

## 5. Abstract

This doctoral dissertation addresses a clinically significant issue concerning the health of children born to mothers who have undergone organ transplantation. Despite an increasing number of publications examining various aspects of in utero exposure to immunosuppressive agents and its impact on the development of children born to transplant recipients, the specific subject of this dissertation has not yet been the focus of in-depth analysis. The aim of this study was to determine whether fetal exposure to immunosuppressive medications administered to women after organ transplantation affects the long-term immunogenicity of routine childhood vaccinations in their offspring.

The research involved a review of the existing literature (Publication 1) as well as original studies (Publications 2 and 3), which assessed post-vaccination immune responses to selected viral and bacterial pathogens common in childhood. These analyses were conducted in a cohort of children born to liver or kidney transplant recipients.

The studies evaluated IgG antibody concentrations following immunization against the following pathogens: hepatitis A virus (HAV), hepatitis B virus (HBV), measles virus, poliovirus, and the bacteria *Mycobacterium tuberculosis*, *Haemophilus influenzae* type b, *Streptococcus pneumoniae*, *Clostridium tetani*, *Bordetella pertussis*, and *Corynebacterium diphtheriae*. The study group included children of organ transplant recipients, and results were compared with an age- and sex-matched control group drawn from the general pediatric population. The enzyme-linked immunosorbent assay (ELISA) method was used for antibody measurement.

Statistical analysis revealed no significant differences in vaccine immunogenicity for most of the antigens tested between the study and control groups. The type of transplanted organ (kidney vs. liver) did not influence the children's immune response to vaccination. An exception was a higher antibody titer against BCG in children of kidney recipients; however, the underlying cause of this finding remains unclear and warrants further investigation. No increased incidence of adverse vaccine reactions was observed in the study group, supporting the safety of vaccinations administered to this population.

The findings suggest that the current national immunization schedule is appropriate for children born to organ transplant recipients and does not require modification. Importantly, the results underscore that vaccinations in this group are not only effective but also safe—the incidence of adverse post-vaccination reactions did not differ from that in the general

pediatric population. The absence of significant deviations in immune responses among children prenatally exposed to immunosuppression provides strong support for adhering to the standard vaccination regimen. The results may have important practical implications for both clinicians and public health decision-makers, as they strengthen confidence in vaccine prophylaxis in populations of infants and children at particular risk.