A survey of infection control practices for influenza in mother and newborn units in US hospitals

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The purpose of this study was to describe infection control practices for influenza in mother and newborn units in United States hospitals in the context of the 2009 H1N1 pandemic. We conducted surveys of neonatal intensive care unit directors in February and November 2010 and requested information on infection control practices during the 2009 and 2010 influenza seasons. We received 111 responses to the initial survey and 48 to the follow-up survey. In 2009, 58% of respondents restricted breastfeeding by mothers with influenza-like illness; 42% did not. Ninety percent of the respondents maintained physical separation between an ill mother and her newborn infant, although the approaches to this separation varied. Eighty percent of postpartum units and 89% of neonatal intensive care units restricted access by children. In 2010, fewer hospitals restricted mother-infant contact and children visitation compared with 2009. Infection control practices for influenza in mother and newborn units vary considerably in US hospitals, particularly regarding contact between an ill mother and her newborn infant. The identification of this variation may inform best practices in this area, as well as future investigations and future guideline development.

Key words: infection control, influenza, maternal, neonatal

Pregnant women and newborn infants are known to be at high risk for seasonal influenza infection and its complications.[1] The recent pandemic caused by the 2009 H1N1 influenza A virus appeared to carry particular risks for these groups, as numerous reports documented high rates of hospitalization and death among pregnant and postpartum women and infants who were <1 year old.[2-5] Given the higher burden of influenza in pregnancy, hospitals are faced with the particular challenge of caring for pregnant women with influenza in a manner that will allow for optimal patient-centered care, while limiting the risk of infection to the mother herself, her newborn infant, and other patients.

During the 2009 H1N1 pandemic, public health agencies, including the Centers for Disease Control and Prevention (CDC), offered guidance for hospitals for infection control practices that addressed the use of strict isolation and the use of N95 or equivalent respirator masks for health care workers who cared for patients with suspected 2009 H1N1.[6] Specific guidance for maternal and newborn units for the care of pregnant women with suspected H1N1 illness was offered in July 2009 with the release of "Considerations Regarding Novel H1N1 Flu Virus in Obstetric Settings" (Table 1).[7] Recommendations included the avoidance of close contact between mother and newborn infant while the mother was febrile, the care of the infant by a healthy caregiver in a separate room and the use of expressed breast milk, rather than breastfeeding during that period, and consideration of the newborn infant as potentially infected and the use of appropriate isolation and precautions.

After its release, various professional organizations raised numerous concerns about the statement; the concern was that separation of mother and newborn infant may not be practical (given configuration and staffing of many postpartum wards), that current evidence did not support the possibility of fetal infection and thus, the need to consider the newborn infant as infected, that the placement of the newborn infant in other areas of postpartum wards could increase exposure to other potentially infected individuals, and that separation of mother and infant could lead to lactation failure. Recognizing these concerns, other public health agencies released statements that modified the CDC recommendations. For example, the Massachusetts Department of Public Health recommended new mothers with influenza-like illness be allowed to have their infants in their hospital room, with appropriate use of face masks, gowns, and careful hand hygiene.[8]

Based on the feedback, the CDC issued a revised statement in November 2009 (Table 2).[9] The new guidelines continued to recommend temporary separation of the newborn infant from the ill mother in the postpartum period but allowed for this separation to occur in a separate room or within the mother's room with the infant in an incubator or in a bassinet at least 6 feet from the mother. The new guidelines suggested that the infant who is born to a mother with confirmed or suspected H1N1 illness should be considered exposed, rather than infected, and that standard precautions for the newborn infant were adequate if the infant was well. Other recommendations remained unchanged from the earlier statement, which included the recommendation for expressed breast milk, rather than direct

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TABLE 1
Summary of recommendations in July 2009 Centers for Disease Control and Prevention statement on H1N1 in obstetric settings[7]

Isolate ill mother from other patients
Use surgical mask on ill mother during labor and delivery
Until mother has received antiviral medications for 48 hours, her fever has resolved, and she is able to control cough and secretions, use of the following precautions:
Avoid close contact between mother and infant
Care for the infant in a separate room by a healthy caregiver
Express breast milk rather than breastfeed
After these conditions are met and until at least 7 days after the onset of influenza symptoms, use of the following precautions:
Use face mask and clean gown or clothing and require strict hand hygiene by mother for all contact with infant
Initiate breastfeeding with the use of these precautions
Consider the newborn infant to be potentially infected and use appropriate infection control procedures for the infant while in the hospital
Limit visitors to mother and to those persons who are necessary for emotional well-being and care

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breastfeeding, during the febrile phase of maternal illness. These recommendations around breastfeeding were also included in an information sheet that was directed to parents.[10]

Notably, other organizations continued to struggle with the issue of breastfeeding in the context of possible maternal H1N1 infection. In November 2009, members of the American Academy of Pediatrics (AAP) Section on Breastfeeding and the AAP Committee on Infectious Diseases published a statement that suggested breastfeeding by these mothers could be allowed with proper precautions, which would include washing of hands and breast before breastfeeding and wearing of a mask by the mother.[11]

TABLE 2
Summary of new recommendations in November 2009 CDC statement on H1N1 in intra- and postpartum settings

Temporary separation of ill mother from newborn infant until mother has received antiviral medications for 48 hours, her fever has resolved for 24 hours without use of antipyretics, and she is able to control cough and secretion, with the following options for separation during this period:
Infant in separate room
Infant in incubator in mother's room
Infant in bassinet in mother's room at least 6 feet away from mother, ideally separated by Plexiglas or curtain barrier
Consider the newborn infant to be exposed, with the use of standard precautions in the newborn nursery if the infant is well
After discharge:
Avoid contact with the newborn infant by all persons in the home with suspected or confirmed 2009 H1N1 virus infection
Vaccinate against 2009 H1N1 and seasonal influenza all persons who provide care for the infant or are living with the infant

Summary of recommendations in November 2009 Centers for Disease Control and Prevention statement on H1N1 in intra- and postpartum settings[9] (changes from July 2009 statement).

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After the 2009-2010 influenza season, the CDC continued to update its guidance on infection control practices for influenza and H1N1. Recommendations around 2009 H1N1 were now incorporated into guidelines for seasonal influenza. General guidelines for influenza in health care settings no longer recommended the use of N95 or equivalent respirators for routine patient contact, although their use was recommended during aerosol-generating procedures.[12]

Similarly, the CDC recommendations for the obstetric setting were consolidated into 1 document for influenza, without particular recommendations for 2009 H1N1 (Table 3). The guidelines for infection control practices in obstetrics reverted to the previous document for seasonal influenza from August 2009. With regards to a mother with influenza-like illness, breastfeeding was considered acceptable with appropriate precautions, and rooming-in of the infant with the mother was recommended with use of an incubator located 3 feet from the mother.[13]

The translation of these various guidelines into practice has not been straightforward. Many hospitals struggled with the implementation of the 2009 CDC guidelines with regard to balancing family-centered care and support of breastfeeding with limiting risk of infection transmission to the newborn infant and to other patients. With limited definitive evidence to guide these decisions, hospitals relied on a combination of public guidelines and local expert opinion for policy development.

Given these challenges, we sought to gather further information on the approaches that are taken by hospitals in the implementation of infection control policies about influenza in their mother and newborn units during the 2009 H1N1 pandemic. We believed that a description of the range of hospital practices could provide valuable information regarding the unique issues around infection control in perinatal care and could potentially inform development of public health guidelines in the future.