Infrastructure And Control Management In Tokyo: Infectious Disease Epidemiology

Introduction

Tokyo is the capital city of Japan, and has been considered as the urban centre which is the largest in the world. In the year 1853, Matthew C.Perry who was the Navy commodore of United States sailed into the Bay of Tokyo with his fleet led to the opening of the West in the country. Japanese society was considered as the most isolated society previously throughout the world. And then Japan felt the need of industrialization for which in the mid-19th century on words, there was an aggressive growth in the economic and industrialization was observed. It was a shock by witnessing such a massive increase and hence growth of a country in such a small pan of time. Japan is enclosed with four main islands and number of islands which is located off the northern Pacific Coast of Asia. It was understood that only about 18% of the land of Japan was fir for settlement. The major population of Japan is believed to be clustered around number of cities wherein, thirty six million people have been staying in Tokyo.

After the industrialization and economic growth of Tokyo, Japan has been considered as the world's third largest home of economy, it was observed that there was a series of setbacks which was faced by Japan economically which took place late in 1990s. The major resource of Japanese economy is concentrated by the motor vehicles, electronics, Industrial tools, steel and some other metals as well. It has even been witnessed that Japan as a country also has agricultural sector, and they have restricted there growth to maximum of rice, sugar beets, as well as some traditional fruits and vegetables. Japan has taken the most diverse growth and is now also known for its best development in industries concentration on fishing and beef production. Japan has been known to be the most concentrating country where the growth has been witnessed by History and has been known for its hard work and massive production of economy. We have been talking about Japan in total, if we concentrate on Tokyo, we will be able to see that Tokyo as a small state has proved its capability and as the most earned state and well maintained state, people have been seeking to go there and stay as it gives the opportunity for them to grow.

Infrastructure and Control Management

It is believed that, any event which indulge mass gathering has been the most considered as susceptible of acquiring imported and locally endemic infectious disease. In the year 2014, Tokyo had experienced the biggest outbreak of dengue, which was even believed that it was the first time in 70 years that Japan has come to witness an autochthonous transmission of any infection or disease. Now it is the top most priority to be well prepared for the upcoming Olympics 2020, for any infectious disease in all the areas which is even not much susceptible of getting it. This is what we call it to be preparedness. It is believed that preparedness is necessary for the upcoming Olympics 2020. The previous outbreak of dengue in Tokyo was shocking and now for the best interest and believe it is being believed that, even Japan will be under preparation of any such emerging infectious threats which is very uncommon. Now it is an obvious concern that, some of the infectious disease is impossible to control with the help of

border, which has an anatomy of Pathogen. It is always necessary to have an approach which is not restriced and doesn't have any limitations. While it seems to be impossible to control any disease which is highly contagious, so as a pragmatic approach it is believed to have a plan for health professionals and all the officials to understand how to be prepared for any emergency and how to effectively diagnose and respond to it, it has been considered as a preparedness plan. In the same context, Failure mode and effects analysis (FMEA) has been considered as the best framework which can help to test and detect the vulnerability and resiliency of the plans which are believed to have a better plan of preparedness and control of any such outbreak which can be a sign of emergency and a major hazard. For the application of FMEA, a project map has been outlined which will help in understanding the activities and operations and to relate all the steps together by going step by step. Once the steps has been taken care of, the second and the most important step is to analyse the plan and to detect and failure in the process. Once the failure mode is described it is then taken into consideration for the severity of the failure:- Severity (S), occurrence (O), Detection (D). once it is detected, the numbers are then, multiplied to calculate the Risk Priority Number (RPN) for every mode of failure, (RPN = S * O * D; range, 1 to 1000). The calculation will then give a fair idea of understanding the proximity of dangerous infectious disease.

Etiology and Epidemiology

The most susceptible disease which has been considered as a major part of concern in Japan Olympics 2020 is obviously dengue, but apart from dengue, Japan is now taking all the prevalent steps and measures which can help in restricting and preventing any disease which is infectious in nature and which can be a cause of concern during the mass visit. It is understood that during any mass visit, the chances of infectious disease transmission becomes very hazardous and hence leads to a major of health related issues which is the major setback. Now as Japan has already witnessed one of the most dangerous outbreak of dengue it is now a major concern wherein all the measures needs to be taken care of and there should not be any infection which doesn't have a cure.

Talking about the infectious disease which is the most important concern for Japan are:-

Measles:- The epidemics of measles occur in every 2 to 5 years in every country. As Japan is going to host Olympics, it is now the major concern to keep all the suspicion at place and have a better knowledge for the same. It is also known that 20 to 30 million infection occur globally and nearly about 1 million of deaths has been witnessed annually. The virus associated with Measles is rubeola virus for which humans are the only host. It has been observed that measles are more severe and highly detected in adults, infants and individuals with compromised immunity. Rubeola virus is a single stranded RNA virus, the virus is transmitted by air droplets, direct contacts and much more. It has been considered as the most communicable and infectious disease. 10 to 14 days has been considered as the incubation period for the virus after detection. It is believed that the most severe and complications are respiratory inability, diarrhoea and Central nervous system involvement.

Rubella:- It is also considered as a German measles, it is a very acute viral illness which has been characterized by rashes, scarlet fever, and enlargement and tenderness of the postoccipital, retroauricular, and posterior cervical lymph nodes.During early pregnancy the virus can cause Congenital Rubella Syndrome (CRS), it is considered as a very hazardeous

disease which affects numerous system in the body of a fetus , which eventually results to, microcephaly, deafness, mental retardation, and heart, liver, and spleen damage. It is also considered that, Autism has also been associated with in utero exposure to rubella. Infants with CRS can shed large quantities of virus from body secretions for as long as 1 year and can therefore transmit the disease to anyone caring for them who are susceptible, especially a pregnant woman.

Water Borne Disease:- It has been known that water borne disease has been the most leading cause of morbidity in humans. It has been considered as epidemic, it can lead to diarrhoea, food poisoning, Jaundice, Dengue, constipation, gastrointestinal problems. It is important to take up all the steps which is necessary to decrease the cause of any such infectious or contagious disease which can lead to high morbidity rate.

Critical Control Points

There is no treatment for dengue fever, for dengue infected patient proper medical care by physicians and experienced nurses can save the lives. Maintaining body fluid volume is critical in dengue. In 2015 first dengue virus vaccination was introduced and approved by regulatory authority in 20 countries for the use of this vaccination. It was developed by Sanofi Pasteur named Dengvaxia (CYD-TDV), In November 2017, analysis to retrospectively determine serostatus at the time of vaccination were released, Analysis showed that the subset of trial participants who were inferred to be seronegative at time of first vaccination had a higher risk of more severe dengue and hospitalizations from dengue compared to unvaccinated participants.

Critical control points

Main method to control and prevent the transmission of dengue virus is to fight vector mosquitoes, preventing them from laying eggs by environment management and modification, disposal of waste should be in a manner that doesn’t help them to survive there. Emptying and cleaning the water storage tanks containers on weekly basis, so that mosquitoes can’t survive and lay eggs there. Applying insecticides to water storage outdoor containers. It is always necessary to have all the precautionary steps at place and hence to evaluate each one of the point with due care. It is the responsibility of the organizer to have all the steps of prevention and preparedness at place. Each step needs to be placed one after other and hence needs to be collaborated in a way which can help in eliminating any effect which is dangerous for any mass event. Dengue outbreak was the biggest and the most devastating incident which occurred in Tokyo. Hence for the upcoming Olympics which is in 2020 Japan has been building all the necessary steps which can be of use to them for the control. It is equivalent to understand the nature and cause of effect and hence propagate each step accordingly.

WHO responds to dengue in the following ways:-

Supports countries in the outbreaks of any infectious disease through collaborating network of laboratories and providing technical support and guidance to countries for the effective management of dengue outbreaks. Improving their reporting systems and capture the true burden of the disease. Training on clinical management, diagnosis and vector control at the regional level with some of its collaborating centre, developing effective insecticide products and application and providing guidelines and handbooks for surveillance, case management,

diagnosis, dengue prevention.

Disease transmission Control

It has been observed that, in every consequent year there is an, huge number of people undertake air travel. Whether for business or pleasure or for a mass event such as Olympics, it is believed that these journeys needs to be safe and enjoyable for the passenger and for the visitors. However, there is a continuing concern about whether, or to upto which extent, aircraft cabins represent a high risk of transmission of infectious disease. The passenger health is not greatly at risk through air travel. However there have been some of the cases of infectious disease transmission within aircraft cabins, primarily due to the crowding together of a large variety of people in a confined space, increase the probability of the spread of disease. An increase in the international travel has also been a reason of risk for the global spread of infectious diseases. It is not possible to predict when the next pandemic will occur or how long it will last but many health officials think that it’s only a matter of time. The increase in international air travel could lead to the spread of a future influenza pandemic, the aviation industry needs to play a critical role in mitigating the consequences and placing it safe for the passengers who are travelling internationally and hence will lead to a safe journey for them.

References:-

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