

# บทบาทพยาบาลในการดูแลสตรีตั้งครรภ์ที่มีพาหะไวรัสตับอักเสบบี

## The Roles of Nurses in Taking Care of Pregnant Women Being Active Hepatitis B Virus Carriers

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### บทคัดย่อ

พาหะไวรัสตับอักเสบบี เกิดจากเชื้อไวรัสชนิด double-stranded DNA เมื่อเชื้อเข้าสู่ร่างกายจะทำลายเซลล์ตับ เชื้อไวรัสมีโครงสร้างเปลือกหุ้มเป็นไขมัน มีแกนกลางเป็นชั้นโปรตีน หุ้มด้วย double-stranded DNA ซึ่งอยู่ชั้นในสุด สาร DNA จะเป็นตัวถอดรหัสสร้างโปรตีนที่อยู่บนเปลือกไวรัส เรียกว่า hepatitis B surface antigen พาหะไวรัสตับอักเสบบี สามารถติดต่อทางเลือด น้ำลาย และสิ่งคัดหลั่ง เมื่อสตรีตั้งครรภ์ได้รับเชื้อไวรัสตับอักเสบบี จะมีภาวะเสี่ยงต่อการแพร่กระจายไปสู่ทารกในครรภ์ ซึ่งสามารถติดต่อได้ทั้งในระยะตั้งครรภ์ ระยะคลอด และระยะหลังคลอด ดังนั้นบทบาทของพยาบาลในการดูแลสตรีตั้งครรภ์ จึงต้องมีความรู้ความเข้าใจเกี่ยวกับการดูแลสตรีตั้งครรภ์ที่มีพาหะของไวรัสตับอักเสบบี อย่างต่อเนื่องตลอดระยะคลอด และหลังคลอด เพื่อป้องกันการแพร่กระจายของเชื้อ การให้คำแนะนำในการปฏิบัติตัวเพื่อส่งเสริมสุขภาพ ลดความรุนแรงของโรค และลดภาวะแทรกซ้อนที่อาจเกิดขึ้นต่อทารกในครรภ์

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## Abstract

Hepatitis B virus is a partially double-stranded DNA virus. Once it enters the body, it focuses on destroying liver cells. The hepatitis B virus contains an outer envelope and an inner core. The outer envelope is composed of a surface protein called the hepatitis B surface antigen or HBsAg (hepatitis B core antigen). The inner core of the virus is a protein shell referred to as the hepatitis B core, which contains the hepatitis B virus DNA and enzymes used in viral replication. Hepatitis B is spread by percutaneous or mucosa exposure to infected blood and various body fluids, as well as through saliva. When pregnant women have hepatitis B virus, they are at risk to pass the virus to their fetuses as the transmission can happen during pregnancy, delivery, and postpartum period. Therefore, nurses who play an important role in caring of pregnant women should have knowledge and understanding about caring of pregnant women with hepatitis B carrier continually from delivery and after giving birth periods to prevent the spread of the virus in providing recommendation for taking care of themselves to promote their health, reduce severity of the disease, and reduce complications that probably happen to fetuses.

**Keyword:** Roles of nurses, Pregnant women, Hepatitis B virus

## Introduction

Hepatitis B virus can be transmitted mainly through blood or body fluids infected with virus and enters to the body through wounds, hypodermic syringes or mucous membranes. Hepatitis B virus can be mostly found in blood, followed by various body fluids such as saliva, vaginal fluid, and seminal fluid.<sup>1,2</sup> Those who have acute hepatitis B infection will be detected HBsAg in blood. The acute infection in adults, 50 percent of them will not show initial signs and symptoms and another 50 percent will have a symptom of acute hepatitis infection symptoms; fatigue, loss of appetite, nausea and vomiting, fever, stomachache, dark urine, and jaundice. 1% of people with hepatitis B infection experiences severe symptoms to liver failure and may die.<sup>2,3</sup> Infection in baby at birth does not show any initial signs or symptoms. People having acute infection with and without symptoms will have the virus cleared from the body shortly. But if HBsAg in blood has been detected and the infection lasts for longer than 6 months, it is called chronic hepatitis B infection.<sup>3</sup> The infection in baby at birth while the immune system is not strong,

90% of the babies become patients with chronic hepatitis B. Patients with chronic hepatitis B typically do not have symptoms but have a chance to die of cirrhosis and liver cancer by 15 to 25 percent.<sup>4</sup>

Major routes of infection from hepatitis B carriers are sexual contact and mother-to-baby transmission which can happen during pregnancy, delivery, and after giving birth. The infection most commonly happens during delivery due to the baby's exposure to the mother's blood.<sup>1</sup> In countries with a low incidence of hepatitis B infection, the transmission is majorly found in sexual contact. It has been found that people frequently having sexual intercourse with infected people will get infected by 25 percent but in countries with a high rate of population with hepatitis B infection; for example, Thailand is reported with patients with chronic hepatitis B as much as 5.1 percent, the infection is from mother-to-baby transmission.<sup>3,4,5</sup> If pregnant women get sick from acute hepatitis B during the first trimester of pregnancy, the infection transmission from mother to baby can happen by 10 percent. If sickness from acute hepatitis B happens in the third trimester of

pregnancy, babies are expected to get infected by 80–90 percent.<sup>6</sup> In pregnant women with chronic hepatitis B, while they have labor pain babies will have direct exposure to mothers' blood and body fluids infected with the virus, causing infection in babies at birth of mothers detected with HBs Ag in blood. In case there is no prevention of disease by immunization (immunoprophylaxis) with hepatitis B immunoglobulin (HBIG) injection with the whole package of hepatitis B vaccine, babies at birth will get infected by 20 percent. With the whole package of HBIG combined with HBV vaccine, babies at birth are prevented from the infection by 90 percent. Some babies are found getting infected during delivery though they receive the complete package of HBIG and HBV vaccine.<sup>5,6,7</sup> A study in babies getting infected though they receive HBIG and HBV vaccine found the infection happened in mothers with HBeAg in blood indicating there was an increasing amount of virus in mothers' blood or in mothers with a high amount of virus in blood (high viral load) during delivery.<sup>7</sup> As per the two cases mentioned above, HBIG injection and HBV vaccination may not be sufficient to prevent the infection in babies at birth. There should be a reduction of the amount of virus in mothers' blood with antiviral drugs before delivery. Thus, screening pregnant women with chronic hepatitis B infection and prevention of transmission from mothers to babies using HBIG injection, HBV vaccination, and anti-virus medicine is necessary in controlling and preventing hepatitis B virus carriers in Thailand.<sup>3</sup> As a result, nurses who play a vital role in taking care of pregnant women should have knowledge and understanding about caring of pregnant women with hepatitis B carrier continually from delivery and postpartum periods to prevent the spread of the virus in providing recommendation for taking care of themselves to promote their health, reduce severity of the disease, and reduce complications that probably happen to fetus.

### Effect of hepatitis B virus on pregnancy

Effect of mothers: Pregnant women being HBsAg carriers and not showing symptoms do not increase the risk of complications during pregnancy. In case pregnant women have complications such as cirrhosis, varice, or liver failure.<sup>7,8</sup>

Effect of fetus in utero: Babies get infected during pregnancy. If mothers have HBV infection in the third trimester of pregnancy, babies are born prematurely, babies have low birthweight, babies die at birth, and babies can be at risk for infection.<sup>5,6,7,8,9</sup>

### Prevention of mother to child transmission of hepatitis B virus infection

When HBsAg in blood of pregnant women is found in the screening process, HBIG infection and HBV vaccination to newborn shall prevent infection in babies. Therefore, pregnant women found with HBsAg should be tested for HBeAg and Hepatitis B DNA or Hepatitis B viral load to evaluate the amount of virus present in blood.<sup>8,9</sup> Pregnant women found with HBeAg or with Hepatitis B DNA more than 200,000 IU/ml or viral load more than 1,000,000 copies/ml should be considered to have antiviral drugs to reduce the amount of virus in blood during delivery, the serum alanine transferase (ALT) test to evaluate the liver function in pregnant women, recommendation on preventing hepatitis B virus carrier in newborn.<sup>6</sup> Today recommendations on preventing hepatitis B virus carrier from mother to child are provided by many organizations which can be summarized as follow:<sup>7,8,9</sup>

1. Newborn to HBsAg positive mothers should receive hepatitis B vaccine at least 3 times at birth, at age 2 months, and at age 6 months.
2. Newborn to HBsAg positive mothers have to receive the first dose of hepatitis B vaccine in conjunction with hepatitis B immune globulin (HBIG) in the first 12 hours after birth, in anterolateral thighs

and later babies need to receive vaccine at least 2 times at age 1-2 months, and at age 6 months.<sup>6,14</sup>

3. Pregnant women detected HBsAg and HBeAg and/or HBV DNA more than 200,000 IU/ml or the amount of hepatitis B virus DNA (viral load) more than 1,000,000 copies/ml should be recommended antiviral drugs to minimize the amount of virus while delivery. The antiviral drugs will be given in the third trimester of pregnancy (they are commonly given at gestational age 28 weeks.) until delivery. When babies are delivered, the antiviral drugs can be stopped immediately. Newborn babies to HBsAg positive mothers have to receive the first dose of hepatitis B vaccine in conjunction with hepatitis B immune globulin (HBIG) in the first 12 hours after birth, in anterolateral thighs and later babies need to receive vaccine at least 2 times at age 1-2 months, and at age 6 months.<sup>9</sup>

Antiviral drugs for hepatitis B given in pregnant women: The antiviral drugs that have been studied and administered to prevent hepatitis B virus transmission from mother to child are as follow:<sup>10,11,12</sup>

1. Lamivudine (LAM), oral, 100-150 mg. daily
2. Telbivudine (LdT), oral, 600 mg. daily
3. Tenofovir Disoproxil Fumarate (TDF), oral, 300 mg. daily. Tenofovir Disoproxil Fumarate (TDF) is the most widely used currently as both LAM and LdT have a high viral resistance rate. Pregnant women being in an active carrier state and receive the antiviral drugs to prevent infection from mother to babies aim to minimize the amount of virus in blood during delivery.

### **Roles of nurses in taking care of women being hepatitis B carriers.**

Roles of midwives in nursing women with hepatitis B disease during pregnancy, delivery, and postpartum period. Nurses are important persons in

preventing the spread of disease when pregnant women start to have their antenatal care by providing recommendation before and after blood test, taking care of pregnancy, delivery, and postpartum period to be operated with quality. Continuous follow-up on infected persons during pregnancy, delivery, and postpartum period are shown below.<sup>17,18,19</sup>

#### **Antenatal care**

Pregnant women who have their first time antenatal care will be screened for hepatitis B disease and recommended self-care practice to prevent the natural history of disease that will be more severe and the spread of the disease in case pregnant women have been found being disease carriers, and to prevent effect of infection during pregnancy as detailed below:

1. Screening for hepatitis B virus infection in pregnant women by checking health check-up history and doing blood test to look for HBsAg;

- 1.1 Personal data and family history. Emphasis is placed on finding a risk group of infection, i.e. age, race, number of marriages or number of sexual partners, lifestyle in sexual relations, the history of using medicines and addictive substances, personal data of their husbands and members of their families especially risk behavior related to sexually transmitted infection and the history of using medicines and addictive substances.

- 1.2 History of Obstetrics and Gynecology, i.e. previous pregnancy and delivery, infection in previous pregnancy, child's personal data such as newborn characteristics, vaccination, and current health condition.

- 1.3 History of previous illness, i.e. hepatitis B vaccination, examination and treatment of sexually transmitted diseases, signals and symptoms of hepatitis B.

- 1.4 Medical check up schedule during pregnancy is provided to evaluate infection

symptoms, i.e. fever, fatigue, loss of appetite, nausea and vomiting, stomachache, dark urine, pale stool, joint pain, and jaundice in some cases with severe symptoms. Nurses should provide medical check up to pregnant women being hepatitis B carriers at every antenatal care visit.

1.5 Blood testing to find HBsAg with advice and counselling before and after blood drawing. For pregnant women found to be HBsAg positive on the screening, recommendation for self-care practice should be provided to prevent natural history of disease severity and the spread of the disease to other people.<sup>6,8</sup>

2. Recommendation for self-care practice to prevent natural history of disease severity and the spread of the disease;<sup>13,14,15</sup>

2.1 Providing knowledge associated with the disease, cause of the disease and transmission, preventing the spread of disease, natural history of disease, nursing care to prevent the transmission from mother to child to minimize pregnant women's anxiety and allow pregnant women to be aware of the disease and participate in self-care practice for preventing severity and spread of the disease in an appropriate manner.

2.2 Recommending self-care practice during pregnancy; proper self-care practice will decrease the incidence and increase a better quality of life through the following activities:

2.2.1 Abstain from alcoholic drinks.

2.2.2 Avoid foods most frequently contaminated with aflatoxin that can destroy liver more such as dried beans, uncooked rice that kept for too long to be contaminated with fungal species, chilli powder, etc.

2.2.3 Eat cooked and clean foods, avoid high-fat foods or grilled foods, abstain from raw or semi-cooked foods that probably contain liver fluke increasing more risk for getting liver cancer.

2.2.4 Keep the body healthy by regular exercising and make the mind happy.

2.2.5 Minimize the transmission such as safe sexual activities, be careful of exposure to contaminated blood and body fluids, etc. Advice on information disclosure should be provided to spouses so that they can find out infection, disease carrier or vaccination in case they do not have immunity from the virus.<sup>6</sup>

3. Self-care practice recommendation for promoting health during pregnancy similar to general pregnancy

#### **Delivery phase**

This is the stage that the infection can be passed from mothers to medical personnel who are directly exposed to blood and body fluids. Thus, nurses have to stay alert to the spread of infection in conjunction with taking care of delivery to be operated normally as follow:

1. Prevent the spread of infection from exposure to blood and body fluids on the basis of universal precaution in the stage of waiting for delivery and during delivery.<sup>14</sup>

2. Take care of the delivery to be operated normally such as follow up delivery progress, do not stimulate the delivery more frequently than needed, evaluate fetal heart sound, observe uterine contraction disorder and take care of safety and convenience of pregnant women, relaxing and sleeping, excretion, using relaxation techniques to relieve labor pains.<sup>14,15</sup>

3. Take care of newborn babies on the basis of universal precaution in touching or holding babies, quick suctioning neonates's mouth and nose at birth, clean baby's skin before giving vaccination.<sup>13,14</sup>

4. Take care of babies to have immunization with HBIG injection in 24 hours and Diphtheria Pertussis Tetanus vaccine and HBV vaccine three times at age 2, 4, and 6 months.<sup>14</sup>

### Postpartum period

1. Prevention of the spread of infection on the basis of universal precaution for exposure to lochia, milk, and body fluids of mothers after giving birth.<sup>14,15</sup>

2. Nursing care for evaluating the health condition of mothers after giving birth and self-care practice recommendation for promoting health for postpartum period, i.e. uterine contraction to prevent postpartum haemorrhage, relief of uterine pain, perineal wound care, lochia observation, prevention of phlebitis, and health promotion in general self-care practices such as relaxing and sleeping, food eating, exercising, personal health care, etc.including promoting psychological adjustment, building relationships with babies, and self-adjustment to their roles as mothers.<sup>12,13,14</sup>

3. Giving advice about correct breastfeeding. Babies born to mothers with chronic hepatitis B, in case they receive HBIG injection and HBV vaccination at birth, they can have breastfeeding but mothers need to be carefully keep nipples not to be cracked.<sup>9</sup>

4. Giving advice about regular self-care practice related to surveillance and natural history of the disease to prevent more severity of natural history of the disease.<sup>14</sup>

5. Giving advice about birth control and family planning in an appropriate manner and giving advice spouses to have regular health check-up and blood test for next pregnancy.<sup>13</sup>

6. Giving advice how to prevent the spread of infection to other people.<sup>12</sup>

### Conclusion

Hepatitis B virus infection is an important problem as it causes cirrhosis and liver cancer especially pregnant women being active carriers whose initial signs and symptoms may not be apparently shown. The spread of infection is triggered by exposure to blood and body fluids and the transmission

from mother to child. Nurses are important medical personnel in preventing the spread of infection, minimizing severity of the disease, preventing infection in babies at birth during delivery stage and promoting health condition of infected pregnant women from pregnancy, delivery, and postpartum period through screening, surveillance and giving advice and recommendation to pregnant women and their spouses to have self-care practice for promoting their health, watching over the spread of infection including regular health check-up to prevent more severity of natural history of the disease.

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