How Kerala Is Fighting Corona virus after declaring it "State Calamity"
Source: - NDTV.Com, 04 Feb 2020

Coronavirus: The viral disease, which has killed 450 people in China where it originated in December, was declared a global health emergency by the World Health Organisation last week as it spread to more than 20 countries.

Thiruvananthapuram: Kerala has stepped up efforts in fight against the lethal disease caused by Novel Coronavirus- declared a "state calamity" on Monday- after confirming first three cases in India in the last five days. More than 40,000 health officials, government employees, ground staff have been mobilised for three hugely challenging tasks - surveillance, contact tracing and counselling. The viral disease, which has killed 450 people in China where it originated in December, was declared a global health emergency by the World Health Organisation last week as it spread to more than 20 countries. All three coronavirus patients in Kerala are students who returned from China's Wuhan city - the epicentre of outbreak - last month. They are admitted in three different hospitals in north Kerala's Kasaragod, Central Kerala's Thrissur and south Kerala's Alappuzha. Twenty-eight isolation facilities have been prepared in the state - two from each district.

In the last three days, over 80 people - who came in direct contact with the three coronavirus patients - have been traced and placed under observation at hospitals and isolation wards. Over 2,230 people are under watch across the state; around 75 of them are in isolation wards and rest of them have been quarantined at homes. "Co-ordination is being carried out at a mammoth scale. The health department has over 40,000 employees. There are forty other state government departments - animal husbandry, revenue. Several departments will be working together. This goes all the way down to the 1,200 local self government institutions, right till the ground level", Rajan Khobragade, State Health Principal Secretary, explained to NDTV. The Rapid Response Team in Trivandrum is chaired by the state health minister herself. Sources have confirmed to NDTV that health officials in Kerala sought support from the civil aviation ministry and details of passengers who traveled with the affected three students fron Wuhan before the screenings began at airports across the country. Over 50,000 passengers across the country were screened at airports across the country till Saturday, Union Health Ministry said. Contact tracing begins with a detailed interview of the patients, helping them recall as as many details of people they came in direct contact with. Details can be location specific, names of places they visited or people they

met. More than 600 people were evacuated by India from Wuhan, where they were locked down amid outbreak, over the weekend. "Most students studying at Wuhan are from Kerala and that's why we have been making these mass appeals, intensifying all our measures to contain any possible spread. While people are responding to our appeals very well. If there are people who do not co-operate, we may be forced to take action", KK Shailaja, Kerala's Health Minister has said. On Monday, Kerala declared coronavirus a "state calamity". This would mean 'all hands on deck', officials said. "All leaves have been cancelled , seven district collectors were to leave for Mussoorie for their training. Now, they have been asked to stay back. It's about streamlining the government machinery to break the chain of contact," state health minister said. There is a special designated team of doctors and counsellors who have been personally calling the people under isolation at homes or at hospital.

So far, they have personally called and counselled 372 people, giving them specific numbers to call back at any point if they are anxious or fearful about anything. "We call people, reassure them, give them a number that they can call back on anytime if they deal with anxiety, sleeplessness. This number is functional 24x7. We already had 105 counsellors posted in 10 districts affected by floods in the last two years. So this positioned us in a much better way to reach out to effected families for counselling", Dr Kiran, the nodal officer for mental health in the state, told.

State, ICMR Bangalore to ink pact for cancer registry

Source:- TimesofIndia.com, 04 Feb 2020

JAIPUR: Soon, each and every case of cancer will be registered in the state as the health department is planning to sign an MoU with Indian Council of Medical Research (ICMR), Bangalore, which will provide a software to the health department to register each case of cancer along with other details such as part of body, stage of cancer at the time of diagnoses. Cancer has emerged as one of the non-communicable diseases, which has attracted attention of the health authorities. The state-of-the-art government’s cancer hospital is all set to get inaugurated. At a time when studies suggest that 70% of cancer cases are diagnosed at an advanced stage, the state government does not have the actual figures of cancer cases and actual burden of disease in the state. In the state, there are only six hospitals including government and private, which have their own hospital-based registry of cancer. However, the health department

is planning to prepare a population-based registry to find out the actual burden of different kinds of cancers in the state, said a health department official. The health department has no details of the actual number of patients suffering from different kinds of cancers such as cervical, gall bladder, oral, head and neck, lung, stomach, colorectal, and oesophagus whereas in females, breast cancer, cervix cancer and ovarian cancer in the state. With the new cancer registry, the health department will be able to find out the actual number of patients of each kind of cancer in the state. The official said that cancer has been declared a notifiable disease but as they want a paperless registry (online registry), they are taking the help of ICMR, Bangalore. All those patients, tested positive for cancer through histopathological examination will get registered. The health department is planning to get the details of all the cancer patients online from hospitals who are diagnosed with cancer through histopathological examination to find the actual burden of the disease, which would help in preparing policies for benefitting cancer patients in future.

Talking about the prevalence of cancer in the country, Dr Divesh Goyal, senior consultant, medical oncology, of a private hospital, said, “Eighty per cent people in the country consult with a doctor when recovery is difficult, also 71% death caused at the age of 32-69 years. Due to late detection of cancer 70% of the people die in the first year, whereas 15% die because of lifestyle factors, obesity and tobacco use, and other 15% cancers in minors.”

Malaria Vaccine for Pregnant Women Yields Promising Results

Source:- Med India, 05 Feb, 2020

A team of researchers from Inserm and Université de Paris led by CNRS Research Director Benoît Gamain had spent the past two decades developing a vaccine for gestational malaria. However, pregnant women are an exception because the red blood cells infected with the Plasmodium falciparum parasite responsible for malaria accumulate in the placenta, promoting anemia and gestational hypertension. The disease is also linked to a higher risk of spontaneous abortion, premature birth and intrauterine growth delays which lead to low birth weight and a high rate of neonatal mortality. The goal is to prevent the deaths of up to 10,000 mothers and 200,000 babies each year. "Developing an effective vaccine for young women before their first pregnancy is a priority if we are to reduce malaria-related mortality. An effective strategy could focus on a population similar to that targeted by HPV vaccination, for example, before the women become sexually active", emphasizes Benoît Gamain. A safe and effective vaccine

Called PRIMVAC, the vaccine had recently been produced in large quantities in accordance with current regulations. In a clinical trial published in Lancet Infectious Diseases, the researchers provide data on its safety and ability to induce an appropriate immune response, up to 15 months after the initial vaccination. The vaccine was evaluated in 68 non-pregnant women aged 18 to 35 at the Cochin Pasteur Clinical Investigation Center in Paris, then at the National Center for Research and Training on Malaria (CNRFP) in Ouagadougou, Burkina Faso. The participants were randomly assigned to 4 cohorts, receiving the vaccine at various doses, on 3 occasions over a period of 3 months. These women were then monitored for 15 months in order to identify and treat any side effects and study the immune response induced by the vaccination. The results of this study show that PRIMVAC is well tolerated. In addition, the researchers have shown that vaccine can produce an immune response, with the production of antibodies in 100% of women vaccinated after only two injections. The antibodies produced are capable of both recognizing the parasitic antigen on the surface of the infected red blood cells and inhibiting their adhesive capacity, which is responsible for their accumulation in the placenta.

"We were able to show that the vaccine is well tolerated, at all the tested doses. The side effects observed were mainly pain at the injection site. We also revealed that the quantity of antibodies generated by the vaccine increases after each vaccination and that they persist for several months. It therefore appears that the vaccine has the capacity to trigger a lasting and potentially protective immune response", underlines Gamain. Studying this immune response on the longer term will be the subject of future clinical trials. The researchers want to continue monitoring the 50 Burkinabe volunteers in order to evaluate whether the immune response induced by the vaccination is maintained until their first pregnancy.

Indian Council of Medical Research Offers Drug For Corona virus Treatment

Source:- Outlook India, 07 Feb 2020

ICMR says it is an “experimental repurposed drug” and should be used only in cases where there is documented evidence of the person suffering from infection. Indian Council of Medical Research (ICMR) says it is offering an “experimental repurposed drug” for treatment of confirmed cases of novel coronavirus within the country. Responding to the panic over the deadly China virus outbreak, Raman Gangakhedkar, head of Epidemiology and Communicable Diseases (ECD) division, ICMR, told Outlook that “Even as other people are searching for cures,

ICMR has certainly started thinking in terms of providing one of the medicines, which is still an experimental repurposed drug, on compassionate grounds." Declining to identify the drug, given the tendency of people in India to indulge in self-medication, Gangakhedkar says as it is an experimental drug and should not be used by a person who suspects he has coronavirus. "So we are not publicizing this. We have suggested its use only in cases where there is documented evidence of the person having the virus. Only then will you be offered this treatment. Also, only if you feel comfortable, should you take this drug," says Padma Shri awardee Gangakhedkar. Despite the high transmission efficiency, Gangakhedkar feels there is no need to panic if people observe healthy and hygienic practices everyday such as washing hands, not spitting, and using clean tissues or handkerchief while sneezing or coughing, etc. Gangakhedkar also says that coronavirus has a very low mortality rate, though it has very high transmission efficiency.The deadly coronavirus has killed more than 425 people and infected a further 20,000 in China, nearly all of them in central Hubei province -- the epicentre of the outbreak -- and spread to two-dozen countries since it emerged in December.

India has reported three cases of coronavirus. All three patients from Kerala recently returned from China's Wuhan city. Currently, 647 Indians and seven Maldivians who have been evacuated from Wuhan and Hubei province are in 14-day quarantine at a medical camp in Manesar, near Delhi.The World Health Organization said that the outbreak of avirus does not yet constitute a "pandemic"

New details on how a viral protein puts the brakes on virus replication

Source:- Science Daily, 07 Feb, 2020

An interdisciplinary team of researchers at Colorado State University has used computational chemistry, biochemistry and virology to uncover new information on how viruses such as West Nile, dengue and Zika replicate. Based on their research, the team said these viruses appear to cripple their own genome replication machinery.

CSU researchers described the results as "surprising," and said the findings have implications for future vaccine and antiviral drug development. The study, "Motif V regulates energy transduction between the flavivirus NS3 ATPase and RNA-binding cleft," was published in the *Journal of Biological Chemistry* on Feb. 7.

How a virus replicates

Kelly Du Pont, first author of the study and a doctoral candidate in chemistry at CSU, studies Nonstructural Protein 3 -- or NS3 -- in flaviviruses, which cause a number of diseases in humans. NS3 is a key enzyme that these viruses use to copy their genomes. For flaviviruses to replicate, the NS3 helicase -- a viral enzyme that binds or remodels nucleic acid -- has to unwind the double-stranded ribonucleic acid. NS3 uses adenosine triphosphate or ATP, a molecule abundant in cells, as fuel to power the unwinding. Du Pont said the unwinding action is similar to what happens with a zipper on a jacket, while the energy produced from ATP driving the unwinding is similar to the transmission system of a car. "The release of energy from the fuel drives the pistons up and down to turn the transmission and then the wheels, causing the car to move forward," she said. "NS3 uses ATP as its fuel to unwind the double-stranded ribonucleic acid, but we don't know where the crankshaft or transmission is for this machine." Du Pont said this research was initially focused on trying to figure out what part of the NS3 protein acts as its molecular transmission. While studying the process, the team identified the part of NS3 that acts as a brake during unwinding. They also identified mutations that make NS3 unwind the double-stranded ribonucleic acid faster than is normally seen, but also make the virus replicate more inefficiently in cells.

Potential for drug, vaccine development

If researchers can learn more about how NS3 unwinds the double-stranded ribonucleic acid and how this process is controlled, they could potentially target areas within the helicase for development of drugs to treat virus-caused diseases. Brian Geiss, senior author on the study and associate professor of microbiology at CSU, said the findings could also one day lead to improved development of vaccines against these viruses. "Most vaccines are developed by finding random mutations that slow down virus growth," he said. "By understanding how viral enzymes like NS3 work in great detail, we can use that information to rationally design new mutant viruses that replicate less well and act better as a vaccine, without having to rely on chance to make the vaccine. This can help develop vaccines more rapidly and precisely." Du Pont, who specializes in creating computational simulations, has been working in Geiss's lab in the Department of Microbiology, Immunology and Pathology. While interdisciplinary work is common at CSU, Geiss said the breadth of Du Pont's project is not typical. "Kelly represents a true interdisciplinary scientist who can use the tools and knowledge from many different areas of science to answer previously unanswerable questions," he said. "She uses computational

chemistry, protein biochemistry and enzymology, and classical virology techniques to study how these viruses work in unprecedented detail. Kelly is what I hope we will see more of in terms of the scientist of the future," he said. The research team is now taking a closer look at how changes in NS3 affect replication of the virus and how the changes affect the ability of the virus to kill cells. Du Pont and Geiss are also working with the Ebel Laboratory at CSU to see how viruses with altered NS3 proteins infect mosquitoes and alter their survival during infection. Co-authors on the study include Russell Davidson, a recent graduate of the Department of Chemistry at CSU, and Martin McCullagh, assistant professor in the Department of Chemistry at Oklahoma State University, who conducted this research at CSU.

New Finding Paves the Path Forward in the Fight against Cerebral Malaria
Source:- Med India, 09 Feb, 2020

A key molecule involved in the development of cerebral malaria, a deadly form of the tropical disease has been discovered by scientists. The study identifies a potential drug target and way forward toward alleviating this condition for which few targeted treatments are available. The team also demonstrated that blocking EphA2 with different drugs prevented this dangerous symptom from occurring. According to the researchers, the findings indicate that a similar therapeutic strategy could potentially prevent the disease in humans. The advance is really significant," says Tracey Lamb, Ph.D., senior author of the study and associate professor in Pathology at University of Utah Health. "New targets to block a leaky brain in malaria are urgently needed to prevent mortality from cerebral malaria". The research, led by scientists at U of U Health in collaboration with Centre Pasteur du Cameroun in Cameroon, appears online in the journal PLOS Pathogens.Cerebral malaria strikes more than 575,000 each year, disproportionately affecting young children in sub-Saharan Africa. The tropical disease causes fluids to leak from the brain, and coma, eventually killing 20% of those who are infected. Among survivors, 80% develop long-term neurodevelopmental symptoms including seizures and mental health disorders. Disruption of the blood brain barrier is a critical step in the pathogenesis of cerebral malaria that makes the disease so deadly. True to its name, the blood brain barrier is made up of cells that line blood vessels and fit together tightly, assembling into a barricade. The semi-permeable cell wall keeps fluids from the nervous system from mixing with the bloodstream while allowing essential metabolites to pass through. Researchers took note of

EphA2 when they saw that the molecule became activated at the site of the blood brain barrier just prior to its breakdown. Further investigation showed that EphA2 disrupts the blood brain barrier by loosening the tight junctions between cells, removing the glue that keeps these cells bound to each other.With a key player identified, the scientists wondered whether blocking EphA2 would protect the blood brain barrier during infection. Treating infected mice with two different agents showed this seems to be the case. One agent was a repurposed cancer drug, Nilotinib, that inhibits several molecules including EphA2. The second was an engineered protein that specifically blocked molecules called ephrin ligands that will interact with EphA2 and prevent its activation. According to the study's first author Thayer Darling, Ph.D., it is notable that both therapeutics were effective when given four days after infection. They did not need to be administered as a preventive prior to infection which can be difficult to do in a real-world situation."Usually children are not brought in to the clinic until they're already experiencing symptoms of malaria," says Darling, who carried out the research as a graduate student with Lamb. "We're hopeful that therapeutics that target EphA2 may be able to prevent cerebral malaria in children after the onset of those initial symptoms." The work was primarily conducted in laboratory mice but additional results show clinical relevance. Blood from children with symptoms of cerebral malaria have elevated levels of an Ephrin protein that binds EphA2. Finding the marker in these children suggests the same pathway mediates the disease in both mice and humans.

"Understanding how infection with malaria parasites can lead to deleterious neurological conditions is key to discovering new therapeutic means to curb malaria-associated deaths globally," says co-author Lawrence Ayong, Ph.D., a professor at Centre Pasteur du Cameroun. "This research is very exciting and leads the way for future studies focused on modulating the activity of this protein in humans as a way to prevent malaria-associated deaths in children."