Intermittent preventive treatment and the spread of drug resistant malaria

Zhilan Feng[1] **Katharine Gurski**[2] **Carrie Manore**[3] **Angie Peace**[4]
Olivia Prosper[5] **Miranda Teboh-Ewungkem**[6]

[1] *Purdue University, West Lafayette, IN 47907* fengz@purdue.edu
[2] *Howard University, Washington, DC 20059* kgurski@howard.edu
[3] *Los Alamos National Laboratory, Los Alamos, NM 87545* cmanore@lanl.gov
[4] *Texas Tech University, Lubbock, TX 79409* A.peace@ttu.edu
[5] *University of Kentucky, Lexington, KY, 40506* olivia.prosper@uky.edu
[6] *Lehigh University, Bethlehem, PA 18015* mit703@lehigh.edu

Over the last decade, control measures have significantly reduced malaria morbidity and mortality. However, the burden of malaria remains high, with more than 70% of malaria deaths occurring in children under the age of five. The spread of antimalarial resistant parasites challenges the efficacy of current interventions, such as Intermittent Preventive Treatment (IPT), whose aim it is to protect this vulnerable population. Under IPT, a curative dose of antimalarial drugs is administered along with a child's routine vaccinations, regardless of their infection status, as both a protective measure and to treat subclinical infections. We have developed mathematical models to study the relative impact of IPT in promoting the spread of drug resistant malaria (compared with treatment of clinically ill individuals), and the combined effect of different drug half-lives, age-structure and local transmission intensity on the number of childhood deaths averted by using IPT in both the short and long-term in malaria endemic settings. I will also discuss some consequences of unstable and seasonal transmission of malaria on the efficacy of IPT.

⋆Mini-Symposium: Advances in modeling vector-borne neglected tropical diseases