



Women's Knowledge of Congenital Cytomegalovirus: Baseline Results from the HealthStyles™ Survey

Early Hearing Detection and Intervention (EHDI)
Centers for Disease Control and Prevention

National Center on Birth Defects
and Developmental Disabilities

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Main Goal

- Gain some baseline knowledge about what women know (and don't know) about congenital cytomegalovirus (CMV).
 - This can help with development of prevention messages and strategies



Why is this important?

- Most healthy children and adults infected with CMV have no symptoms or might develop mild flu-like illness.
- Congenital CMV can cause temporary symptoms and permanent disabilities in infants and children.



Why is this important? (cont'd)

| Temporary Symptoms | Permanent Disabilities |
|----------------------|------------------------|
| Enlarged liver | Hearing & vision loss |
| Enlarged spleen | Mental retardation |
| Jaundice | Cerebral palsy |
| Petechia and purpura | Microcephaly |
| Pneumonitis | Ataxia |
| Low birthweight | Seizures |
| Seizures | Death |



Why is this Important? (cont'd)

- CMV is the most frequently transmitted intrauterine virus (0.65% of live births).¹
- ~1 in 150 children is born with congenital CMV infection.²
- ~1 in 750 children is born with or develops permanent conditions due to congenital CMV.²
- Congenital CMV is as common a cause of serious disability as Down syndrome and neural tube defects.



Why is this Important? (cont'd)

- Congenital CMV poses a substantial economic cost on the U.S. healthcare system.

- Estimated at \$1–2 billion.³



How is CMV transmitted?

- Children and adults: Mainly via bodily fluids (**especially urine and saliva**).
- Fetus: Via placenta from the mother.
- Women who are infected for the first time during pregnancy are more likely to pass CMV to the fetus.

Who transmits CMV?

- Duration of viral shedding following primary infection:
 - 2–3 weeks for adults
 - Months to years for young children
- Therefore, CMV is most often transmitted by young children.



Where is CMV Transmitted?

- Most often in day care centers.
- 1–2-year-old children are most likely to be excreting CMV.
- Parents who have never been infected with CMV and who have children in day care have a higher infection rate than parents with home care.
- Infection of susceptible parents almost always occurs if their child is excreting CMV.

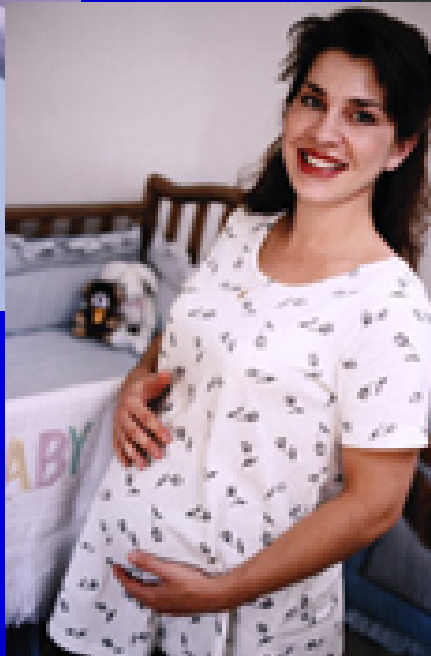


How is congenital CMV prevented?

- Currently no vaccine (or other medical intervention), therefore our approach to prevention:
- Hygiene, especially *handwashing*.
- *Education about CMV and how to prevent it through hygiene.*



How do we communicate this message?



First, we need baseline information

- We need to do a survey about women's knowledge of congenital CMV.
 - Have women heard of congenital CMV?
 - If they have heard of it, where did they hear about it?
 - If they have heard about it, is their knowledge accurate?
 - What are women willing to do to prevent getting an infection during pregnancy?



Methods

Authors submitted 4 questions to HealthStyles™

- The HealthStyles™ survey is an annual postal mail survey sent to a large sample of adults 18 years of age or older (more than 4,000 people per year).
- The survey examines health-related attitudes and behaviors.
- Data are weighted to be nationally representative.



The Questions

1. Have you seen, heard, or read anything about congenital cytomegalovirus (CMV) in newborns?
2. If you have seen, heard, or read anything about congenital cytomegalovirus (CMV) in newborns, where have you seen, heard, or read about it?
3. What condition do you believe a baby could be born with if a pregnant woman is unknowingly infected with cytomegalovirus (CMV)?



The Questions (cont'd)

4. If a woman is pregnant, sometimes she can get an infection from children, including her own children, which can hurt her unborn baby. If you were pregnant, and if each of the actions below would help protect you and your unborn baby from getting an infection, how easy or hard would each of these things be for you to do during your pregnancy?



Results

Awareness of Congenital CMV

- Only 14% of female and 8% of male respondents had heard of congenital CMV.
- Women were 1.8 times more likely to have heard of congenital CMV than men ($P < 0.001$).



Results (cont'd)

Awareness of Congenital CMV

- Education was associated with women's awareness of CMV ($P < .001$)
 - The higher their educational level, the more likely women had heard of congenital CMV.
- Age, household income, race/ethnicity, and geographic region were not associated with women's awareness of congenital CMV.



Results (cont'd)

Source of Information About CMV

Question #2: If you have seen, heard, or read anything about congenital cytomegalovirus (CMV) in newborns, where have you seen, heard, or read about it (check all that apply)?

- **29% Doctor, hospital, clinic, other health professional**
- **28% Don't know**
- **4% Internet**
- 19% Newspaper, magazine
- 14% Brochures, flyers, pamphlets, posters
- 13% Television
- 12% Educational program
- 9% Family or friend
- 2% Radio
- 1% Toll-free hotline



Results (cont'd)

Knowledge of Effects of Congenital CMV on the Child

- In general, women who had heard of CMV were more accurate in their knowledge of the conditions caused by CMV than women who had not heard of CMV.
- However, they still showed a surprising lack of knowledge (e.g., they thought CMV could cause heart defects).



Results (cont'd)

Adoption of Hygienic Behaviors to Prevent Congenital CMV

| Behavior | Easy or Somewhat Easy (%) | Hard or Somewhat Hard (%) | Don't Know (%) |
|--|---------------------------|---------------------------|----------------|
| Washing hands after changing baby's dirty diaper | 97 | 2 | 1 |
| Not sharing the same drinking glass, spoon, or fork with young child | 86 | 13 | 1 |
| Not kissing young child on mouth | 68 | 31 | 1 |



Results (cont'd)

Adoption of Hygienic Behaviors to Prevent CMV

| Behavior | Variables Related to Ease of Adoption |
|--|---|
| Washing hands after changing baby's dirty diaper | None |
| Not sharing the same drinking glass, spoon, or fork with young child | Age, education, pregnancy plans, or child younger than 5 years of age |
| Not kissing young child on mouth | Age, race/ethnicity, education, pregnancy plans, child under 5 years |



Summary of Results

Main Goal:

- Gain some baseline knowledge about what women know (and don't know) about congenital cytomegalovirus (CMV)
 - Ultimately: Develop educational materials and prevention approaches



Summary of Results (cont'd)

- Very few women had heard of congenital CMV (~14%).
- Women were more likely to have heard of congenital CMV than men.
- Women with a higher level of education were more likely to have heard of congenital CMV.



Summary of Results (cont'd)

- Women's knowledge of the conditions caused by congenital CMV was not very accurate
- Women who had heard of congenital CMV most often heard of it in a healthcare setting.
 - Very few heard of it from the internet.
 - Many did not know where they had heard of it.



Conclusions

- **Congenital CMV is a substantial problem.**
- **Awareness is disturbingly low.**
 - **Only 14% of women had even heard of it**
 - **No reason to believe that knowledge was accurate even among those who had heard of it.**
 - **Suggests that few if any women are taking preventive measures.**



Conclusions (cont'd)

- **Prevention messages need to be developed and promulgated.**
- **Women appear to be willing to take steps toward prevention.**
 - **Acceptance for some of the messages varies by age, race/ethnicity, pregnancy status and plans, and presence of young children in the home.**



Conclusions (cont'd)

- All groups of women should be targeted with these messages.
- Healthcare providers appear to be a good source of information and, therefore, need to be educated and encouraged to share information with women.



References

1. Kenneson A, Cannon M. Review and meta-analysis of the epidemiology of congenital cytomegalovirus (CMV). *Reviews in Medical Virology* (in press 2007).
2. Dollard, SC, Grosse, SD Ross, DS New Estimates of the Prevalence of Neurological and Sensory Sequelae and Mortality Associated with Congenital Cytomegalovirus (CMV) Infection. *Reviews in Medical Virology* (in press 2007).
3. Institute of Medicine (U.S.) Committee to Study Vaccine Development: Vaccines for the 21st Century: A Tool for Decision Making. Washington, D.C. National Academy Press. (2000).



Questions?

Thank You!

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CMV:

<http://www.cdc.gov/cm/>



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