Antimicrobial resistance as a social dilemma: an international interdisciplinary project

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Project background

• Broad spectrum antibiotic use in acute medical patient in hospitals is a contributing factor in the development of antimicrobial resistance

• Adherence to guidelines is suboptimal. Restrictive and enabling strategies improve prescribing behaviour to some extent. (Davey et al 2017)

• Need new approaches to optimising the use of broad-spectrum antibiotics in acute medical patients, grounded in theory about antibiotic use that goes beyond a focus on individual prescribers.

• Antibiotic use can be characterised as:
  – a social dilemma (good of individuals vs society)
  – in which multiple prescribers act as agents mediating between the interests of different principles
  – and are subject to various incentives and pressures (including local norms and expectations)
Project aims and approach

• Pump-priming project Jan 17 - Dec 18

• Aims
  – develop a theory-based model of the dynamics of broad spectrum
    antimicrobial use in acute medical patients
  – undertake preliminary work on using agent-based modelling (community
    of agents) to simulate the effect of interventions focused at different
    levels and in different contexts on outcomes in terms of behaviour and
    antimicrobial resistance levels

• Based on interdisciplinary workshops and interviews with 30-40
  stakeholders in 3 countries (UK, ZA, SL)
## Collaborators

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<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Role</th>
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<tbody>
<tr>
<td>Carolyn Tarrant</td>
<td>University of Leicester UK</td>
<td>Psychologist (improvement science, qualitative)</td>
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<td>Andrew Colman</td>
<td>University of Leicester UK</td>
<td>Psychologist (game theory, quantitative)</td>
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<td>Edmund Chattoe-Brown</td>
<td>University of Leicester UK</td>
<td>Sociologist (agent-based modelling, quantitative)</td>
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<td>David Jenkins</td>
<td>University Hospitals Leicester UK</td>
<td>Consultant Medical Microbiologist</td>
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<td>Shaheen Mehtar</td>
<td>Stellenbosch University ZA</td>
<td>Clinical Professor Infection Control</td>
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<td>Nelun Perera</td>
<td>University Hospitals Leicester UK/University of Colombo SL</td>
<td>Consultant Microbiologist</td>
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Benefits of interdisciplinary research

• Bringing social science expertise to bear on a real world problem to provide new insights and approaches.
  – ‘Obvious once you suggested it, but I’d never thought of it’

• Can’t do this work without clinical involvement.
  – Understanding the nature of the problem and the context
  – Shaping the study (e.g. who are the stakeholders)
  – Facilitating access

• My interest in problem definition, implementation of interventions, qualitative research (and game theory) ties the project together.
Challenge 1: Finding collaborators

• To what extent can we ‘engineer’ interdisciplinary contacts?

• This collaboration arose through informal networks
  – Worked with Prof Colman previously, met Dr Jenkins at a workshop
  – Already started to discuss this avenue of research
  – Other collaborators came from informal networks (Leicester heavy!)

• Networking meetings are great but
  – Need proactive follow-up (identifying specific research questions around shared interests, need leadership and commitment)
  – Perceived risks of developing new collaborations?
Challenge 2: Different priorities and expectations

- Clinical focus on tacking the problem, academic focus on theorising and model development. Need to develop shared understandings of what the outputs might be.

- Lack of familiarity with qualitative methods, concerns about sample size and generalisability.

- Importance of regular meetings to discuss plans and expectations. This is something we’ll have to manage on an ongoing basis.
Challenge 3: Areas of expertise

- Anxieties about not having knowledge and expertise across the clinical / theoretical / methodological spectrum.

- Need to emphasise that the value of interdisciplinary research is that everyone brings different and valuable expertise and perspectives – don’t all need to be experts in everything.

- PI as linchpin

- Team need some level of shared understanding to orient towards the problem, and to understand what each party can contribute.
Challenge 4: Appointing a researcher

- Difficult to find someone with relevant disciplinary and methodological expertise (which will bring more value?)
- In the end went with disciplinary expertise, with a little experience in relevant methods
- More training required
  - Qualitative methods
  - Agent-based modelling
The particular challenges of international interdisciplinary collaboration

- Financial agreements

- Less control for PI - need to rely on overseas clinical collaborators to deliver on key project requirements
  - collaboration agreements, standardisation of topic guides (?), regular meetings, overseas visits and training

- Multiple ethics applications

- Getting together - tube strikes, storm Doris, and monsoon season!