PhD Opportunities: TLOPHD2019

Topic 4: Economic evaluation, uncertainty and global security in infectious disease

Registered through the Department of Health Sciences

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The economic evaluation of strategies to mitigate the health impact of infectious disease involves a high degree of complexity, heterogeneity and uncertainty in the policy options to be compared, the stakeholders, the available evidence and the decision models. Policy concern about the control of infectious diseases extends across borders and institutional boundaries. Efforts to eradicate and eliminate infectious disease require international co-operation and co-ordination sustained over long time horizons. The likelihood of epidemics and pandemics is difficult to estimate, and may increase with other uncertain factors such as climate change, the amount of global travel, urbanization and changes in land use.

Evidence may be required on the relative value of various combinations of ongoing treatment costs such as mass drug administration (MDA), investment in monitoring to prevent and identify outbreaks, investment in vaccine development and delivery, and investment in elimination and eradication strategies. The benefits of infectious disease control and the economic evaluation of epidemic preparedness include health impacts and non-health outcomes such as productivity. Investments to tackle infectious disease place demands on local resources in resource constrained settings where opportunity costs are very high, and on global resources in terms of donor funds and aid agencies. Risk pooling and global funds may offer a solution, but require evidence to inform how much each stakeholder should contribute. Inconsistent or unsustainable investment can frustrate attempts at control. Effective policies can have unintended consequences. Increases in monitoring capacity can be associated with reduced yield. Successful control policies can make diseases less visible, which can lead to premature reduction in control efforts in the face of high competing demands for scarce resources.

Dynamic transmission models are often employed in the economic evaluation of infectious disease policies. However, these models can be difficult to integrate with full uncertainty analysis and value of information methods. The attention on heterogeneity in infectious disease models is often on epidemiological factors without full consideration of health economic factors.

The aim of this PhD is to develop analytical methods for the economic evaluation of infectious diseases in eastern and southern Africa. The methodological framework should incorporate a global security perspective, evaluation of heterogeneity within and between populations, and analysis of decision uncertainty. The successful applicant will have a Master’s in statistics, mathematical modelling, epidemiology or another relevant discipline with a strong quantitative component, and a
strong interest in economics and/or health economics, and/or a Master's in economics or a specialisation within economics with a strong quantitative component. As part of the PhD, the successful candidate will have the support of experienced infectious disease modellers and have the opportunity to work with the Infectious Disease Institute in Uganda.

References


