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COVID-19: A Global Threat

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ABSTRACT

Infection with the novel coronavirus (COVID-19) in 2019 is an unprecedented public health emergency of international concern. There are severe awareness gaps in epidemiology, transmission patterns, governance, and forensic strategies. Six types of coronaviruses are suspected to induce human diseases, like those of common colds, extreme acute respiratory syndromes, and respiratory syndromes in the middle east. Coronaviruses are an engulfed community of viruses with single-beach, non-segmented, positive natured RNA sequences. Coronavirus has distinct and unique physiology, the name originating from the exterior fringe, or 'Corona' of the encapsulated envelope protein. Affiliates of the family *Coronaviridae* exacerbate a broad spectrum of animal and human outbreaks. Replication of the RNA genome arises only across the generation of an embedded pair zoonotic mRNA molecule. The coronavirus is vicariously liable for respiratory infections as well as for pneumonia, coughing, coldness, snoring, upper respiratory sicknesses with diarrhea. are caused in animals. The disorder is an acknowledgment by PCR-based monitoring of adequate respiratory swab. Benchmark infection control and risk reduction strategies must be accompanied. It is necessary to assess suspect cases and contact with them. Isolation of indicative instances and symptomless interaction with home quarantine is mandatory. To conclude, the regulation of this intensively contagious disease necessitates International coordination.

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INTRODUCTION:

The novel coronavirus eruption that we are suffering illustrates the times in which we live. There is a threat of catastrophic pandemics leading to fatalities, economic losses, and civil destabilization in the world. The existing eruption would be a benchmark of how well prepared we are for such a drastic, virulent respiratory disease outbreak. At the end of December 2019, frequent Wuhan health services recognized a multitude of patients emerging from the mysterious impacts of pneumonia. These instances were epidemiologically affiliated in Wuhan, Hubei Province, China, with the wholesale market of marine and wet animals. The WHO designated Covid-19 to be a public health urgent situation of the international ongoing crisis on 29 January. The very first corroborated scenario of Covid-19 has been admitted to the hospital in India on 30 January 2020. This ailment was assigned to as COVID –19 (Coronavirus disease – 2019) by WHO on 11 February 2020. Coronaviruses, as outlined in the World Health Organization (WHO), are a diverse community of pathogens that may also threaten birds and mammals, particularly humans. Coronavirus propagates to humans by direct contact with airborne droplets, causing due to coughing, sneezing, hugging, and smooching. Stop these behaviors with compromised friends and family members. Coronavirus can be transmitted by pet animals such as dogs, cats, pigs, cows, turkeys. So stop touch and separate if you encounter any illnesses such as diarrhea, cold, fever. COVID-19 is indeed an on-going epidemic. New insights into the pathophysiology, propagation mechanisms, clinical attributes, and maintenance of this virus are emerging. This is a highly communicable virus, but the mortality rate is lower relative to SARS and MERS. National and international health authorities have indicated good collaboration in the management of this epidemic, and more international collaboration is required. Only time will tell how this tale of COVID-19 unfolds.

Yet the current trajectory for this outbreak is unclear. This report provides a panoramic perception of this new strain. Since awareness about this strain is progressively growing, readers are encouraged to update themselves regularly. Benchmark infection control and risk reduction strategies must be accompanied. It is necessary to assess suspect cases and contact with them. Isolation of indicative instances and symptomless interaction with home quarantine is mandatory. To conclude, the regulation of this intensively contagious disease necessitates International coordination.

MICROBIOLOGY:

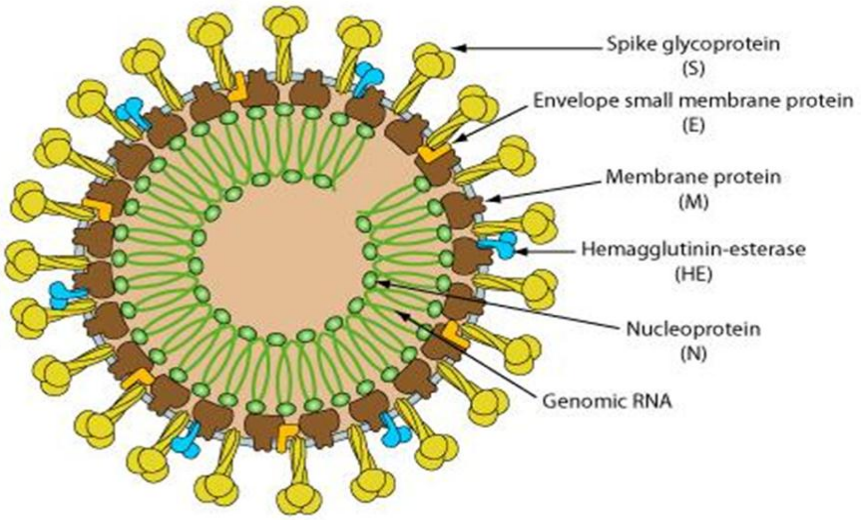

Figure No. 1: CORONA VIRUS STRUCTURE

The spherical RNA - surfaced coronavirus is single-stranded, encased with glycoprotein modeled as a club. The four subgroups of corona pathogens are Beta, Delta. Gamma and Alpha corona. There are multiple serotypes of each subgroup of that same coronavirus. Some of them contaminated humans, including cats, mice, pigs, and ducks with other tainted animals.

TYPES:

Coronaviruses are the key component of the *Coronavirinae* subspecies in the *Coronaviridae* community. Distinct categories of human coronaviruses differ in the degree to which the corresponding disorder may become serious and the extent to which it can propagate. Doctors primarily acknowledge seven categories of coronavirus that would proliferate humans.

Common Types:

1. OC43 (beta coronavirus)
2. 229E (alpha coronavirus)
3. HKU1 (beta coronavirus)
4. NL63 (alpha coronavirus)

Infrequent pathogens that mostly induce further critical ramifications include MERS-CoV that provokes Middle East Air Syndrome, and SARS-CoV causing severe ARS. During 2019, there started to spread a strange new infection called SARSCoV-2, which triggered COVID 19 illness.

CHARACTERISTICS:

A study released on 24 January 2020 suggests that sufferers with corona pathogen illness have several common attributes including nausea, cough, and discomfort. Most sufferers had bilateral anomalies. In 2020, the bronchoalveolar fluid lavaging coronaviruses in China were confined. This is also present in samples of blood. To date, a proprietary urine and feces study has not indicated a corona pathogen.

CORONAVIRUS LIFE CYCLE:

The leaps embroiled in the development cycle of the coronavirus were as follows;

1. Attachment and entrance.

2. Replicase protein expression.

3. Replication and transcription.

4. Assembly and release.

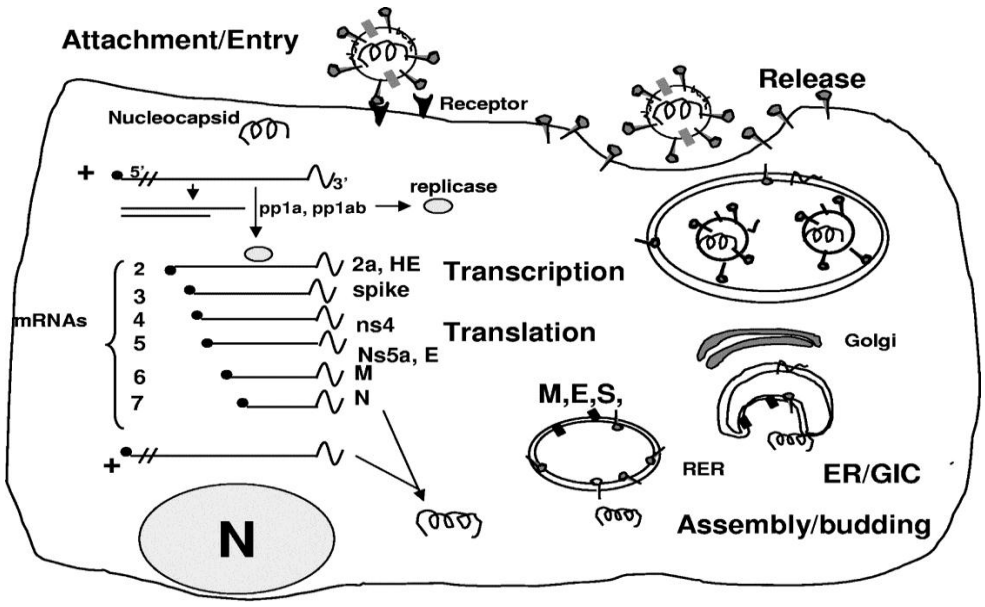

Figure No. 2: CORONA VIRUS LIFE CYCLE

SPREADING OR TRANSMISSION:

A survey about how HCoV propagates from individual to individual is minimal. Investigators however claim that pathogens are disseminated through liquids in the respiratory region like that of mucus.

The tiny droplets are dispersed through the air through cough and sneezing without shielding the mouth. Touching or shaking hands only with an individual who has an infection would propagate the infection amongst the people. Making interaction with the exterior or entity that has the pathogen, and then followed by touching the nose, eyes, or mouth. Some animal coronaviruses, such as feline coronavirus (FCoV), can be transmitted via feces. The National Health Institute (NHI) estimates that certain classes of individuals are more likely to experience medical problems due to COVID-19. However, it's still questionable if this refers to human coronaviruses. These factions shall include:

1. Young kids

2. People 65 years of age or older

3. Women who have been pregnant

Corona pathogens can strike the majority of people at some point in their lifespan. Corona pathogens can metastasize effectively, rendering them so infectious. People should remain at homes and relax while indications function for dissemination prevention. These interactions should also be stopped. Completely covering the mouth and nose with tissue or handkerchief while coughing or sneezing may also assist to eliminate propagation. Tissues should be cleaned upon utilization and sanitation should be preserved all over the building. Coronavirus has usually been propagated by pathogenic airborne droplets. A ciliated epithelium pathogen that caused cell harm and contagion at the site of inflammation has been duplicated. The propagation pathways of pathogens have been shown in Figure No. 3 and 4.

Figure No. 3: TRANSMISSION OF CORONA VIRUS VIA AIRBORNE DROPLETS

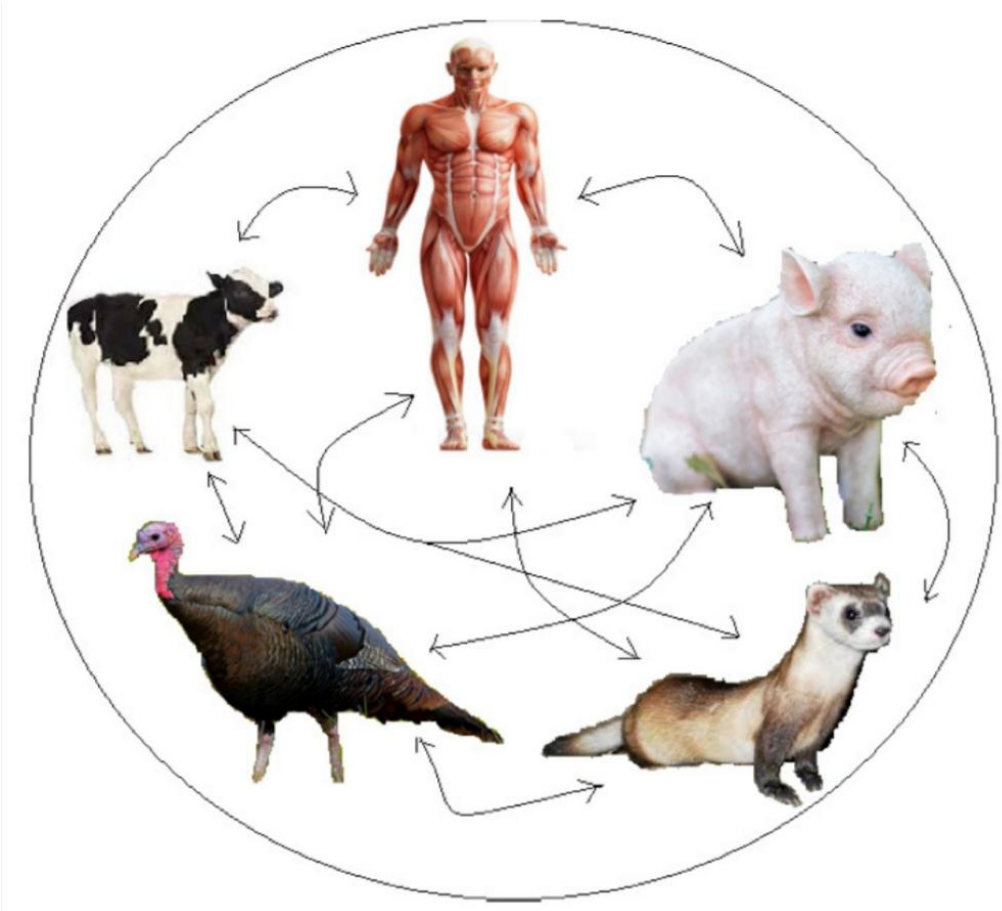

Figure No. 4: CORONA VIRUS TARGETS

Table No. 1: THE DIRECTOR-GENERAL ALSO NOTED THAT THE RISK OF SERIOUS COMPLICATIONS INCREASES WITH AGE ACCORDING TO THE WHO[6]

Stage of severity	Rough percentage of people with COVID-19
Mild disease from which a person can recover	More than 80%
Severe disease, causing breathlessness and pneumonia	Around 14%
Critical disease, including septic shock, respiratory failure, and the failure of more than one organ	Around 5%
Fatal disease	2%

COMMON SYMPTOMS:

The common symptoms include,

1. Fever

2. Breathlessness

3. Cough

4. This may bring 2–14 days for an individual to recognize ailments after the following illness.

The time frame for incubation ranges from 2 days to 14 days from exposure to affected humans. So many individuals seem to have problems such as pain and aches, nasal congestion, runny nose, sore throat, or diarrhea. The most serious abnormalities include fever, cough, respiratory dysfunction, pneumonia, and acute respiratory dystrophy. Probably, such a contaminated individual might not have some of these ailments. In several instances (80 percent), the outbreak would be benign that need no spectacular diagnosis. In extreme situations, notably in elderly people as well as those with comorbid circumstances, the outbreak may result in impeded kidney and liver mechanisms likely to lead to organ incompetence and death. The overall scenario death rate is 2–3.4%.

Table No. 2: THE NUMBER OF CASES AND DEATH OF COVID-19 OUTBREAK ACCORDING TO WHO SITUATION REPORTS ON 13 APRIL 2020

Country	Cases	Deaths	Region
United State	525414	20444	Europe
Spain	166019	16972	Europe
Italy	156363	19901	Europe
Germany	123016	19901	Europe
France	94382	14374	Europe
China	83597	3351	Asia
South Korea	10537	217	Asia
Japan	7255	102	Asia
Malaysia	4683	76	Asia
United Arab emirates	4462	59	Asia
Singapore	2532	8	Asia
Australia	6322	61	Australia
Viet nam	262	0	Australia

Table No. 3: STATE/UT WISE LIST OF COVID CONFIRMED CASES UP TO APRIL 15, 2020.

Name of State/UT	Total Confirmed Cases	Cured	Death
Andaman And Nicobar Islands	11	10	0
Andhra Pradesh	483	16	9
Arunachal Pradesh	1	0	0
Assam	32	0	1
Bihar	66	29	1
Chandigarh	21	7	0
Chhattisgarh	33	13	0
Delhi	1561	30	30
Goa	7	5	0
Gujarat	650	59	28
Haryana	199	34	3
Himachal Pradesh	33	13	1
Jharkhand	27	0	2
Karnataka	260	71	10
Kerala	387	211	3
Madhya Pradesh	730	51	50
Maharashtra	2687	259	178
Manipur	2	1	0
Mizoram	1	0	0
Meghalaya	1	0	0
Odisha	60	18	1

Puducherry	7	1	0
Punjab	176	14	12
Rajasthan	969	147	3
Tamilnadu	1204	81	12
Telangana	624	100	17
UT of J&K	278	30	4
UT of Ladakh	15	10	0
Uttar Peadesh	660	50	5
Uttarakhand	37	9	0
West Bengal	213	37	7
Tripura	2	0	0
Number of confirmed cases in India India	**11439***	**1306**	**377**

CRITERIA FOR EVALUATION FOR COVID‑19:

Any person fulfilling the following criteria must be assessed for COVID-19,

1. Fever and/or signs/symptoms of lower respiratory illness (e.g. cough or shortness of breath) with or without the requirement for hospitalization.

2. Travel background from China or places that record reported COVID-19 instances within 14 days of ailments. These comprise Japan, Italy, Iran, Germany, Spain, and France as well as the Republic of Korea.

3. Every person who has frequent contact with a laboratory-confirmed sufferer with COVID-19 throughout 14 days of symptoms onset, along with the health care provider.

MANAGEMENT:

- Supportive care: Management is mainly supportive in early cases and organ support in intensive care in the form of non-invasive and invasive mechanical ventilation, ECMO, renal replacement therapy in critically ill patients. The WHO and MOHFW have come up with management guidance documents for 2019 nCoV which are updated regularly based on available evidence.

- Role of Corticosteroids: WHO advises against regimen employment of corticosteroids for nCoV associated pneumonia outside of clinical trial except when needed for other indications. Corticosteroid's use during SARS CoV and MERS CoV outbreak were associated with an adverse outcome like delayed clearance of viral RNA from blood. In

SARS CoV patients, steroids use was associated with adverse events like psychosis, diabetes, and increased risk of avascular necrosis. Some benefit of corticosteroid therapy was shown in carefully selected critically ill SARS patients. Corticosteroids have been used in many patients during the current outbreak of 2019 nCoV by Chinese experts. At present insufficient evidence exists to recommend regimen employment of corticosteroids and its employment should have been judicious in critically ill patients at the lowest dose for the shortest time. The outcome of ongoing studies will provide further evidence for or against steroids.

- Potential therapeutic agents: At present no explicit antiviral counseling is available for coronaviruses. Existing therapies are being repurposed for use in this outbreak based on animal studies and experience with SARS and MERS CoV. The most promising of these being protease inhibitors lopinavir and ritonavir which have been employed in many patients in China and other countries. Some patients with SARS and MERS CoV had shown a favourable response to lopinavir/ ritonavir. Remdesivir is another potential drug with an ongoing trial in China. It was used in the case of nCoV in the US with a favorable outcome. Baricitinib is another potential drug candidate. There is effectively no vaccination accessible.

VACCINATION:

It is also without a special vaccine. The only sympathetic drug treatment is the therapeutic approach accompanied by healthcare professionals. Appreciative counseling covers the establishment of antipyretic and analgesic medication, hydration, mechanical ventilation as respiratory medication, and antibiotic application in bacterial outbreaks. Some experiments found that the early synergetic effect of ribavirin and interferon alpha was. While other studies reported mycophenolic acid as monotherapy. Still, health professionals were not fully satisfied with any therapy so further clinical research needed.

PREVENTION:

At present, there are no vaccines to prevent COVID-19. Hence, the best approach to safeguard yourself against COVID-19 is to avoid exposure to persons suspected or confirmed to have COVID-19.

- Hand hygiene: Hands have to be washed often with soap and water for at least 20 seconds, especially after going to the bathroom, before eating, when hands are visibly dirty

and after blowing your nose, coughing, or sneezing. Use of an alcohol-based hand sanitizer with a minimum of 60 percent alcohol if soap and water were not accessible.

- Respiratory hygiene: Mouth and nose should be covered while coughing or sneezing with a tissue and throw the tissue into a closed bin followed by hand hygiene. It is also advised to cough into the bend of the elbow. A minimum distance of at least 1 m (3 feet) can and should be established among participants as well as those with coughing, sneezing, and fever. Congested locations and social events of the populace must be prevented.

- Frequent fever evaluation would be passed out and individuals with medium respiratory ailments should be counseled to remain at home. Any experience of fever, cough, and breathing difficulty especially if the employee has traveled to any of the countries reporting COVID-19 cases or had close contact with a confirmed/suspected case of COVID-19 within 28 days should be reported immediately to the health facility.

- WHO does not any advice on the utilization of facemask by healthy people. Facemasks are recommended for individuals who demonstrate ailments of COVID-19 to limit the spread and dissuade the spread of the virus to others. Using facemask is extremely important for the health workforce and people who are taking fledge of a suspected or a confirmed case in close settings (at home or in a health care facility). If a mask is worn, a medical mask is to be used, ensuring that it fits well and that there are no gaps between the mask and the face. Masks should be discarded in a closed bin when it is damp, followed by hand hygiene. Individuals should avoid touching the nose, mouth, and eyes when the mask is on.

- Environmental hygiene should be maintained especially in common areas used by employees like restrooms and canteens. Regular cleaning and disinfection of frequently touched objects and surfaces using regular disinfectants is necessary. Windows and doors should be kept open for cross-ventilation.

- In the incident that employees travel on the job, they should be persuaded to be careful and circumvent attending live animal market places, wet markets, or the markets for livestock product lines. Overconsumption of raw or uncooked processed foods should always be bypassed. Subjective hygiene must be retained at all times.

QUARANTINE AND RISK OF TRANSMISSION:

Quarantine is an individual or group of people prone to COVID-19, but not yet sick (symptoms, etc.) have been isolated by quarantine to eliminate the chances of transmission of the pathogen from person-to-person. The duration of quarantine depends on the incubation period of COVID-19, which is 14 days from the last date of exposure. MOHFW has also suggested a quarantine of 14 days for people returning from China, Singapore, Japan, the Republic of Korea, Iran, Italy, Spain, France, and Germany. People released from COVID-19 quarantine are not considered a risk for spreading the COVID-19.

TRAVEL ADVISORY:

Based on publicly relevant data, the WHO does not advocate international transportation or trade sanctions. The WHO has also recommended training countries for containment, successful control, earlier monitoring, containment and case mitigation, exposure tracking, and SARS-CoV-2 avoidance and the exchange of information with WHO. Ministry of Health and Family Welfare (MOHFW), Government of India has advised to refrain from travel to China and refrain from nonessential travel to Singapore, Spain, France, Germany, Japan, the Republic of Korea, Iran, and Italy.

SUGGESTED INTERIM GUIDELINES FOR WORKPLACES:

- Any employee with ailments of acute respiratory sickness like fever (temperature more than (100.4°F [37.8°C]), with mild respiratory symptoms, should have been empowered to settle at home. Those who are having severe respiratory symptoms such as difficulty in breathing should seek health care at the earliest, and if possible, with prior appointment.

- Separate sick employees—any employee who reports sick to the workplace or becomes sick at the workplace this could be isolated from the rest. These employees should be educated about respiratory hygiene and should be provided a medical mask and sent home or to a hospital immediately according to the symptoms.

- Job seekers should be adaptable with paid sick leave proposals to prohibit the propagation of the pathogen.

- All workers should emphasize the importance of respiratory safety and sanitation. Ensure that appropriate tissue paper and soap/hand disinfectants are obtainable in the working environment.

- Researches show that COVID-19 could survive on the substrate for some or a few hours and therefore, regular environmental cleaning is recommended with a disinfectant. Make sure the workplace, workstations, and commonly used surfaces like doorknobs, washrooms, keyboards, telephone, remote controls are frequently wiped using disinfectant or cleaning agents.

- Travel advise to employees—specific travel advice should be provided to employees traveling to and from China and countries with active infection. Employees returning from affected countries should live 14 days at home irrespective of the presence or absence of symptoms.

- Informational/educational materials about "Do's and Don'ts", personal hygiene, and other relevant health messages should be displayed at prominent places.

PRACTICE POINTS FROM AN INDIAN PERSPECTIVE:

The coronavirus risk is remarkably moderate in India when this article was published & published. Perhaps in the coming several weeks, that could change. Hence the following is recommended:

- All sufferers with respiratory disorders and international commute must bring travel background to the healthcare providers in the past 2 weeks as well as contact with sick people who have traveled internationally.

- In the emergency section, you can build a triage program for individuals with respiratory diseases and give everyone a clear operative mask to wear. We must use protective masks along with hand-hygiene protocols for the treatment of these individuals themselves.

- Instances claimed to have been assigned to government isolation and test centers. Consumer screening tests are not yet inexpensive in India.

- Sufferers diagnosed with an extreme infection and acute respiratory trauma disorder should always be examined for traveling history and put under contact and isolation. Regular

remediation of materials would be carried out. These should be screened for pathogenesis employing multiplex PCR panels if infrastructure permits and if no pathogen is detected, refer to samples for testing for SARS-CoV-2.

- Every practitioner should remain up-to-date on emerging trends, particularly global outbreak dissemination.

- At this time, non-essential international traveling should always be excluded. People must avoid disseminating rumors and misleading theories about the outbreak and seek to alleviate community fear and anxiety.

Please Note: COVID-19 is an emerging viral disease and for the latest updates please visit the WHO or MOHFW GOI websites.

MOHFW GOI Helpline number: +91-11-23978046;

MOHFW GOI Helpline email id: ncov2019@gmail.com

MOHFW twitter: https://twitter.com/MoHFW_INDIA

CONCLUSION:

Coronavirus propagates to humans by direct contact with airborne droplets, causing due to coughing, sneezing, hugging, and smooching. Stop these behaviors with compromised friends and family members. Coronavirus can be transmitted by pet animals such as dogs, cats, pigs, cows, turkeys. So stop touch and separate if you encounter any illnesses such as diarrhea, cold, fever. COVID-19 is indeed an on-going epidemic. New insights into the pathophysiology, propagation mechanisms, clinical attributes, and maintenance of this virus are emerging. This is a highly communicable virus, but the mortality rate is lower relative to SARS and MERS. National and international health authorities have indicated good collaboration in the management of this epidemic, and more international collaboration is required. Only time will tell how this tale of COVID-19 unfolds.

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