



# Survey of congenital cytomegalovirus (cCMV) knowledge among medical students



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## ABSTRACT

**Background:** Congenital cytomegalovirus (cCMV) is a leading cause of congenital infection worldwide and the most common congenital infection in the United States, affecting 30,000–40,000 US newborns each year and causing permanent disabilities in 8000–10,000. In contrast to how commonly it occurs, physicians and medical students have little knowledge of cCMV.

**Objectives:** To test the hypothesis medical students have little awareness about cCMV infection, and to collect data on medical students' knowledge about cCMV. The long-term goal of this project is to establish medical student awareness of cCMV infection and educate students about available treatments and strategies for prevention in at-risk populations.

**Study design:** Medical students at one institution were surveyed by questionnaire to assess their knowledge of cCMV. Responses were described, quantified, and compared between groups.

**Results:** 751 surveys were sent and 422 completed responses were received. Respondents were well distributed over all 4 medical school (MS) class years. Only 34% MS1 had heard of cCMV compared to 100% MS2–4 ( $P < 0.0001$ ). All MS2–4 who reported being “very familiar” with CMV learned about it in medical school, 80% in one lecture. MS1 respondents were significantly less knowledgeable about cCMV than MS2–MS4 respondents.

**Conclusion:** A baseline lack of knowledge about cCMV was documented in first year medical students. A sharp increase in knowledge of cCMV occurred between MS1 and MS2 years, likely due to preclinical medical student curriculum. However, significant knowledge gaps regarding transmission and treatment were observed in all MS years, representing opportunities for medical education.

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## 1. Background

Congenital cytomegalovirus (cCMV) is a leading cause of congenital infection worldwide and is the most common congenital infection in the United States (US). In industrialized countries, with relatively lower overall maternal CMV seroprevalence (50–70%), an average of 0.4–1.2% of newborns are congenitally infected with

CMV, and in developing nations, with usually higher CMV seroprevalence (over 80%), higher rates between 1 and 5% of cCMV infection have been documented [1]. In the US, approximately 40,000 newborns annually are diagnosed with cCMV, resulting in an estimated 400 deaths and leaving another 8000–10,000 with permanent disabilities including hearing loss, vision loss, intellectual disability, and seizures [2]. The highest risk of transmission and serious disease to the fetus occurs during a primary CMV infection of the mother; however, the fetus can also be affected by maternal CMV reactivation or reinfection with a different strain, causing sequelae in the newborn and child.

An important route of CMV infection in pregnant women is contact with young children's saliva or urine (e.g. diapers, toys, silverware, kissing) [3]. Prenatal hygiene counseling has been shown to decrease maternal CMV infection and therefore the risk of transmitting CMV to the fetus [4]. A CMV vaccine would also likely provide protection against CMV infections, but a vaccine is not yet licensed, leaving behavior measures as the only method available to reduce maternal CMV infection during pregnancy. Treatment with

**Abbreviations:** cCMV, congenital cytomegalovirus; MS, medical student; MS1, first-year medical student; MS2–4, second through fourth year medical students.

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## Medical Student Knowledge Survey

**\*1. The purpose of this survey is to assess general awareness of a specific topic among the medical student population. Your participation in this survey is voluntary and confidential; all responses will remain anonymous and no personal identifiers will be presented in research or to the public. This survey will take approximately five minutes to complete. You will receive your choice of a \$10.00 gift card from iTunes or Starbucks upon completion of the survey.**

**Would you like to continue to the survey?**

- ☐ Yes, I understand these conditions and would like to take the survey.
- ☐ No, I would not like to take the survey.

Fig. 1. Questionnaire administered to medical students.

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