POLICY BRIEF

CUHAS/PB/002/2017

Introduction of congenital viral infections surveillance and screening services for pregnant women in Tanzania

Key messages

- Viral infections during pregnancy are common in Tanzania and have been found to cause inborn (congenital) abnormalities
- About 36.5% of pregnant women in Tanzania are infected with at least one virus that is capable of causing inborn abnormalities
- Despite all these information, there are no specific preventive strategies to address congenital virus infections in Tanzania.
- This policy brief recommends the introduction of surveillance and screening services for viral infections among pregnant women in Tanzania

Executive summary

Despite high percentage of children born with inborn abnormalities, Tanzania has no birth defects registry to provide information on the extent, trends and patterns of the problem. A large proportion of pregnant women in Tanzania is infected with viruses such as Rubella, Cytomegalovirus (CMV), Parvovirus B19 (B19) and Hepatitis B that are known to cause inborn abnormalities. In these cases, undesirable pregnancy outcomes such as spontaneous abortions, stillbirths and congenital abnormalities have been reported. The impact associated with these infections is lifetime health costs related to treatment and caring of the affected individuals as well as socioeconomic and social stress to the family and community. Despite all these information, there are no specific preventive strategies to address congenital virus infections in Tanzania. This policy brief recommends the introduction of surveillance and screening services for inborn viral infections among pregnant women in Tanzania. Such services will help to establish risk transmission levels of these viruses to the unborn babies and guide on preventive measures including alerts for possible future outbreaks in the country.

The Problem

Despite the fact that inborn abnormalities are common in Tanzania (Mashuda et al., 2014) and might be due to various infections, the current practice regarding screening during pregnancy only targets Syphilis and Human immunodeficiency virus (HIV). Other infections such as of Toxoplasma gondii, Parvovirus B19 (B19), Hepatitis B virus (HBV), Rubella virus, Cytomegalovirus (CMV), Herpes simplex type 2 virus (HSV-2), Chikungunya virus and Zika virus that are also known to cause inborn abnormalities/ infections, that are endemic in the country, are not usually screened at health facilities. Unfortunately, Tanzania does not have birth defect registry which could be used to track the trends and patterns of inborn abnormalities for possible and appropriate interventions.

Studies in Tanzania have shown that about 36.5% of pregnant women are infected with at least one virus that is capable of causing inborn infections and more than one third of these women have indicators showing that they have been previously infected with more than one inborn viral infection (Rubella, CMV and Parvovirus B19) (Mhalu & Haukenes, 1990; Mwambe et al., 2014; Mirambo et al., 2016a). In addition, studies from Dar es Salaam and Mwanza have shown that percentage of pregnant women infected with Hepatitis B virus ranges from 2 to 7% (Rashid et al., 2014; Mirambo et al., 2016b) which is considered as relative higher (WHO, 2009).

More studies in Tanzania have shown that about 1,000 out of 100,000 of the live new-borns are likely to have congenital rubella syndrome (CRS) and about 4 in every 1,000 women are likely to deliver babies with inborn CMV infections. These statistics indicate that viral infections are common and are strongly associated with poor pregnancy outcomes (Chibwe, 2016; Mirambo et al., 2016c). In addition Tanzania has been classified as endemic country to Zika virus infections (https://wwwnc.cdc.gov/), an infection first reported in the country in 1952. Some cases of Chikungunya virus infections have been reported in Tanzania (Hertz et al., 2012; Chipwaza et al., 2014; Kajeguka et al., 2016). Zika and Chikungunya viruses have been confirmed to cause brain and other inborn abnormalities in studies elsewhere (Gérardin et al., 2014; Sarno et al., 2016; Valentine et al., 2016; van der Linden et al., 2016).

Inborn abnormalities are associated with lifetime health costs, socioeconomic impact and social stress to the family and community. Based on the records on CRS, the lifetime treatment can cost US$14,000-200,000 per individual patient (Irons et al., 2000; Duszak, 2009; Castillo-Solórzano et al., 2003) which is very high for a country like Tanzania. This policy brief highlights the importance of considering screening of viral infections which appear to be common across the country.

Policy options

Despite the fact that HIV infection and syphilis are screened during pregnancy, and there is immunization for hepatitis B and Rubella viruses among children under five years of age, it is important to introduce screening for other inborn viral infections for evidence based counselling and appropriate management. Information generated through screening will strengthen our knowledge on the magnitude and trends of these infections for the possible future outbreaks. The following policy options are recommended:

1. ***Introduction of screening inborn viruses during pregnancy*** There is evidence that Rubella, CMV, Chikungunya, Hepatitis B and Herpes simplex virus infections are common in Tanzania and might contribute extensively to the cases of inborn abnormalities. Screening for these viruses will be one step ahead in controlling impacts related to these infections across the country.
2. ***Establish a birth defect registry and screening every child with inborn abnormalities:*** In order to have a true picture of the impact of these infections, it is important to establish a birth defect registry. It is also important to screen every child with inborn abnormality for the purpose of monitoring of inborn acquired infections.
3. ***Introduce evidence based counselling to prevent infections and undesirable pregnancy outcomes:*** Having a child with inborn abnormalities is associated with socioeconomic and social stress impacts. To lessen fear among pregnant women and families especially with the current Zika problem worldwide, there is a need to introduce evidence based counselling regarding pregnancy outcome in relation to possible inborn infections.

Implementation considerations

Point of care rapid tests are available for detection of Herpes simplex type 2 virus, Hepatitis B virus, Rubella virus, Cytomegalovirus, Parvovirus B19 justifying the easy implementations of the proposed policy options. These tests do not require advanced skills and infrastructures that would probably require capital investment and maintenance costs. In addition, there are other reliable advanced tests (immunoassays) for Zika virus detection (Huzly et al., 2016). The cost of screening one viral infection using disposable rapid test is about US$ 1 - there are expected additional costs using this strategy. The current screening services during pregnancy involve drawing of blood for blood typing, level of haemoglobin, syphilis and HIV testing. The same blood sample can be used to screen for other inborn viral infections. Using existing services during pregnancy the identified viral infections can be screened for every pregnant woman attending antenatal clinic. In cases where the test is not available the samples can be taken to the nearby zonal hospitals/health centres for processing using the existing infrastructures. It is important to note that the implementation of these policy options will save the Government and communities from incurring high lifetime

treatment costs (>US$ 14,000) and social stress associated with the conditions.

Competing interests

The authors declare that they have no competing interests.

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