CHANGING PROTECTIVE AND RISKY BEHAVIORS TO PREVENT
CHILD-TO-PARENT TRANSMISSION OF CYTOMEGALOVIRUSJack W. Finney, Kathryn M. Miller, and Stuart P. Adler
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Child-to-parent transmission of cytomegalovirus may be reduced by increasing protective behaviors (handwashing and glove use) and decreasing risky behaviors (intimate contact between child and parent). This study showed that an educational intervention resulted in increases in reported and objective measures of protective behaviors and decreases in reported risky behaviors. Further study must determine if changes in protective and risky behavior are maintained and prevent cytomegalovirus transmission.

DESCRIPTORS: behavioral pediatrics, prevention, day care, cytomegalovirus, health promotion

When pregnant women contract a primary cytomegalovirus (CMV) infection in the first half of pregnancy, approximately 20% of their infants will be congenitally infected with CMV. Congenital CMV infection can result in mental retardation, deafness, and other neurological problems; from 1,500 to 3,000 infants are born annually with CMV-related neurological handicaps (Kumar et al., 1984). Developmental sequelae could be reduced by preventing maternal CMV infection during pregnancy.

Child-to-parent transmission of CMV infection is 5 to 25 times higher for women with young children in group day care (Adler, 1988; Pass, Hutto, Reynolds, & Polhill, 1984). We evaluated an intervention to change protective and risky behaviors for mothers of young children in day care.

METHOD: Subjects were 11 mothers who had a child enrolled in one of three day-care centers. Children were less than 18 months of age ($M = 10$ months; $SD = 5$ months). CMV serologic status was unknown for both mothers and children. Mothers were of child-bearing age, but they were not currently pregnant (due to human subjects concerns). However, an effective intervention for nonpregnant women is likely to be effective for pregnant women, who may perceive a higher risk and be more motivated to adhere to recommendations than are nonpregnant women.

A multiple baseline design across groups of subjects included 3 mothers with 2-week baselines and 8 mothers with 3-week baselines. Each week, mothers estimated the percentage of opportunities that they performed protective or risky behaviors on a 0% to 100% scale. After baseline, a physician discussed and answered questions about the procedures with each mother at the day-care center for approximately 15 min. The intervention was designed to be used during obstetric visits that typically include numerous prenatal prevention topics. Mothers were given information about CMV infection and its potential complications. Detailed written instructions were provided about protective and risky behaviors. *Protective behaviors* included frequent hand washing after exposure to bodily fluids (e.g., after diaper changes, handling dirty laundry, touching the child's toys and other objects, bathing the child) and wearing protective gloves (e.g., during diaper changes). Mothers were given boxes of latex gloves and bottles of liquid hand soap. *Risky behaviors* included intimate contact (e.g., kissing on the mouth, sleeping together, sharing towels and washcloths, and eating or drinking from the same utensils). *Measures* included the self-reported percentages of both types of behaviors. At a weekly home visit, a research nurse provided a new box of gloves and a new bottle of hand soap. The remaining number of gloves was counted and the amount of remaining soap was weighed for objective measures of adherence to protective behaviors.

RESULTS AND DISCUSSION: The figure shows parent reports and objective measures of protective behaviors. Protective behaviors were reported at low levels during baseline. After intervention, reports of hand washing and glove use increased. Reports were consistent with objective measures. An average of 46 g of soap was used per week. An average of 35 gloves was used, for an estimated two to three diaper changes per day. For children in day care, home diaper changes may occur this infrequently. For the four risky behaviors, baseline reports for all subjects averaged 14.4% and decreased to 5.1% after intervention.

The results suggest that mothers of young children engaged in behavior that placed them at risk for contracting CMV infection. Furthermore, these mothers made changes consistent with recommendations to increase protective behaviors and decrease risky behaviors. Behaviors were monitored over only a few weeks; maintenance of these changes is not known. Anecdotal reports from all mothers indicated that protective behaviors were easily performed, although several did not like using latex gloves. None of the mothers were concerned about reducing the specific types of intimate contact with their children.

Several limitations should be noted. Self-report and indirect objective measures may be unrelated to actual behavior change. In addition, CMV serology status was not measured, and therefore the validity of targeting these behaviors was not established (Finney, 1991). Finally, the study did not identify which variables resulted in reported changes. For example, novel information about CMV may have led to behavior change, or free soap and gloves may have served a discriminative function or reduced the response requirements for performing protective behaviors. Individual contact with a physician may have influenced behavior or may have been unnecessary. In addition, the changes may reflect reactivity to data-collection procedures.

Research is needed to determine whether behavioral protection-risk reduction approaches prevent CMV transmission during pregnancy and reduce congenital infections in infants. Collaborative efforts between physicians and psychologists can

make important contributions to the reduction of health threats to children and their parents and to the extension of health promotion interventions beyond the medical setting.

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