Reviewer's report

**Title:** Laboratory Testing and Diagnostic Coding for Cytomegalovirus among Privately Insured Infants in the United States: a Retrospective Study using Administrative Claims Data

**Version:** 1 **Date:** 1 May 2013

**Reviewer:** Aparecida Yulie Y Yamamoto

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Leung et al., determined rates of laboratory testing and diagnostic practices for congenital CMV infection and diseases in U.S. privately insured infants. The manuscript reports the results of a retrospective study of rates of testing and diagnostic coding for CMV among 368,266 insured infants using a large national healthcare claims database. The manuscript contains interesting data but retrospective studies are susceptible to bias in data collection and analysis.

My concerns and comments are the following:

Minor essential revisions:

Methods section:

The major limitation of this retrospective study is the definition of cases of congenital infection because laboratory testing results were not available in the data source and the authors did not include laboratory confirmation of congenital CMV infection. No standardized diagnosis testing such as viral detection within 3 weeks of life for congenital CMV infection was defined to confirm the diagnosis in infants with a diagnostic code for CMV.

The authors should include as CMV-associated conditions some laboratory testing that are usually performed as part of evaluation of the neonate with congenital CMV infection. The rates of CMV-specific tests may increase when both clinical and laboratory findings were included as CMV-associated conditions. Among the laboratory abnormalities, it is well known that elevated liver transaminase levels, direct hyperbilirubinemia and thrombocytopenia can be found in approximately 80% of the symptomatic infants.

Results section:

In the first paragraph, line1, page 6, the authors described that the 368,266 infants were less than 1 year of age. In page 7, they reported the diagnosis of hearing loss in 542 infants with #3 visits within the 1st year of life. However, in the Methods section, the authors reported that they analyzed medical claims from infants who were less than 30 days of age. Please clarify.

Table 1. According to previous published reports, petechiae, jaundice and hepatosplenomegaly are the most frequent manifestations in symptomatic congenital infection, being present in about 75 -80% of infected infants.
In the Table 1, a code for petechiae was present in 1,650 (0.5%) of all infants; however, among 229 infants with CMV-specific testing, only 1 (0.4%) infant with petechiae was tested and only 1 (1.6%) among 61 infants with code for congenital or CMV disease was noted to have petechiae as CMV associated condition. It is likely that the proportion of infants with petechiae was greatly underestimated. In addition, as showed in the Table 1, hepatomegaly and splenomegaly were not found as CMV-associated condition in any infant with a diagnosis code for CMV.

The low frequencies of various clinical abnormalities seen commonly in symptomatic congenital CMV infection may be explained by incomplete medical claims coding.

In addition, 24/61 (39%) of infants with the diagnostic code for congenital CMV infection had none of the 11 CMV-associated conditions. In the absence of routine neonatal screening for congenital CMV infection, it would be of interest to verify if other CMV-associated findings were present in these 24 infants.

Table 2: Considering that phenylketonuria, hypothyroidism, galactosemia, and hemoglobinopathies testings are performed as standard routine care for all infants, it was no clear why only 38,344 (10.4%) among 368,266 infants were tested. These results reinforce the insensitivity of claims data to identify the majority of diagnoses and laboratory tests reported in medical records.

As commented by the authors, “In the absence of national surveillance for congenital CMV infection or disease further investigation should be done to determine whether claims data could be an adequate data source for monitoring trends in diagnosed congenital CMV disease”, claims data could not be an adequate data source and the quality of the data is the greatest concern.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.