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## How did vaccination of pregnant women against pertussis affect hospitalizations of infants at Children's Hospital Vall d'Hebron?



In 2014, a vaccination program for pregnant women against whooping cough began in Catalonia due to the increase in hospitalizations of young infants for this infection. This study compares the hospitalization rate for whooping cough in babies under one year of age between the periods 2008-2013 and 2014-2019 at the Hospital Infantil Vall d'Hebron and demonstrates the considerable decrease in hospitalizations after the program.

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Whooping cough is a bacterial respiratory infection caused by *Bordetella pertussis* or *Bordetella parapertussis* that may cause severe coughing for weeks or even months. It can affect people of any age, but newborns and young children are at higher risk of complications.

Since between 2010 and 2013 there was a significant increase in cases of whooping cough, as well as hospitalizations and deaths due to this infection mainly in young infants, in 2014 pregnant women began to be vaccinated against whooping cough in Catalonia to protect their future children.

Since the mother is in close contact with her son, may she become infected it would be likely that the child also becomes infected. By vaccinating pregnant women, we diminish the risk of mother's infection within the first months of her son's life, when not yet vaccinated being more vulnerable to severe forms of whooping cough. On the other hand, when the pregnant woman receives the vaccine, it occurs a passage of antibodies (a type of defense) to the fetus through the placenta. The maternal antibodies will circulate in the child's blood for a few months.

In our study, we compared the hospitalization rate for whooping cough in children under one year of age in the period prior to the vaccination program in pregnant women (2008-2013) with that of the period with the vaccination program (2014-2019). In the first period there were 95 hospitalized children and in the second there were 48. The hospitalization rate, a parameter that considers the population of the reference area of the Hospital Infantil Vall d'Hebron, decreased from 4.72 to 2.43 after the establishment of the vaccination program, that is, children in the second period were 49% less likely to be admitted for whooping cough.

We also made these calculations by dividing children under one year into two subgroups: under 3 months and children 3-11 months. We observed that the hospitalization rate in children under 3 months fell from 13.11 to 6.47, thus they were 51% less likely to be hospitalized. In the subgroup of children aged 3-11 months, the rate did not change significantly, which may be because at these ages they have already received their first vaccinations, which is the main protective factor, and the maternal antibodies received have begun to decrease.

Since the establishment of the vaccination program against whooping cough in pregnant women in Catalonia in 2014, the vaccination rate has been increasing year after year. An inverse correlation was observed between vaccination coverage in pregnant women and hospitalization rates in children, being statistically significant in the global of children under one year of age and in the subgroup of children under 3 months of age. This implies that the higher the vaccination rate in pregnant women, the lower the hospitalization rate in children.

However, we were unable to demonstrate that patients admitted after the start of the vaccination program had milder symptoms; they required hospital admission less frequently, but those who do have a similar severity.

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**References**

Ruiz-Botía I, Riera-Bosch MT, Rodríguez-Losada O, Soler-Palacín P, Melendo S, Moraga-Llop F, Balcells-Ramírez J, Otero-Romero S, Armadans-Gil L. **Impact of vaccinating pregnant women against pertussis on hospitalizations of children under one year of age in a tertiary hospital in Catalonia.** *Enferm Infecc Microbiol Clin.* 2022;40(9):473-478. doi: [10.1016/j.eimce.2022.06.002](https://doi.org/10.1016/j.eimce.2022.06.002)

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