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WAR AGAINST COVID-19

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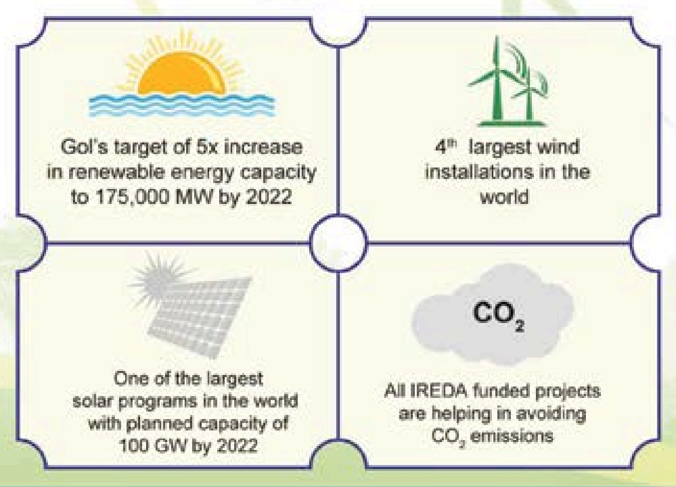

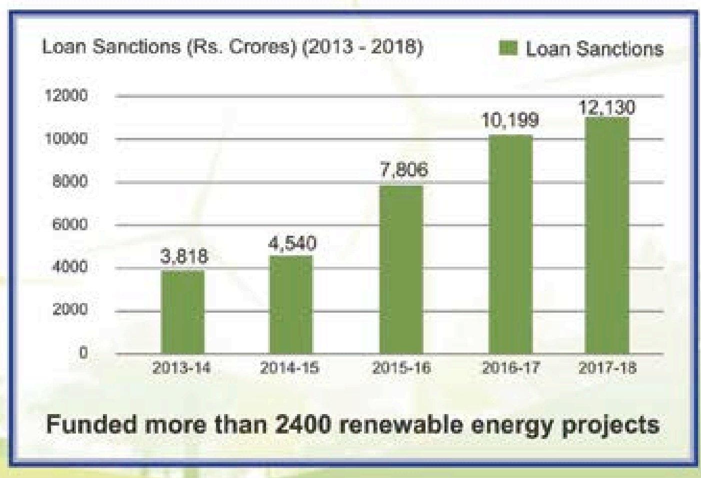

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Mount a United Offensive against Corona!

Dear Readers,

Thanks for your continuous support. Legendary poet C F Alexander refers to the significance of gaiety and naturalness in these immortal lines: "All things bright and beautiful , all creatures great and small, all things wise and wonderful , each little flower that opens, each little bird that sings, the purple-headed mountain, the river running by, the sunset and the morning that brightens up the sky ..." If we are not healthy (do not feel in the state of physical, mental and social well being), we cannot enjoy happiness in life.

Today there is holocaust all over the world due to unprecedented outbreak of Coronavirus. Now question is – from where it originated either from China's lab where research on bat was going on or from other natural causes? It is still mysterious. Some claims that it is due to negligence of an intern who was at China Wuhan's lab and already on the job of research. Recently, US President Donald Trump and other countries have also accused China of misleading the world about the severity of the outbreak, and there are growing calls for an international inquiry into the origins of the virus. As coronavirus continues to exact a huge toll on the economy and human lives across the world, the war of words between the US and China over the origin of COVID-19 shows no sign of de-escalation. The latest row threatens to turn the US-China relationship, already frayed due to the trade war, from bad to worse. But who is right or wrong, it is still a matter of investigation.

If we talk about preparedness and control over Covid-19 in India, the government deserves appreciation for adopting an effective containment strategy to contain the disease within a defined geographic area by early detection of cases, breaking the chain of transmission and thus preventing its spread.

As per a statement issued by the Union Health Ministry, India has adopted a strategic approach taking into account different possible factors such as travel-related cases, local transmission of COVID-19, large outbreaks amenable to containment, and widespread community transmission.

There are 216 districts which have not reported any cases till date. As many as 42 districts have seen no fresh cases in the last 28 days, while 29 districts have seen no fresh cases in the last 21 days. A total of 36 districts have seen no fresh cases in the last 14 days, and 46 districts have seen no fresh cases in the last 7 days.

The Ministry of Health has issued additional guidelines for states quarantine/ facility isolation in hotels, service apartments, lodges etc., for returnees from abroad/contacts/ isolation of suspects or confirmed cases.

The World Health Organization has already praised India for its tough and timely efforts to control the spread of coronavirus. At present millions are infected worldwide due to COVID-19 outbreak. Studies of patients with severe acute respiratory syndrome (SARS) demonstrate that the respiratory tract is a major site of SARS-coronavirus (CoV) infection and disease morbidity. Remember! SARS also emerged as a regional and global health threat in 2002-2003, and claimed over 800 deaths.

Various actions have been collectively taken by the Centre and states/UTs for prevention, containment and management of COVID-19. These are being regularly reviewed and monitored at the highest level. The Indian Council of Medical Research (ICMR) has initiated a multi-centre clinical trial called PLACID trial, "Phase-II Open-Label, Randomized Controlled Trial, to assess the safety and efficacy of Convalescent Plasma to Limit COVID-19 associated complications in moderate disease". The study has received approval from the COVID-19 National Ethics Committee (CONEC). ICMR has shortlisted 21 institutes for PLACID trial. These include five hospitals in Maharashtra; four in Gujarat; two each in Rajasthan, Tamil Nadu, Madhya Pradesh and Uttar Pradesh; and one each in Punjab, Karnataka, Telangana and Chandigarh.

Incorporating the latest developments on COVID-19 outbreak, Double Helical brings to you in-depth stories on the strategies to to fight against Covod-19. In this critical scenario we urge our readers to stay home, be safe and follow the government's guidelines. No need to get panicky. Let's all join hands to fight against Coronavirus. Take care of yourself and your loved ones!

Thanks and regards

Amresh K Tiwary,
Editor-in-Chief

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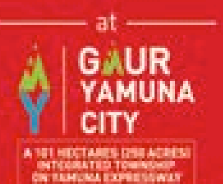

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DECODING THE WRATH OF VIRUS

An extensive study carried out by the authors to delineate the clinical characteristics and evaluate the prevalence of underlying factors of COVID-19 resulted in highly significant findings that merit close attention…

BY DR PROF RAMESH K. GOYAL/ DR PUNEETA AJMERA/ DR JASEELA MAJEED

Dr Prof Ramesh K. Goyal, Vice Chancellor, DPSRU, Delhi

DOUBLE HELICAL

Today, India is virtually waging a war against coronavirus (COVID-19), the global pandemic that has ravaged the most parts of the world too. The United Nations has called corona pandemic the worst global humanitarian crisis since the World War II. The first case of coronavirus infection in India was detected on 30 January 2020 in Kerala. The patient, a student at the Wuhan University of China, was tested positive for novel coronavirus after returning to Kerala. The Government of India has taken the challenge head on by frontloading tough decisions from implementing "Janata Curfew" on 22 March 2020 to initiating nationwide lockdown from 25 March 2020 to May 17, 2020 urging 1.3 billion Indians to stay home to contain the spread of this deadly pandemic.

Accentuating factors of COVID-19

Literature review shows that there are very few studies that outline path physiology of COVID-19. Also, its mechanism of transmission is still uncertain. Present knowledge relies on researches on similar corona viruses that describe human-to-human transmission through respiratory droplets. To compound the threat, association of corona with comorbidities like cardiovascular diseases, hypertension and diabetes increases the mortality rate from the infection.

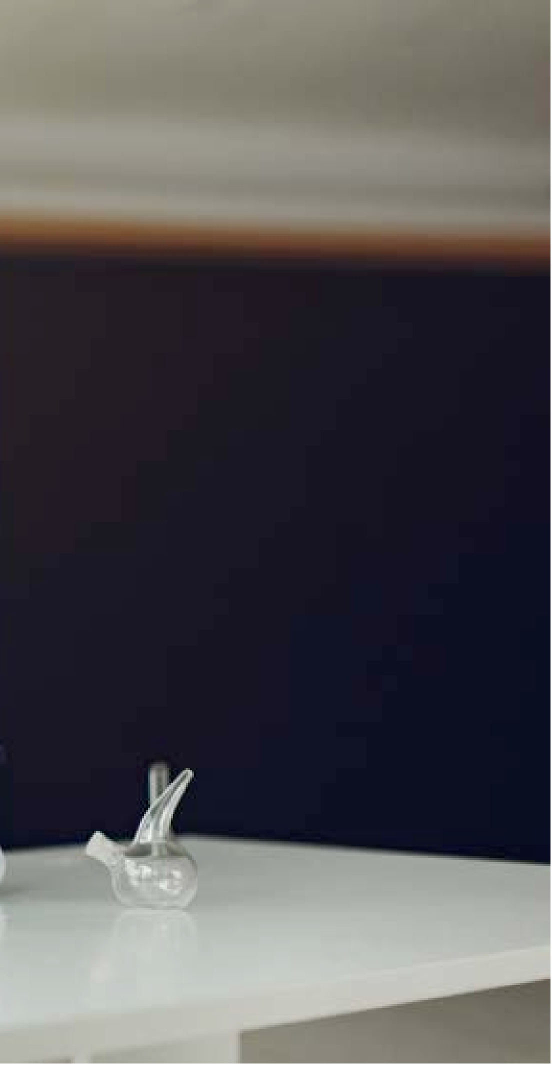
The link of morbidities in COVID-19 with renin angiotensin system (RAS) and angiotensin converting enzyme-2 (ACE2) as the site of the multiplication of coronavirus has widely been reported. Delineating the clinical characteristics of corona infection with RAS cannot be undermined. There is a necessity to consider holistically the role of RAS when the ACE2 receptors are occupied by coronavirus. There is massive derangement of the entire RAS in corona infection and patients with pre-existing co-morbidities. ACE inhibitors or angiotensin receptor blockers should be monitored carefully considering the role of RAS in the prognosis of corona infections.

Exclusive DPSRU Study

Countries all over the world are taking aggressive steps and adopting all possible preventive measures to decrease the spread of COVID-19. Previous researches on SARS and MERS described the association of age, gender and presence of co-morbidities with mortality risk, with diabetes and cardiac diseases being the most imperative components to predict adverse outcomes. Therefore, it is necessary to evaluate these parameters in COVID-19 also.

We carried out a study to delineate the clinical characteristics and evaluate the prevalence of underlying comorbidities if any, in deceased corona victims in India. A literature search was conducted using different sources to collect the data pertaining to demographic, epidemiological, clinical and laboratory characteristics of deceased patients along with their medical history, travel and exposure history and underlying chronic diseases if any.

Using the database from the Union Ministry of Health and Family Welfare, and other official sources from 30 January (when the first COVID-19 case detected in India) to 10 April 2020, we conducted a retrospective multi-centre study on the first 206 death cases in India with laboratory-



monitoring and supportive care in such patients.

Background

In 2002, SARS-COVID was first spotted in the Guangdong province of China and recognized as the cause of severe acute respiratory syndrome outbreak with CFR (Case Fatality Rate) of 9.6 percent leading to 8096 confirmed SARS cases across 29 countries and 774 deaths. The symptoms of SARS-COVID included fever, cough, dyspnoea, and watery diarrhoea. Higher fatality rates were detected in elderly patients as well as patients with medical conditions like diabetes, hypertension, cardiac problems etc. Almost a decade after the SARS-COVID outbreak in September 2012, Middle East Respiratory Syndrome (MERS), caused by MERS corona virus (MERS-CoV) was detected in Saudi Arabia with CFR of 34.4 percent. MERS shared many symptoms with SARS like fever, atypical pneumonia, yet key differences are apparent. Noticeable gastrointestinal symptoms, acute respiratory distress syndrome (ARDS) and acute kidney failure were also reported in patients with MERS. Around 2494 confirmed MERS cases with 858 deaths were reported across 27 countries. All these cases were linked with residence or travelling to the regions near Arabian Peninsula with more than 80 percent involving Saudi Arabia (the World Health Organization, 2004). In 2015 an outbreak of MERS was reported outside Arabian Peninsula in the Republic of Korea with confirmed cases in countries across Europe, North Africa, United States, Asia and the Middle East. By the end of 2016, more than 1850 laboratory-confirmed MERS-CoV cases were recorded, with a mortality rate of about 35 percent. Although CFRs of SARS and MERS are much higher, COVID-19 has resulted in more deaths because of large number of cases.

Fatal Association

The common symptoms of COVID-19 are fever, dry cough, nasal congestion, fatigue, diarrhoea, shortness of breath and breathing difficulty. In some cases disease may lead to more serious respiratory conditions like bronchitis, pneumonia, respiratory failure or multiple organ failure. The Chinese Centre of Disease Control and Prevention published a study conducted on 44672 confirmed cases of COVID-19. It was concluded that 81 percent of the corona infected people

confirmed infection of SARS-CoV-2. Results depict that around 53.4 percent of deaths included people aged above 60 years which shows that older people are at significantly higher risk of developing corona infection. Males (72.3 percent) seemed to be hit harder and were more likely to have severe illness than females (27.7 percent). Pre-existing comorbidities like diabetes, hypertension, respiratory and cardiac problems were prevalent in around 54.1 percent of deceased and therefore strongly associated with poor outcome in corona affected patients in India. Patients having pre-existing comorbidities are more susceptible to develop several complications which highlights the significance of earlier cardiac

had mild symptoms, 14 percent of the remaining were in severe conditions while five percent experienced critical illnesses like respiratory failure, septic shock or multiple organ failure. Also, only 2.2 percent of confirmed cases were less than 20 years old.

Preliminary researches on corona illustrate that elderly or people with comorbidities like cardiovascular diseases diabetes mellitus, cancer, hypertension, or lung diseases are at higher risk(Thevarajan et al., 2020; Zheng, Ma, Zhang, & Xie, 2020).The very first study conducted on 41 covid19 laboratory confirmed cases showed that 28 patients were discharged and six had died. Jordan et al. described that around 25 percent of people including adults more than 70 years and those having existing health problems like respiratory disorders, cancer and cardiovascular diseases in United Kingdom are designated in high risk category (Jordan, Adab, & Cheng, 2020). Chen et al. conducted a study on a cohort of 799 corona-affected patients admitted in the isolation ward of a hospital in Wuhan, China(Chen et al., 2020).The authors compared characteristics of 113 death cases with those of 161 recovered cases. Study concluded that the patients who died were around 17 years older than the patients who recovered. 83.7 percent of the deceased were males and had comorbidities like hypertension, cardiovascular diseases and diabetes mellitus etc. The review of literature reveals that in most of the patients admitted with medical comorbidities of SARS-CoV-2, a wide range of clinical manifestations can be seen.

In response to the recent novel coronavirus outbreak originating in Wuhan, Hubei province, China, observations concerning novel coronavirus mortality are of urgent

public health importance. The present work presents the first review of the fatal novel coronavirus cases in China. Clinical data of fatal cases published by the Chinese Government were studied. As of 2 February 2020, the clinical data of 46 fatal cases were identified. The case fatality rate was significantly higher in Hubei province than the rest of China. While 67 percent of all deceased patients were male, gender was unlikely to be associated with mortality. Diabetes was likely to be associated with mortality.

There is, however, not yet sufficient evidence to support the association between hypertension and mortality as similar prevalence of hypertension was also observed in the Hubei population In response to the recent novel coronavirus outbreak originating in Wuhan, Hubei province, China, observations concerning novel coronavirus mortality are of urgent

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There is, however, not yet sufficient evidence to support the association between hypertension and mortality as similar prevalence of hypertension was also observed in the Hubei population. A series of viral pneumonia cases were confirmed in Wuhan, Hubei province, China in December 2019. A new coronavirus was identified and named by the World Health Organization first as 2019-nCoV then SARS-CoV-2 as the cause of the disease COVID-19. While the pathogenesis and aetiology of SARS-CoV-2 infection is still not completely known, it has been observed that it is genetically similar to

SARS-COV AND MERS-COV

1. And that the incubation time is between 1 and 14 days.
2. Unlike other human coronaviruses, some patients had low-grade fever or were even asymptomatic yet remained infectious.

Recently, snakes have been suggested as the natural reservoirs of SARS-CoV-2, assuming that the Huanan Seafood Wholesale Market was the origin of the virus

Methodology

The present study was conducted using different sources like the corona-tracker India, which is updated daily based on the data displayed on the website of Union Ministry of Health and Family Welfare; press releases of different states; directorate of health services of various state Governments; official government links; databases PubMed and Web of sciences until April 10, 2020.We collected data pertaining to demographic, epidemiological, clinical and laboratory characteristics of deceased patients along with their medical history, travel and exposure history and underlying chronic diseases if any. The first 206 death cases were thoroughly analysed to delineate the clinical characteristics and evaluate the prevalence of underlying comorbidities if any, in corona victims in India.

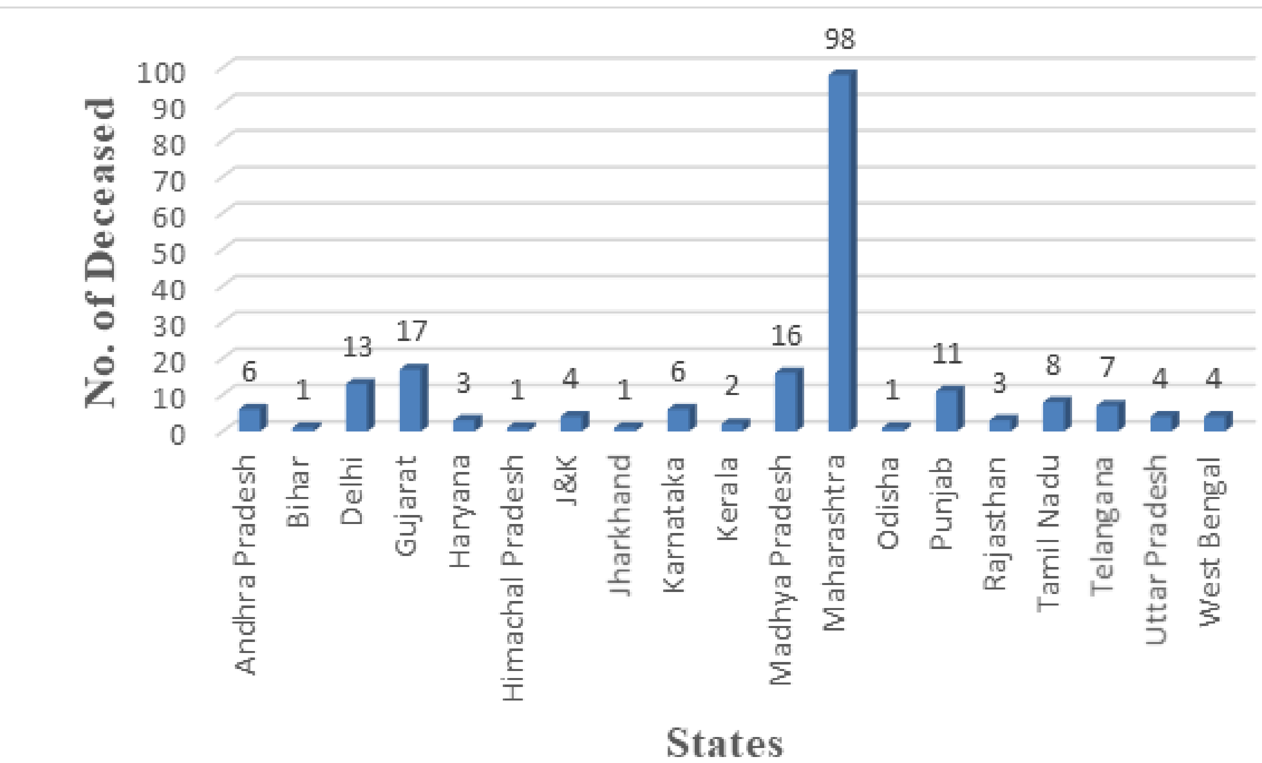
Results

The results of the present study depicted that as on 10th April 2020 (Ministry of Health and Family Welfare site, accessed on 10 April 2020, 08:00 GMT+5:30) the number of deceased cases was the highest in Maharashtra (98) followed by Gujarat (17), Madhya Pradesh (16), Delhi (13) and Punjab (11). State-wise deceased cases in India is depicted in figure 1. It was found that 5.1 percent of the deceased were less than 40 years old while 53.4 percent were more than 60 years old and 41.4 percent were between 40 to 60 years old. Age-wise deceased cases are shown in figure 2. 72.3 percent (149) of the deceased were males whereas 27.7 percent were females i.e. death ratio of males to females was 2.6:1. This shows that male sex is more prone to corona virus infection than females. This is presented in figure 3.

10.6 percent (22) of the deceased were diabetic and 7.7 percent (16) were hypertensive. 22.3 percent (46) of the dead patients were diabetic as well as hypertensive. 8.7 percent (18) of the deceased were having pre-existing respiratory problems. All three conditions i.e. diabetes mellitus, hypertension and cardiovascular disease were present in 4.8 percent (10) of the deceased patients. Percentage of co-morbidities in CORONA deceased cases is depicted in figure 4 below. 9.7 percent (20) of the deceased patients were having travel history from the affected regions. 3.8 percent (8) deceased were associated with Tablighi Jamaat who attended religious ceremony in Delhi. The youngest causality of corona in India was fourteen months old boy from Gujarat's Jamnagar who died of multiple organ failure. A thirty-year-old pregnant woman is the first and only case to die of corona virus infection during pregnancy in India. She was nine months pregnant and had pre-existing respiratory complications.

Fever and cough were the predominant symptoms at the onset. Some other prevalent clinical manifestations in deceased patients included fatigue, chest tightness, head ache, sore throat and dyspnoea while few less common symptoms were diarrhoea, myalgia and anorexia. Acute respiratory distress syndrome, respiratory failure, cardiac failure, sepsis and renal failure were some of the common complications that were observed in the deceased.

STATE-WISE CORONA DEATH CASES IN INDIA



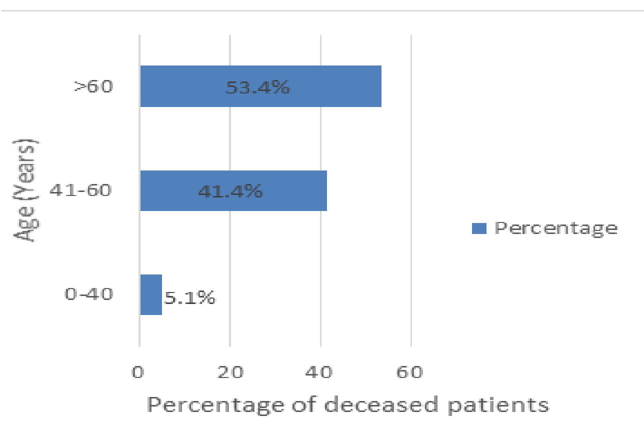
Discussion and conclusion

Around 53.4 percent of deaths included a person aged above 60 years which shows that older people are at significantly higher risk of developing corona infection. Reasons that older people are more susceptible to corona include various physiological changes that occur in the body with ageing. In addition to this, body's immune function decreases with age and multi-morbidity thus making older people more vulnerable to the infection and other serious complications. They are also more prone to have conditions like cardiac and lung disease, diabetes mellitus or renal problems that weaken the ability of their body to fight with infectious disease. But there are some reports showing that people above 60 years who were admitted to hospitals for corona treatment have recovered completely.

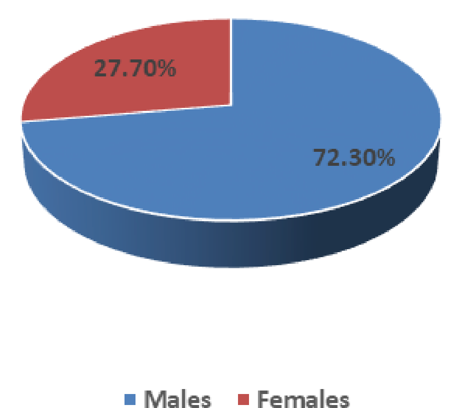
Therefore, it is evident that the health of a person before the pandemic plays a crucial role. People who are healthy and free from any medical conditions are at lesser risk. Another pattern that is being observed in this research is gender differences i.e. males seem to hit harder and are more likely to have severe illness than females. This may be because of biological differences between men and women. Immune responses in women are more robust as compared to men. Also since autoimmune diseases are more prevalent in women, they are more protected against new invading infections because of production of increased levels of antibodies that remain in the circulation for a longer time. Toll-like receptor (TLR)-7 is also higher in females leading to better immune responses and ultimately increased resistance to viral infections (Conti & Younes, 2020). Another factor is that the presence of two X chromosomes in women emphasizes their immune system though only one is inactive, while there is only one X chromosome in men (Conti & Younes, 2020; Sawalha, Zhao, Coit, & Lu, 2020). A research on single-cell sequencing concluded that that ACE2 (Angiotensin Converting Enzyme 2) gene expression was more predominant in males in Asia, which may be the reason that men are more susceptible to corona (Corley & Ndhlovu, 2020).

Severe acute respiratory syndrome coronavirus (SARS-CoV) and SARS-CoV-2 bind to their target cells through Angiotensin converting enzyme 2 receptors (ACE2), which is expressed by epithelial cells of the lungs, kidneys, intestine and blood vessels which significantly increases in patients having type 1 or type 2 diabetes mellitus, treated with "ACE inhibitors (ACEIs) and angiotensin II type-I receptor blockers (ARBs)" (Wan, Shang, Graham, Baric, & Li, 2020). The ACE inhibitors and ARBs used for the treatment of hypertension may results in an upregulation of Angiotensin converting enzyme 2 ACE2(X. C. Li, Zhang, & Zhuo, 2017). Thiazolidinediones and ibuprofen can also increase ACE2. This shows that ACE2 expression is increased in diabetes mellitus and treatment with ACE inhibitors and ARBs increases

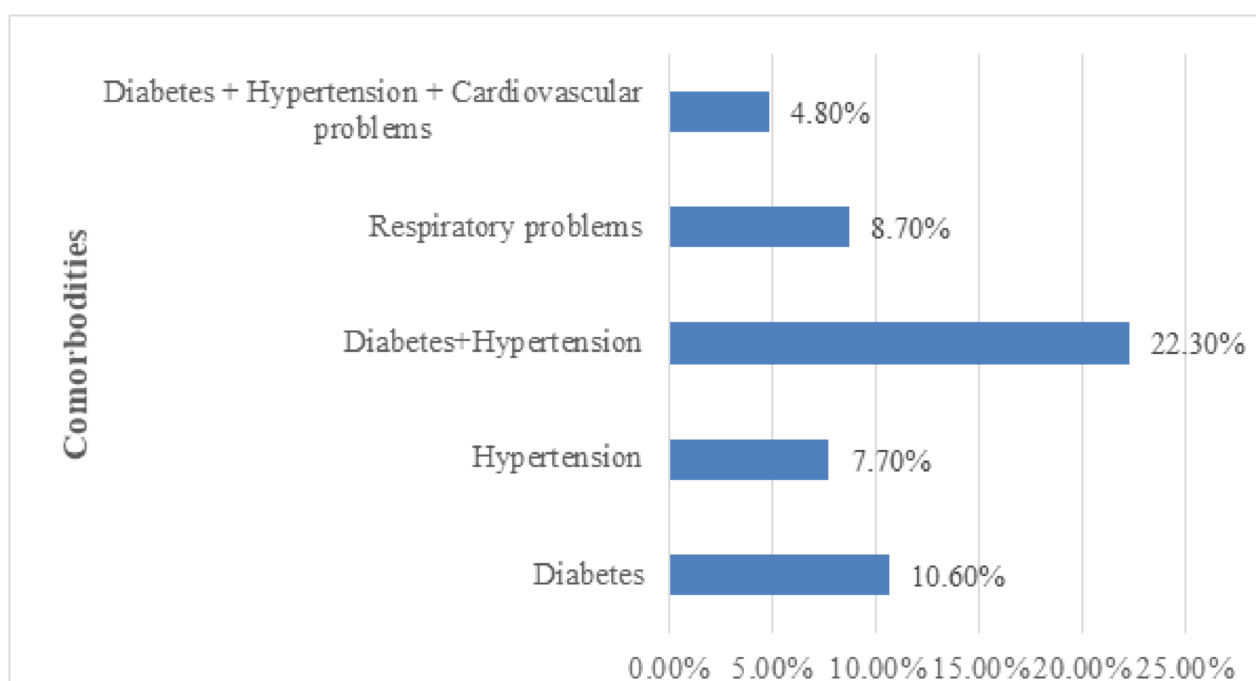
AGE-WISE DECEASED CASES OF CORONA



GENDER-WISE DEATH CASES OF CORONA



PERCENTAGE OF CO-MORBIDITIES IN CORONA DEATH CASES



ACE2 expression facilitating corona infection (Fang, Karakiulakis, & Roth, 2020).

It is also observed in our study that patients with cardiovascular diseases are more vulnerable for novel coronavirus infection. Previous studies also depicted relationship between cardiovascular metabolic diseases and SARS and MERS infections (Badawi & Ryoo, 2016; Yang et al., 2006). The reports of ACE2 gene expression in cardiovascular system poses a greater risk to the patients with existing cardiovascular diseases if contracted with corona infection and also affect the development and prognosis of pneumonia. Therefore, we suggest that patients with cardiovascular diseases, diabetes mellitus and hypertension who are treated with ACE2 related drugs, are at higher risk for developing corona infection. They should be carefully monitored for ACE2-modulating medications. Our research concludes that pre-existing comorbidities like diabetes, hypertension, respiratory and cardiac problems are strongly associated with poor outcome in corona-affected patients. Patients having cardiovascular comorbidities are more susceptible to develop cardiac complications which highlights the significance of earlier cardiac monitoring and supportive care in such patients. To conclude we believe that strict monitoring and classification

of corona patients with comorbidities could help in the individual evaluation of the disease and would provide effective triage for the treatment and management of individual patients.

Some aspects of RAS and CORONA

The connecting link to this associated comorbidity has been the angiotensin-converting enzyme-2 (ACE2) receptor as its site of virus multiplication. Research has proved that ACE2 is expressed in epithelial cells of the lung, intestine, kidney and blood vessels. The expression of ACE2 is substantially increased in patients with diabetes, hypertension and it is the regulator not only of the blood pressure, but inflammation and immune mechanisms too.

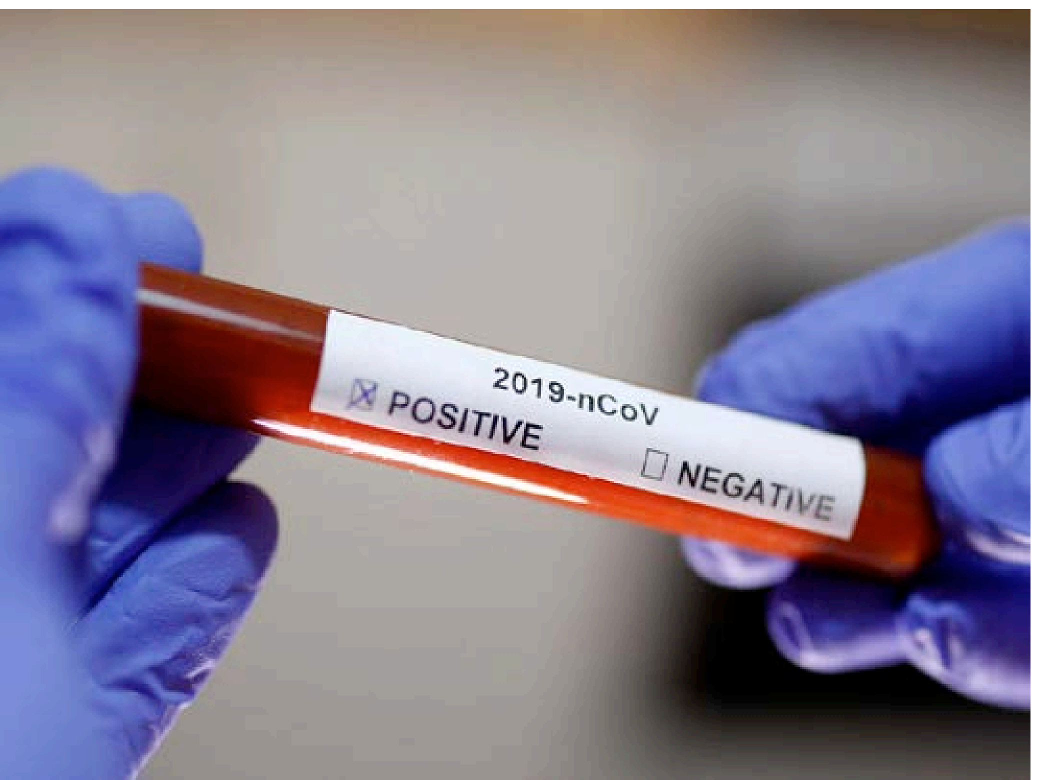
One of the strategies emerged was to consider the use of ACE 1 inhibitors and ARBs drugs during the treatment and management of corona infection. Another strategy has been to develop antiviral newer drugs including the repurposing of the available drugs considering the ACE2 as the target. In spite of all these attempts, the death rates are not getting decreased. Further, some of the clinical features appear to be similar throughout the world.

ACE2 is found in epithelial cells of the lung, intestine, kidney and blood. Increase in ACE2 has been reported in patients with type 1 or type 2 diabetes and hypertension and may be responsible for cardiomyopathy. In patients having type 1 or type 2 diabetes mellitus, if treated with ACE inhibitors and angiotensin II type-I receptor blockers (ARBs) have increased levels of ACE2.

It is also observed in our study that patients with cardiovascular diseases are more vulnerable for novel coronavirus infection. Patients with existing cardiovascular diseases face a greater risk of corona infection and also affect the development and prognosis of pneumonia. Pneumonia leads to substantial gas exchange obstruction, causing hypoxaemia, which diminishes the energy supplied by cell metabolism and upsurges anaerobic fermentation. This causes destruction of phospholipid layer of cell membrane by intracellular acidosis and oxygen free radicals causing respiratory distress and it is the primary cause of corona-induced death.

ACE 1 or the Angiotensin per se may not have direct role with COVID-19 multiplication but its binding to ACE2 or the site is likely to cause disturbance in the regulation and function of RAS. Besides blood pressure control by angiotensin-1 orangiotensin-2, both are involved in immune mechanisms cytokines control. Even the porphyrin and methhemoglobin like situation is likely to be produced with the disturbances in RAS.

It may be assumed that as a consequence to this, there may be exaggerated increased in the expression of ACE2 that facilitates infection with COVID-19. It is suggested that patients with cardiovascular diseases, diabetes mellitus and hypertension who are treated with ACE2 related drugs have the worst prognosis after corona infection. They should be monitored

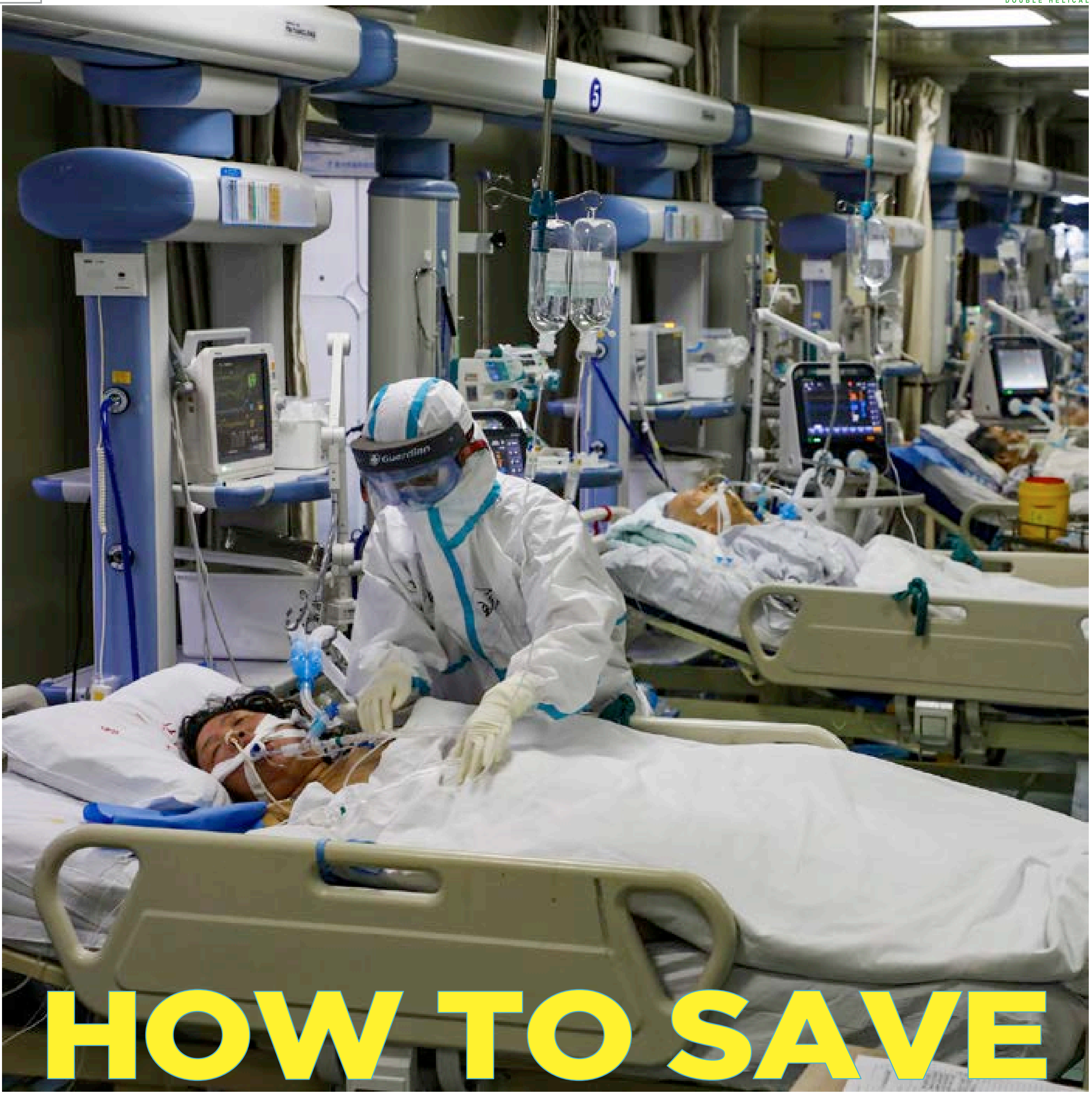


carefully for ACE2-modulating medications. During the management of the patients in ICU, RAS should be considered not only from the point of new drug usage for the treatment of the patient but also the management of the serious patient of corona in ICU.

It is necessary to consider holistically the role of RAS when the ACE2 receptors are occupied by corona. There is a controversy whether the ACE2 levels are increased or inhibited. There are no therapeutically proven inhibitors of ACE2. Angiotensin receptor blockers like losartan block vasoconstrictor and profibrotic through AT1 receptors, but in turn they cause activation of AT2 receptors to produce vasodilatation. It is not clear whether because of corona there is inhibition of just receptors of ACE2 or ACE2 levels. It is well known that physiologically, there is short feedback control through renin on ACE2 production. Further, ACE2 is also reported to be generated through an alternate pathway in heart and kidney. The same possibility cannot be ruled out in abnormal circumstances in lung tissues. ACE2 is now known to regulate not only the vasculature but inflammation, oxidative stress, fibrosis and proliferation.

Cytokine surge leading to damage of alveoli and their functions of oxygen transport is one of the main causes of complications leading to multi-organ failure. Further, thrombotic events also appear to be high. These are known to occur in diabetics also and can be correlated with RAS. ACE 2 is known to break down angiotensin-II and angiotensin-I to angiotensin (1–7) and angiotensin (1–9), respectively. ACE2/Ang (1–7) system plays an important anti-inflammatory and anti-oxidant role protecting the lung against infections.

(The authors are from Delhi Pharmaceutical Science and Research University, Delhi)



HOW TO SAVE THE SAVIOURS

Deaths of doctors and nurses from COVID-19 in India and worldwide are of great concern. We need to draw the right lessons and make the healthcare system a safer place for medical workers...

BY DR RAJEEV JAYADEVAN

By the very nature of their work, health workers are at increased risk to catch COVID-19. In the SARS outbreak of 2003, caused by a similar virus called SARS-Cov, one-fifth of the cases were healthcare workers. The novel coronavirus, also called SARS-Cov-2, is more contagious than its predecessor. Deaths from it occurred not only among older people, but also among those in the twenties and thirties. The deaths of Narjes Khanalizadeh, a 25-year-old nurse from Iran, and Dr Osama Riaz, the 26-year-old doctor from Pakistan are examples. British nurses Areema Nasreen and Aimee O'Rourke died in their thirties.

Dr Rajeev Jayadevan

Systematic flaws contributing to doctors' deaths

Infection in multiple healthcare workers can occur following surgery on a COVID-19 patient, as was documented following a hernia operation at the SMS Medical College Jaipur.

A large number of the infections that occurred among healthcare workers are from preventable factors. Being safe from the virus involves much more than wearing a mask and gown. Several administrative, academic and engineering measures are often overlooked.

Those who get infected with the virus need not always develop symptoms. Such people become a source of spread of virus to unsuspecting colleagues through repeated interactions in closed spaces. Such incidents have been reported in India and elsewhere. They may inadvertently spread disease to patients and bystanders. Hospitals have been a source of spread of Covid-19 in almost all countries.

When healthcare workers get sick, they either go into quarantine or get admitted to hospital. The total number of hospital beds are finite. The system gets stressed due to smaller remaining number of workers taking on greater volume of work. This workload includes the sick healthcare workers themselves as well as the patients whom they infected. This increases the infection risk among the remaining healthcare workers, setting off a vicious cycle.

When healthcare workers get sick, hospitals might get shut down, increasing the strain in the system. Healthcare workers cannot be replaced easily. It is not easy to train a new worker to do the same task.

Lessons learned from the healthcare workers' deaths

Underestimating the pandemic

Being caught unawares is by far the biggest mistake that has happened to healthcare workers all over the world. That is, by realising late that the patient under their treatment had COVID-19. Often, a patient would get admitted with respiratory symptoms, and the diagnosis of the SARS-Cov2 virus would be made only several days later. By then, several healthcare workers and others would have become infected. A recent incident at NRS Medical College West Bengal highlighted this continuing problem.

The extent of local spread has been consistently underestimated in Spain, Italy, US and UK, resulting in a vicious cycle of healthcare workers getting infected and passing on to colleagues and patients. Although this might seem rather elementary, being in the habit of seeing patients without sufficient precautions is a major factor that caused infection, as can be seen from the cases of the departed. Healthcare workers at Singapore, on the other hand adhered to standard precautions and have had no outbreak among healthcare workers. Standard precautions are protective even if there is unexpected exposure to aerosol. In the present scenario, it is safer to treat every patient as COVID-19 till proven otherwise. Implementation of IPC (Infection control precautions) even after a delayed diagnosis has effectively prevented further spread of infection in such cases shows that following standard precautions at all times is an effective preventive tool.

Ignorance about the extent

In Italy, the pandemic arrived at the same time as the annual flu season. Reportedly, many GPs continued to see patients casually, thinking it was only a minor flu. Over 150 doctors have died in Italy alone from COVID-19. Ignorance about the extent of local spread contributed to deaths. In addition, some of the reported COVID deaths in healthcare workers could also be non-work related.

In Spain, doctors were not informed early of the extent of spread, hence did not take adequate precautions. In China, the early spread of COVID-19 to healthcare workers occurred because patients went to see doctors in local clinics who had no knowledge of such an outbreak, and saw these patients without precautions.

Asymptomatic spreaders

Many healthcare workers still believe that only sick-looking people could give them the virus. They remain unaware of the large segment of asymptomatic spreaders, and let their guard down while in the company of apparently healthy people.

Lack of testing facilities

Lack of testing facilities, denial and underreporting of the pandemic contributed to this ignorance among healthcare workers. Unfortunately, without widespread testing, it is impossible to contain the spread of the virus in a region. Several countries are still unable to test adequate numbers of their population due to multiple reasons.

Germany on the other hand, was proactive in preparing as early as January with testing facilities. Prof. Dr Christian Drosten and team, Institute of Virology, Hospital Charite of Berlin developed the PCR testing kit early, and immediately shared the technology with other labs.

Need for surveillance testing

Periodic surveillance of healthcare workers by testing is necessary to detect infected people early and to isolate them. As infection does not always result in symptoms, waiting for fever or cough to appear before testing is the wrong strategy in the healthcare worker setting. It must be noted that surveillance testing is different from diagnostic testing. Surveillance testing of healthcare workers during a pandemic is done to protect the hospital and the community—by identifying and isolating infected individuals early. Example of diagnostic testing is when it gets ordered for a patient who is admitted with severe pneumonia, where it is primarily for documentation of the diagnosis. The virus has already affected healthcare workers in major hospitals in India, while the status of the vast majority of other hospitals is still unknown because surveillance testing is not being done yet. When hospitals unknowingly start spreading the virus to visiting patients, the disease penetrates deeper into the community and the pandemic gets worse.

Shortage of PPEs

Shortage of PPEs has been blamed in all nations including US, Italy, Iran and UK. This requires customised solutions according to each nation's circumstance and policy. Inappropriate and excessive use of PPE could also lead to wastage of resources, eventually causing shortage. Hence, judicious use of PPE must be promoted, according to scientific guidelines rather than by perceived risk or excessive fear of infection. Hoarding of precious resources such as N95 masks by those who don't need it, must be discouraged. In Italy, the death of 67-year-old Dr Roberto Sello is said to have occurred after he continued to see patients after PPE ran out.

A large number of healthcare worker infections in Iran -- up to 41% of the COVID-19 cases -- are reportedly attributed to PPE shortage. Those healthcare workers taking care of sick relatives at home must be careful not to bring the virus to the workplace. If a family member is sick with fever, coming to work could be risky to colleagues—in the setting of a pandemic.

Right quarantine strategies

Self-quarantine (self-isolation) is an important aspect of prevention. It refers to keeping a potential virus carrier from infecting the healthy community around. Therefore, it applies to healthcare workers who had significant contact with a COVID-19 patient. The local protocols and the logic behind them must be repeatedly

emphasised to all healthcare workers. However, overzealous quarantine strategies can lead to a depleted workforce. In Singapore and Hong Kong, quarantine is advised only for those who had close contact by definition, and they are able to preserve their healthcare worker workforce as a result.

Reverse quarantine must be practised where applicable. Reverse quarantine refers to protecting the vulnerable from others who might give them the disease. The COVID-19 related death of an 85-year-old doctor who had reportedly had pre-existing cardiac morbidity in Mumbai, soon after the visit of his grandson from the UK, highlights the need to reverse quarantine the elderly and vulnerable. Every effort must be made to prevent the entry of the virus into the households where such individuals are living. The report that other family members also tested positive suggests that the visitor's earnest efforts at self-quarantine were not enough to stop the virus from infecting others in the household.

Infection control measures

Housekeeping, laundry and biomedical waste disposal departments play a major role in disinfection and prevention. They must be involved in infection control meetings. Guidelines for disinfection have been published. Diluted household bleach solution (1% Sodium hypochlorite) is effective for most non-metallic, non-fabric surfaces. It is economical and easily made by mixing two tablespoons of bleaching powder in one litre water.

Wrong use of PPE

Unauthorised reuse of PPE increases infection risk, and is an expected outcome of shortage. The death of Dr Frank Gabrin in New York is an example. CDC has published a new guideline on reuse of N95 mask during times of shortage. Wrong use of PPE is widespread among healthcare workers. Putting on and removing PPE requires special training. Mask and glove use are commonly done wrong. Substandard PPE has been implicated, as manufacturers cut corners to improve their profits. These errors can be easily remedied by supervision and training programmes.

Emergency intubation

Healthcare workers are often exposed to a high viral load in the casualty or ICU before standard PPE could be worn for emergency intubation procedures. Those who work in these settings must therefore anticipate being in such positions and take sufficient preparation.

Lack of IPC

Every hospital must have a strong and efficient Infection prevention and control (IPC) that decides local policy based on established guidelines, trains personnel and audits the outcome. Even in developed nations, compliance is never a 100%, hence the need for continuous monitoring. Longer working hours and fatigue contribute to risk of infection. The hospital administration must take these recommendations seriously. Lack of IPC has been blamed as a major factor in healthcare worker deaths.

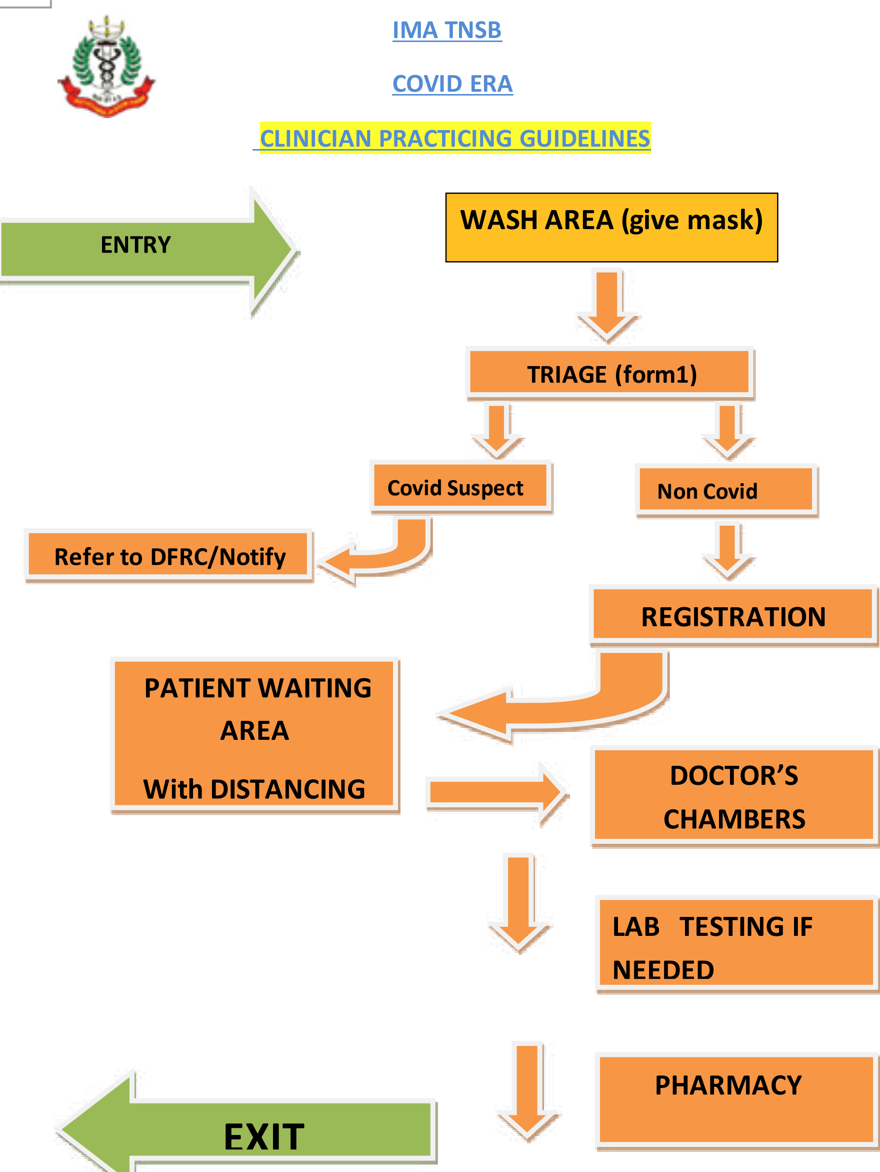
Efficient triage of patients before they reach the reception is an important step in reducing the spread of virus at the facility. Patients who are visiting can be counselled in advance of handwashing, sanitising, mask use and be provided a route map.

The flow of patients and staff through the hospital must be planned to minimise spread of infection. This can be achieved through administrative and engineering controls. Also called TCB or Traffic Control Bundling, such measures have effectively prevented healthcare worker infections at hospitals.

Cohorting of staff prevents the mingling of those who work in high risk areas with those who work in other parts of the hospital. This reduces risk of infecting colleagues. When procedures are done that are high risk for aerosol, the number of staff present in the room must be minimised. The air flow in such rooms must follow strict engineering controls.

Minimising risk from speech

Everyday speech has great role in transmitting the SARS-Cov-2 virus in the form of really tiny invisible



droplets. In the April 15 issue of NEJM, Anfinrud et al from NIH have demonstrated how speech generates tiny droplets that are effectively blocked by wearing a cloth mask.

Taken together, these findings have significant role is devising preventive strategies. Limiting conversation in closed spaces, maintaining universal social distancing and asking all patients to wear a mask before entering the room or facility are simple, economical yet evidence-based measures that can be easily practised.

Wearing of masks has been a shifting topic. The Ministry of Health and Family Welfare, Government of India has asked the general public to wear mask while stepping out. Periodic multidisciplinary meetings with all stakeholders within a hospital will help make the place safer for everyone. Such meetings must involve those who work in engineering, maintenance, pharmacy, microbiology, lab, nursing, housekeeping, human resources, doctors and administration.

Avoiding asymptomatic transmission

In a study published by the CDC team in NEJM on April 24, the role of asymptomatic transmission as the Achilles heel of community spread of COVID-19 has been discussed. This means that healthcare workers could get infection from a well-looking colleague or patient or bystander simply through conversation.

Elderly doctors at threat

COVID-19 related mortality increases over age 65, and also among those with associated conditions such as diseases of the heart, lung, kidney and liver, cancer, obesity and diabetes. Healthcare workers who are over 65 or otherwise vulnerable may therefore be assigned to non-clinical areas of work, where the risk of contracting the virus is lower. Such measures will reduce overall healthcare workers' mortality risk. A substantial number of doctors and nurses have died after coming back from retirement to serve on the frontlines. In France, Dr Jean-Jacques Razafindranazy, 67 came back after retirement to help the ER, and died of COVID-19. In Cardiff, Wales, 65-year old nurse Gareth Roberts had a similar fate. So was the case of Dr Alfa Saadu, 68, returned from retirement to help out at a local hospital in the UK.

Keep patients' volume down

Doctors who see extraordinarily large volume of patients are exposed to greater viral loads. It is unclear whether repeated exposures lead to more severe infection. The death of 62-year-old Dr Shatrughan Panjwani of Indore, who dutifully saw patients from slum areas, raises the question of limiting patient numbers in clinics. Introducing engineering controls to promote social distancing, wearing of masks by all patients and bystanders, and improving natural ventilation in busy outpatient clinics are related topics. Infection control precautions are not easy to implement in such settings.

Ignorance is a killer

Underestimating the ignorance of individual healthcare workers is a

mistake that happens to policy makers. It is commonly assumed that those at the grassroots level will completely understand, remember and carry out instructions. In reality, this does not happen. Besides, it is difficult to find out how many people did not understand instructions. Apart from an audit, there is no reliable method to measure the level of ignorance and non-compliance. For instance, even in well-equipped settings, faulty use of PPE is common, resulting in spread of infection. Being vigilant and taking proactive steps will help prevent complications that are a natural outcome of ignorance. Unfortunately, as a group, healthcare workers are at greatest risk when the prevailing level of ignorance is high.

Ignorance is not necessarily the fault of the healthcare worker. Faulty public health policies where health education as well as data collection are done without foresight can result in the collective blinding of entire communities.

Delay in recognising the community spread of the virus in Italy and Spain cost many healthcare workers their lives. Older doctors and nurses with chronic illnesses returning from retirement to serve on the frontline is not a model of ideal workforce deployment. Declaring an area to be safe without adequate testing is yet another example of collective ignorance; this can be dangerous to a large number of people.

In a pandemic, media play a major role in dispelling ignorance. Imposing penalty for fake news helps prevent misinformation, which is another contributor to ignorance. Methods of health education require substantial customisation for the population intended. Ignorance of policy-makers represents a larger problem, as has been documented in several nations.

Checklists to eliminate errors, pre procedural briefing, post procedural debriefing, team-based simulation and training are helpful in intensive care settings.

Lying patients

Patients are known to conceal their high-risk travel or contact history, and this has been implicated in the deaths of doctors. Hence, there is no substitute to taking standard precautions with all patients, however impractical it might seem.

Among all risk factors, ignorance appears to be the most dangerous as well as remediable from the viewpoint of a healthcare worker.

All healthcare workers are vulnerable

The risk applies not only to nurses and doctors, but also to pharmacists, technicians, physiotherapists, receptionists, paramedics, attenders, ambulance drivers and other staff. All healthcare workers therefore require training and protection according to their level of exposure to the virus. The deaths of 35-year old pharmacist Ismail Durmus in Turkey, 33-year-old UK pharmacist Pooja Sharma, 28-year-old Calire Marie Fuqua, a receptionist in a paediatrician's office in Louisiana, US show that the virus does not discriminate by age, type of clinical work or gender. Infection of staff working in high traffic areas such as the pharmacy was documented at SMS Medical College Jaipur. Two young attenders Oscar King Jr and Elbert Rico, also known as porters in the UK, died at John Radcliffe Hospital, Oxford.

Doctors working with the airway such as dentists, and anaesthesiologists are especially at risk for COVID-19 infection. In a study, this group comprised 12% of all doctor deaths from COVID-19. Psychiatrists make up 3% of deaths among doctors (6 deaths out of 198). This suggests the risk from prolonged exposure to aerosol by conversation in a closed environment.

GP/ER doctors make up 40% cases followed by 6% Medicine, 5% dentistry, 4% 6% Medicine, 5% dentistry, 4% Cardiology, 4% Ophthalmology, 4% ENT, 3% Respiratory, Cardiology, 4%, Ophthalmology, 4% ENT, 3% Respiratory, 3% Psychiatry3% Psychiatry, and , and 3% Anaesthesia, 3% Gen Surgery, 3%, Obstetrics/ Gynaecology 3%, Anaesthesia 3%, and Gen Surgery, 3%.

With their hands-on experience with Covid-19, Mirco Nicoti et al from Italy are advising a massive deployment of outreach services. They assert that pandemic solutions are required for the entire population, not only for hospitals. Home care and mobile clinics may be used for less ill patients. These measures release pressure from hospitals, preserve PPE, beds, ventilators, decrease contagion, thus protecting patients and healthcare workers.

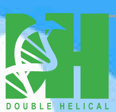
Mortality or CFR Case Fatality Rate of COVID-19 is not a fixed number. It depends on quality of care available. If healthcare systems are overwhelmed, the mortality increases up to five-fold. This directly applies to healthcare workers working in these areas. It is therefore important to take widespread measures for the entire population to preserve valuable resources, as discussed above. Recognising work-related stress and seeking help early is important.

Anyone who works in healthcare is at risk. In addition to doctors, nurses and other clinical staff, infection is also known to occur among non-clinical personnel within a health-care setting. Focus and terminology should therefore shift from "health-care workers" to "health workers", thus encompassing drivers, cleaners, security guards, burial teams, community-based workers and all others who are at risk while performing health services. In the SARS 2003 epidemic, a study published in NEJM showed 136 patients being infected as a result of one patient admitted to ICU. The infection spread to 20 doctors, 34 nurses, 15 other health workers, 16 medical students and 53 patients who happened to be at the hospital at the same time, in spite of the use of PPE. Aerosol-generating procedure using a jet nebuliser was the likely cause of this spread.

LARGER IMPLICATIONS OF THE PANDEMIC

COVID-19 has exposed many chinks in India's healthcare system. The crisis has also given us an opportunity to plug the loopholes in the state of health services in the country. Here is an unexplored perspective to the unprecedented health crisis...

BY DR VINAY AGGARWAL



It's been more than a month and a half since Prime Minister Narendra Modi announced complete lockdown in view of the emerging COVID-19 pandemic. It was indeed a bold and timely call taken for a country like ours and has been beneficial in terms of flattening the curve to a great extent.

Advantages of lockdown

On the day India crossed 1 million tests, its total number of positive cases was still far less than the likes of Germany, Italy, Spain and even the United States. In terms of recovery, we have seen a positive trend of almost 27 per cent and mortality rate of around 3.3 per cent. Most of the positive cases were mild type/ asymptomatic and did not warrant typical ICU care.

Now that we have braved through the main lockdown & have all accepted the need for extended period of living and working with some relaxations under the COVID guidelines, we must not lose sight of the spirit behind this bold call. The main reason for the complete lockdown was to prevent the

surge of COVID-19 cases that might have required increased hospitalisation and overwhelmed the already fragile healthcare system of our country. The lockdown was also intended to give the bureaucracy (Centre & state governments) enough time to prepare a contingency plan for readiness to manage the COVID-19 cases if requirement of hospital beds and healthcare facilities increases.

Impact on healthcare sector

So, now comes the real question - How is our healthcare system handling this crisis? Behind the claps, lamps, being showered with flowers from the sky, how are the healthcare corona warriors really coping? Currently, healthcare sector in the country has taken a major hit. Most family physicians are sitting at home, all routine outpatient clinics have been blocked, all routine surgeries and elective procedures have been cancelled, small nursing homes/ hospitals are almost running empty or have been foreclosed, big corporate hospitals have seen major occupancy drop down to less than 30 per cent. All this has resulted in significant revenue losses all around in private healthcare sector.

HCWs at risk

Many public hospitals have been converted to COVID centres, leading to helplessness in the large number of patients they catered to. There is a growing fear amongst the healthcare personnel to discharge their duties in view of the reports of increasing COVID positive cases and deaths among healthcare workers (HCWs). An action by the authorities like sealing these institutions further compounds the panic all around.

Suffering of non-COVID patients

Genuine patients who need healthcare services for routine and chronic non-COVID-19 illnesses are suffering. Many patients who are diagnosed with cancer, cardiac ailments, renal diseases, brain tumours have been deferring the diagnosis or treatments due to fear of acquiring coronavirus in the hospitals that may finally lead to higher morbidity and mortality in coming months.

Inadequate testing facilities

The government on its part needs to increase the availability and scope of COVID testing to ensure routine elective work can be safely carried out with prior tests in susceptible cases; this will ensure safety of healthcare workers & prevent unnecessary burden of contact tracing and quarantine of healthcare workforce. Without the availability of rapid tests kits, the current turnaround time for PCR tests for COVID -9 is high and averages almost 2 -3 days.

Illogical sealing

Random actions by authorities to seal a medical establishment in case of a healthcare worker turning COVID positive creates unnecessary panic amongst public, besides huge financial loss to the establishments. This amounts to breaking the back of the small nursing homes & hospitals that provide much of the healthcare in this country. This is leading to doctors being over cautious in their practice.

Victimisation of doctors

There have been instances where district magistrates, health secretaries and hospital heads have asked for action to be taken against HCWs who tested positive for COVID-19, squarely putting the entire blame of a confused and collapsing infection management system on the doctors and healthcare workers. This is leading to the larger public perception of HCWs as carriers of infection and hence rising incidents of stigmatisation and violence against them. Reports also emerged of authorities coming down hard on

junior doctors and staff who protested putting themselves in harm's way without proper PPE.

Don't overlook other killers

The government needs to adapt a comprehensive strategy to improve the overall healthcare structure by supporting and strengthening public/private healthcare. Millions of deaths every year in India are due to communicable diseases easily preventable by following basic hygiene and cleanliness practices, if enforced. The lessons learnt by the government from combating Corona pandemic should be replicated in managing the bigger killers in India like tuberculosis, malaria, dengue, typhoid, etc. India lags considerably behind the developed world in many health indices and the same level of determination, focus and coordination is required by all stakeholders to improve them as has been seen in combating COVID-19 pandemic in our country.

Primary and secondary healthcare should be strengthened throughout the country, so that we don't burden the tertiary care referral centres. Make in India movement should encourage the production of PPEs, laboratory test kits, ventilators and other essential drugs.

Taking private sector along

Telecommunication services should be freed from outdated laws & healthcare IT startups need to be encouraged. Wider coverage of health insurance and private investments needs to be promoted. Private healthcare provides almost 80 percent doctors, 60 percent hospitals and 30 percent of hospital beds in the country. The government has to stop ostracising its most valuable ally in healthcare and align the private sector in developing policy, uniform guidelines and infection control protocols as we move forward.

Authorities should strengthen and support the nursing homes and hospitals in their area instead of reprimanding them. Doctors and HCWs should be protected from the scourge of violence and stigma both in private and public establishments. This pandemic has been a wakeup call and both centre and state governments should recognize the need for larger GDP allocation to health. The Governments (Centre & state), medical associations, public/private hospitals and the public at large together can transform India into a world leader in health services.

(The author is Past National President, Indian Medical Association, Executive Member, Delhi Medical Council and Recipient of Dr B C Roy National Award)

DOCTORS IN DISTRESS

India's fight against COVID-19 has witnessed frequent spectacles of violence against doctors and healthcare professionals. To prevent their recurrence, there should be better implementation of the law with enhanced provisions for protection of medical community. It is imperative to bring about a systemic change to curb this unsettling trend...

DR SHYAMA PRASAD MUKHERJEE

The COVID-19 pandemic has brought to the fore the unsavory realities of India's healthcare system and the dangers the health workers are exposed to. The countless number of attacks on the health professionals have done immense damage, lowering the morale and motivation of the healthcare workers waging a war on behalf of the country against the coronavirus.

During this crucial juncture when there is a need for increased sensitivity, sensibility and empathy what has come to the forefront is the complete opposite. The attacks were

IMPACT OF COVID-19 ON CHILDREN

BY DR MANISHA YADAV

It has been established that the COVID-19 pandemic has led to a number of health issues that are cause of grave concern. One such issue is the threat to the mental health of children.

Following the worldwide lockdown, generally, children, like adults, tend to suffer from depression, however what is being neglected are the issues of social anxiety and eating disorders which is accompanying the physical debilitation caused by the virus. The malleable minds of the young are being greatly impacted. They might be physically strong enough to fight off the virus, however, their innocent minds might not be able to cope with the everlasting mental health issues it might cause. The implications of this pandemic are graver than what meets the eye. Therefore, it is imperative that special caution is taken while having a conversation with the children.

When we talk about children they are not just vulnerable to the infection but also to the masked mental health issues caused due to the uncertainty of the situation. It is our responsibility to not only safeguard the lives of the children but also to protect them from the hidden impact of COVID-19 post the pandemic.

How to answer their innocent questions? In that case we must always pass the correct information in a way that they shouldn't feel insecure about the whole scenario. Also give them examples of positive work being done to come out of the situation. Be a little sensitive towards them when they miss their peers. Make them have a video call under your supervision.

Let them share their daily routines and activities and the newly developed interests. Utilise this time to establish a bond and friendship with your children which otherwise wouldn't have been possible in this competitive world. This is the time to develop an activity which you could share with your children like baking a cake or painting. It might provide them with some stability and also allow them to share their feelings.

It is also imperative to create a safe environment for a healthy conversation about the crisis and how they are being affected by it.

Make them learn the preventive measures to protect them against COVID-19 and teach them the value of good hygiene to be maintained post pandemic as well.

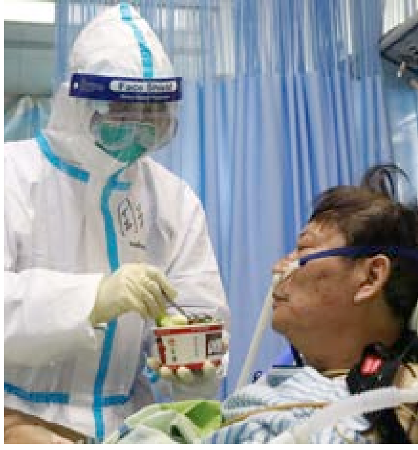
Last but not the least, practice responsive caregiving. As we are going through a lot due to this crisis which is likely to add to our stress levels, we might end up getting irritated and reacting to children in various situations. But let's be little more responsible and don't make them learn wrong behaviour. Always remember in all situations, responding to your children and not reacting is the key to good parenting.

(The author is child specialist associated with Indian Spine Injury Centre, New Delhi)

not specific to an area or a community; they have encompassed a number of cities throughout the country from Delhi, Indore, and Chennai to places in Bihar and Uttar Pradesh. What triggers this behavior? What can be done to stop this violence against the doctors?

Firstly, there should be better implementation of the law, along with suitable amendment in it. Even though Medical Protection Act is in place, it fails to be effective as it is neither featured in the Indian Penal Code (IPC) nor in the Code of Criminal Procedure (CrPC) which makes it increasingly difficult for the victim to file a complaint against the perpetrators.

Pertinently, the Epidemic Diseases (Amendment) Ordinances 2020, provides for non-bailable offence, up to seven years of imprisonment and Rs five lakh in fine. What needs to be done for further protection of doctors and healthcare professional is the effective implementation of this law in the absence of an epidemic as well. Secondly, there needs to be in place a security team to protect the doctors.



Another contributing factor is the immensely disproportionate doctor-to-patient ratio with one doctor for 1400 patients. The recruitment of more doctors may decrease the violence against doctors as the patients will feel less anxious.

Additionally, from the perspective of the healthcare workers, young doctors should receive better training in regard to the communication skills. They should be trained to develop better interpersonal relationships and provide clear understanding of the procedures and treatment plan to the patients and their relatives. Emphasis should be laid on how to pacify and deal with the grieving relatives as more often than not the attack is instigated by a relative.

Lastly, it is imperative to bring about a systemic change to curb the violence against healthcare professionals. This change can only be achieved by starting a dialogue with the administration, health officials and the public. The mob violence against doctors during this pandemic should be taken as an initiation of such a movement. The dialogue will help us better understand mob mentality that comes to the fore in case of some unintended outcome of treatment. This understanding can only be achieved through dialogue. All the stakeholders of India healthcare sector need to come together to put an end to the violence against healthcare professionals.

(The author is Child Specialist, Civil Hospital, Lucknow)

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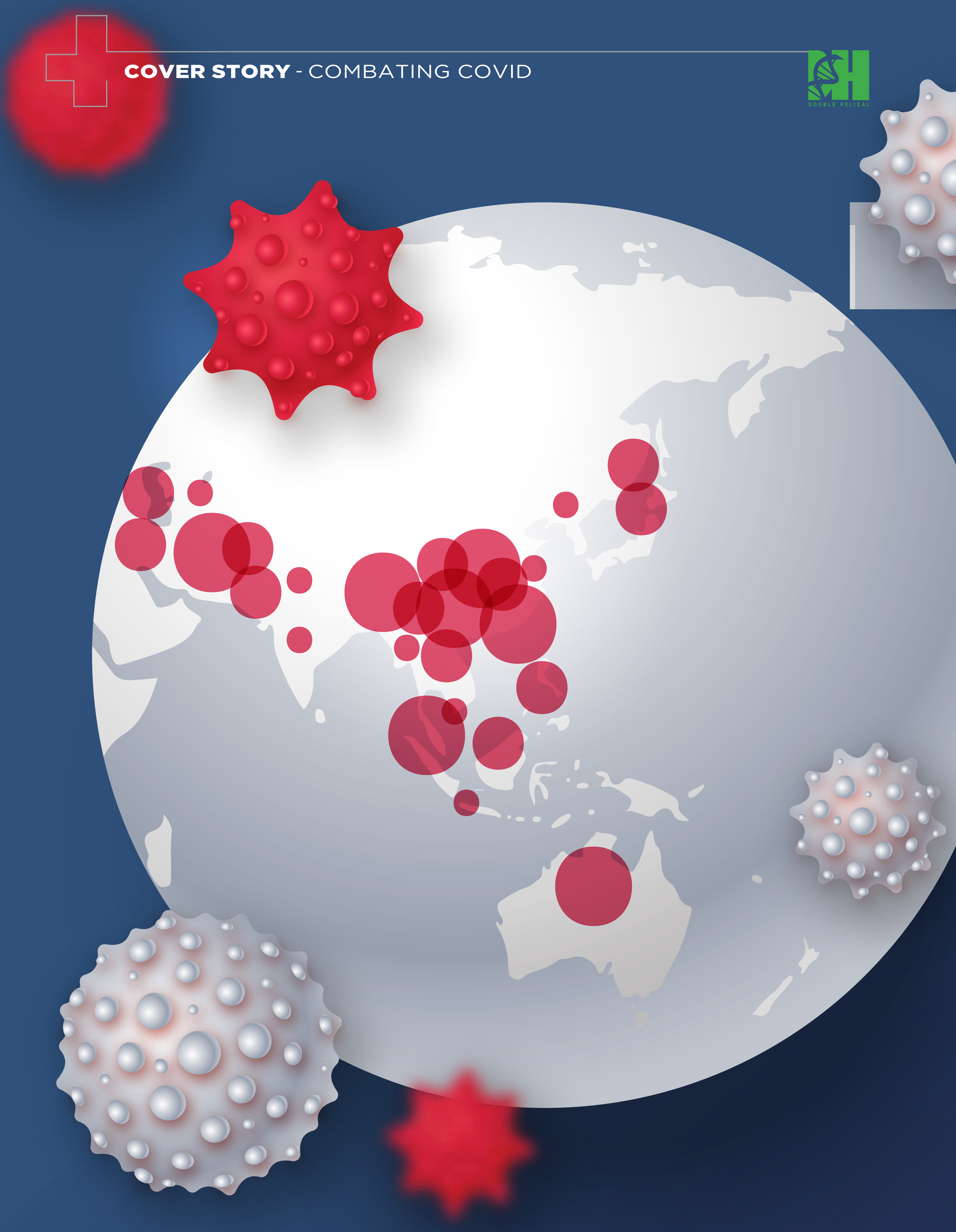
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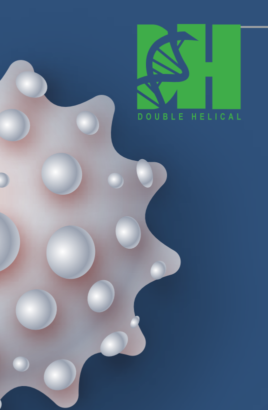


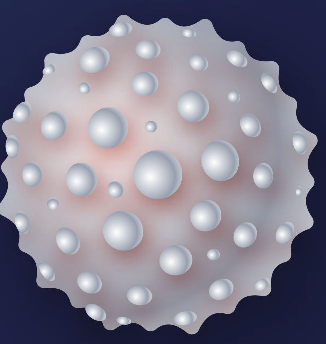
NEW STRATEGIES TO COUNTER CORONA

Several organisations across the world are making concerted efforts to develop drugs and vaccines for coronavirus. WHO has listed over 80 vaccines that are in various stages of clinical research. Many more activities are underway to prevent, contain and cure the dreaded virus that has taken millions in its stranglehold across the globe…

BY AMRESH K TIWARY

At present millions are infected worldwide due to COVID-19 outbreak. Studies of patients with severe acute respiratory syndrome (SARS) demonstrate that the respiratory tract is a major site of SARS-corona virus (CoV) infection and disease morbidity. Remember! SARS also emerged as a regional and global health threat in 2002-2003, and claimed over 800 deaths.

Various actions have been collectively taken by the Centre and states/UTs for prevention, containment and management of COVID-19. These are being regularly reviewed and monitored at the highest level. Recently, **Dr Harsh Vardhan, Union Minister of Health and Family Welfare**, interacted with the state health ministers of Tamil Nadu, Karnataka and Telangana through a video conference wherein he reviewed the preparedness efforts and containment measures regarding COVID-19. Further, he added that



there is a need to increase the sampling and testing of SARI/ILI cases, along with proper quarantine arrangements of migrant workers returning from other states.

The Indian Council of Medical Research (ICMR) has initiated a multi-centre clinical trial called PLACID trial, "Phase-II Open-Label, Randomized Controlled Trial, to assess the safety and efficacy of Convalescent Plasma to Limit COVID-19 associated complications in moderate disease". The study has received approval from the COVID-19 National Ethics Committee (CONEC). ICMR has shortlisted 21 institutes for PLACID trial. These include five hospitals in Maharashtra; four in Gujarat; two each in Rajasthan, Tamil Nadu, Madhya Pradesh and Uttar Pradesh; and one each in Punjab, Karnataka, Telangana and Chandigarh.

There are 216 districts which have not reported any cases till date. As many as 42 districts have seen no fresh cases in the last 28 days, while 29 districts have seen no fresh cases in the last 21 days. A total of 36 districts have seen no fresh cases in the last 14 days, and 46 districts have seen no fresh cases in the last 7 days.

The Ministry of Health has issued additional guidelines for states facility quarantine/ facility isolation in hotels, service apartments, lodges etc., for returnees from abroad/contacts/ isolation of suspects or confirmed cases. For further details the guidelines can be seen at:

So far, a total of 16,540 people have been cured. This takes our total recovery rate to 29.36 %. This recovery rate is continuously increasing which currently means that almost 1 out of every 3 patients who were hospitalised has been recovered/cured. The total number of confirmed cases is now 56,342. It is noted that on an average, 3.2% patients are on oxygen support, 4.7% of patients are in ICU, and 1.1% patients are on ventilator support.

According to **Dr A K Agarwal, Ex Dean, Maulana Azad Medical College and presently Medical Advisor (Innovation), Apollo Hospital, New Delhi,** the WHO has proposed Solidarity Vaccine Trial to speed the development with an adaptive design. This allows vaccines to be added to the trial on an ongoing basis. Participants will be enrolled continuously, and vaccines that don't seem to be working can be dropped from testing. The WHO still needs to hammer out details, such as how a vaccine's efficacy will be measured,

The WHO has established an expert panel to prioritize vaccines for inclusion in its trial, but it is unlikely to be the only organization seeking to do this. The US National Institutes of

Comparison of COVID-19 Cases and Deaths

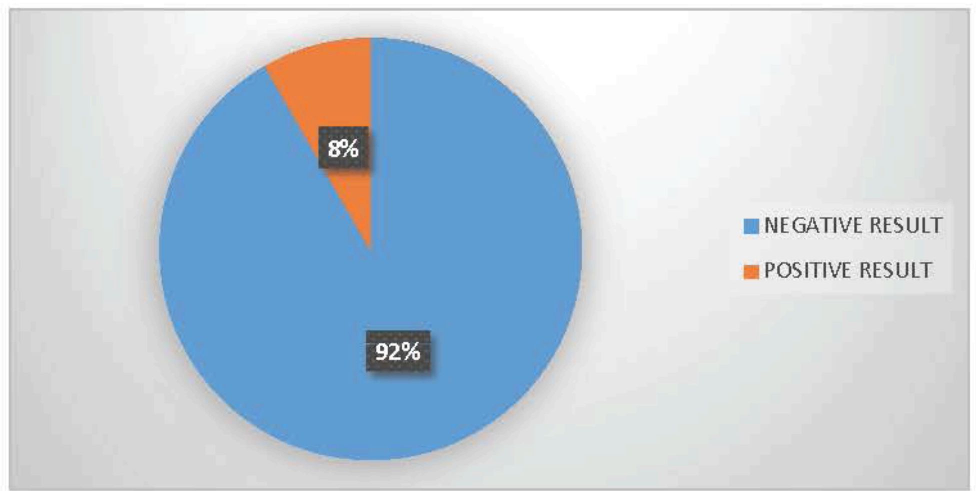
VARIABLES	WORLD	INDIA	MAHARASHTRA
TOTAL CASES	3672238	56342	17974
NEW CASES	83465	3390	1216
TOTAL DEATHS	254045	1886	694
NEW DEATHS	6539	103	43
MORTALITY	6.92 %	3.35 %	3.86 %

Health (NIH) in Bethesda, Maryland, has unveiled a partnership with more than a dozen companies that aim to coordinate the development of drugs and vaccines for coronavirus. And the Coalition of Epidemic Preparedness (CEPI), a global foundation that funds vaccine development, is supporting nine different vaccines. Some of the kinds of vaccines being developed like RNA vaccines have not been widely tested in people or won regulatory approval. A vaccine developed at the Jenner Institute at the University of Oxford, UK, is currently undergoing early-phase trials.

Another challenge will be determining how the different vaccines compare to one another; whose proposal for an efficacy trial could allow the performance of different vaccines to be directly compared. Expected global demand for a corona virus vaccine could make developers more willing to cooperate.

According to the CDC, there are six stages of vaccine development: exploratory, pre-clinical, clinical developments which include three phases of trial, regulatory review and approval, manufacturing and quality control. Given the meticulous testing and approval protocols involved in all these stages, with the ultimate goal of testing for safety, side-effects and, of course, the ability to induce immunity,

Total samples tested for COVID-19 in Maharashtra (N=200477)*



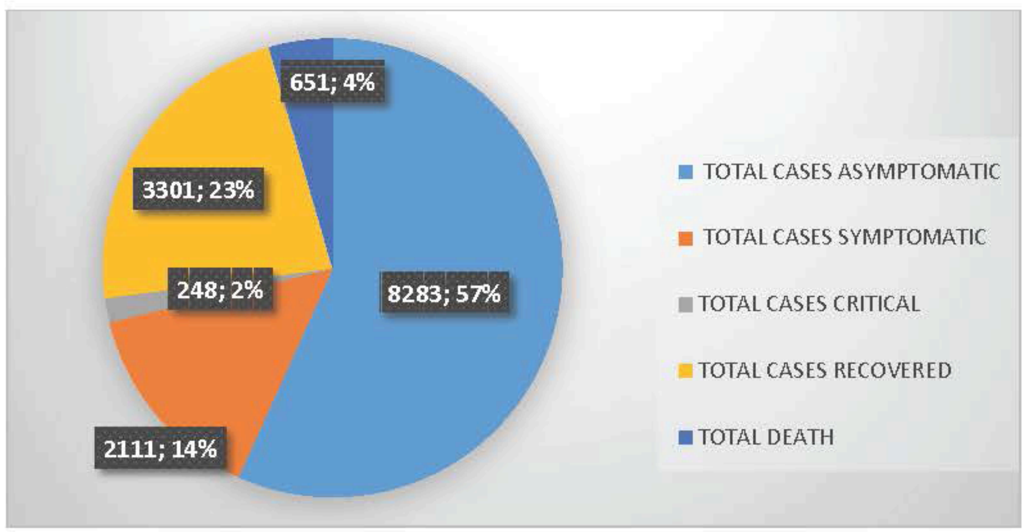
*Details are available for 200477 tested samples

COVID-19 Testing status in Maharashtra.(N=200477)*

STATUS	GOVERNMENT LABS	PRIVATE LABS	TOTAL
SAMPLES TESTED	103768	96709	200477
NEGATIVE	95016 (91.57 %)	88846 (91.87 %)	183862 (91.71%)
POSITIVE	8752 (8.43 %)	7863 (8.13 %)	16615 (8.29 %)

*Details are available for 200477 tested samples

Status of COVID-19 Cases in Maharashtra (N=14594)*



*Details are available for 14594 cases

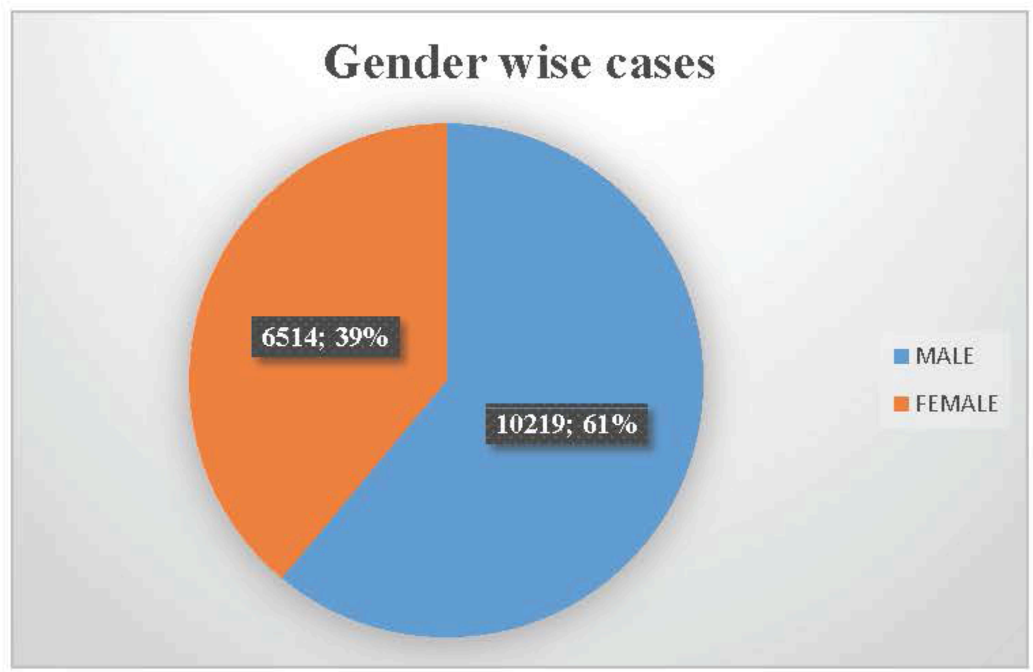
it can take years to move a vaccine from a lab to the general public.

Dr Narendra Saini, Chairman, Scientific Committee DMC, IMA_ EDB Corona Committee, said, "Even when vaccine is tested successfully, normally new vaccines cannot be produced quickly and in sufficient supply. Each step of the manufacturing process must be verified and tested, and may face supply chain bottlenecks. Normally, it may take 10 years or more but timeline, however, can change when a public health crisis, such as an outbreak or a natural disaster, emerges like in present times. The mumps vaccine considered the fastest ever approved, took four years."

"We want a new vaccine as fast as possible, and research is underway around the world towards this goal. First step is genome sequencing. Scientists around the world have a head start as this was provided by scientists from China. Most of the vaccine being researched is based on injecting a small amount of cloned genetic code from coronavirus, building and producing the 'spike proteins' of this virus. These spikes, theoretically, would generate a response from the immune system that can protect against a novel coronavirus attack in the future", Dr Narendra Sain, added.

History suggests, for probability of success, there is need to actively pursue not two or three vaccine candidates, but more. WHO has listed over 80 that are in various stages of

Gender wise distribution of COVID-19 Cases in Maharashtra (N=16733) *



*Details are available for 16733 cases

clinical research. According to a report at least six Indian firms are also engaged in developing a novel coronavirus vaccine, either independently or in partnerships with international companies. As per report at present, there are seven vaccine candidates who are in first or second phase of trial. Closest prediction seems to be by Oxford University scientists who are confident that their vaccine could be ready by September. Who will be successful, only time will tell, while WHO Health Emergencies Programme, already claims that a vaccine for coronavirus is at least a year away. This seems to be a realistic statement, anything earlier will need extraordinary efforts from scientists across the world and some luck as well that the virus does not have a major change

FELUDA: LOW-COST TEST FOR COVID-19 DEVELOPED IN INDIA

It is the first such indigenous test kit to be developed in India based on

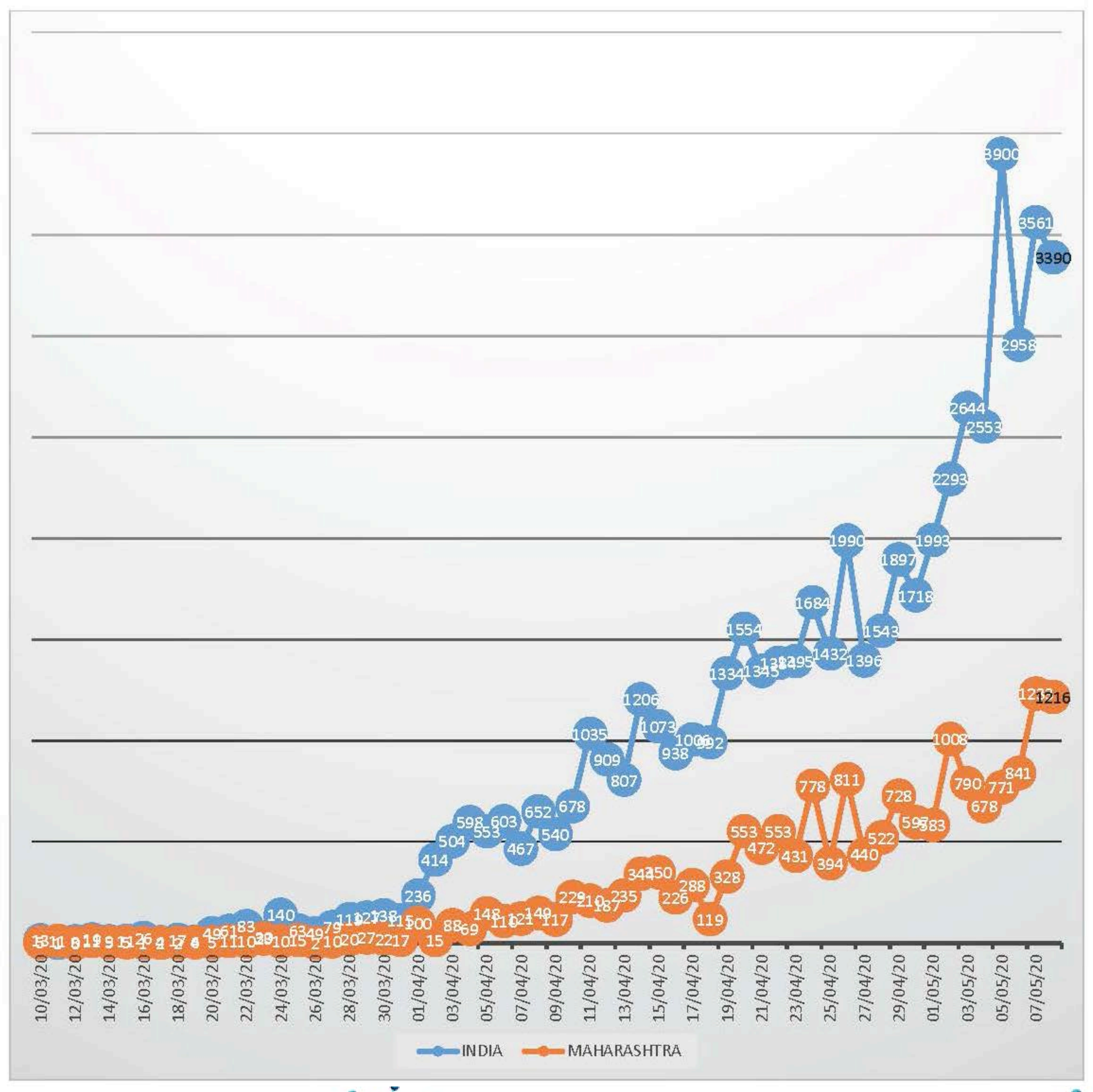
CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) technology. Named after “Feluda”, the detective character in legendary filmmaker Satyajit Ray’s stories, the test has been developed by Debojyoti Chakraborty and Souvik Maiti. Feluda is also an acronym for the scientific name of the test — Fncas9 Editor Linked Uniform Detection Assay. It uses CRISPR technology for detection of genomic sequence of novel coronavirus. Test protocols are simple, easy to interpret and results are made available in relatively lesser time. Through a nasal swab, we get RNA samples of the virus from the patient. It starts the same way as normal RT-PCR, which is the extraction of RNA and by using a specifically designed PCR reaction to amplify a part of the viral nucleic acid sequence. Then a highly specific CRISPR, FnCAS9, binds to that sequence using innovative chemistry on a paper strip, can be visualized as a positive band - like one sees in simple pregnancy tests.

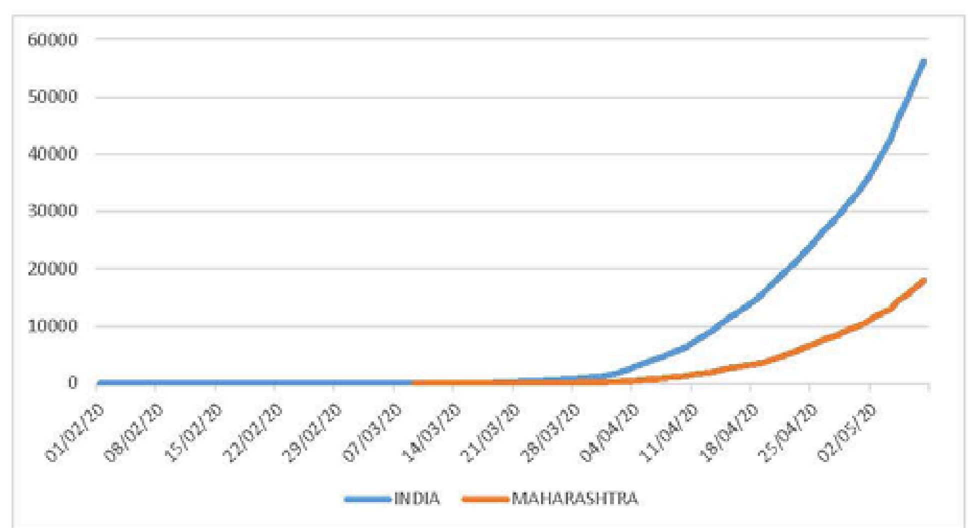
The results are known in around one hours and cost will be around Rs 500 to Rs 700.This is a qualitative test, it can tell presence or absence of corona and can be useful for mass testing. Main advantages are its specificity, affordability, relative ease of use and non-dependency on expensive PCR machines

ARE MEN SUFFERING MORE THAN WOMEN?

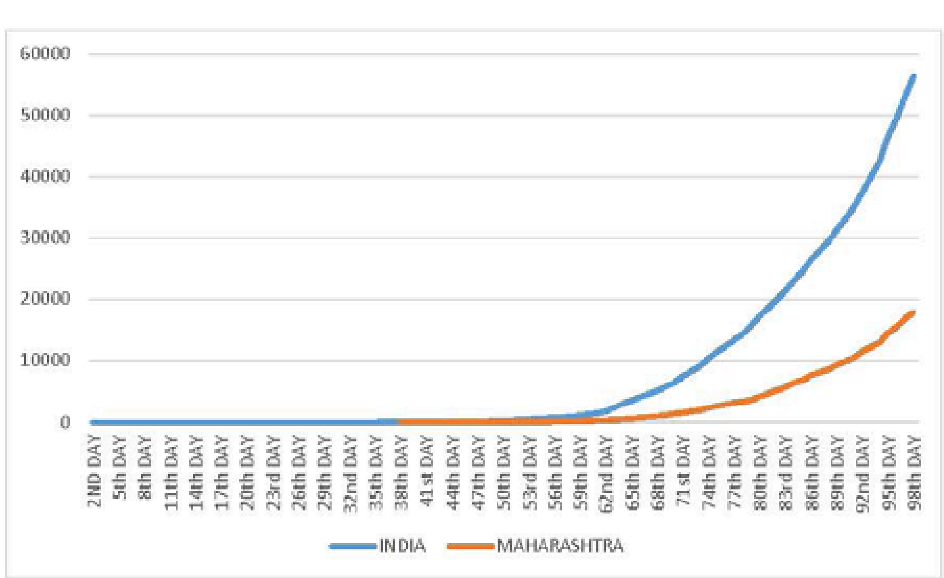
It is apparent from reports across the world that men are suffering from increased morbidity and mortality from COVID-19 compared to women

Datewise Distribution of COVID-19 New Cases in India & Maharashtra





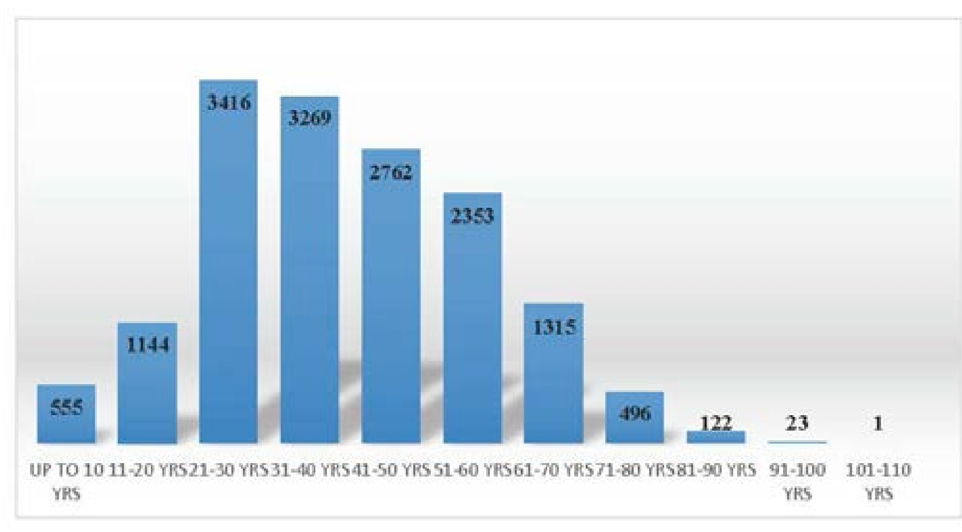
Day wise trend of COVID-19 Cases in India (N=56342) & Maharashtra (N=17974)



According to scientific literature, the men have higher rates of smoking and more chronic health conditions such as diabetes and heart disease compared to women. Men also use hand hygiene less often than women. Men are also disadvantaged by their low levels of estrogen, which protects women from many diseases. Women have been thought to have a more vigilant immune system compared to men, may be only one chromosome in male. A recent study by **Dr Jayanthi and Dr Aditi Sha** has proposed that presence of testicles in men makes them more vulnerable to longer and more severe cases of COVID-19.

ACE2 (Angiotensin Converting Enzyme) receptor expressed in tissues is critical to mediate the entry of the virus, that interacts with the novel coronavirus's spike proteins and facilitates the entry of this virus into human cells. They found ACE2 receptor in abundance in the testes, however it was entirely absent in the ovaries. Beside ACE2, there are other proteins that contribute to this process. If their hypothesis was true, testicular inflammation should be a common symptom, which is not true. No evidence that reduced testicular function is an outcome of this virus.

Age wise distribution of COVID-19 Cases in Maharashtra (N = 15456)*



*Details are available for 15456 cases

Temporary reduction in number of spermatozoia can be observed with high fever of any cause. There is no sign of the virus in the semen of infected men. Some hormonal changes could be due to general inflammation affecting also the gonad function.

COVID-INDUCED MORTALITY

Dr Ravi Wankhade, Past President National, IMA, said, "Three points on confirmed death figures merit attention. All three points are true for all currently available international data sources on COVID-19 deaths.

1.The actual total death toll from COVID-19 is likely to be higher than the number of confirmed deaths – this is due to limited testing and problems in the attribution of the cause of death.

2.The figure of confirmed deaths and total deaths varies by country. How COVID-19 deaths are recorded may differ between countries (e.g. some countries may only count hospital deaths, whilst others have started to include deaths in homes).

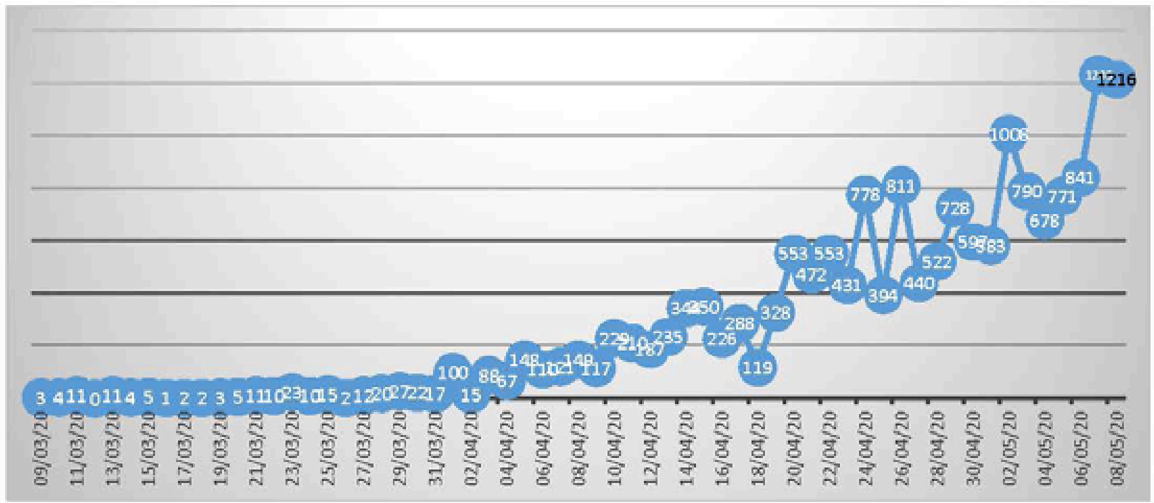
3.The reported death figure on a given date does not necessarily show the number of new deaths on that day: this is due to delays in reporting.

The case fatality rate is the number of confirmed deaths divided by the number of confirmed cases. During an outbreak – and especially when the total number of cases is not known – one has to be very careful in interpreting the CFR. The attribution of deaths to specific causes can be challenging under any circumstances. Health problems are often connected, and multiplicative, meaning an underlying condition can often lead to complications which ultimately results in death. This is also true in the case of COVID-19: the disease can lead to other health problems such as pneumonia and acute respiratory distress syndrome (ARDS).

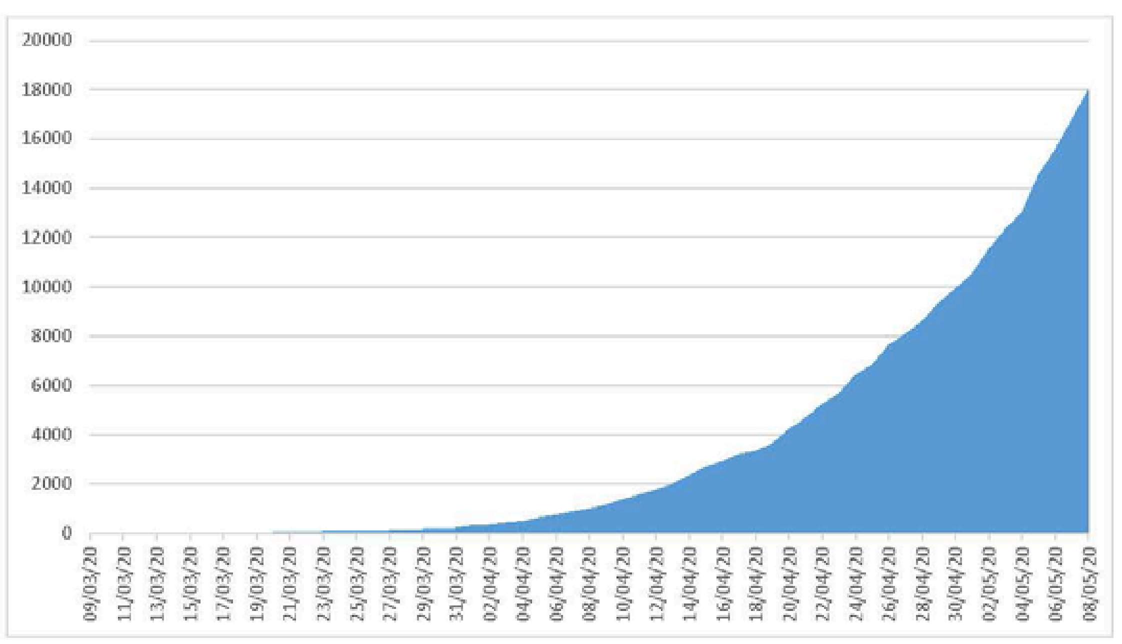
"So, how are deaths from COVID-19 recorded? What is and isn't included

Datewise Distribution of COVID-19 Cases in Maharashtra (N= 17974)

a) Datewise Distribution of New cases

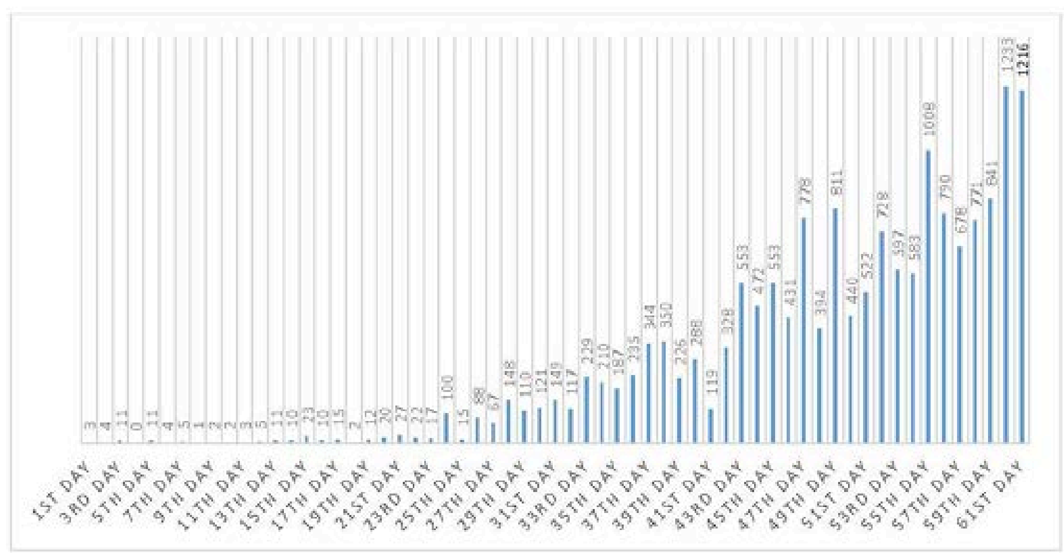


b) Datewise Distribution of Cumulative cases

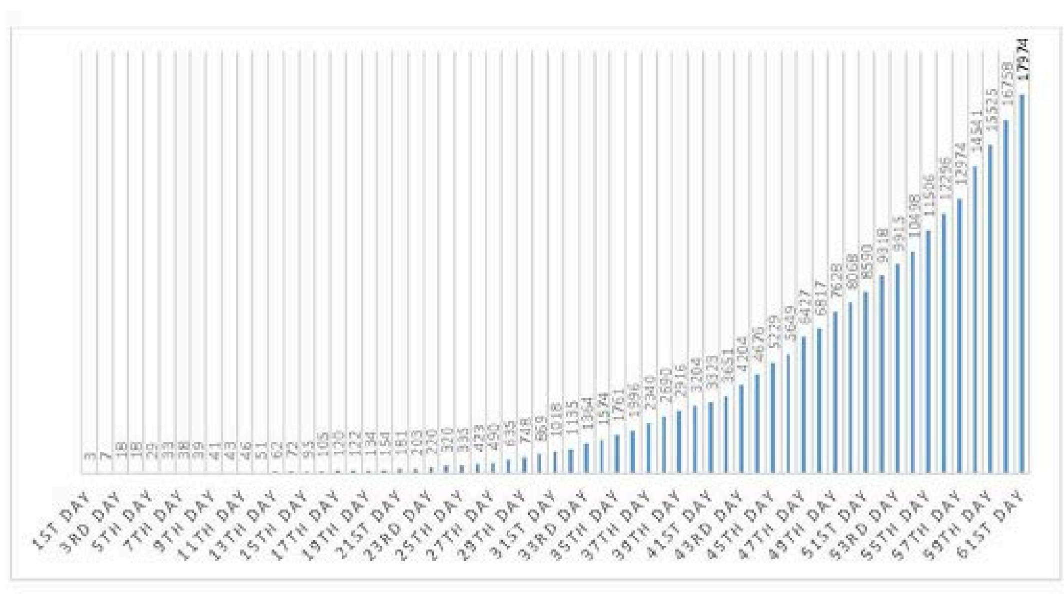


Daywise Distribution of COVID-19 Cases in Maharashtra (N= 17974)

a) Daywise Distribution of New cases



b) Daywise Distribution of Cumulative cases



in these totals? As is standard in death reporting, countries are asked to follow the 'cause of death' classifications from the WHO's International Classification of Diseases guidelines. However, countries also typically provide their own guidance to practitioners on how and when COVID-19 deaths should be recorded. Let's take a look at two concrete examples of national guidance: the United States and the UK. Both provide very similar guidelines for medical practitioners on the completion of death certificates – the US CDC's Vital Statistics Reporting Guidance, and the UK Government guidance.

Both guidelines state that if the practitioner suspects that COVID-19 played a role in an individual's death it should be specified on the death certificate. In some cases, COVID-19 may be the underlying cause of death, having led to complications such as pneumonia or ARDS. Even when it's the underlying and not the direct cause, COVID-19 should be listed. Although confirmed cases are reliant on a

positive laboratory confirmation of the COVID-19 test, a laboratory diagnosis may not be required for it to be listed as the cause of death. In the UK guidelines, for example, it makes clear that practitioners should complete death certificates to the best of their knowledge, stating that "if before death the patient had symptoms typical of COVID-19 infection, but the test result has not been received, it would be satisfactory to give 'COVID-19' as the

Date wise Distribution of New Deaths due to COVID-19 in India and Maharashtra

cause of death, and then share the test result when it becomes available. In the circumstances of there being no swab, it is satisfactory to apply clinical judgment.

This means a positive COVID-19 test result is not required for a death to be registered as COVID-19. In some circumstances, depending on national guidelines, medical practitioners can record COVID-19 deaths if they think the signs and symptoms point towards this as the underlying cause.

The US CDC guidelines also make this clear with an example: the death of an 86-year-old female with an unconfirmed case of COVID–19. It was reported that the woman had typical COVID-19 symptoms five days prior to suffering an ischemic stroke at home. Despite not being tested for COVID-19, the doctors determined that the likely underlying cause of death was COVID–19 given her symptoms and exposure to an infected individual.

In an ongoing outbreak, the final outcomes – death or recovery – for all cases is not yet known. The time from symptom onset to death ranges from 2 to 8 weeks for COVID-19. This means that some people who are currently infected with COVID-19 will die at a later date. This needs to be kept in mind when comparing the current number of deaths with the current number of cases. So, it is very important to decipher the data on deaths and cases to know about the mortality risk of COVID-19..

Double Helical
A COMPLETE HEALTH JOURNAL

Mitigating COVID Pains

AN APPEAL

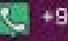
The Coronavirus pandemic calls for voluntary endeavours from stakeholders across the spectrum to contribute towards lessening the disastrous impact of the turbulent situation. Accordingly, Double Helical has set up a Relief Fund that invites contributions from industries, entrepreneurs and all individuals in helping re-build lives out of the ruins of COVID outbreak.

In the upcoming issue of the magazine, we are covering the activities of all such Organisations/Good Samaritans who are striving to make a difference in the life of the nation at this critical juncture. We are also organising webinars on all aspects related to India's fight against COVID-19.

Kindly participate in our social welfare endeavours with your time and resources to enable us to make our collective contribution towards national re-construction.

How to Donate to Double Helical COVID Relief Fund:

Name of Account: Double Helical Pvt Ltd
Bank name: HDFC / Kaushambi
A/C number: 5020001063177
IFSC Code: HDFC0002653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EMPOWERING THE ELDERLY

The government, healthcare providers and society at large need to take specific initiatives to ensure the medical, physical and emotional wellbeing of senior citizens...

BY DR STEVE PAUL MANJALY

For centuries in India, the extended family system served as a buffer for the elderly people. However, this deemed responsibility has taken a huge hit in the last few decades due to changes in the family structure and mobility of the younger generation. With only 1.28 % of the national GDP contribution towards healthcare, most patients have to fund for their own health expenditure. Middle-aged parents have to support their adult children in their early years, as well as their aging parents. This

aptly titled 'sandwich generation' finds it increasingly difficult to cope with it both mentally and physically. Elder abuse and neglect has become a common phenomenon. A majority of the disabled elderly are put in old age homes, which are often overcrowded and poorly maintained.

Ask any medical student on what he knows on geriatrics and you would find a dumbstruck student grappling with answers. The existing MBBS curriculum does not incorporate geriatric medicine in its 4+ years of training. Once graduated, these young doctors are lured into narrow stream 'super specialties' with very little knowledge of elder care. So, the government and private healthcare providers should implement the following steps:

- All older patients admitted in any specialty should undergo a rapid geriatric assessment by a geriatrician within 24 hours of admission. This will prevent complications, functional decline and increased hospital stay.
- A bi-weekly geriatric outpatient clinic, led by a physician or a geriatrician, needs to be promoted by both public and private healthcare providers.
- Hospitals should be made elderly friendly, with separate queues at the pharmacy, laboratory and fast track access to emergency care, across other specialties.
- Providing caregiver support for inpatients could help in improving patient care, as many of them live with their equally aged spouses who are unable to perform caregiver duties when their counterpart is admitted.
- The geriatric team should also comprise of a dedicated physiotherapist and a dietician to help address their mobility and nutritional needs.
- Outreach camps and home care services should be provided for every patient who needs support on discharge.

What initiatives need to be done by/among civil society at large to empower senior citizen?

Older persons need to be safe enough to venture out on the streets. Pavements modified for wheelchair use, public transport suited to their needs need to be established. Retirement homes and day care centres primed to the needs of the elderly need to be set up. NGOs could help in creating awareness of its benefits and help in its sustainability. Job opportunities should be made available for retirees and older persons. Senior citizen help groups could work in tandem with other officials and help identify patients with dementia and disability, to provide early medical aid..

(The author is HOD, Geriatric Medicine, Jubilee Mission Medical College, Thrissur)

NEED FOR A HOLISTIC APPROACH

Healthcare for the elderly requires special attention, government policies, dedicated resources and adequate capacity building, incorporating the provision of older-person-centered and integrated palliative care. The WHO has called for study of geriatrics to be made essential for medical students worldwide...

BY DR GIRDHAR GYANI

Healthy ageing is a major public healthcare challenge in India. The process aging is a universal phenomenon and India is no exception to this .Elderly population (60+) jumped 35.5 percent — from 76 million in 2001 to 103 million in 2011 in India, while the country's overall population grew by 17.7 percent. Today older people consist approx. nine percent of the total Indian population and their population is projected to reach over 20 percent by 2050.

The population dynamics fuelling India's growth and changing age structure are rooted in the combined impact of increasing life expectancy and declining fertility. For example, in India LEB (Life Expectancy at Birth) for both sexes increased from 53 years in 1975 to 64 years in 2000 and is expected to reach 72 years by 2025.

Experts are of the opinion that healthcare for the elderly would require special attention, government policies, dedicated resources and adequate capacity building. Internal statistics indicate a grim picture, for example, Maharashtra has the fourth-highest number of elders with 9.2 percent of the population, Tamil Nadu with (10 percent), Himachal Pradesh (10.1 percent) and Kerala (11.8 percent) respectively.

This rapid demographic transformation will have shocking implications for healthcare providers in India.

Unfortunately little effort has been made to understand the health and social care needs of elderly in India. There is a huge shortage of manpower in geriatrics in the country and this does not seem to improve in the near future. India at present needs at least 1 million geriatric care professionals. As the demand for geriatric care increases, the World Health Organization (WHO) has called for teaching on geriatric to be made routine for medical students worldwide.

Health care systems in countries like India will also have to adapt as the proportion of their older population continues to increase. In the light of population ageing, the education of tomorrow's medical doctors must include not only geriatrics care but also interdisciplinary approaches. The WHO recommends awareness for training all future medical doctors in the care of older persons. It also promotes the adoption of a life-course approach in the education and training of doctors. The WHO developed a study on Teaching Geriatrics in Medical Education (TeGeMe) - a joint initiative of ALC and the International Federation of Medical Students Associations (IFMSA) which focused on the integration of geriatric medicine within medical curriculums worldwide.

We in India need to understand that there is a vast difference between general nursing and geriatric care. Moreover social attitude towards elders in India is not very encouraging for various socio-economic reasons. India today is confronted with the massive challenge of putting in place an infrastructure to deal with various critical needs of an aging population that is vulnerable and needs special care. The undergraduate medical curriculum at present does not cover geriatric care completely, while postgraduate geriatric courses are almost absent in India. Making the resources available and capacity building of the staff involved in geriatric care will be an enormous task.

The societal response to population ageing will require a transformation of health systems that moves away from disease-based curative models and towards the provision of older-person-centered and integrated palliative care, it will require a coordinated response from many other sectors and multiple levels of government agencies. It must be built on a paradigm shift in our understanding of ageing to one that takes into account the diversity of older populations and responds to the inequities that often underlie ageing. It will need to draw on improved ways of measuring and monitoring the health and functioning of older populations.

The issue of ageing must be addressed thoughtfully & correctly. The elderly population suffers high rates of morbidity and mortality due to communicable & non communicable diseases. Given the challenges of an ageing population, the need for elderly immunization should be addressed by all stakeholders' especially through legislations and should be a part of the policy document of the government.

At present there is hardly any protocol in place to deal with the multi-dimensional physical, psychological, and emotional needs of the ageing population in India. A holistic approach and integrated efforts by the health and other related sectors in India is necessary to make an impact on geriatric care.

Coordinated impact of the following factors are likely to change the scenario as far as the plight of geriatric healthcare in India is concerned: change in social attitude towards elders through public campaigns, revising the curriculum of under graduate & post- graduate medical courses as per recommendations of WHO to cater to the needs of the geriatric population, introduction of special nursing courses to cater the needs of the geriatric population and legislation by the Government to address the various challenges faced by elderly population especially bestowing "adult vaccination" legislative significance (making adult vaccination mandatory for elderly population) will go a long way in addressing the issue of elderly care in India.

Association of Healthcare Providers (India) intends to come out with a dedicated FORUM for Elderly Care to address issues in close coordination with government and other stakeholders.

(The author is Director General, Association of Healthcare Providers, India)

ADDING LIFE TO YEARS

In today's fast changing social paradigm, there is need for separate, properly equipped old age homes with all types of facilities such as a worshipping place, medical facilities, ICU, ambulance, open walking green space, clean kitchen and a club with indoor games, amphitheatre and entertainment zone...

BY UPASANA ARORA

Almost every other day, I get panic calls from some old people who either seek personal help in sorting out family tiffs or enquire about possibility of having a decent old age home as their own children are too busy in their personal lives and pressing daily chorus to spare some time for them. On several occasions, I grope for convincing answers but mostly in vain.

When we talk about geriatric care in India, it's a very new concept. In Indian culture, elderly care has always been part of a family responsibility. But now society is changing giving way to advent of old age homes. One more reason is that average life span has extended substantially. Now people are looking after themselves properly and living for more years. So, it is the need of the hour that there should be a separate, properly equipped wing for looking after this age group.

The Government should take the initiative and private healthcare providers should also contribute in this task. First we should understand the needs of this age group: what are the common infrastructure they require and what kind of problems they are facing. And, which kind of ambience can give them comfort so that we can create places specifically for geriatric care. These sites should have complete care under one roof and patient and attendant should not feel neglected or lost.

Senior citizens are backbone of the society so the latter should create proper atmosphere for senior citizens where they should feel comfortable and respectable not neglected or humiliated.

If I talk about my dream I want to create a place where senior citizens should live together with all types of facilities like club, and worshipping places. And, there should be all medical facilities for them 24x7. If they can't walk, a wheelchair, helper should be there. An intensive care unit should also be housed there so they can be treated immediately in case of any emergency. An ambulance should always be at their disposal.

On normal days, they should enjoy happy active life, even if anyone is on wheel chair and diapers, with other inmates and friends. There must be facilities of indoor games, open walking green space, entertainment –amphitheatre and clean kitchen.

The senior citizens are boon not bane for the society because they are have treasures of knowledge and experience that can guide us for years. Young and enterprising people should also come forward to make old care places so much comforting that the elderly themselves happily wait for their turn to be a proud occupant there.

(The author is Director, Yashoda Super Speciality Hospital, Kaushambi, Ghaziabad)

PROVIDE COMPREHENSIVE CARE

Though the Government has launched several initiatives and welfare schemes for the elderly, it needs to do much more to provide accessible, affordable and high quality long-term, inclusive and dedicated services to the ageing population...

DR PRATIBHA PEREIRA

The elderly account for around 9 per cent of the total population, of which two-thirds live in villages and nearly half of them in poor conditions. By 2050, more than one in five people will be aged over 60, taking the elderly population to reach over 20 percent.

According to the Census of India 2001, 72.22 percent of elderly live in rural areas while 27 percent are in the urban sector. Some studies have revealed that 90 percent of elders in India belong to unorganized sector and are unable to access healthcare facilities. Elderly people are highly prone to mental morbidities due to ageing of the brain, problems associated with physical health, cerebral pathology, socio-economic

factors such as breakdown of the family support systems, and decrease in economic independence.

Around 60 percent of senior citizens in India depend on others for their day to day survival of which 80 percent depend on their children as 60 yrs is the retirement age .India's demography is in a phase of transition. And of course, the potential for illness and disability looms large. India has 100 million elderly population who suffer from multiple co morbidity, age related issues due to declining physiology and social, psychological and economic problems

ROLE OF GOVERNMENT

Government of India has launched many initiatives and welfare schemes for the elderly and has passed various legislations such as the National Policy on Older Persons (NPOP), various pension schemes, and National Programme for Health Care of the Elderly (NPHCE) to provide accessible, affordable and high quality long-term, comprehensive and dedicated care services to the ageing population.

RECOMMENDATIONS FOR THE GOVERNMENT:

- Extend the retirement age to 70
- Reserve a percentage for part time jobs.
- Encourage self-employment.
- Evaluate the use of this human resource based on chronological aging, biological aging and life span.
- Comprehensive geriatric clinic in every hospital.
- Recognise the IGNOUE training programme in geriatric care
- Large rural-based mobile hearing assessment clinics for the elderly with free hearing aids.

RECOMMENDATIONS FOR PRIVATE HOSPITALS

- To provide the highest quality clinical care to improve the health of older adults and society by creating and translating knowledge through education and research.

SET UP SPECIAL OPD FOR COMPREHENSIVE ASSESSMENT OF THE ELDERLY

When confronted with myriads of medical illnesses in the elderly, there are possibilities of overlooking the most prevalent disorders like subclinical depression, memory impairment, risk of fall, and mobility issues. Mental health, barring major psychiatric diseases or Alzheimer's, is not given due importance. Importance of assessing the mental health cognition helps in using this enormous human resource. Other complex issues include polypharmacy, frailty, ageism, research in gerontology, and creation of fast track care for the old and the oldest old including home care services, and palliative care.

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ASPIRATIONS FOR ELDERLY

IbIn Bangalore's Senior Citizen initiative has taken the lead in suggesting comprehensive measures for the care of the elderly to ensure that they live a dignified and fulfilling existence in their sunset years...

BY DR ALEXANDER THOMOS

India is experiencing a rapid demographic transition characterised by a significant increase in the numbers of the elderly. In 2011, this segment accounted for 8.2 percent of the country's population. But, by 2050, it is expected to touch the 20 percent mark.

The needs of India's older adults are unique. Owing to the society's diverse cultural and socio-economic composition, our elderly segment must thus be addressed at many levels. This warrants adopting a holistic approach that includes strengthening health care, facilitating economic empowerment and promoting social integration. Not only that, but vulnerable groups among the elderly – rural women, the widowed, the disabled, the SC/ST sections of the populace, tribals, migrants, refugees and the homeless – require even closer attention.

The most effective approach would be to foster collaboration among seemingly diverse stakeholders so that the needed momentum for the care of the elderly is reached, their rights are preserved and a dignified and fulfilling life becomes a reality for them.

Aspirations for the Elderly is the first element of this collaborative effort. India Backbone Implementation Network (IbIn) is anchoring an initiative for elderly healthcare. Based on a

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national think tank of experts' in-depth knowledge and first-hand experience of the needs of the elderly, the related legislation and state policy and the strengths and weaknesses of elder care programmes in our country, the NTT recommends five major areas of focus in elder care – health, social, financial, empowerment and legal.

Going forward, IbIn will take the lead in implementing the strategies that come out of the recommendations detailed in this document. The more the elderly age, the further their health deteriorates. This adversely affects not only something as basic as their activities of daily living (ADL, e.g. eating, bathing and dressing) but, prevents most older adults from utilising healthcare facilities because of the limitations it imposes on their intellectual, physical and financial ability. Moreover, their financial dependence on their children and others often restricts them from accessing healthcare and enjoying a good quality of life during their sunset years.

Sensitizing political leaders on the issues involved is especially important, as political will is critical in addressing the health needs of the elderly. These leaders need to champion enhanced budgetary allocations, equitable human resource distribution, innovative delivery systems and stronger administrative mechanisms for better healthcare for the elderly.

Government could promulgate legislation to introduce well-conceptualized, universal health insurance schemes that cover all essential geriatric illnesses at modest premiums. The state could, through measures worked out jointly with insurance companies, finance Universal Health Coverage for the elderly so as to reduce their out-of-pocket expenditure.

Nationwide publicity through massive, well-strategised campaigns could promote awareness on various issues concerning the elderly. Enlisting advertising, public relations professionals and journalists with the

print and electronic media to educate the younger age groups in healthy ageing would foster social inclusion among older adults.

Strengthening and making existing primary health care systems elder-friendly are also required. While the former could be achieved by setting up and establishing new infrastructure, a mechanism for functional referral to higher centres would help these systems become elder-friendly. Further, re-targeting the associated health services at primary, secondary and tertiary levels would go a long way in making them affordable, accessible and elder-sensitive.

The state could encourage private and public-sector technology organisations to develop innovative remote access devices, applications and channels for monitoring, delivering and following up on elderly care and well-being. A variety of incentives could be employed to spur the creation of low-cost, out-of-the-box solutions based on existing platforms, e.g. telemedicine, short text messaging, telephone and the Web.

India's network of district hospitals has reached a stage of maturity that should allow them to be re-designed as "one-stop" centres offering services for the elderly. With specialist support provided by both public and private sectors, this state-owned infrastructure could deliver a comprehensive range of services to older adults.

In contexts where non-allopathic treatment has higher efficacy, collaboration with alternate systems of medicine would broaden the scope of the preventive, curative and rehabilitative care of the elderly.

Another mode of maximising reach for elder care would be capacity-building of the country's medical and non-medical workforce through both formal and non-formal courses. This would ensure the availability of skilled manpower at all levels. Embarking on training on a war footing would help meet the rising demand for geriatric care. Public-private partnership (PPP) could also make available numerous options for affordable and accessible elder care. Promoting some of these PPP organizations as centres of excellence for research and treatment in specific older adult health conditions like dementia, disability and non-communicable diseases would add significantly to the body of knowledge in elder care.

SOCIAL CONCERNS:

The social structure of Indian communities is changing rapidly, influenced by globalisation, urbanisation, migration, a changing work culture and the shift towards nuclear families. This has shrunk the social life of the elderly, imposed limitations on their societal roles and vitiated the quality of life that is essential for them. The priorities of the young seem to be replacing the needs of the elderly.

In such a climate, the much-needed tolerance of and care for the older generation must be instilled in the youth by implementing value-based education in schools and in young adults by encouraging activities that enhance cross-generational expressive ties. A society whose children, youth and young adults, together with those in middle age, care for and support the dependent elderly, is alive and vital. Such societies also readily adopt barrier-free standards in living and working spaces and transportation systems. They facilitate access for the elderly to friends, family and the wider community and strengthen instrumental

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ties across those age brackets.

LEGAL ASPECTS

Despite constitutional rights and legal provisions in the Indian legal framework, there are no laws in the country that specifically protect and promote the human rights and fundamental freedoms of older adults. To obtain justice when their rights are violated, the elderly must follow the same tedious legal processes to which the less vulnerable sections of society are subjected.

Moreover, the penal provisions under the Maintenance and Welfare of Parents and Senior Citizens Act (Imprisonment, Fine and Disinheritance) 2007 are difficult to execute, as parents find it difficult to plead for punitive action to be taken against their errant children. The safety and legal protection of life and property for the elderly continue to be big concerns. Against this backdrop, resolution of disputes regarding maintenance of the elderly should include dispute settlement mechanisms such as mediation, instead of the penal provisions of the Act. Special provisions should also be included in the Indian Penal Code to protect older adults from domestic abuse. Specific and comprehensive legislation to grant special status to older adults, and especially the minorities among them, would be needed.

Systemic measures, such as simplified legal procedures to deal with violations of the rights of the elderly, would firmly underpin such legislation. This could include free legal aid, legal aid help lines, and sensitization and advocacy programmers to raise awareness among the elderly of their legal entitlements and, concurrently, orientating and sensitizing the law enforcement machinery. This could include the formulation of other legislation related, for instance, to end-of-life care, advanced directives, anticipatory care plans, and withdrawal of feeding and not-for-resuscitation exigencies.

THE WAY FORWARD

Clearly, the way forward is collaborative multi stakeholder engagement so that a forum for IbIn Bangalore's Senior Citizen initiative may be developed. Aspirations – which represents the first product of this collaboration – has created a platform for discussion and cooperation across sectors. The gaps identified in this document and the ideas that can help close them can be translated into strategic programmers to serve India's elderly.

This initiative has identified five major areas of need and recommended programmatic measures to address them. It is hoped that the recommendations will encourage individuals and agencies to invest further in elder care systems so that manifold returns may be hoped for in the future. In parallel, while implementation is strengthened through the initiation of large-scale programmers, cost-effective and evidence-based research should be given the required impetus so that it is distilled into policy that preserves the rights of the elderly and assures them a dignified and fulfilling life.

(The author is President, Association of National Board of Accredited Institutions)

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