**Introduction**

Micronutrient status...

- Can be affected by the acute phase response to inflammation and lead to misclassification of micronutrient status
- Examples:
  - Vitamin A Status: Elevated C-reactive protein (CRP) and α1-acid glycoprotein (AGP) associated with lowered serum retinol and retinol binding protein levels
- Iron status: Elevated CRP and AGP associated with increased serum ferritin and plasma ferritin levels

How is hemoglobin (anemia status) affected by the acute phase response?

- Prevalence of infection as well as micronutrient deficiencies are high in many developing countries, so it is important to determine how acute phase response influences measurements of nutritional status.

**Objectives**

Is there an association between anemia status and the acute phase protein biomarkers, C-reactive protein (CRP) and α1-acid glycoprotein (AGP), in children 6-59.9 months of age in Papua New Guinea (PNG)?

**Methods**

Survey Design:

- 2005 PNG National Micronutrient Survey
- Stratified, probability proportional to size (PPS) cluster survey
- Stratification by 4 main regions of PNG
- N = 870 children 6-59.9 months of age
- Anemia defined as hemoglobin < 11g/dL (adjusted for altitude)
- Elevated CRP defined as CRP > 5mg/L
- Elevated AGP defined as AGP > 1.2mg/L

**Results**

Overall prevalence (n=870):

- Children with elevated CRP/AGP tended to be younger, more stunted, and more underweight compared to children with normal levels of CRP/AGP.

Anemia Status and CRP:

- Children with elevated CRP more likely to be anemic, controlling for age and region.

Anemia Status and AGP:

- Children with elevated AGP more likely to be anemic, controlling for age.

Anemia Status and any acute phase response:

- Children with elevated CRP or AGP more likely to be anemic, controlling for age and region.

**Conclusions**

- CRP and AGP are significantly associated with anemia in this survey which suggests CRP and/or AGP measurements be collected in nutrition surveys.
- Simulations of different prevalences of elevated CRP and AGP found a small effect on overall anemia prevalence. Presenting anemia prevalence overall, for those with elevated markers, and for those with normal markers of inflammation provides flexibility in interpreting results.

**REFERENCES**