TB Modelling and Analysis Consortium

TB MAC Modelling Research Group
TB Vaccine Quantitative Modelling Meeting
14th September 2018
Washington DC

BILL & MELINDA GATES MEDICAL RESEARCH INSTITUTE

BILL & MELINDA GATES foundation

Université de Montréal

gsk

California Department of PublicHealth

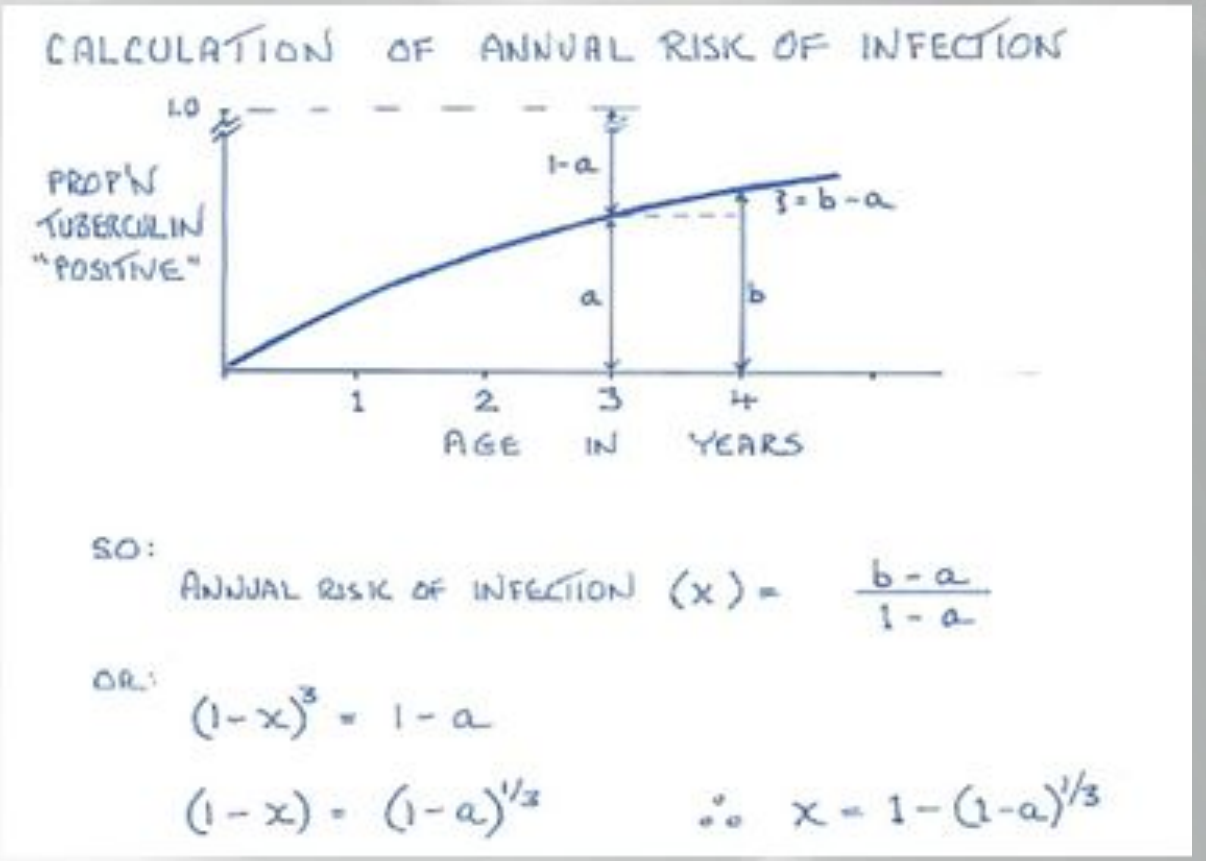
FDA

vaccitech

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

TB MAC rationale

- Complex natural history, range of interventions, variation in settings => global and country decision makers face great uncertainty
- Modelling can be used to compare strategies and quantify uncertainty
- But
  - Lack of co-ordination
  - Limited data, models and modellers
  - Decision makers & modellers uninformed



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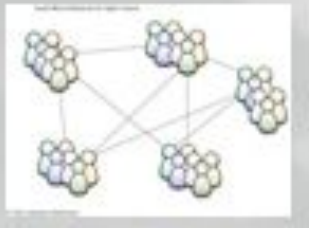
TB MAC impact 2012-16

- Helped foster modeller <--> stakeholder links
- Provided evidence at numerous high level meetings
  - GFATM decision not to reduce the % of funds allocated to TB
- Influenced development of models/methods with impact at
  - Global level
    - WHO GTB methods for HIV+/- TB incidence and mortality
  - Country level
    - South Africa: 'Targets' work used for 1st TB&HIV investment case, first ringfenced TB grant & increased domestic funding
    - TB MAC influenced models supported NSP and GFATM submissions in increasing # countries
- Supported WHO Task Force for TB Impact and Measurement to include modelling in mandate

But much more to do…



GLOBAL TUBERCULOSIS REPORT 2014

The Global Fund
To Fight AIDS, Tuberculosis and Malaria

World Health Organization

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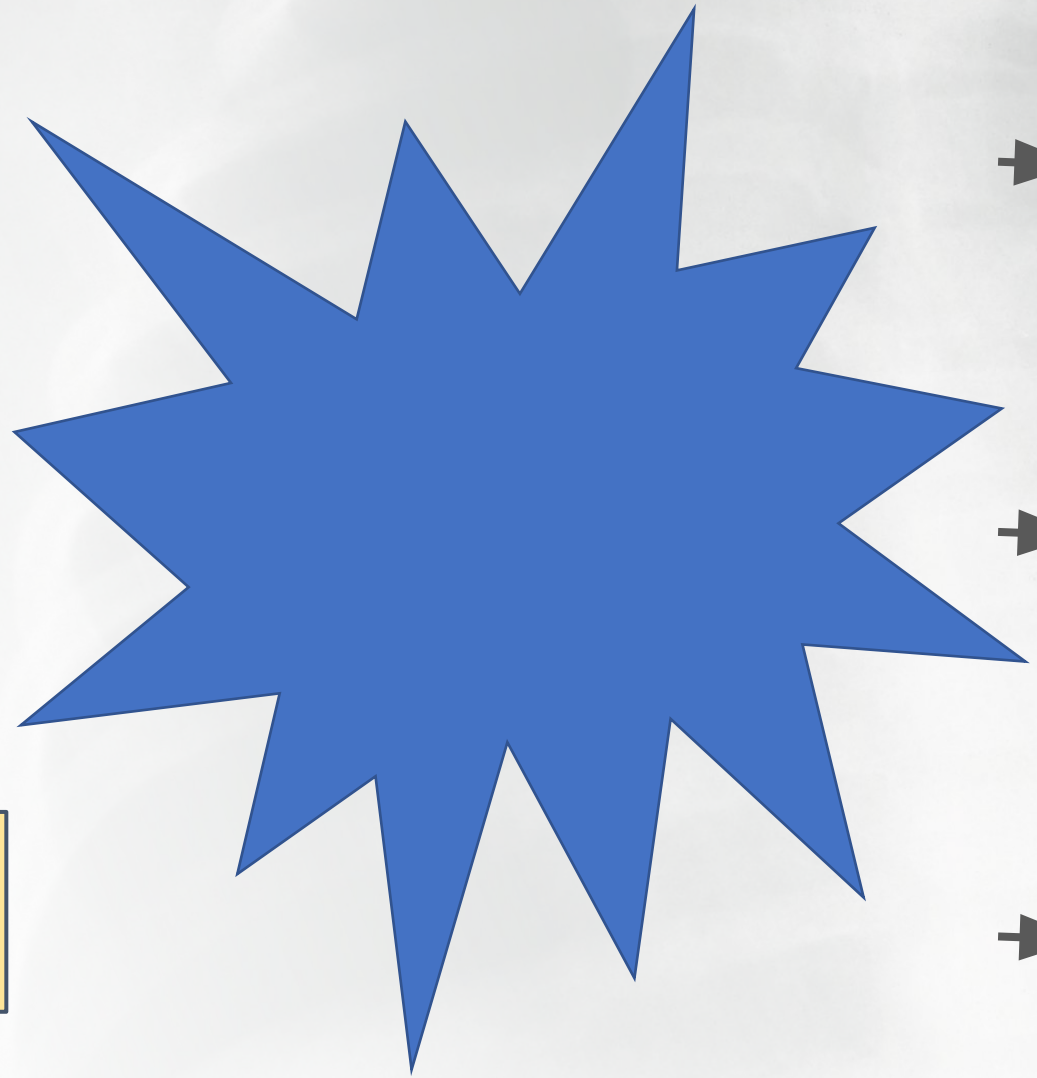
TB MAC Strategy '17-20

Activities and Outputs	Outcomes	Impact



- Strengthening networks
- Creating solutions
- Empowering decision makers

1. Strong and effective links between decision makers and modelers & economists
2. New high quality resources available/accessible to decision makers
3. TB decision makers are better equipped to integrate these resources in their decision making

Improved TB control policy decision making and practice at global and country level

Increased effectiveness and efficiency of TB control policy and practice at global and country level

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TB Modelling and Analysis Consortium - What

Improved comms & website, annual meeting (incl. vaccines and diagnostics this year), matchmaking

Coordinate WHO Task Force modelling stream

Knowledge sharing on key data and methods advances to support decision making

Modelling to inform policy guidance including model details sharing

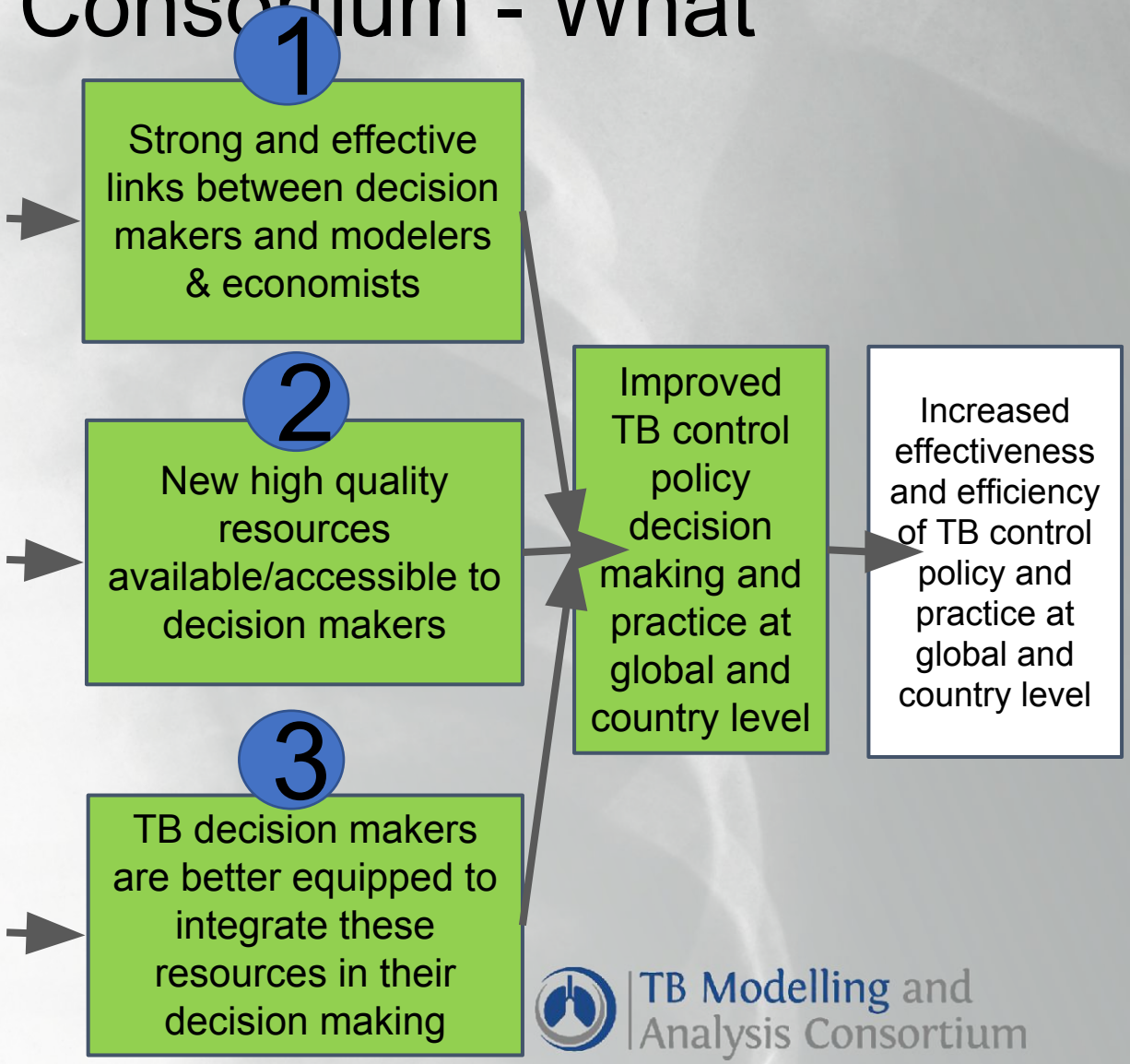
County level modelling guidance

Create framework for measurement of coverage and change in epi indicators

Facilitate multi-funder Roadmap for Country level modelling

Training of TA in use models (model generic)

Case studies of best practice in TB modelling



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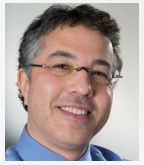
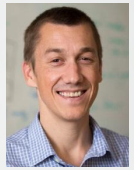
TB Modelling and Analysis Consortium - Who

Steering Committee

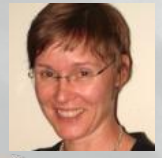



- Katherine Floyd - WHO
- Anna Vassall - LSHTM
- Anna Bershteyn - IDM
- Frank Cobelens - AIGHD
- Geoff Garnett – BMGF
- David Dowdy – JHU
- Michael Kimerling - KNCV
- Nick Menzies – Harvard
- Ted Cohen - Yale




Advisory Panel


- Dr Jeremiah Chakaya Muhwa – The Union
- Liz Corbett - LSHTM
- Philippe Glaziou - WHO
- David Wilson – World Bank
- Sevim Ahmedov – USAID
- Johannes Hunger – GFATM
- Adam Macneil - CDC
- Geoff Garnett – BMGF
- Sahu Suvanand – StopTB




Secretariat

- Finn McQuaid
- Tina Sachs/ Kristian Godfrey
- Madeleine Clarkson
- Richard White




Funding:

BILL & MELINDA GATES foundation

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Rationale and aim for meeting

- Quant modelling useful tool
- Not much focus on the use of quant modelling for TB vaccines
- Lit review – 23 papers (2016) + 5 (post-2016)
- Ever fewer for within host
- 2 yrs ago, BMGF kindly allocated resources for meeting
- Aim - Maximising the utility of quant modelling to support TB vaccine candidate development and implementation

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What we hope to have by end of the day

- Updated vaccine modellers/ immunologists/ epidemiologists/ etc on new preclinical/ clinical/ modelling results + upcoming data
- Created Framework for the use of quantitative modelling to accelerate TB vaccine development
  - Manuscript submission on Framework?
- Summarised key problems/actions to improve utility of quantitative TB modelling for
  - Vaccine dose/regimen selection
  - TB vaccine TPPs/PPCs and implementation
- Increased networking amongst and sharing of knowledge between vaccine modellers/ immunologists/ epidemiologists/ etc
- Opportunity to access $100k funding (shared across TB prevention, diagnostic, & vaccines)

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Organiser/committee member input, logistics and questions

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Session #1

Framework for the use of quantitative modelling to accelerate TB vaccine development

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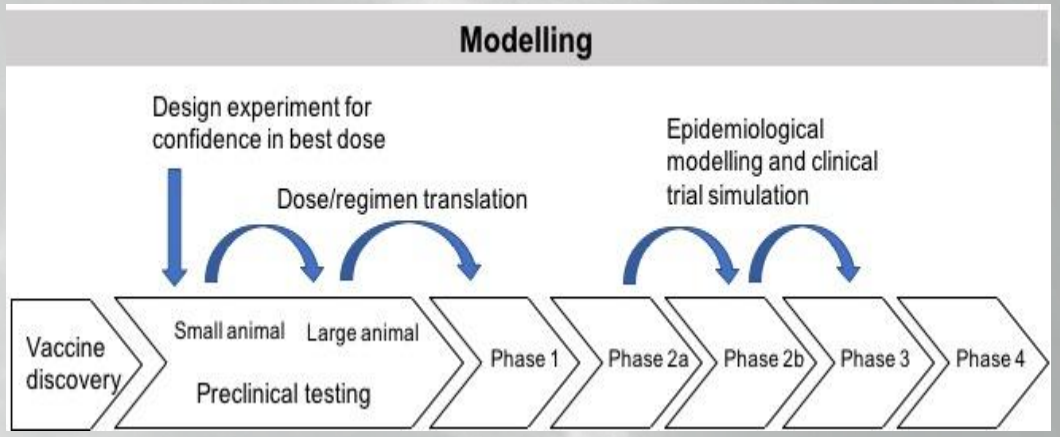
Group work session #1
Framework for the use of quantitative modelling to accelerate TB vaccine development

- Outcome
  - Fleshed out table vaccine devt pathway
  - Draft manuscript?
    - If so, identify drafting group
- Framework scope
  - No exclusions for quant method
  - In
    - Info for direct use for TB vaccine development
    - Eg In silico antigen discovery and down selection
  - Out
    - general basic science, understanding TB, not TB vac
- 1 virtual group
  - Helen Mc, Tom S, Marie-Ange Demoitie, Elisa Nemes, Yamir Moreno, Helen F, Geoff G
- , Start in different place in table, but cover all



Research question		Best dose selection				Pop level impact estimation	
Quant methods		IS/ID				ODE/IBM pop level models	
Who's doing?		…, LSHTM, …				Aggreio, AuTuM, LSHTM, …	

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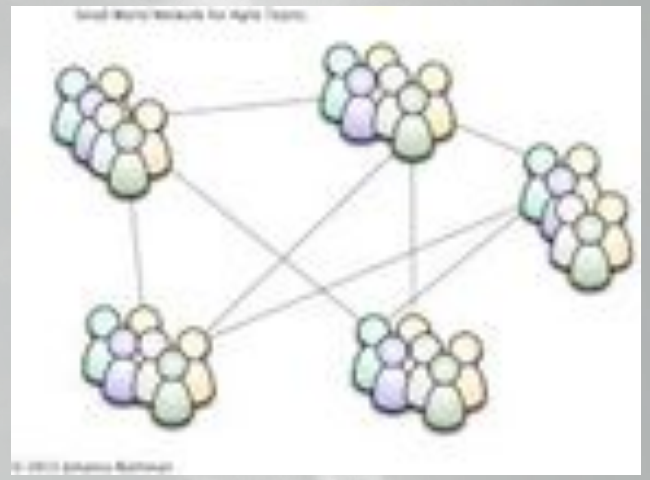
Groups

- 6 groups (1 remote)
- Leads Jeff, Sophie, Rebecca, Louis, Tom, Richard(remote)
- Chose a rapporteur to feedback (4m)
  - Input into online google doc (1 for each group)
  - Folder here



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Session 1 groups

Group	1	2	3	4	5	VC
Starting point for discussion	Phase 4/ Implementation	Discovery	Pre-clinical/ Phase I	Phase 2/3	Pre-clinical/ Phase I	Phase 2/3
Lead	**Tom Evans**	**Jeff Barrett**	**Sophie Rhodes**	**Rebecca Harris**	**Louis Joslyn**	**Richard White**
Members	Andrew Siroka	Leander Grode	Hannah Priyadarshini Gideon	Robin Mogg	Gabriela Gomez	Yamir Moreno
	Chanchala Kaddi	Karim Azer	Joaquin Sanz Remon	Karen L Elkins	Willem Hanekom	Tom Scriba
	Jennifer Flood	Zhaoling Meng	Dereck Tait	Alexander Schmidt	Johan Vekemans	Stéphane Temmerman
	Marcel Behr	Rada Savic	Sourya Shrestha	Frank Cobelens	Chathika Weerasuriya	Nadia Ouaked
	Ted Cohen	Raj Manchanda	Nick Menzies	Michael Kimmerling	Madeleine Clarkson	Elisa Nemes
		Finn McQuaid				Geoff Garnett
						Helen Fletcher

Session #2

Issues in using quant models for TB vaccine dose/regimen selection
- moving forward

Chair: Willem H

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Group work session #2
Issues in using quant models for TB vaccine dose/regimen selection

Topic and outcome

1. Identify major **blocks**, and **actions to remove them**, in using quant models to improve dose/regimen decision making?
2. How can we use the **recent efficacy data to learn about the animal models**, and how can math modelling help?

Additional sub-questions we could consider within each of these larger topics:

- Is TB a **good place to undertake** this new effort, or is it better to try and do this in a different field with more approaches and data (say HIV or malaria)?
- How do we **bridge** animal data of unproven vaccines to human data?
- How could we **best use the upcoming immunology data** from the recently released/upcoming clinical trials?
-

Invited to think about a perspective or opinion piece we can write together?

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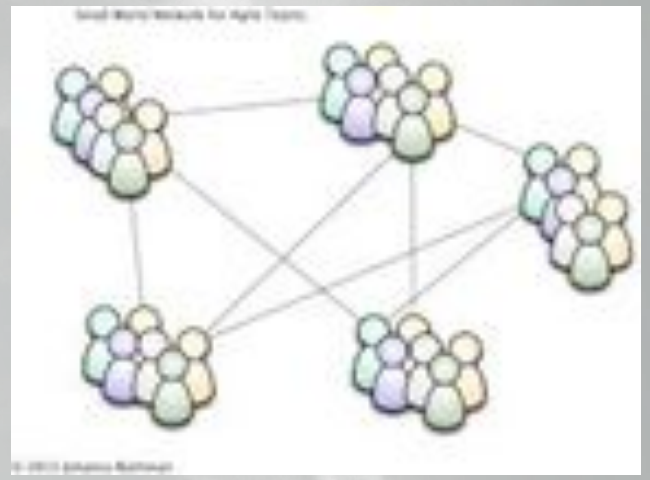
Session 2 Groups

- 6 groups (1 remote)
- Leads Jeff, Sophie, Rebecca, Louis, Tom, Richard(remote)
- 2 questions - take one or both
- Chose a rapporteur to feedback (4m)
  - Input into online google doc (1 for each group) for report
  - Summarise into slide for feedback today
  - Folder here



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Session 2 groups

Group	1	2	3	4	5	VC
Lead	**Tom Evans**	**Jeff Barrett**	**Sophie Rhodes**	**Chathika Weerasuriya**	**Louis Joslyn**	**Richard White**
Members	Hannah Priyadarshini Gideon	Joaquin Sanz Remon	Leander Grode	Andrew Siroka	Gabriela Gomez	Yamir Moreno
	Dereck Tait	Karim Azer	Willem Hanekom	Johan Vekemans	Robin Mogg	Tom Scriba
	Karen L Elkins	Jennifer Flood	Zhaoling Meng	Chanchala Kaddi	Sourya Shrestha	Stéphane Temmerman
	Alexander Schmidt	Rada Savic	Chathika Weerasuriya	Marcel Behr	Raj Manchanda	Nadia Ouaked
	Michael Kimmerling	Nick Menzies	Madeleine Clarkson	Ted Cohen	Finn McQuaid	Elisa Nemes
						Geoff Garnett
						Helen Fletcher

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Session #3

Issues in using quant models for informing vaccine characteristics in TPP/PPCs, target-population-informed development, and implementation strategy
- moving forward

Chair: Jeff Barrett

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Group work session #3
Issues in using quant models for informing vaccine characteristics in TPP/PPCs, target-population-informed development, and implementation strategy

Topic and outcome

1. Identify major **blocks**, and **actions to remove them**, in using quant models to create information for TB vaccine **TPPs and PPCs**
2. Identify major **blocks**, and **actions to remove them**, in using quant models to create information for TB vaccine **implementation**
3. Or **any topic amenable to modelling** you feel is important/interesting in the area

Additional sub-questions we could consider within each of these larger topics:

- Is there a modelling role for **designing clinical trials and large community based studies**?
- What, if any, **lessons** could be applied from the experience with **modelling efforts in other diseases**?
- Can **models developed** for other diseases, where impact of vaccination models were developed beforehand, be **evaluated after the fact to see how they performed**?
- **Economics**

Invited to think about a perspective or opinion piece we can write together?

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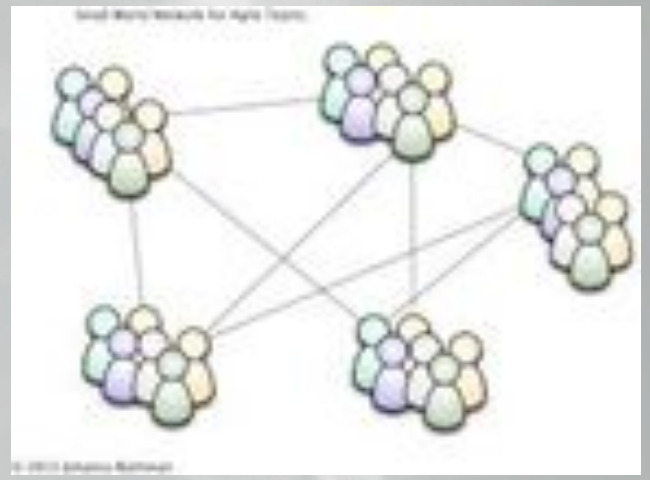
Session 3 group work

- 6 groups (1 remote)
- Leads Jeff, Sophie, Rebecca, Louis, Tom, Richard(remote)
- 2 questions - take one or both or new
- Chose a rapporteur to feedback (4m)
  - Input into online google doc (1 for each group) for report
  - Summarise into slide for feedback today
  - Folder here



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Groups for session #3

Group	1	2	3	4	5	VC
Lead	**Tom Evans**	**Jeff Barrett**	**Sophie Rhodes**	**Rebecca Harris**	**Louis Joslyn**	**Richard White**
Members	Andrew Siroka	Gabriela Gomez	Hannah Priyadarshini Gideon	Joaquin Sanz Remon	Leander Grode	Yamir Moreno
	Karim Azer	Willem Hanekom	Johan Vekemans	Dereck Tait	Chanchala Kaddi	Tom Scriba
	Robin Mogg	Zhaoling Meng	Karen L Elkins	Sourya Shrestha	Chathika Weerasuriya	Helen McShane
	Jennifer Flood	Raj Manchanda	Alexander Schmidt	Rada Savic	Marcel Behr	Marie-Ange Demoitie
	Finn McQuaid	Madeleine Clarkson	Ted Cohen		Michael Kimmerling	Elisa Nemes
						Esse Ifebi Herve Akpo
						Helen Fletcher

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