

Ebola Survivor and Her Pregnancy Outcome

[Announcer] This program is presented by the Centers for Disease Control and Prevention.

[Sarah Gregory] I'm talking today with Dr. Moon Kim about her article discussing an Ebola survivor and the delivery of her baby. Dr. Kim is a medical epidemiologist at the Los Angeles County Department of Public Health. Welcome, Dr. Kim.

[Moon Kim] Hello Sarah, and thank you for the opportunity to discuss our findings on this podcast.

[Sarah Gregory] Many survivors of Ebola virus disease are women of child-bearing age. Is this of particular concern?

[Moon Kim] What's important about this is that many survivors of Ebola virus disease, which, according to the World Health Organization, is approximately 5,000 women of childbearing age, will require medical care for not just routine illnesses, but also surgical services, dental work, and management of other diseases. Also, many of these female survivors will require obstetric care and may come to the United States for this care. So hospitals and healthcare workers need to be prepared to provide care in a manner that promotes patient dignity and comfort, prevents stigmatization that Ebola virus survivors may receive, and ensure receipt of appropriate and high-quality medical care.

[Sarah Gregory] Your article discusses an Ebola survivor who delivered her baby in the U.S. What were some of the steps taken to ensure everyone's safety, including the delivery and hospital staff?

[Moon Kim] The patient described in our report had recovered from Ebola virus disease and became pregnant more than five months after her last negative Ebola virus PCR test and was asymptomatic.

The Los Angeles County Department of Public Health, California State Department of Public Health, and the CDC determined that the patient was healthy and had fully recovered from Ebola virus disease. She was extremely low risk for transmission of the virus. Hospital staff raised concerns about the possibility of Ebola virus being harbored in immune-privileged sites in Ebola virus disease survivors, for example in the cerebrospinal fluid, and expressed concerns about the theoretical risk for Ebola virus transmission. This patient did not show signs or symptoms of Central Nervous System, or CNS, involvement during her acute illness or during her pregnancy, which likely indicated a decreased risk of any latent Ebola virus reservoir in her CNS; therefore, it was considered likely that epidural or spinal anesthesia for this patient would not pose an infectious risk to staff.

[Sarah Gregory] So what was done then?

[Moon Kim] We did play an active role in assessing and guiding management of the patient and reviewing infection control precautions, including the use of personal protective equipment. The Los Angeles County Department of Public Health and the CDC met with the hospital's healthcare providers, nursing directors, laboratory director, environmental services staff, anesthesiologists, and hospital administration to address concerns and review the patient's care plan, including planning for any complications, such as the need for cesarean delivery or the development of peripartum fever.

Hospital infection control procedures were reviewed in person with hospital staff. In reviewing these policies, we did not recommend any additional precautions above the standard precautions currently used for all deliveries at the hospital. We also did not make any recommendations for any changes to the hospital's policies for environmental cleaning or waste disposal.

When reviewing personal protective equipment, the hospital staff did importantly point out the often imperfect adherence to the use of PPE during labor and delivery, so they expressed concern over the patient's history of Ebola virus disease because large volumes of blood and amniotic fluid are often encountered in typical, uncomplicated vaginal deliveries.

As a result of these concerns, many discussions were held regarding what PPE should be used during labor and delivery; however, neither CDC nor the American College of Obstetrics and Gynecologists had tailored recommendations for PPE specifically for vaginal or cesarean deliveries for any patients. Therefore, the CDC and the Los Angeles County Department of Public Health developed a preliminary set of recommendations for the patient's providers regarding the use of PPE during and after labor and delivery to ensure that standard precautions were implemented. These PPE recommendations were discussed with the providers in the days before delivery, and staff members were able to ask for clarification and ensure that materials were readily available. These PPE recommendations did not differ from standard precautions, but they specifically discussed which PPE to use for casual contact, vaginal examinations, labor and delivery, anesthesia, and postpartum care. Routine hand hygiene, the use of barriers for mucous membrane protection, and the use of double gloves for procedures that involve sharps were specifically outlined.

[Sarah Gregory] What implications does this case have for U.S. hospitals?

[Moon Kim] Many more Ebola virus disease survivors will become pregnant and deliver, and some may do so in the United States. Many other survivors will require routine medical care, including care for post-Ebola virus disease syndrome. Lessons learned from this patient, specifically those addressing concerns about potential risks for virus transmission, may be applied to future patients. However, each survivor who seeks medical care will likely need to be assessed individually to determine possible risks for transmitting virus.

No evidence currently exists that Ebola virus can persist in the female genital tract, so perceived risk needs to be mitigated so that patients are not stigmatized and receive appropriate care.

We concur with the current guidelines by the World Health Organization, which state that women who have recovered from Ebola virus disease are not infectious and should receive

routine prenatal care, and their labor and delivery should be performed using standard Personal Protective Equipment for protection against blood and body fluids.

[Sarah Gregory] Tell us about the patient and the delivery. And was the baby healthy?

[Moon Kim] The patient delivered at 40 weeks gestational age. The patient was given epidural anesthesia for pain control and had a normal vaginal delivery of a female baby with Apgar scores of eight and nine at one and five minutes of age, respectively. Yes, the baby was healthy and there were no complications. The patient and her baby were discharged from the hospital at 36 hours postpartum. They returned for routine pediatric follow-up seven days after birth and were doing well. At six weeks follow-up, before returning to West Africa, the mother and baby continued to do well.

Placenta, amniotic fluid, cord blood samples, colostrum, and ear and oral samples from the baby were negative for Ebola virus. The placenta and umbilical cord were histologically normal, and no Ebola virus antigen was detected by immunohistochemistry.

[Sarah Gregory] Do we know if this fortunate outcome is generalizable or a unique result?

[Moon Kim] The normal pregnancy for the patient described in this study and her delivery of a healthy baby offers reassurance that women who become pregnant after recovery from Ebola virus disease pose little risk for transmission of Ebola virus to the baby or others.

But the immune effects of pregnancy in the context of Ebola virus disease have not been well documented and alterations in the immune system do occur during pregnancy, which during acute Ebola virus infection likely increases the risk for a poor outcome, including spontaneous abortion and neonatal death.

However, our patient did not have acute Ebola virus infection when she became pregnant. She had fully recovered from Ebola virus disease at the time she became pregnant. And unlike the CNS, eye, and male testis, the genital tract of a non-pregnant female is not considered an immune-privileged site. On the basis of epidemiologic evidence in the field, of multiple uneventful deliveries in West Africa and of the laboratory-analyzed case we reported here, no evidence currently exists that Ebola virus can persist in the female genital tract.

However, because each individual's clinical course of Ebola virus disease could be different and complex, each Ebola virus disease survivor who seeks medical care will likely need to be assessed individually to determine possible risks for transmitting the virus.

[Sarah Gregory] Dr. Kim, what conclusions were drawn from this event?

[Moon Kim] An important point to note is that over the course of our involvement in this case, it became evident that, although standard infection control precautions should routinely be used in all labor and delivery settings, written guidelines that are tailored for labor and delivery settings that specifically outline Personal Protective Equipment use in labor and delivery settings may be useful, given the heightened concern for a theoretical disease transmission risk.

[Sarah Gregory] Thank you, Dr. Kim, for taking the time to talk to me today. Listeners can read the entire July 2016 article, “Pregnancy, Labor, and Delivery after Ebola Virus Disease and Implications for Infection Control in Obstetric Services, United States,” online at cdc.gov/eid.

I’m Sarah Gregory for Emerging Infectious Diseases.

[Announcer] For the most accurate health information, visit www.cdc.gov or call 1-800-CDC-INFO