

Applicant

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Project Title

Genetic biomarkers of serum iron, and their role in the risk of infectious diseases: A Mendelian randomization approach

Project Summary

Iron is intrinsically tied to human health. During inflammation, we observe significant anemia stemming from a profound change in its metabolism. This metabolic response is believed to help protect our body's iron from being used by infectious agents. Iron levels being probably related to infectious risks, iron supplementation could lead to significant infectious adverse events on a population scale. Traditional epidemiological studies have shown increased infectious risks from iron supplementation. However, their retrospective nature, all lead to risks of confounding bias and reverse causation. Mendelian randomization (MR) is a genetic epidemiology method that mimics randomized controlled trial by leveraging natural genetic randomization that we can use to bypass these limitations. We hypothesize that individuals with lower serum iron levels have a lower risk of infections like pneumonia and sepsis. We will use MR and large genotype databases to answer this important question.

Keywords

Genome Wide Association Study, Iron, Ferritin, Infections, Mendelian randomization