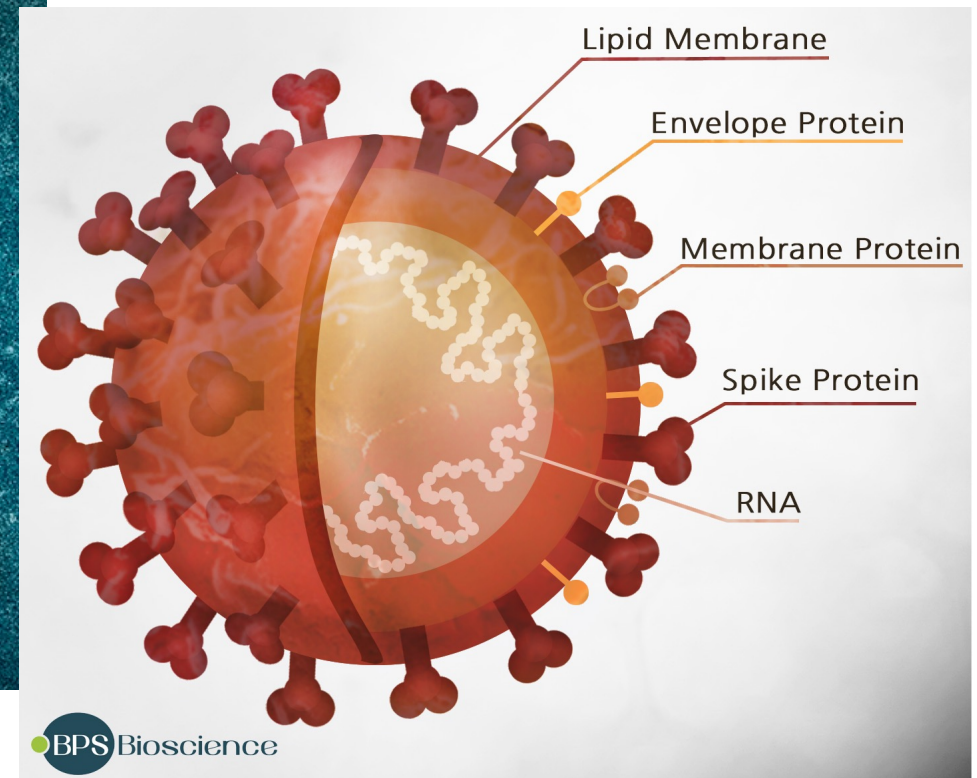
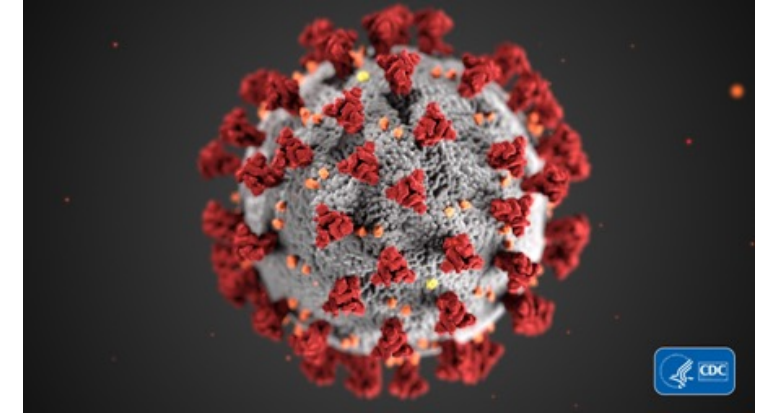
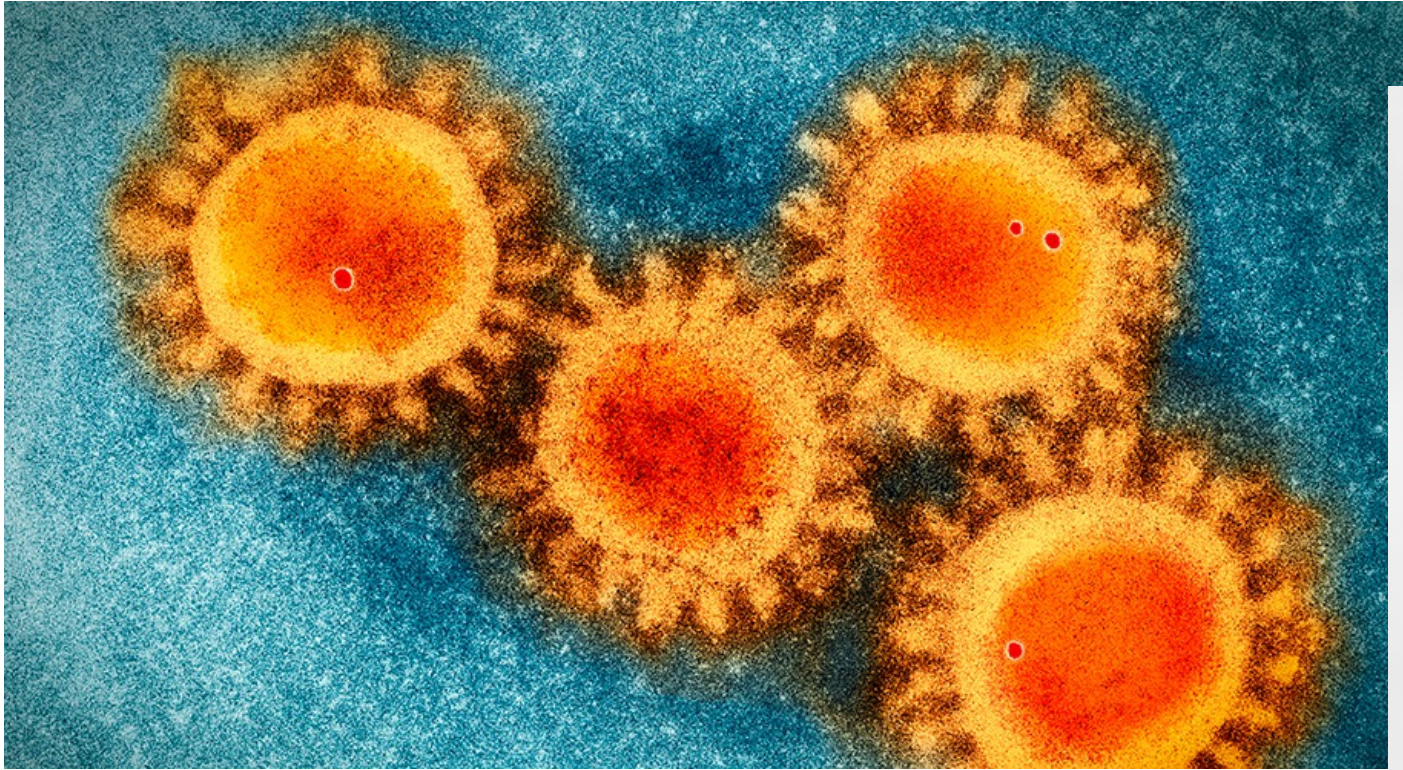
Time line of Covid in Wuhan China Nov - Dec 2019-Jan 2020



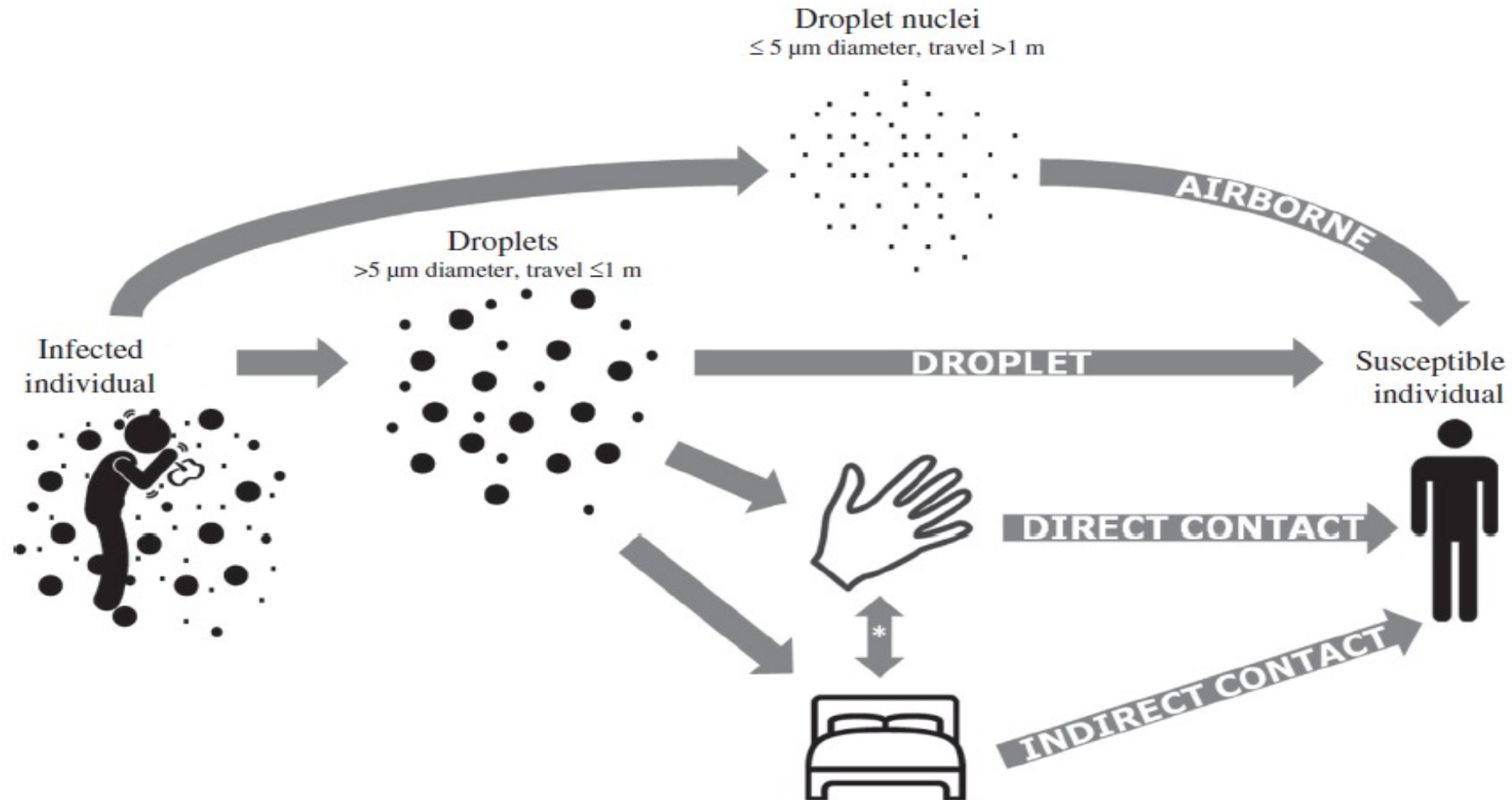
Detailed Covid epidemic graph in Wuhan –



Corona virus (SARS Covi -2) – agent of Covid 19 pandemic



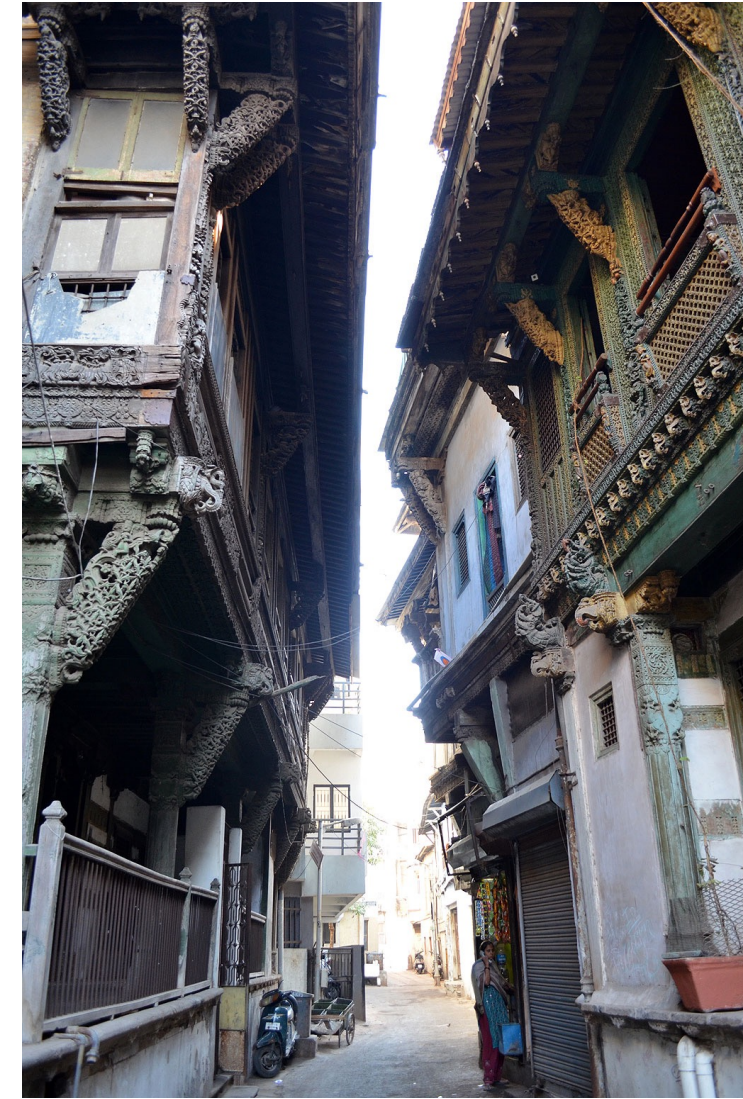
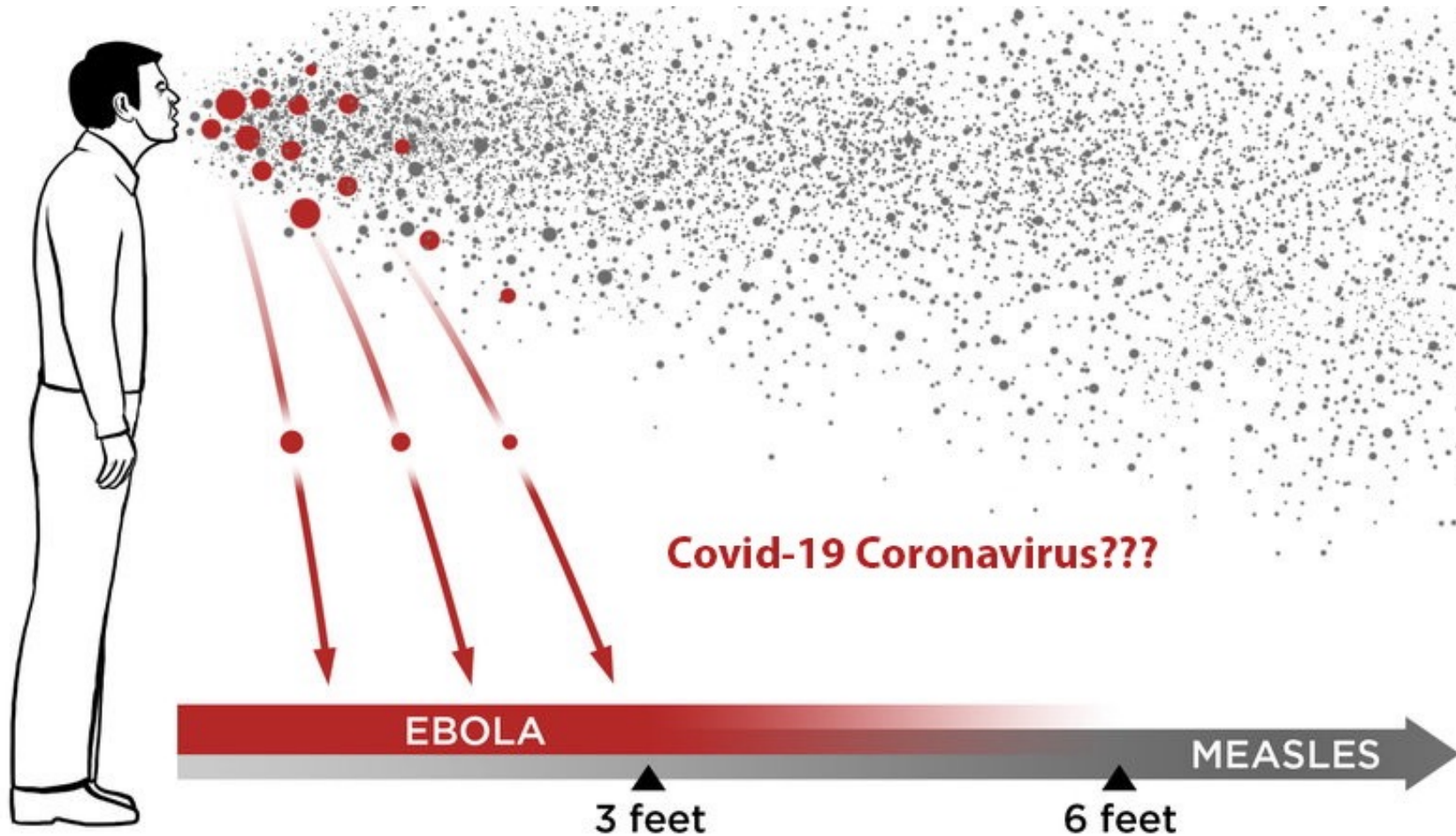
Mode of transmission of coronavirus



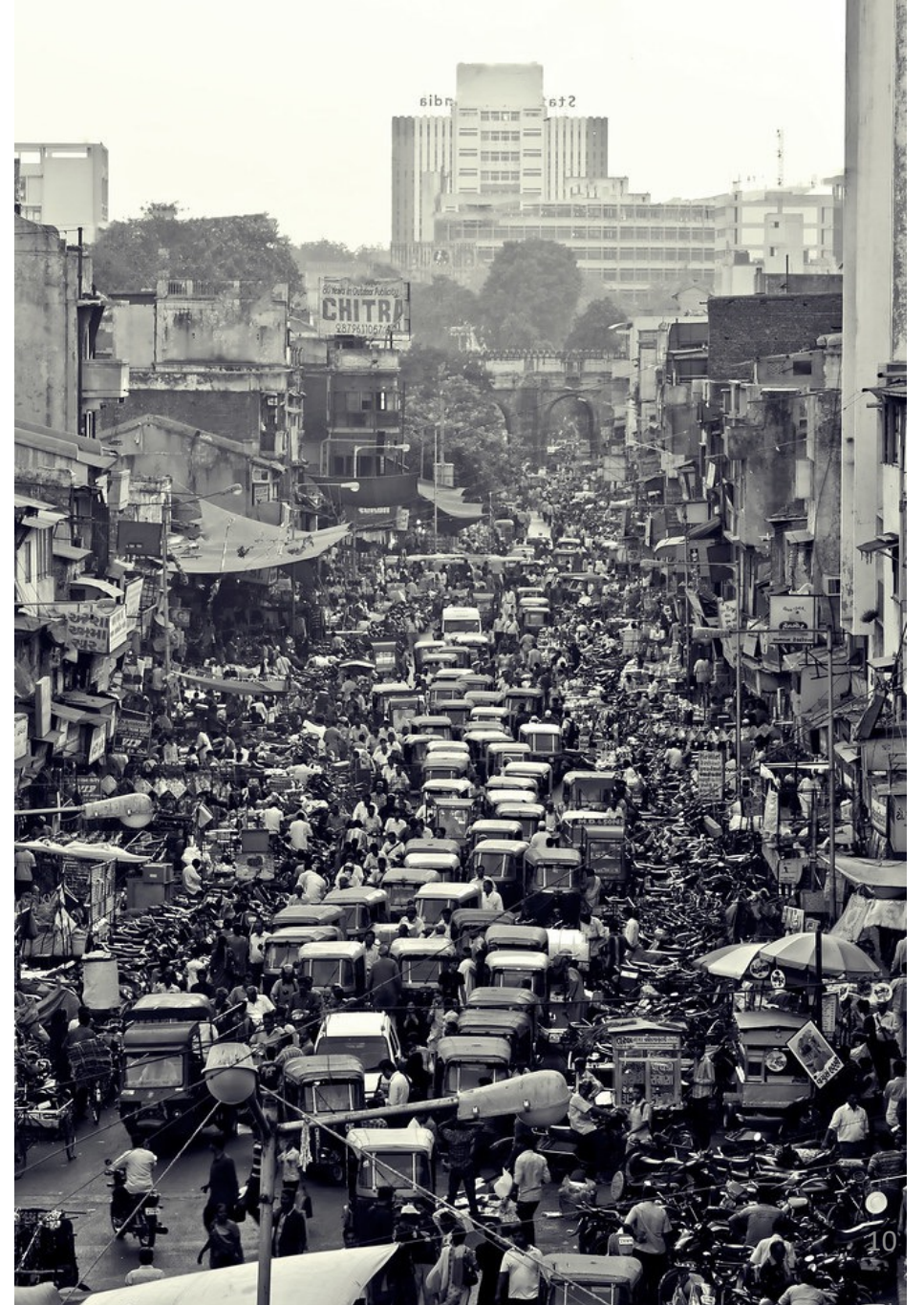
* Transmission routes involving a combination of hand & surface = indirect contact.

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
- Nov 2019- early indications – Dec 2019 cases in Wuhan – Jan 2020 spread in china and outside china.
- Feb 2020 spread to Europe and south east Asia
- March April spread in other countries
- March 24th 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 deal 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 ...