Modelling and Programs: A Love-Hate Relationship

Session Date: Friday, November 3

Session Time: 1:00pm – 4:00pm

Session Location: Severn I

Session Description: Mathematical models and statistical analyses aid researchers studying the transmission dynamics of neglected tropical diseases (NTDs), informing intervention strategies. To be most effective, modelling efforts must address the right questions, and modellers must have access to relevant program data. This session will provide a dialogue between program managers and modellers on how to come together to solve problems NTD programs face.

Session Chair: Deirdre Hollingsworth, University of Warwick

Session Rapporteur: Emma Davis, University of Warwick

KEY DISCUSSION POINTS

Presentations: findings/data

- **Dr Zulma Cucunuba (Imperial) and Dr Santiago Nicholls (WHO): Chagas**
  - A connection at COR-NTD 2016 led to ongoing partnership between Imperial College and the Pan-American Health Organization involving modelling of Chagas in Colombia, with a view to expanding.
- **Dr Rachel Pullan (LSHTM, on behalf of Dr Maria Rebollo): ESPEN and Integrating Maps and Models**
  - ESPEN – data sharing platform for NTD data in African regions. Contains subnational endemicity data (expanding to include coverage etc.), data visualization, country progress data.
  - Mapping projections: Decisions are sometimes not made at higher than district level.
- **Dr Sake de Vlas: How to increase love for modelling?**
  - Increasing awareness and utilization of modelling is important
  - For outbreaks: emergency, no time for trials/data collection, but we can use established modelling approaches. For endemic infections: Long history of intervention programs, decisions, data, strategies – modelling can provide additional source of evidence.
- **Dr Annette Kuesel (TDR): Capacity Building**
  - Capacity building is important and often overlooked in modelling – could we consider accreditation/certification to formalize development?

Discussions:
(Panel – Dr Graham Medley and Dr Annette Kuesel)

- 2020 goals → Similar to outbreak situation, need to make more real-time decisions, faster time scales.
- Companies like Novartis actually do more pre-clinical modelling than conjectured in discussion – regulators sometimes ask for modelling as part of the process.
- To make the best public health decisions we need to take knowledge from all areas of expertise – public health programs are often unsure where modelling fits in to this.

- How do we tell when models are ready/useful? How do we increase trust?
- Data sharing needs to be fair and transparent.

KNOWLEDGE GAPS IDENTIFIED

Gaps: data and tools

- Sometimes incomplete understanding of what data is useful (from the field) and what questions are important to ask (for the modelling).
- Low accessibility of user-friendly versions of models: web apps, spreadsheets, etc.
- Outputs of models often aren't easy to access and modelling papers aren't accessible to non-modellers – lack of understanding and trust.

RECOMMENDED NEXT STEPS

Actions

Accessibility:

- Model outputs should always relate back to identifiable measures with simpler and more recognisable terms. Example: Force of infection isn't as useful as more direct measures.
- Output should be of same type as observations.
- Visualise model assumptions.

Credibility:

- Evaluate previous predictions – update models when needed.
- Modelling papers with non-modelling disease experts have higher impact.

Data sharing:

- Make sure to credit everyone for the information they've contributed – co-authorship is ideal following provision of data.
- Need to show use and value of the data being available – results and demonstrated of added value will encourage further sharing.

Capacity building:

- Train local modellers.
- Ideal: Fellow comes from an endemic country with data to a modelling group.
- Investigate the possibility of a modelling fellowship.
- Training of policy makers is key for ensuring findings are utilized.