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AN OVERVIEW OF YELLOW FEVER

T.MERLIN SHIBA, ASST PROFESSOR, COMMUNITY HEALTH NURSING

SREE BALAJI COLLEGE OF NURSING,

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH,

CHROMEPET, CHENNAI-44

ABSTRACT:

Yellow fever was once one of the most feared epidemic diseases in the world with the capacity to bring devastation to almost every continent. Mass vaccination campaigns in the mid 20th century. Succeeded in bringing the disease under control for over 40years but since the late 1980s, this deadly disease has returned, putting at risk a new generation in west and central Africa and threatening to erupt into devastating urban episodes.

The yellow fever initiatives led by WHO and UNICEF with the support of global alliance for vaccines and immunization(GAVI alliance)has now been launched with the aim of dramatically reducing the risk of yellow fever outbreak in 12 endemic countries in Africa through the vaccination of 48 million people over the coming four years.

KEY WORDS:

Environmental Protection Agency (EPA), mosquito-borne virus, para-menthane-diol (PMD)

INTRODUCTION:

Yellow fever virus (YFV), a mosquito-borne virus endemic to tropical Africa and South America, is capable of causing large urban outbreaks of human disease. With the ease of international travel, urban outbreaks could lead to the rapid spread and subsequent transmission of YFV in distant locations. In simulations of a 2008 outbreak in Asunción, Paraguay, local outbreaks occurred in 12.8% of simulations and international spread in 2.0%. Using simple probabilistic models, we found that local incidence, travel rates, and basic transmission parameters are sufficient to assess the probability of introduction and autochthonous transmission events. These models could be used to assess the risk of YFV spread during an urban outbreak and identify locations at risk for YFV introduction and subsequent autochthonous transmission.

CAUSES:

The flavivirus causes yellow fever, and its transmitted when an infected mosquito bites you. Mosquitoes become infected with the virus when they bite an infected human or monkey. The disease cannot be spread from person to person.

SYMPTOMS

The majority of people infected with yellow fever virus will either not have symptoms, or have mild symptoms and completely recover.

For people who develop symptoms, the time from infection until illness is typically 3 to 6 days.

Because there is a risk of severe disease, all people who develop symptoms of yellow fever after traveling to or living in an area at risk for the virus should see their healthcare provider. Once you have been infected, you are likely to be protected from future infections.

- Most people will not have symptoms.
- Some people will develop yellow fever illness with initial symptoms including:
 - Sudden onset of fever
 - Chills
 - Severe headache
 - Back pain
 - General body aches
 - Nausea
 - Vomiting
 - Fatigue (feeling tired)
 - Weakness
 - Most people with the initial symptoms improve within one week.
 - For some people who recover, weakness and fatigue (feeling tired) might last several months.
- A few people will develop a more severe form of the disease.
 - For 1 out of 7 people who have the initial symptoms, there will be a brief remission (a time you feel better) that may last only a few hours or for a day, followed by a more severe form of the disease.
- Severe symptoms include:
 - High fever
 - Yellow skin (jaundice)
 - Bleeding
 - Shock
 - Organ failure
- Severe yellow fever disease can be deadly. If you develop any of these symptoms, see a healthcare provider immediately.
- Among those who develop severe disease, 30-60% die.

DIAGNOSIS

- Yellow fever infection is diagnosed based on laboratory testing, a person's symptoms, and travel history.

TREATMENT

- There is no medicine to treat or cure infection from yellow fever.
- Rest, drink fluids, and use pain relievers and medication to reduce fever and relieve aching.
- Avoid certain medications, such as aspirin or other nonsteroidal anti-inflammatory drugs, for example ibuprofen (Advil, Motrin), or naproxen (Aleve), which may increase the risk of bleeding.
- People with severe symptoms of yellow fever infection should be hospitalized for close observation and supportive care.
- If after returning from travel you have symptoms of yellow fever (usually about a week after being bitten by an infected mosquito), protect yourself from mosquito bites for up to 5 days after symptoms

begin. This will help prevent spreading yellow fever to uninfected mosquitoes that can spread the virus to other people.

YELLOW FEVER VACCINATION

- The vaccination against yellow fever should be given at least 10 days before travelling to an area where the infection is found, to allow your body to develop protection against the virus that causes the infection.
 - Some countries require a proof of vaccination certificate before they will let you enter the country. This will only become valid 10 days after you are vaccinated.
 - The yellow fever vaccination is given as a single injection and it offers protection to over 95% of those who have it.
 - The protection offered by the vaccine is lifelong for most people. Vaccination certificates are also valid for life.
 - Even if you have been vaccinated, it's still a good idea to take steps to prevent mosquito bites while you're travelling – for example, by using mosquito nets, wearing loose, long-sleeved clothing, and applying insect repellent containing 50% DEET to exposed skin.
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- **Type of vaccine:** Live, attenuated
 - **Number of doses:** One dose of 0.5 ml
 - **Boosters:** A single dose of YF vaccine is sufficient to confer sustained lifelong protective immunity against YF disease; a booster dose is not necessary for protection but may still be required by some countries. Adjustments of the provisions for the duration of validity of certificates under the IHR are ongoing.
 - **Contraindications:** Infants aged less than 6 months; history of severe allergy to egg or to any of the vaccine components, or hypersensitivity to a previous dose of the vaccine; thymoma or history of thymectomy, immunodeficiency from medication, disease or symptomatic HIV infection
 - **Adverse reactions:** Rarely, neurological (encephalitis) or multi-organ failure resembling wild-type yellow fever.
 - **Before departure:** International certificate of vaccination becomes valid 10 days after vaccination.
 - **Recommended for:** All travellers to countries and areas with risk of yellow fever transmission and when required by countries.
 - **Special precautions:** Not recommended for infants aged 6–8 months, except during epidemics when the risk of YF virus transmission may be very high. The risks and benefits of vaccination in this age group should be carefully considered before vaccination. The vaccine should be avoided during pregnancy or breastfeeding.

PREVENTION OF YELLOW FEVER

The most effective way to prevent infection from Yellow Fever virus is to prevent mosquito bites. Mosquitoes bite during the day and night. Use insect repellent, wear long-sleeved shirts and pants, treat clothing and gear, and get vaccinated before traveling, if vaccination is recommended for you.

PREVENT MOSQUITO BITES



Use Insect Repellent

Use Environmental Protection Agency (EPA)-registered insect repellents External with one of the active ingredients below. When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breastfeeding women.

- DEET
- Picaridin (known as KBR 3023 and icaridin outside the US)
- IR3535
- Oil of lemon eucalyptus (OLE)
- Para-menthane-diol (PMD)
- 2-undecanone

TIPS FOR BABIES AND CHILDREN



- Always follow instructions when applying insect repellent to children.
- Do not use insect repellent on babies younger than 2 months old.
 - Instead, dress your child in clothing that covers arms and legs.
 - Cover strollers and baby carriers with mosquito netting.
- Do not use products containing oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD) on children under 3 years old.
- Do not apply insect repellent to a child's hands, eyes, mouth, cuts, or irritated skin.
 - Adults: Spray insect repellent onto your hands and then apply to a child's face.



WEAR LONG-SLEEVED SHIRTS AND LONG PANTS

Treat clothing and gear

- Use permethrin to treat clothing and gear (such as boots, pants, socks, and tents) or buy permethrin-treated clothing and gear.
 - Permethrin is an insecticide that kills or repels mosquitoes.
 - Permethrin-treated clothing provides protection after multiple washings.
 - Read product information to find out how long the protection will last.
 - Do not use permethrin products directly on skin.



Take steps to control mosquitoes indoors and outdoors

- Use screens on windows and doors. Repair holes in screens to keep mosquitoes outdoors.
- Use air conditioning, if available.
- Stop mosquitoes from laying eggs in or near water.
 - Once a week, empty and scrub, turn over, cover, or throw out items that hold water, such as tires, buckets, planters, toys, pools, birdbaths, flowerpots, or trash containers.
 - Check indoors and outdoors.
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PREVENT MOSQUITO BITES WHEN TRAVELING OVERSEAS

- Sleep under a mosquito bed net if you are outside or in a room that does not have screens.
 - Buy a bed net at your local outdoor store or online before traveling overseas.
 - Permethrin-treated bed nets provide more protection than untreated nets.
 - Do not wash bed nets or expose them to sunlight. This will break down the insecticide more quickly.
- Yellow fever vaccine is recommended for people who are 9 months old or older and who are traveling to or living in areas at risk for yellow fever virus in Africa and South America.

- For most people, a single dose of yellow fever vaccine provides long-lasting protection and a booster dose of the vaccine is not needed. However, travelers going to areas with ongoing outbreaks may consider getting a booster dose of yellow fever vaccine if it has been 10 years or more since they were last vaccinated.

CONTRAINDICATIONS OF VACCINE:

- Allergy to a vaccine component
- Aged younger than 6 months
- Symptomatic HIV infection or CD4+ T-lymphocytes <200/mm³ (<15% of total in children aged <6 years)
- Thymus disorder associated with abnormal immune function
- Primary immune deficiencies
- Malignant neoplasms
- Transplantation
- Immunosuppressive and immune modulatory therapies

PRECAUTIONS

- Age 6 to 8 months
- Age 60 years or older
- Asymptomatic HIV infection and CD4+ T-lymphocytes 200 to 499/mm³ (15-24% of total in children younger than 6 years old)
- Pregnancy
- Breastfeeding

CONCLUSION:

It is important to remember that CDC's vaccine *recommendations* are a different thing than country entry *requirements*. Proof of yellow fever vaccine may be required for entry into certain countries. Notifiable condition that is endemic in south America, the caribbean and Africa. As no specific anti viral therapy is available, treatment is supportive. A safe and effective vaccine is available.

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