

# research updates

## Zika Virus: An Update for Midwives

by NINA ZAGVAZDINA

1. Meaney-Delman D, Rasmussen S, Staples E, Oduyebo T, Ellington S, Petersen E, et al. Zika virus and pregnancy: What obstetric health care providers need to know. *Obstet Gynecol.* 2016;127(4):642-8.
2. Grilo Diniz S. Zika virus and pregnancy: A perspective from Brazil. *Midwifery.* 2016 April;35:22-3.
3. Zika Virus [Internet]. Atlanta (GA): US Department of Health and Human Services, Center for Disease Control and Prevention; 2016 Feb 11 [updated 2016 May 24; cited 2016 May 26]. Available from: <http://www.cdc.gov/zika/>.

**ZIKA, A MOSQUITO-BORNE flavivirus,** has gained significant attention since its appearance in the Americas in 2015. Of particular interest to midwives and other obstetric providers is the association between Zika infection of the pregnant mother and adverse neonatal outcomes, especially microcephaly. Prior to 2015, Zika was found in parts of Africa and Asia but was limited to the Eastern Hemisphere. In May, 2015, transmission was confirmed in Brazil, and the virus spread rapidly in South and Central America, affecting over 20 countries and territories. Zika is transmitted primarily by *Aedes aegypti*, a mosquito with a large geographical range, including the southern United States. Another confirmed vector, *Aedes albopictus*, is also widely distributed. As of May, 2016, the only reported cases of Zika infection in the United States

have been travel-related; however, according to the World Health Organization (WHO), Zika is likely to continue to spread.

Zika is believed to have an incubation period of up to 7 days. Most people infected with Zika do not become ill, but 1 in 5 experience symptoms such as fever, muscle and joint pain, malaise, maculopapular rash, headache, vomiting, or conjunctivitis. Symptoms generally persist for several days to 1 week, at which point the virus clears from the bloodstream. Transmission can also occur as a result of sexual contact, though this is less common.

Maternal-fetal transmission of the Zika virus has been confirmed; however, a causal relationship between Zika infection and adverse neonatal outcomes has not been formally established. Current epidemiologic and laboratory data suggest an association between maternal infection with the Zika virus and adverse outcomes such as microcephaly, brain atrophy, ventricular enlargement, and intracranial calcifications. The frequency of maternal-fetal transmission is unknown. Women can become infected during any trimester, and transmission risks, including effects of timing, viral load, and maternal immune response, are not understood. Also, no information is available on the potential for viral transmission to the fetus from an infected but asymptomatic mother.

Although Brazil reported a



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significant increase in infants born with microcephaly since the establishment of Zika in the country, microcephaly has not increased in Colombia, where Zika is established as well. Several explanations have been proposed, including the possibility of a more aggressive regional mutation of Zika virus. Currently, the Centers for Disease Control and Prevention (CDC) recommends that women who are or who may become pregnant avoid travel to areas where Zika has been confirmed.<sup>1</sup> Additionally, the WHO declared a Public Health Emergency of International Concern in February, 2016, in response to the spike in microcephaly cases. Pregnant women residing in affected areas are encouraged to be proactive about mosquito management, including wearing long sleeves and using DEET-based insect repellants. DEET-based repellants are considered safe for use during pregnancy and breastfeeding; however, alternatives such as para-Menthane-3,8-diol (PMD) or lemon and eucalyptus extract are available for

those wishing to limit their exposure to DEET. Additionally, mosquito habitats can be reduced in urban areas when sources of standing water are eliminated (i.e. rain buckets, stagnant freshwater puddles, and pools).

For the midwife, an awareness of Zika virus occurrence and possible effects is important because clients may have questions or concerns regarding travel and exposure. With the 2016 Summer Olympics taking place in Brazil, millions of people are expected to travel to areas where Zika occurs. It is important to remember that Zika is not only mosquito-borne but also can be transmitted via sexual contact, including vaginal, anal, or oral sex. The CDC recommends that pregnant women use condoms for the duration of the pregnancy during sexual activity with male partners who have travelled to an area where Zika is established. Clients with a suspected Zika infection can be tested for the virus using serum (within 7 days of onset of symptoms) or urine (within 14 days of

onset of symptoms) samples<sup>2</sup> and can be referred to an obstetrician or maternal-fetal medicine specialist with a positive result. State and local health departments may facilitate testing as well. Laboratory-confirmed cases of Zika should be reported to the CDC for contribution to the US Zika Pregnancy Registry. The goal of the registry is to enable researchers to further the current understanding of the effects of Zika on pregnancy,<sup>3</sup> and although contribution to the registry is elective, obstetric workers are encouraged to participate because of the anticipated spread of the virus.

Currently, there is no treatment or vaccine for Zika. A positive test during pregnancy is an indication for referral

and will likely result in a more closely monitored pregnancy with regular ultrasounds. If a client experiences pregnancy loss and Zika is suspected, fetal tissue can be submitted to the CDC for evaluation<sup>4</sup> if appropriate consent has been received from the parents. To stay current on what is known about Zika and its transmission, for updated clinical resources, and for information about the geographic distribution of cases, visit <http://www.cdc.gov/zika/>. ●

#### REFERENCES

1. Areas with Zika [Internet]. Atlanta (GA): US Department of Health and Human Services, Center for Disease Control and Prevention; 2016 Apr 26 [updated 2016 May 26; cited

Zika is not only mosquito-borne but can also be transmitted via sexual contact.

2016 May 26]. Available from: <http://www.cdc.gov/zika/geo/index.html>.

2. Diagnostic Testing [Internet]. Atlanta (GA): US Department of Health and Human Services, Center for Disease Control and Prevention; 2016 Jun 1 [updated 2016 May 15; cited 2016 May 26]. Available from: <http://www.cdc.gov/zika/>

[hc-providers/diagnostic.html](http://www.cdc.gov/zika/hc-providers/diagnostic.html).  
3. US Zika Pregnancy Registry [Internet]. Atlanta (GA): US Department of Health and Human Services, Center for Disease Control and Prevention; 2016 Feb 25 [updated 2016 May 23; cited 2016 May 26]. Available from: <http://www.cdc.gov/zika/hc-providers/registry.html>.

4. Zika Virus: Collection and Submission of Fetal Tissues for Zika Virus Testing [Internet]. Atlanta (GA): US Department of Health and Human Services, Center for Disease Control and Prevention; 2016 Feb 11 [updated 2016 Apr 04; cited 2016 May 26]. Available from: <http://www.cdc.gov/zika/hc-providers/tissue-collection-submission.html>.

## Adapted CCHD Screening Protocol Proposed to Improve Home Birth Safety

by ASH JOHNSDOTTIR, CPM, LDM, BSM

**CONGENITAL HEART DEFECTS** are a leading cause of infant death. According to the Centers for Disease Control and Prevention (CDC), congenital heart defects “account for nearly 30% of infant deaths due to birth defects.”<sup>1</sup> About 18 per 10,000 babies born in the United States are affected by critical congenital heart defects (CCHD), meaning that they require surgery or catheter intervention. Babies who are discharged from care with undiagnosed CCHD are at serious risk, but screening and early detection of CCHD through pulse oximetry can help prevent morbidity and mortality in these newborns.

Pulse oximetry screening for CCHD has been widely implemented in many countries and across various birth settings. Although universal screening has been advocated by the CDC since 2011, research indicates that implementation of CCHD screening for babies born in out-of-hospital settings has not kept pace with the rate of screening for babies born in-hospital.

A recent study of midwives in Washington State by Evers et al. found that, although almost all midwives were aware of the recommendations, only about half had implemented routine CCHD screening.<sup>2</sup> Chief among the barriers to implementation of CCHD screening among out-of-hospital midwives are concerns and questions regarding how to best implement these recommendations in the home and birth center settings.

In contrast to the United States, where less than 2% of babies are born at home with midwives, a large proportion of births happen out-of-hospital in the Netherlands. Similar to many American midwives, Dutch midwives commonly stay for somewhere around 3 hours after a home birth. Early discharge (within several hours) from the hospital after an uncomplicated delivery is also common.

Given the typical time frame for home birth midwifery care in the immediate postpartum, it is crucial to note that physical examination

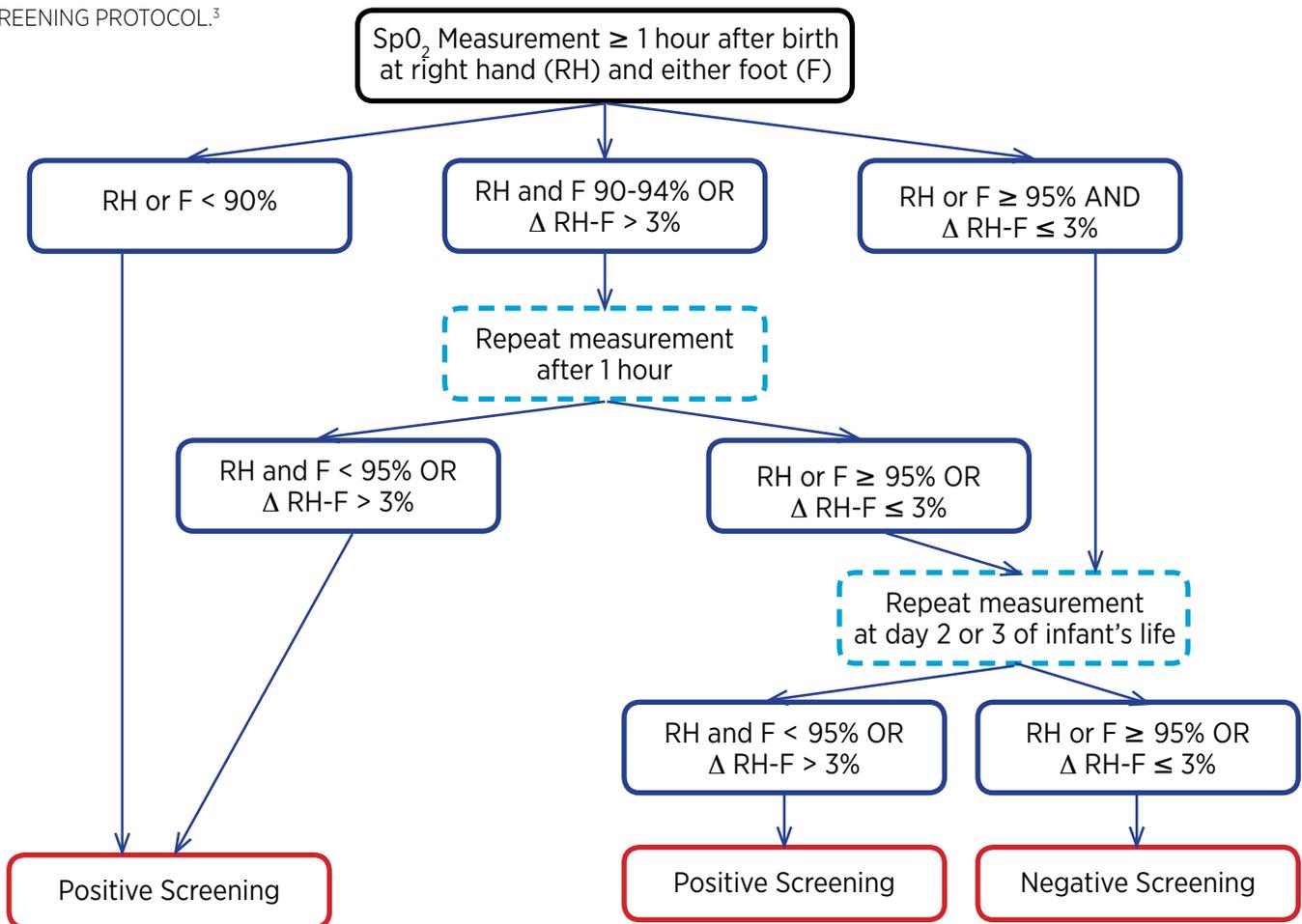


done before discharge is not an adequate method of screening for CCHD; about 30% of cases are missed. In US hospital settings, pulse oximetry screening for CCHD typically takes place after 24 hours but before discharge. Since the vast majority of babies born out-of-hospital will be discharged before 24 hours, the question remains whether

waiting until  $\geq 24$  hours, per current recommendations, is the best protocol for these newborns.

With this in mind, an adapted CCHD screening protocol was developed to suit the Dutch perinatal setting.<sup>3</sup> The authors of this adapted protocol state that it may increase safety in other countries for both home and freestanding

**FIGURE 1. PULSE OXIMETRY SCREENING PROTOCOL.<sup>3</sup>**



ADAPTED FROM NARAYEN ET AL.

birth center births attended by CPMs and other midwives, as well as for early discharge from hospital. The adapted Dutch pulse oximetry screening protocol is presented in Figure 1. For newborns with a positive screening, immediate pediatric evaluation and referral is indicated. No follow up other than routine care is suggested for infants with a negative screening.

The chief concern that many may have about the implementation of this protocol is the risk of false positives, including the inevitable distress, expense, and other negative outcomes associated with an unnecessary hospital transport for pediatric evaluation of the newborn. Although the false positive rate is lower when CCHD screening is done >24 hours after birth, research in two studies cited by Narayan et al. found that the

overall false positive rate from early screening was still very low. Importantly, both studies also found that, among infants screened before 24 hours who did have a false positive screen (i.e. no cardiac anomalies found), many of these newborns suffered from some other type of serious non-cardiac pathology: “A recent study of Singh et al. with screening <12 h after birth showed a false positive rate of 0.16% of which 79% suffered from other significant pathology, and a Polish study with screening at median age of 7 h showed a false positive rate of only 0.026% with other significant pathology found in 43% of these false positive screening tests.”<sup>3</sup>

Narayan et al. posit that through early detection of CCHD before discharge in out-of-hospital births, as well through early evaluation and

referral for “false positive” infants who suffer from other significant non-cardiac problems, the adaptation of this protocol by midwives may have the potential to increase the safety of home birth.<sup>3</sup>

Still, until the proposed protocol has been well studied, it remains to be seen whether it is advisable for CPMs and other home birth midwives to adopt this protocol and whether the proposed benefits outweigh the risks. At a minimum, US-based CPMs who have not already done so should consider implementing the current CDC protocol for CCHD screening into their practices. ●

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## REFERENCES

1. National Center on Birth Defects and Developmental Disabilities: Centers for Disease Control and Prevention. Screening For Critical Congenital Heart Defects. Atlanta (GA). [accessed March 15, 2016]. <http://www.cdc.gov/ncbddd/pediatricgenetics/documents/CCHD-factsheet.pdf>.
2. Evers PD, Vernon MM, Schultz AH. Critical congenital heart disease screening practices among licensed midwives in Washington state. *J Midwifery Womens Health*. 2015;60(2):206-210.
3. Narayan IC, Blom NA, Verhart MS, Smit M, Posthumus F, van den Broek AJM, Havers H, Haak MC, te Pas AB. Adapted protocol for pulse oximetry screening for congenital heart defects in a country with home births. *Eur J Pediatr*. 2015 Jan;174(1):129-132.

## Data vs. Culture in the Home Birth Debate

by ANA VOLLMAR, CPM

Roome S, Hartz D, Tracy S, Welsh AW. Why such differing stances? A review of position statements on home birth from professional colleges. *BJOG*. 2016;123(3):376-382.

### THE PAST 6 MONTHS HAVE SEEN

multiple studies published on different aspects of out-of-hospital birth. The findings are both affirming and present important challenges for maternity care providers working in homes and birth centers. From the MANA Statistics Project, 6,534 waterbirth babies had no increased risk for negative outcomes.<sup>1</sup> From Oregon, planned out-of-hospital birth in 2012-2013 was associated with a higher rate of perinatal death than planned in-hospital birth (3.9 vs. 1.8 deaths per 1,000 births), although the absolute differences in risk were extremely small between the locations (<1 death per 1,000 births).<sup>2</sup> In Ontario, the neonatal outcomes of 11,493 planned home births were compared with those of 11,493 hospital births, and birth setting was found to confer no additional risk to babies born to either nulliparous or multiparous women.<sup>3</sup> Also from the MANA Statistics Project, out-of-hospital TOLAC (trial of labor after cesarean) did not incur an increased rate of uterine rupture, but, consistent with other studies, it did appear to have a higher neonatal mortality rate than in-hospital TOLAC (4.75/1,000 vs. 1.1/1,000), especially when other complicating factors were present. Additionally, rates of out-of-hospital TOLAC were higher in areas of the country with low VBAC and high cesarean rates, suggesting limited regional access to TOLAC.<sup>4</sup>

The studies reflect the variety of political and healthcare systems in which out-of-hospital birth occurs. Diving deeper

into the question of attitudes towards out-of-hospital birth, Roome et al. explore the range of stances on home birth from professional obstetric and midwifery organizations in the UK, USA, Australia, New Zealand, and Canada. After reviewing the organizations' stances, the authors analyzed the key studies used in each position statement, and found that the pro-home birth (ACNM, CAM, ACM, RCOG, RCM) and anti-home birth (RANZCOG, ACOG) position statements utilized studies confirmatory and contradictory of home birth in very different ways.

For instance, organizations supporting home birth either did not cite the controversial 2010 Wax et al. study of out-of-hospital neonatal mortality rates,<sup>5</sup> or dismissed it on methodological flaws. These organizations also did not cite concerns with the quality of studies positively reporting home birth safety. In contrast, organizations opposed to home birth drew heavily on findings from Wax et al. without raising methodological concerns, and criticized the quality of studies supportive of home birth. In short, the organizations had vastly different responses to the same papers.

The organizations also varied in their transparency about the statements' development and review processes, and in disclosure of conflicts of interest for authors. Organizations with the most transparency included RANZCOG, RCOG, RCM, and CAM, while neither ACNM nor ACOG outlined their review methods, and ACOG's statement of policy on home birth did not cite any evidence or studies.

Key areas of difference emerged between the two stances, including definitions of safety and the role of personal autonomy in decision-

Empirical knowledge alone is unlikely to resolve differences of opinion on home birth.

making. Anti-home birth position statements defined safety primarily in terms of neonatal mortality, viewing childbirth as pathological and inherently risky. In contrast, pro-home birth position statements more broadly defined safety to include not only neonatal outcomes, but also the potential harm of interventions and emotional and psychological safety. These statements viewed childbirth as a normal, physiologic event.

The organizations also took different stances on personal autonomy in decision-making. Anti-home birth organizations maintained that women should be able to make bad/risky decisions (like choosing a home birth) provided they know all the facts and risks. In contrast, pro-home birth position statements argued that true, autonomous decision-making is only possible in the context of healthcare systems that are integrated and accessible to all (which is rarely, if ever the case), and that if people choose home birth against medical advice, they should nonetheless have access to a care provider in the setting of their choice. All position statements emphasized that integrated care was critical to home birth safety; the statements differed in their recommendations about whether or not home birth should occur in regions where integrated care is not present.

Roome et al. conclude that "further empirical knowledge alone is unlikely to resolve the differences of opinion" between the organizations, given the organizations' different values regarding safety, risk, and decision-making. In other

words, while the new findings from MANA, Oregon, and Ontario may be helpful in refining and improving intrapartum care, they are not going to impact the positions of the professional organizations. Instead, the authors suggest that to advance the impasse between pro- and anti-home birth organizations, discussion must focus on areas of differing values and philosophies, with the goal of producing shared and transparent position statements. Finding consensus and common ground about out-of-hospital birth is not only – or perhaps even mostly – a data issue, but is also a cultural issue. ●

### REFERENCES

1. Bovbjerg ML, Cheyney M, Everson C. Maternal and Newborn Outcomes Following Waterbirth: The Midwives Alliance of North America Statistics Project, 2004 to 2009 Cohort. *J Midwifery Womens Health*. 2016;61(1):11-20.
2. Snowden JM, Tilden EL, Snyder J, Quigley B, Caughey AB, Cheng YV. Planned Out-of-Hospital Birth and Birth Outcomes. *N Engl J Med*. 2015;373:2642-2653.
3. Hutton EK, Cappelletti A, Reitsma AH, Simioni J, Horne J, McGregor C, Ahmed RJ. Outcomes associated with planned place of birth among women with low-risk pregnancies. *CMAJ*. 2016;188(5):E80-90.
4. Cox KJ, Bovbjerg ML, Cheyney M, Leeman LM. Planned Home VBAC in the United States, 2004-2009: Outcomes, Maternity Care Practices, and Implications for Shared Decision Making. *Birth*. 2015;42(4):299-308.
5. Wax JR, Lucas FL, Lamont M, Pinette MG, Cartin A, Blackstone J. Maternal and newborn outcomes in planned home birth vs planned hospital births: a metaanalysis. *Am J Obstet Gynecol*. 2010;203(3):243.e1-8.