

Rethinking maternal vaccination in the era of climate change

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The phenomena of climate change is making its impact globally. Pakistan though not a major contributor for climate change, is suffering from both direct and indirect effects. The effects of floods in the province of Sindh in 2022, can still be witnessed. The recent floods in Punjab have caused massive displacements of masses. One of the indirect effects of the climate change is an increase in the number of vector-borne infectious diseases like hepatitis, malaria, dengue and Zika virus infections.¹ These infections carry increased risk of maternal mortality and morbidity. Also seen are the increased reporting for typhoid and cholera cases.² Can these infections be prevented? There are number of ways to acquire success for this cause. One of such means is vaccination during pregnancy.

Vaccination during pregnancy involves use of inactivated compounds to decrease the risk of viraemia or bacteraemia in the foetus and newborn. World Health Organization (WHO) recommends vaccination against tetanus, diphtheria, and acellular pertussis (Tdap) routinely in all pregnant women

This is given at the end of second trimester. This is in line with the Expanded Programme for Immunization (EPI), started in 1978. Flu vaccine (inactivated) is also safe and can be administered in the event of seasonal infection during pregnancy. Similarly vaccination against Hepatitis B is suggested in women during pregnancy, if she has not received it previously, but this is not practiced widely.

During the last epidemic, we saw the uptake of vaccine against COVID-19 infections by the pregnant women, globally. Since, Covid was a pandemic, the vaccine was also administered at national level by the government. Though the uptake was slow, but significant uptake was seen in the local population due to efforts at the government level, social mobilization and awareness campaigns.³ This was done under the label of Supplemental Immunization Activities. (SIA)

Floods bring displacements and migrations. The current flood situation in the province of Punjab has displaced 2.4 million people.⁴ This number keeps on increasing with

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every passing day, as rehabilitation measures gain strength. The stagnant water will provide a fertile ground for breeding of mosquitoes, with subsequent rise in malaria, Zika, chikungunya, and other vector borne infections. Dengue and Zika infections are known to be associated with higher mortality and morbidity, in pregnant women. There are two types of Dengue vaccines available, effective against all 4 serotypes. The Center of Disease Control (CDC) recommends vaccination against Dengue in special circumstances, in areas of high prevalence and where benefits outweigh risks.⁵

Hepatitis E (HEV) infection during pregnancy is also associated with increased mortality and morbidity. There are number of reports from our own country stating higher maternal and perinatal mortality.⁶ Vaccine against HEV is available, and can be easily administered to high risk displaced women. This 3 dose vaccine, unlike Dengue vaccine can be given to the pregnant women. Vaccination against Dengue requires caution against pregnancy for a minimum of one month following completion of vaccination. The floods and land sliding in one of the province of country resulted in a sharp increase in reporting of active Dengue cases.⁷

Vaccination and chemoprevention against malaria will prevent premature, low birth weight babies and congenital malaria who have increased chances of mortality.⁸ Malaria vaccination in children provide protection for next 3-4 years. Chemoprevention during pregnancy is approved during second and third trimester, but still awaits WHO approval in first trimester.⁸ The vaccine PfSPZ, still awaits clearance for pregnant women. This three dose vaccine, with out a booster dose has been in trial against Falciparum Malaria in Africa.⁹ In these special circumstances, perhaps the regulatory authorities should go an extra mile to speed up the process.

Typhoid infection due to stagnant water and mixing of sewerage water with drinking water leads to increased rate of infection in pregnant women. Same is the case with Cholera. Centre for Disease Control (CDC) which recommends vaccination during pregnancy against both the diseases, in special circumstances.⁵ Inactivated typhoid vaccine (Vi polysaccharide) can be given during pregnancy. Though no data is available for cholera, CDC recommends vaccination where benefits out-weighs risks.

Awareness about the prevention is necessary among the health care professionals as well, as these are not routine vaccinations. The health department in the respective provinces should also make an effort to not only increase the awareness against these diseases, but also provide vaccines to the EPI programs and medical camps set up for the displaced person. Local production of these vaccines, as seen for HEV will make it a cost effective strategy in the coming years, when such natural disasters are anticipated more frequently. These steps also need to be incorporated in our medical college curriculum, as to increase the awareness. Since the Asian countries will be on the forefront of receiving the effects of climate change, in form of floods and other natural disasters, they should come together to draw strategies for it. Our scientists and researchers should focus their researches on the above subject for the larger benefit of the community.

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