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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

Carolyn Tarrant	University of Leicester UK	Psychologist (improvement science, qualitative)
Andrew Colman	University of Leicester UK	Psychologist (game theory, quantitative)
Edmund Chattoe-Brown	University of Leicester UK	Sociologist (agent-based modelling, quantitative)
David Jenkins	University Hospitals Leicester UK	Consultant Medical Microbiologist
Shaheen Mehtar	Stellenbosch University ZA	Clinical Professor Infection Control
Nelun Perera	University Hospitals Leicester UK / University of Colombo SL	Consultant Microbiologist

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

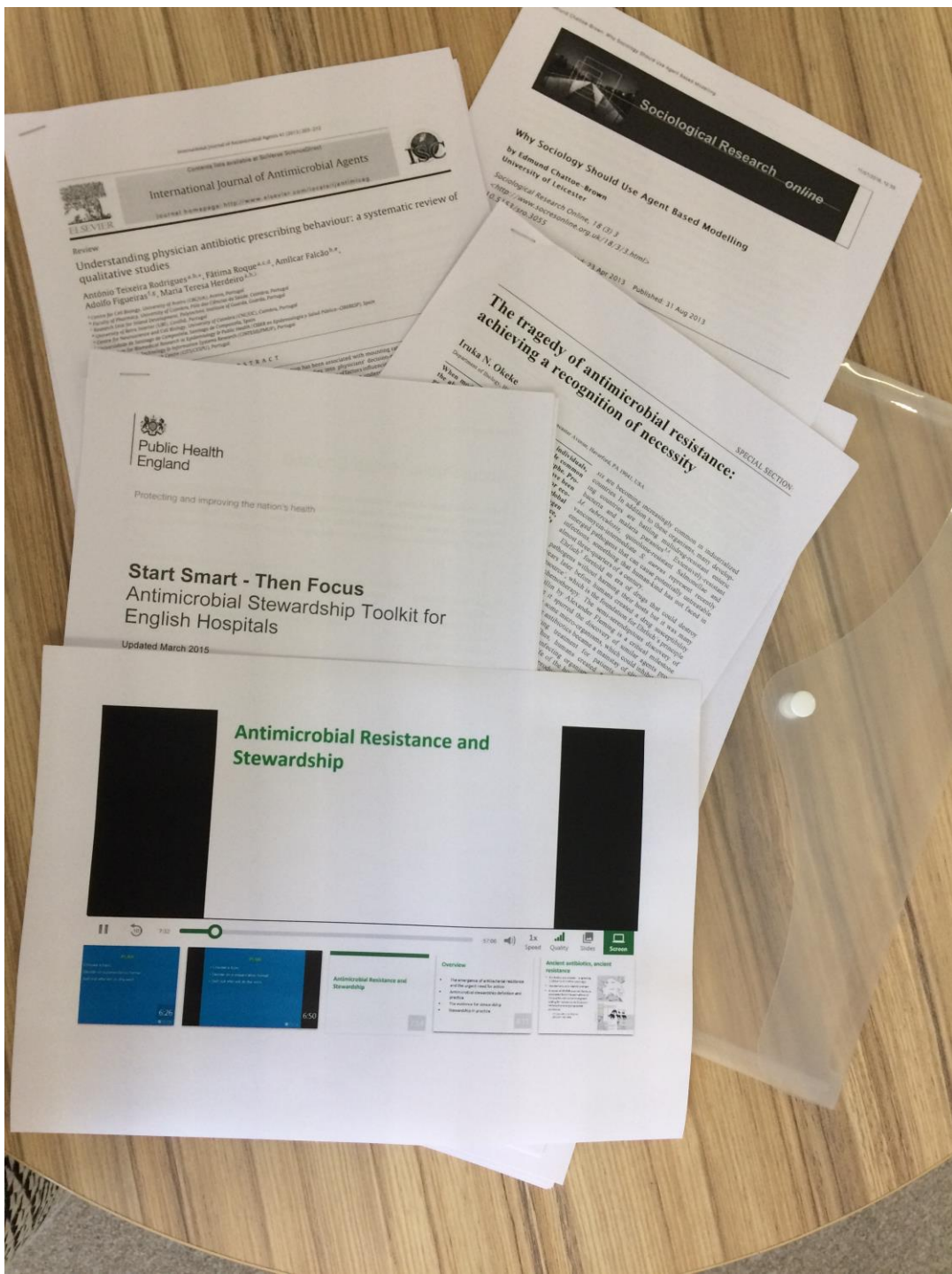
- To what extent can we ‘engineer’ interdisciplinary contacts?
- This collaboration arose through informal networks
 - Worked with Prof Colman previously, met Dr Jenkins at a workshop
 - Already started to discuss this avenue of research
 - Other collaborators came from informal networks (Leicester heavy!)
- 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 tackling 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.



Review
Understanding physician antibiotic prescribing behaviour: a systematic review of qualitative studies
 António Teixeira Rodrigues^{a,b,*}, Fátima Roque^{c,d}, Amílcar Falcão^{b,e}, Adolfo Figueras^{f,g}, Maria Teresa Henriques^{h,i}

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The tragedy of antimicrobial resistance: achieving a recognition of necessity
 Fruka N. Okeke
 Department of Pathology, University of Maryland, Baltimore, MD, USA

As an emerging consensus opinion is incorporated into the public health agenda, the need to address antimicrobial resistance (AMR) is becoming increasingly apparent. The tragedy of AMR is that it is a global health problem that is not being adequately addressed. The tragedy of AMR is that it is a global health problem that is not being adequately addressed. The tragedy of AMR is that it is a global health problem that is not being adequately addressed.

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Start Smart - Then Focus
Antimicrobial Stewardship Toolkit for English Hospitals
 Updated March 2015

Antimicrobial Resistance and Stewardship

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Antimicrobial Resistance and Stewardship

- The emergence of antimicrobial resistance and the impact on public health
- The role of antimicrobial stewardship in reducing antimicrobial resistance
- The importance of antimicrobial stewardship in reducing antimicrobial resistance
- The role of antimicrobial stewardship in reducing antimicrobial resistance

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!

