

# Screening of pregnant women for fetal neonatal alloimmune thrombocytopenia: a cost-utility analysis

Thijs de Vos<sup>1</sup>, Ilonka Tersteeg<sup>1</sup>, Enrico Lopriore<sup>1</sup>, Dick Oepkes<sup>1</sup>, Leendert Porcelijn<sup>2</sup>, Ellen van der Schoot<sup>3</sup>, E.J.T. (Joanne) Verweij<sup>1</sup>, Dian Winkelhorst<sup>1</sup>, Masja de Haas<sup>3</sup>, and M. Elske Akker-van Marle<sup>4</sup>

<sup>1</sup>Leiden University Medical Center

<sup>2</sup>Sanquin Blood Supply Foundation

<sup>3</sup>Sanquin Research

<sup>4</sup>LUMC

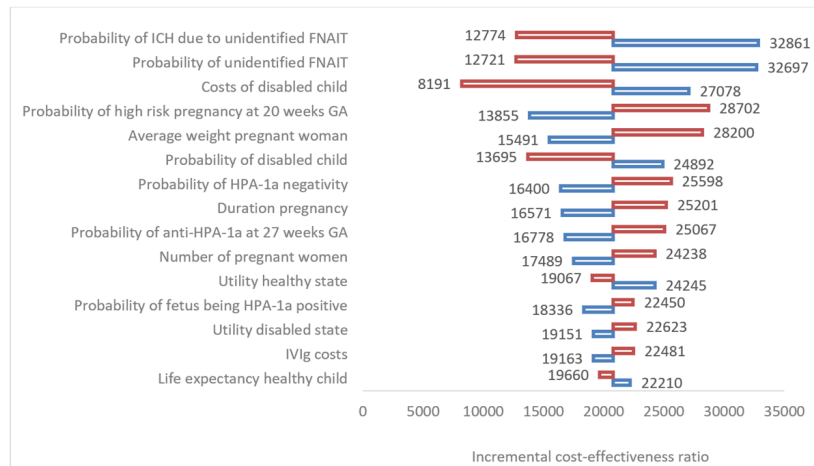
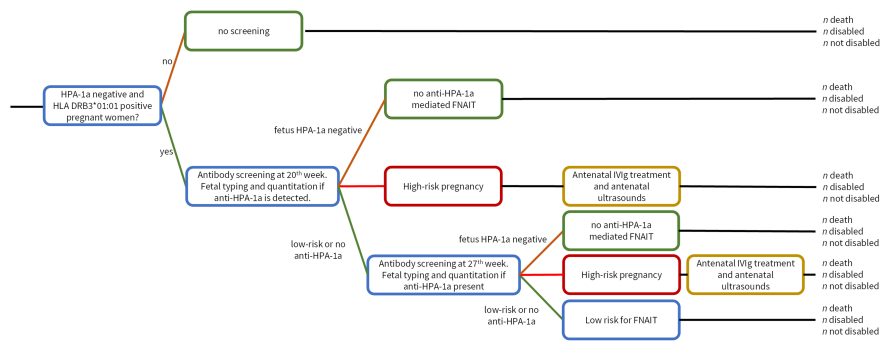
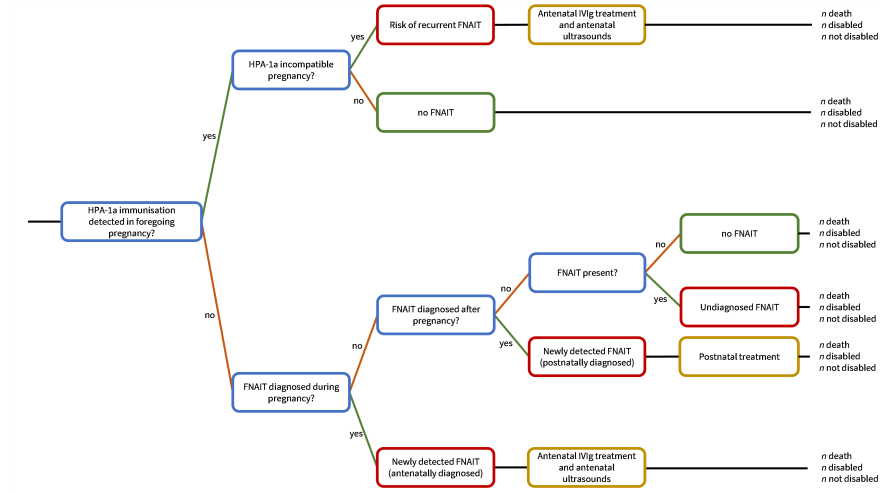
December 21, 2022

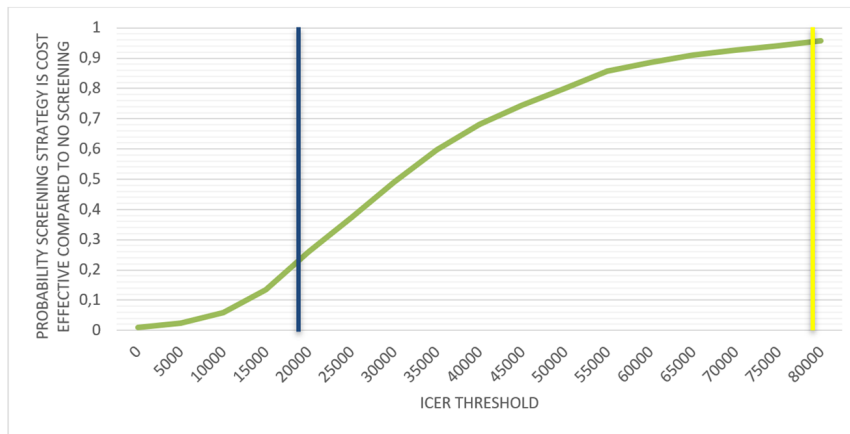
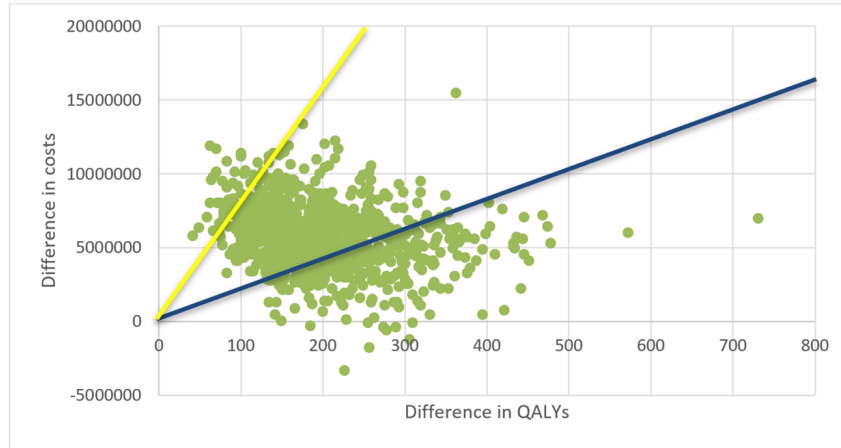
## Abstract

**Objective:** Fetal and neonatal alloimmune thrombocytopenia (FNAIT) results from maternal platelet-directed antibodies which can cause severe intracranial haemorrhage (ICH) in fetuses and new-borns. Screening for human platelet antigen-1a (HPA-1a) directed antibodies during pregnancy could allow for timely intervention with antenatal treatment and prevent the occurrence of ICH. We aim to assess the cost-effectiveness of adding screening for anti-HPA-1a to the prenatal screening program. **Design:** A decision analysis model was developed. **Setting:** The Netherlands. **Population:** 171,713 pregnant women. **Methods:** Lifetime costs and effects of antenatal anti-HPA-1a screening with subsequent diagnostic and treatment interventions were compared to the current situation without screening in the Netherlands. Model parameters were based on literature and expert opinions. **One-way-sensitivity analysis and probabilistic sensitivity analysis were performed.** **Main Outcome Measures:** Incremental cost-effectiveness ratio (ICER). **Results:** Adding screening for HPA-1a antibodies to the current antenatal screening program of the Netherlands will lead to an additional cost of 4.7 million euro and a gain of 226 Quality-Adjusted Life Years (QALY) per year, indicating an ICER of  $\text{€}20,782$  per QALY gained. One-way sensitivity analysis showed that the uncertainty around the incidence of ICH, lifetime costs of disabled children and the probability of having antibody quantitation  $>3.0$  IU/ml at 20 weeks had the highest effect on the ICER. **Conclusion:** Antenatal HPA-1a screening might be cost-effective. To obtain more knowledge and thereby reduce the uncertainty on risk stratification, a pilot screening program is warranted. **Funding:** Sanquin

## Hosted file

Cost-effectiveness analysis FNAIT manuscript.docx available at <https://authorea.com/users/568189/articles/614163-screening-of-pregnant-women-for-fetal-neonatal-alloimmune-thrombocytopenia-a-cost-utility-analysis>





### Hosted file

Supplemental data.docx available at <https://authorea.com/users/568189/articles/614163-screening-of-pregnant-women-for-fetal-neonatal-alloimmune-thrombocytopenia-a-cost-utility-analysis>