

# Medtalks with Dr KK Aggarwal

## Possible Scenarios: Coronavirus

- Hit and run virus and will disappear in 6 months.
- Join the flu on the listing of the world's winter illnesses—that will be routinely vaccinated against.
- Might take the form of a global pandemic, killing millions of people.

### Hit and run virus

Travel restrictions and quarantine were imposed in Hubei province and elsewhere over millions of people. Coronavirus is believed to have an incubation period of up to 14 days.

Deadly outbreak is tamped down by quarantines and hospitalization.

It appears that asymptomatic infections do not drive the outbreak, based on other coronaviruses. Four common coronaviruses are already endemic in people which seem to cause about 10-30% of colds, and pneumonia, as well as the more dangerous Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS), with SARS being the closest genetic match to 2019-nCoV or COVID-19.

### Will become endemic like another seasonal flu

It may go on to have seasonal behavior, with flare-up in winter like the flu. This pattern has been seen in at least two of the common coronaviruses.

This would mean that it would reappear next winter. Such a thing happened with the 1918 Spanish flu pandemic that hit the world in two seasonal waves. However, this will give us time for clinical trials to test the effectiveness of antiviral drugs including remdesivir and development of a new vaccine.

### Deadly global pandemic: Unlikely

The relatively few cases appearing in several countries may flare up worldwide in the coming months with deadly consequences. This was seen in 1957, when a flu pandemic killed 1.1 million people worldwide, and again in 1968, when another flu strain killed about 1 million people.

As per WHO, it has not seen an outbreak in doctors and nurses outside of Wuhan.

The Spanish flu outbreak of 1918 had a death rate of 2.5% and affected the young.

The new coronavirus mortality rate is lower than 2%, owing to unreported milder cases. A Chinese National Health Commission official said that the death rate in provinces except Hubei was 0.16%. That's still higher than influenza, which has about a 0.03% death rate.

Nearly 82% of COVID-19 cases are mild, 15% are severe, and 3% are critical.

## Acts Applicable to COVID-19

### Indian public health system

India has a constitutional division of legislative responsibilities between the Central government and the States. Both the Central government and the State governments are constitutionally empowered to legislate on matters of public health.

### Central Acts

#### 1. Epidemic Diseases Act 1897

The preamble states that its objective is to provide for better prevention of the spread of dangerous epidemic diseases.

It empowers the State governments and the Central government to take measures as required to control the further spread of disease.

When a State government is satisfied that any part of its territory is threatened with an outbreak of a dangerous disease, it may adopt or authorize all measures, including quarantine, to prevent the outbreak.

Likewise, the Central government, when satisfied that there is an imminent threat of an outbreak of an epidemic disease and that the provisions of the law are insufficient to prevent the outbreak, may take measures and prescribe regulations enabling inspection of any ship or vessel leaving or arriving at any port and for the detention of any person arriving or intending to sail.

Any person who disobeys any regulation or order made under the 1897 Act may be charged with an offence under Section 188 of the Indian Penal Code.

*188. Disobedience to order duly promulgated by public servant.—Whoever, knowing that, by an order promulgated by a public servant lawfully empowered to promulgate such order, he is directed to abstain*

from a certain act, or to take certain order with certain property in his possession or under his management, disobeys such direction, shall, if such disobedience causes or tends to cause obstruction, annoyance or injury, or risk of obstruction, annoyance or injury, to any person lawfully employed, be punished with simple imprisonment for a term which may extend to one month or with fine which may extend to two hundred rupees, or with both; and if such disobedience causes or tends to cause danger to human life, health or safety, or causes or tends to cause a riot or affray, shall be punished with imprisonment of either description for a term which may extend to six months, or with fine which may extend to one thousand rupees, or with both. Explanation.—It is not necessary that the offender should intend to produce harm or contemplate his disobedience as likely to produce harm. It is enough that he knows of the order which he disobeys, and that his disobedience produces, or is likely to produce, harm. Illustration—An order is promulgated by a public servant lawfully empowered to promulgate such order, directing that a religious procession shall not pass down a certain street. A knowingly disobeys the order, and thereby causes danger of riot. A has committed the offence defined in this section.

Such offence, at the discretion of the trial magistrate, may be tried summarily. No suit or legal proceeding lies against any person or authority for anything done, or in good faith intended to be done, under this Act.

Some of the issues that require revisiting - the "definition of epidemic disease, territorial boundaries, ethics and human rights principles, empowerment of officials, [and] punishment." National Centre for Disease Control is developing a "Public Health Emergencies Act".

2. **Indian Penal Code: Section 270:** *Malignant Act likely to spread infection of disease dangerous to life.—Whoever malignantly does any act which is, and which he knows or has reason to believe to be, likely to spread the infection of any disease dangerous to life, shall be punished with imprisonment of either description for a term which may extend to two years, or with fine, or with both.*
3. **MCI Ethics Regulations 2.2:** *Patience, Delicacy and Secrecy: Patience and delicacy should characterize the physician. Confidences concerning individual or domestic life entrusted by patients to a physician and defects in the disposition or character of patients observed during medical attendance should never be revealed unless their revelation is required by the laws of the State. Sometimes,*

*however, a physician must determine whether his duty to society requires him to employ knowledge, obtained through confidence as a physician, to protect a healthy person against a communicable disease to which he is about to be exposed. In such instance, the physician should act as he would wish another to act toward one of his own family in like circumstances.*

4. **MCI Ethics Regulation 7.14:** *The registered medical practitioner shall not disclose the secrets of a patient that have been learnt in the exercise of his/her profession except – i) in a court of law under orders of the Presiding Judge; ii) in circumstances where there is a serious and identified risk to a specific person and/or community; and iii) notifiable diseases. In case of communicable/notifiable diseases, concerned public health authorities should be informed immediately.*
5. **Quarantine of Visitors:** For people entering India from abroad, a health officer appointed by the Central government is posted and empowered at the port of entry.

The health officer may ask for the aircraft journey logbook, which shows the places the aircraft visited. He may also inspect the aircraft, its passengers, and its crew, and subject them to medical examinations upon arrival.

The officer should follow specific precautions about communicable diseases requiring a period of quarantine (such as yellow fever, plague, cholera, smallpox, typhus and relapsing fever) and other infectious diseases that do not require a period of quarantine.

He has the authority to prohibit the embarkation on any aircraft of any person showing symptoms of any quarantinable disease and any person whom the health officer deems likely to transmit infection.

Airline staff need to report any suspected cases or passengers who in their opinion, from observations made in flight, may be suffering from symptoms of a quarantinable disease.

With Ebola, in August 2014, the Health Ministry announced that "mandatory self-reporting is required at immigration."

6. **Right to move free**

Quarantine affects the fundamental right "to move freely throughout the territory of India." However, this right is subject to reasonable restrictions that the state may impose in the interest of public health.

## 7. Right to privacy

The Supreme Court of India has found that the right of privacy is an essential component of the right to life, but it is not absolute and may be restricted to prevent crime or disorder, or to protect health, morals or the rights and freedom of others.

### State Acts

Punjab Vaccination Act makes primary vaccination and revaccination of children compulsory throughout the state.

Epidemic Diseases Act gives wide ranging powers to the states.

The states, in such emergencies, assign some of the powers to the deputy commissioners in the districts through State Health Acts or Municipal Corporation Acts.

### State and Municipal Governments

A State government can take measures and prescribe regulations for the inspection, vaccination and inoculation of persons traveling by road or rail, including their segregation in a hospital, temporary accommodation or otherwise, if they are suspected by the inspecting officer of being infected with any such disease.

A State government, by general or special order, may authorize a deputy commissioner to exercise, in relation to his district, all the powers under Section 2 of the 1897 Act that are exercisable by the State government in relation to the state, other than to determine the manner in which and by whom any expenses are to be defrayed.

Many of these powers are prescribed in Municipal Corporation Acts governing the major municipal areas, or Public Health Acts that also provide municipal-level commissioners or collectors with quarantine or other powers. These can be in relation to removal of a person to separate premises for medical treatment, cleansing or disinfecting any building or part of any building or any articles, taking special measures in case of the outbreak of dangerous or epidemic diseases.

### Civil Rights

The extent of Section 2 of the Epidemic Diseases Act is wide enough to allow a state or a lower functionary in the administration, in dealing with an emergency caused by the outbreak of a dangerous disease, to seek or require the cooperation of the public or corporate bodies in the public or private sectors. If the desired cooperation is not forthcoming, a regulation may be imposed. Failure to obey or comply with restrictions

imposed by such a regulation constitutes a punishable violation.

### Judiciary

The judiciary in India ensures transparency in government actions and executive orders. A judicial review of executive orders and regulations can be sought. The Parliament of India has also enacted a Freedom of Information Act, requiring transparency in government actions.

### International Regulations

PHEIC: mandates reporting to WHO about disease in question.

### The Epidemic Diseases Act

#### 2. Power to take special measures and prescribe regulations as to dangerous epidemic disease:

(1) When at any time the [State Government] is satisfied that [the State] or any part thereof is visited by, or threatened with, an outbreak of any dangerous epidemic disease, the [State Government], if [it] thinks that the ordinary provisions of the law for the time being in force are insufficient for the purpose, may take, or require or empower any person to take, such measures and, by public notice, prescribe such temporary regulations to be observed by the public or by any person or class of persons as [it] shall deem necessary to prevent the outbreak of such disease or the spread thereof, and may determine in what manner and by whom any expenses incurred (including compensation if any) shall be defrayed.

(2) In particular and without prejudice to the generality of the foregoing provisions, the— [State Government] may take measures and prescribe regulations for— (b) the inspection of persons traveling by railway or otherwise, and the segregation, in hospital, temporary accommodation or otherwise, of persons suspected by the inspecting officer of being infected with any such disease.

**[2A. Powers of Central Government.]**—When the Central Government is satisfied that India or any part thereof is visited by, or threatened with, an outbreak of any dangerous epidemic disease and that the ordinary provisions of the law for the time being in force are insufficient to prevent the outbreak of such disease or the spread thereof, the Central Government may take measures and prescribe regulations for the inspection of any ship or vessel leaving or arriving at any port in [the territories to which this Act extends] and for such

detention thereof, or of any person intending to sail therein, or arriving thereby, as may be necessary.]

3. **Penalty**—Any person disobeying any regulation or order made under this Act shall be deemed to have committed an offence punishable under Section 188 of the Indian Penal Code (45 of 1860).
4. **Protection to persons acting under Act**—No suit or other legal proceeding shall lie against any person for anything done or in good faith intended to be done under this Act.

### COVID-19 Challenges: Why is It More Contagious at Some Places?

The way COVID-19 has spread in local clusters, onboard Diamond Princess and in a church in Korea, has opened questions about its contagiousness.

- It is a droplet infection: Passes through droplets from coughing or sneezing. When these droplets carrying the virus from an infected person reach the nose, eyes or mouth of another person, they can transmit the virus.
- High viremia in early illness.
- It is infectious in both upper respiratory tract infection (URTI) and lower respiratory tract infection (LRTI) stage: Respiratory illnesses can be segregated into two categories: upper respiratory infections - involving the nose, pharynx or larynx (common cold and seasonal influenza); and lower respiratory illnesses - like pneumonia, which affect the lungs.

The original 2003 SARS virus was a lower respiratory infection: It replicated in the cells within the lungs and caused pneumonia. People also appeared to spread the virus days into their illness. Thus, it was more difficult to transmit SARS to others and the task of containing the virus became easier.

COVID-19 appears to be different. While it can also lead to pneumonia, by replicating in the lung cells, it can replicate in the upper respiratory tract as well, even when people don't have any symptoms or just begin to feel sick.

In a paper published in the *New England Journal of Medicine*, German researchers isolated the virus from patients' upper respiratory tract even before they began to show any symptoms. This provides additional evidence for asymptomatic spread of the virus from the nose and throat.

- The virus might also spread through feces: In a paper from the Chinese Center for Disease Control and Prevention (CDC), researchers could isolate live virus from stool samples of COVID-19 patients.

This suggests that the disease could spread when there's suboptimal hygiene. China CDC has therefore recommended measures to stop the spread of the virus through this route. The advice includes: maintaining environmental health and personal hygiene; drinking boiled water, avoiding raw food consumption and implementing separate meal systems in epidemic areas; frequently washing hands and disinfecting surfaces of objects in households, toilets, public places and transportation vehicles and disinfecting the excreta and environment of patients in medical facilities to prevent water and food contamination from patients' stool samples.

More research is needed to understand the significance of fecal-oral route in the spread of this disease.

- Airborne transmission: During the first SARS outbreak, a large Hong Kong housing estate became ground zero when more than 300 people were infected with the disease through airborne transmission.

Such a condition arises when the residue from evaporated, virus-containing droplets gets suspended in the air and goes on to infect those who breathe it in. This is not droplet transmission, since droplets are too large to float through the air and need to be sprayed directly on someone's eye, nose, or mouth in order to infect them.

In this particular case of transmission, it was later found that SARS was capable of going airborne, spreading through the building's faulty plumbing and ventilation systems to the people who lived on the estate.

Vito Iacoviello, chief of the vision of infectious diseases at Mount Auburn Hospital in Cambridge, Massachusetts, has noted that the US CDC is recommending people admitted with COVID-19 to be put in an airborne isolation room. That is the precaution used for TB, measles and chickenpox.

- The super-spreader: The  $R_0$  value of the individual may be more than the  $R_0$  value of the virus or the person has more viruses than the others. It has been seen that an HIV-positive person sheds less virus than HIV + STI-positive person. We may need to find out the additional factor which intensifies the spread.
- Contact period: The virus may survive on the surface longer than thought. Similar viruses have been surviving for up to a week.