IMPROVING HEPATITIS B SERVICES: VACCINATION, DIAGNOSTIC TESTING AND LINKAGE TO CARE AND TREATMENT

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Conflicts of Interest

- None for this talk
- Our Program has 2 research grants for Hepatitis C from Gilead Sciences neither of which funds provide any support to me personally
Outline of this Presentation

• Prevention of Mother to Infant Transmission of HBV infection
• Improving Diagnostic Services
  • Enhanced screening of at risk populations
  • Upgrading diagnostic laboratory services
• Improving Linkage to Care
What can happen in countries where the Birth Dose is not given

In countries where HBV genotypes Ba and C predominate, up to 50% of women will be HBeAg-positive with high viral levels of HBV DNA (e.g. China, SE Asia, Pacific Is.)

Delaying the 1st dose of HBV vaccine until 2-4 months of age means that only a 50% reduction in HBV prevalence in children would be achieved.

In countries where other genotypes predominate (e.g. Africa, Indian Sub-continent) omitting the birth dose would still only provide an 80% at best reduction in HBV prevalence.
Bringing HBV Transmission at birth to < 1%

Hepatitis B vaccine given at birth can reduce transmission to <10%

Adding HBIG will reduce transmission to < 5%

Treating Mothers with high viral levels of HBV DNA > 200,000 IU/ml will reduce transmission to close to zero
Barriers to Birth Dose

In some countries a large proportion of births do not take place in a hospital

GAVI will not provide birth dose of HBV vaccine requiring country to pick this up

- GAVI only supplies HBV vaccine in combination with other childhood vaccines
- Some countries feel they can’t afford cost of birth dose
- It may be that GAVI not supplying birth dose has negative impact on countries implementing it

Establishing an infrastructure to give the birth dose or 1st few days of life for many countries is a real challenge

Good News: Hepatitis B vaccine is stable at room temperatures for at least one month so cold chain not needed
Thinking outside of the box

For infants born out of the hospital, possible alternatives would be

1. Since cold chain not as critical, delivering the vaccine to the family’s home in the first few days
2. If mothers can be seen during pregnancy, screening for HBsAg at time HIV screening is done
   1. If HBsAg is positive and it is unlikely vaccine can be delivered in the first few days, consideration for giving Tenofovir during the 3rd trimester and for 4 weeks post partum. Cost might be $20 to $30 US
Improving HBV (and HCV) Diagnostics

Developing platforms for inexpensive HBV DNA and HCV RNA

Centralized molecular biology laboratories: Example Amplicor® platform at one university hospital in Dar-es-Salaam in Tanzania: cost is about $30 US per test

Can platforms now being installed in hospitals for TB and HIV molecular testing be adapted to also for HBV DNA and HCV RNA testing?
Expanding Diagnostic testing for HBV and HCV

Where screening is currently being done in low and median income (LIC and MIC) countries

- Screening the blood supply for HIV, HBV HCV and syphilis using either serology assays or rapid testing
- There is some testing occurring of persons with liver disease in clinics and hospitals
Expanding Diagnostic testing for HBV and HCV

Where testing could be expanded:

- Household and sexual contacts of persons found to be HBsAg-positive (with offer of vaccination of those seronegative)
- All pregnant women
- Health care workers (offer of vaccination to those seronegative and linkage to care if positive)
- Persons infected with HIV
- In conjunction with HIV screening programs: Test for HBsAg and HCV antibody at time of HIV testing
Improving Linkage to Care

Establishing model programs in countries and regions to treat HBV (and HCV):

- Provide training for providers to understand how to care for and treat those with chronic viral hepatitis using WHO Guidelines that are tailored toward the epidemiology and natural history in their regions
- Establish linkage from diagnostic programs (e.g. blood bank screening) to care and treatment programs
- Provide educational resources for patients with chronic viral hepatitis
- Provide easy access to viral load testing and antiviral medications
- Provide ongoing follow-up for those with chronic HBV as per WHO Guidelines
- Utilize success from model programs to expand Care and Treatment centers in country and region
Model HBV Clinics Demonstration Project in East Africa

To establish two clinics that will implement hepatitis B management and treatment programs following the WHO guidelines
  Mnazi Mmoja Hospital in Stone Town, Zanzibar
  Muhimbili Hospital in Dar-es Salaam
Blood Donor > 18 Tests HBsAg+ at NTBS Center

Donor also tested HIV+?

No

Donor also tested HCV+?

No

Counsel/ Refer to HBV Clinic

Patient consents to testing and management?

No

Counsel (ETOH, PRN Return, etc...)

Yes

Counsel/ Refer to HIV/AIDS Tx Center (usual protocol)

Counseling (usual protocol)

Counsel/ Refer to HBV Clinic

Physical Exam Stigmata of cirrhosis

Labs: HBeAg, anti-HBe, HBV DNA, ALT, AST, Bilirubin, BUN, Creatinine, PT, APTT, CBC & platelets, eGFR, Calculated APRI, Phosphorous, Urine Protein, AFP

Counseling: Appointment for Follow-up visit in 1 month
First Follow-up Clinic Visit after Baseline Evaluation and Labs

- ALT > 2x ULN and HBV DNA > 20,000 IU/mL
  
- OR

- PE Revealed Stigmata of cirrhosis
  
- OR

- APRI > 1.5 and HBV DNA > 2,000 IU/mL

No

- Education & Counseling
- 6 Month F/U Visit

YES

Renal Function WNL

YES

Consult with Medical Director & Schedule F/U

NO

Initiate TDF 300 mg QD

- Education & Counseling
- Medication Supply
- 6 Month F/U Visit

NO

AFP Elevated?

YES

Consult with Medical Director; Address at F/U

NO

Consult with Medical Director

- 20% will be tested for HBV DNA (viral load).
Program Evaluation

What is the programmatic feasibility of managing patients with chronic HBV following WHO guidelines?

What is the proportion of patients with chronic HBV who meet WHO treatment guidelines?

What are the proportion of patients with chronic HBV who are co-infected with HDV?

What is the impact of treatment:
- Proportion of persons with undetectable HBV DNA and normal ALT >1 year after TDF treatment
- Incidence of HCC and ESLD in patients treated vs. those not meeting WHO criteria for treatment
Long-Term Goals

Working with the Ministry of Health, Expand HBV Model Program for Treatment and Care to other hospitals in Tanzania
   Using training and management tools developed before and during this program
   Begin Expansion by the end of this project (2020)

Offer consultation and training to expand this program to other East African Countries and interested countries in sub-Saharan Africa