

Epidemic Methicillin-Resistant *Staphylococcus Aureus*: Dramatically Increased Risk for Circumcised Newborn Boys

Recent reports indicate that community methicillin-resistant *Staphylococcus aureus* (C-MRSA) now has reached epidemic proportions in many areas and has become a worldwide problem.¹⁻⁸ Circumcision long has been known to increase the risk of *Staphylococcus aureus* (SA) infection in newborn boys. The advent of epidemic C-MRSA dramatically worsens the risks associated with *Staphylococcus* infection because:

- the presence of C-MRSA in epidemic proportions increases the chance of an infant being infected with MRSA by caregivers.
- the threat to health is escalated beyond that posed by methicillin-sensitive *Staphylococcus aureus* (MSSA) if an infant should be infected.
- the risk of death is increased.

The circumcision wound is a known portal-of-entry for the pathogen and significantly increases circumcised boys' risk. Sauer (1943) reported fatal *Staphylococcus* bronchopneumonia after ritual circumcision.⁹ Thompson *et al.* (1963,1965) reported that boys have about twice the infection rate of girls, and circumcised boys have twice as much SA disease as non-circumcised boys (26 percent compared to 13 percent).^{10,11} Annunziato & Goldblum (1978) reported staphylococcus scalded skin syndrome (SSSS) from infected circumcisions.¹² Curran & Al-Salihi (1980) reported that male newborns have 5.5 times as much general exfoliative disease (SSSS) as girls.¹³ Enzenauer *et al.* (1985) reported the incidence of *Staphylococcus aureus* (SA) infection on follow-up among the circumcised males to be more than twice as high as among the non-circumcised males and 5.5 times higher than the females.¹⁴ Boys already are at greater risk of SA infection than girls and neonatal circumcision worsens that disadvantage.^{11,13,14}

The strictest aseptic surgical technique may not prevent infection of the circumcision wound with SA because the circumcision wound may be infected while the infant patient is in the newborn nursery or in the community after leaving the hospital. SA spreads rapidly through hospital nurseries and newborn boys quickly become colonized with SA.^{5,11,13-21} Infection frequently affects the diaper and groin area.^{11,14,21} Gooch & Brit (1978) reported that 24 percent of newborns are colonized at time of discharge and, of these, 2 percent have an infection.¹⁹ Enzenauer *et al.* (1984) commented, "Circumcision, by its very nature, requires more staff-person 'hands-on' contact, both during the procedure and during preoperative and postoperative care," so circumcised boys are more likely to be infected.²⁰ Boys may also become infected in the home environment after leaving the hospital.^{18,21}

Isaacs *et al.* (2004) report that osteomyelitis and/or septic arthritis occurs in connection with MSSA, but more skin infection and cellulitis occurs in connection with MRSA.⁵ In a paper presented to the American Academy of Pediatrics describing the effects of methicillin-resistant *Staphylococcus aureus* (MRSA) in newborns, Fortunov *et al.* (2005) report heavy outbreaks of pustulosis in the diaper area along with invasive infections including bacteremia, urinary tract infection, musculoskeletal infections, and empyema (pus in a body cavity).²¹ Fortunov *et al.* report MRSA in boys peaks at 7-12 days of age, which would be 6-11 days after non-therapeutic neonatal circumcision.²¹ The incubation period reported by Fortunov *et al.*²¹ is similar to that reported by Cohen (1992) for post-circumcision urinary tract infections.²² No peak was observed in girls.²¹ Boys had 73 percent of all infections.²¹ Ten of 12 invasive infections were in boys.¹⁸

Mortality

If the SA is methicillin-resistant, mortality increases,^{2,23,24} and death is a possible outcome of MRSA infection. Thompson *et al.* report a higher mortality rate for males.¹¹ The CDC reports four pediatric deaths in North Dakota and Minnesota.²⁵ Isaacs *et al.* (2004) report a mortality rate of 24.6 percent for MRSA infected newborn babies as compared with 9.9 percent for MSSA infected babies.⁵ Healy *et al.* (2004) report a mortality rate of 38 percent among MRSA infected newborn infants.²⁶ Fortunov *et al.* (2005) report one male infant death.²¹ The *New Scientist* reports 800 deaths a year from MRSA in England and Wales.²⁷

Previous Nursery Outbreaks

There are numerous reports of outbreaks of SA among circumcised boys in hospital nurseries. Remington & Klein reported 25 outbreaks from 1961 to 1987 in U.S. hospital nurseries.²⁸ Zafar *et al.* (1995) reported an outbreak of MRSA in a Virginia nursery.²⁹ Hoffman *et al.* (2000) reported an outbreak of erythromycin-resistant methicillin sensitive *Staphylococcus aureus* among circumcised boys in a newborn nursery in North Carolina.³⁰ *Newsday* reported an outbreak of MRSA among circumcised boys in the St. Catherine's Hospital nursery on Long Island.³¹ Saiman *et al.* (2003) report the outbreak of MRSA in a New York City newborn nursery.³²

Outmoded Medical Society Statements.

Circumcision policy statements by medical societies do not consider the impact of epidemic MRSA, so their recommendations may no longer be appropriate.³³⁻³⁷ A recent cost-utility study, which found non-circumcision to be the better choice for optimum health and well-being, also did not consider MRSA.³⁸ Non-circumcision was the preferred medical choice prior to the arrival of MRSA in epidemic pro-

portions.^{33 37 38} The advent of MRSA in epidemic proportions increases risks associated with male neonatal circumcision beyond those previously contemplated and further increases the desirability of the non-circumcision option. MRSA and other antibiotic-resistant varieties of SA, such as vancomycin-resistant *Staphylococcus aureus* (VRSA), increase risk, including death, to newborn circumcised boys.^{21,23,24} In view of this increased risk, the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists should review their policy (2002) of offering elective medically unnecessary non-therapeutic neonatal circumcision at parental request.³⁹

Action Required

Hospital administrators must respond to this new threat to all newborn infants and especially circumcised male infants by limiting circumcisions to those for which there is a clear and present immediate medical indication and by increasing aseptic protocols in newborn nurseries.

Medical practitioners must consider the epidemic status of MRSA and exercise their independent judgment regarding the performance of non-therapeutic neonatal circumcision. There is an ethical duty to decline and avoid scientifically invalid treatment, especially when it puts the patient at risk.⁴⁰ Doctors must act in the best interests of their child-patients regardless of parental requests.^{41,42} Doctors may conscientiously object to the performance of non-therapeutic circumcision of children.⁴¹⁻⁴³

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