and quantitative HEV RNA) currently represent the gold-standard for testing for HEV.

Implications specific to pregnant women and neonates: There is a little information regarding the vertical transmission of HEV from infected mothers to their infants.

For reasons that are not understood, fulminant hepatic failure occurs more frequently during pregnancy, resulting in an inordinately high mortality rate of 15 to 25 percent, primarily in women in the third trimester.[9]A contributing factor may be that pregnancy predisposes to increased viral replication.[9] Pregnant women with jaundice and acute viral hepatitis caused by HEV infection appear to have worse obstetric and fetal outcomes compared to pregnant women with jaundice and acute viral hepatitis due to other causes.

Treatment of HEV infection remains supportive, as the disease appears to be self-limiting in non-immunocompromised patients.

Liver transplantation may be required in severe hepatitis with liver failure.

Hepatitis B

Hepatitis B (HBV) is caused by a double stranded DNA virus with an incubation period of 45–160 days. Modes of transmission are parenteral, sexual contact, mucosal exposure to blood and infected body fluids and vertical. Among regular sexual contacts of HBV infected persons, 25% become seropositive.[10] It is an occupational risk for healthcare workers and nurses. The risk of transmission with percutaneous exposure is 6 to 30%. Body fluids and blood of the patient are highly infectious and very small amount of blood is required for transmission.

Hepatitis B during pregnancy presents with unique management issues for both the mother and fetus. These include the effects of HBV on maternal and fetal health, the effects of pregnancy on the course of HBV infection, treatment of HBV during pregnancy, and prevention of perinatal transmission. Vertical transmission is responsible for approximately one-half of chronic infection worldwide.

The risk of developing chronic HBV infection is inversely proportional to the age at time of exposure. The risk is as high as 90 percent in those exposed at birth, while the risk is much lower (about 20 to 30 percent) in those exposed during childhood. Identification of at-risk mothers permits prophylaxis against transmission, which can reduce transmission rates from 90 percent to as low as 5 to 10 percent.[11]

Implications of HBV infection for the mother

Acute HBV infection during pregnancy is usually not severe and is not associated with increased mortality or teratogenicity.[12] Thus, infection during gestation should not prompt consideration of termination of the pregnancy. Acute HBV occurring early in the pregnancy has been associated with a 10 percent perinatal transmission rate. Transmission rates significantly increase if acute infection occurs at or near the time of delivery, with rates reported as high as 60 percent.[12]

Treatment of acute infection during pregnancy is mainly supportive. Liver biochemical tests and prothrombin time should be monitored. Antiviral therapy is usually unnecessary, except in women who have acute liver failure or protracted severe hepatitis. Lamivudine (100 mg daily) is a reasonable option since it has been used safely during pregnancy and the anticipated duration of treatment is short.

Chronic HBV

Pregnancy is generally well-tolerated by women with chronic hepatitis B infection who do not have advanced liver disease. Occasional patients develop a hepatitis flare, therefore HBsAg-positive mothers should be monitored closely.

women, and are relatively insensitive in *P. vivax* malaria.[1] A positive rapid diagnostic test should be followed by microscopy to quantify the number of infected red blood cells (parasitaemia) and to confirm the species and the stage of parasites. In a febrile patient, 3 negative malaria smears 12–24 hours apart rules out the diagnosis of malaria.

A study by us comparing use of diagnostic tests in pregnant women with fever found that despite all its advantages and usefulness in field situations and low-resource settings, RMAT will not be able to replace microscopy. Microscopy is still more flexible and offers immense advantage of providing species diagnosis and exact parasite densities. RMAT can be used at times where there is urgent need of diagnosis to prevent mortality and morbidity.[2]

PS for MP is gold standard for diagnosis and gives additional information regarding type of parasite and density, however, it requires expertise. RMAT is available, easy to perform and it is recommended that all RMAT are followed-up with microscopy to confirm the results and if positive, to quantify the proportion of red blood cells that are infected.[2]

Other important prognostic factors that should be reported on a peripheral blood smear result are:

- The presence and count of mature trophozoites and schizonts of *P. falciparum*
- Finding malaria pigment in more than 5% of the polymorphonuclear leucocytes in the peripheral blood film.

Is the severity of malaria a useful aid in managing the infection?

Clinical and laboratory findings of **severe/complicated malaria** in adults are as follows.

Clinical Manifestations

- Prostration
- Impaired consciousness
- Respiratory distress (acidotic breathing, acute respiratory distress syndrome, pulmonary edema*)
- Multiple convulsions
- Circulatory collapse, shock (blood pressure < 90/60 mmHg)
- Abnormal bleeding, disseminated intravascular coagulopathy
- Jaundice
- Hemoglobinuria (without G6PD deficiency)

Laboratory Tests

- Severe anemia (hemoglobin < 8.0 g/dl)
- Thrombocytopenia
- Hypoglycemia (< 2.2 mmol/l)*
- Acidosis (pH < 7.3)
- Renal impairment (oliguria < 0.4 ml/kg body weight/hour or creatinine > 265 µmol/l)
- Hyperlactatemia
- Hyperparasitemia (>2% parasitised red blood cells)
- Algid malaria—Gram-negative septicaemia*
- Lumbar puncture to exclude meningitis.

The severity of malaria determines the treatment and predicts the case fatality rate. In uncomplicated malaria, fatality rates are low: approximately 0.1% for *P. falciparum*. In severe malaria, particularly in pregnancy, fatality rates are high (15–20% in nonpregnant women compared with 50% in pregnancy). Brabin estimated mortality to be 2–10 times higher in pregnant women than in non-pregnant women in endemic areas.[3] The non-falciparum species are rarely fatal but caution should still be observed.

How is malaria infection treated during pregnancy?

Treat malaria in pregnancy as an emergency.

Seek advice from infectious diseases specialists, especially for severe and recurrent cases.

*Common features in pregnant women with severe or complicated malaria.

Appendix: Initial rapid diagnosis, assessment and treatment of malaria in pregnancy

Expert advice/IV artesunate: local infectious unit or London 08451 555000; Liverpool 0151706 2000; Oxford 08165 7418415; IDIS pharma 01932 824100.
Useful information: www.hpa.org.uk/HPA/ProductsServices/InfectiousDiseases/LaboratoriesAndReferenceFacilities/1200660023262/ and www.who.int/malaria/publications/atoz/9241546948/en/index.html

Key: ARDS - acute respiratory distress syndrome, BP - blood pressure, CVP - central venous pressure, DIC - disseminated intravascular coagulation, EGA - estimated gestational age, FBC - full blood count, GCS - Glasgow Coma Score, Hb - hemoglobin, HDU - high-dependency unit, ICU - intensive care unit, JVP - jugular venous pressure, LFT - liver function test, NSQ - Neuroticism Scale Questionnaire, RBC - red blood cells, RR - respiratory rate, SaO_2 - oxygen saturation, U&E - urea and electrolytes

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