An Investigation of Global Patterns of Maternal Immunity

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Funded by Princeton’s Center for Health and Wellbeing under the Health Grand Challenge Program

Introduction

• A neonate’s primary protection against measles comes from transplacentally acquired maternal antibodies named immunoglobulin G (IgG)
• Recommendation of when to be vaccinated requires balancing the loss of maternal IgG antibodies and consequent risk of infection with the chance of their presence interfering with the vaccine by inhibiting seroconversion and rendering it ineffective
• Currently, the vaccine recommendation is at 12 to 15 months
• However, children whose mothers have vaccine-induced immunity have lower levels of the IgG antibody and are protected for a shorter period of time compared to children whose mothers have disease-induced immunity

Objective of the Study

This study aims to establish evidence that maternal immunity is waning faster and investigate how it might affect future efforts in determining measles elimination policies.

Methods

• Literature review of available data regarding maternal antibody concentrations in infants under 1 year old
• Compilation of the data to observe global patterns

Results

- Geometric Mean of Measles Antibody Concentrations in Children <1 Yr Old
- Median of Measles Antibody Concentrations in Children <1 Yr Old

Available literature has provided sparse and variable data for a handful of areas worldwide. The threshold of antibody concentration for immunity for most of the studies were around 230-250 mIU/mL. It is noteworthy that Thailand reported a very low statistic. Furthermore, two studies reporting on Dongguan resulted in different median antibody concentrations. It is also difficult to accurately compare geometric means and medians.

Discussion

To further this work, I would tie in modeling and predict how an earlier risk of infection would affect vaccination campaigns as well as how it would affect the efforts of eliminating the measles disease.

Future Work

I am incredibly grateful for Professor Jessica Metcalf for allowing me this opportunity as well as the rest of the Metcalf lab for invaluable guidance and encouragement. Thank you to the Center for Health and Wellbeing for making this amazing summer possible.