Fecal Carriage of Methicillin-Resistant *Staphylococcus aureus* and Vancomycin-Resistant Enterococcus in Healthy Children

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Methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococci (VRE) present major challenges (1–4). Our objective was to define the frequency of MRSA and VRE fecal carriage in healthy children and their mothers to evaluate potential reservoirs and opportunities for reducing transmission.

After approval by the Washington University Human Research Protection Office, informed consent was obtained from women with twin pregnancies to collect stools from them and their offspring between January 2010 and May 2013. Infant stools were collected at approximately monthly intervals, couriered to the laboratory on ice, and frozen on arrival.

Ten milligrams of each specimen was inoculated into 180 μl of tryptic soy broth (TSB) (BD Bacto, Franklin Lakes, NJ) and incubated (37°C, 65 min). To recover MRSA, 20 μl of this outgrowth was added to 180 μl of TSB containing NaCl (6.5%, wt/vol), oxacillin (4 mg/liter), ampicillin (50 mg/liter), aztreonam (8 mg/liter), and amphotericin (2 mg/liter). After incubation (37°C, 24 to 26 h), each well was inoculated into TSB agar containing 6.5% NaCl and the same antibiotics (TSB selective agar) and onto 5% sheep’s blood agar plates (BAP) (BD Bacto) by replica plating. Colonies growing on TSB selective agar and colonies resembling *S. aureus* on the BAP after incubation (37°C, 24 to 26 h) were tested using Staphaurex (Remel, Lenexa, KS), and for confirmation of methicillin resistance, *S. aureus* colonies were subjected to Kirby-Bauer disk diffusion (30 mg/liter cefoxitin) (5).

VRE were sought by placement of 20 μl of the original non-selective outgrowth into 180 μl of Enterococcus agar (BD BBL) containing vancomycin (20 mg/liter), colistin (10 mg/liter), amphotericin (2 mg/liter), and nalidixic acid (15 mg/liter) and incubated (24 to 26 h, 37°C). This broth was plated to Enterococcus agar (BD BBL) containing the same antibiotics. Black colonies were subjected to matrix-assisted laser desorption ionization–time of flight mass spectrometry (Vitek MS with Ionization–time of flight mass spectrometry (Vitek MS with HS021736)).

VRE colonies were subjected to Kirby-Bauer disk diffusion (30 mg/liter cefoxitin) (5). These methods were sufficient to detect 300 viable isolates of MRSA and 500 viable isolates of VRE per gram of stool.

Of the 1,813 and 143 stools from children and their mothers, respectively, 15 and none contained *S. aureus*, respectively; none contained MRSA. VRE (*Enterococcus faecium*) were recovered from one child at 9 and 10 months of age, but all stools from this subject’s twin and the child’s mother were negative for VRE.

Neither methicillin-susceptible nor -resistant *S. aureus* strains are frequently isolated from rectal swabs from children (7), and we extend this finding to bulk stools. VRE colonization rates exceeding 20% have been identified for children with repeated exposures to health care settings (8, 9), but we present profoundly lower rates of carriage in healthy children. The low enteric carriage rates for MRSA and VRE contrast with those for *Clostridium difficile*, healthy children frequently excrete this organism (10). Hence, efforts to diminish VRE and MRSA prevalence by targeting childhood enteric carriage of these health care-associated pathogens will likely be ineffective.

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**REFERENCES**


