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Antimicrobial stewardship across the surgical pathways in low and middle income countries

XVIII ICID Buenos Aires, March 1-4, 2018

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NIHR at 10
improving the health and wealth of the nation through research

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Overview

- Antibiotic decision making in surgery
- The LMIC perspective
- Research gaps in AMS in surgical pathway
- Current/future interdisciplinary approaches to address these gaps

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Why focus on the surgical pathway?

Generation of political priority for global surgery: a qualitative policy analysis

Yusra Ribhi Shawar, Jeremy Shiffman, David A Spiegel

THE LANCET Global Health

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The *Lancet* Commission on Global Surgery

GLOBAL SURGERY 2030

- High burden of surgical conditions
  - 30 – 50% of inpatients undergo surgery
  - WHO estimates up to 50% surgical site infection rate (depending on surgery)
- Post-operative infections are a major cause of morbidity and antibiotic use
- Access to effective healthcare e.g. maternal health
- Need to improve global priority for surgery

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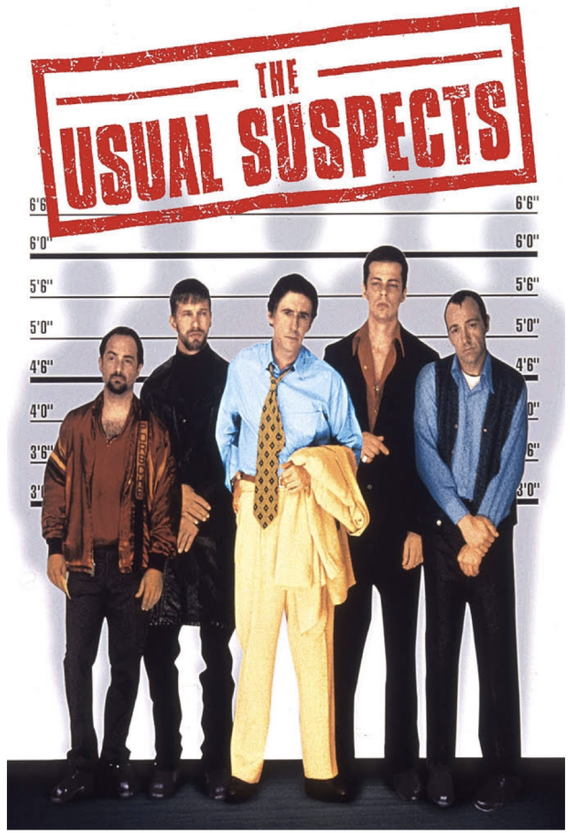
Antibiotic stewardship in surgery is should not be only about

surgical site infections and **antibiotic prophylaxis**



Variation in practice


Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Original article

Understanding antibiotic decision making in surgery—a qualitative analysis

E. Charani [1,*], C. Tarrant [2], K. Moorthy [3], N. Sevdalis [4], L. Brennan [5], A.H. Holmes [1]

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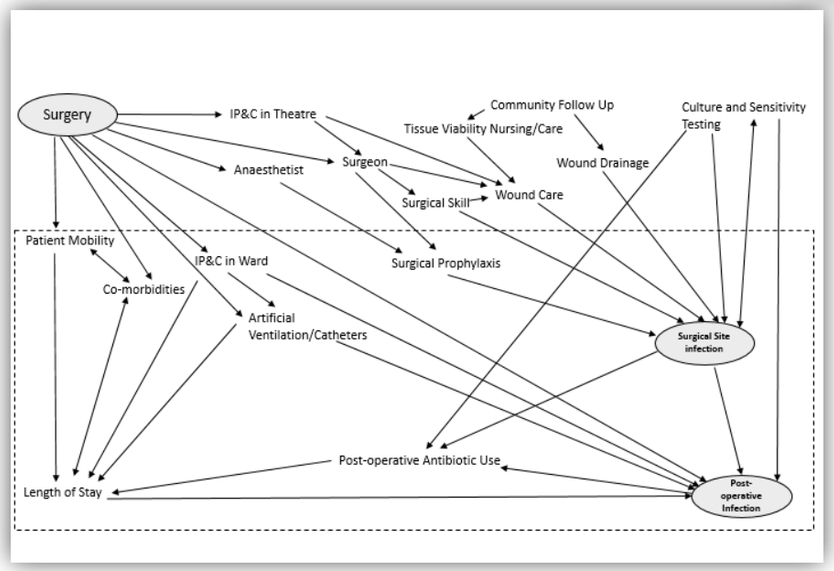
[5] Department of Anaesthesia, Cambridge University Teaching Hospitals, Cambridge, UK



*There is a **lack of clarity around decision** making for treating infections in surgical patients. Antibiotic decision making is a **secondary task** commonly **delegated** to others.*

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Surgical patients are **not** only on cefotaxime and metronidazole.

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Why focus on LMIC?

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Cultural and contextual determinants of the implementation of antimicrobial stewardship in low, middle and high income countries

Charani E, Smith I, Skodvin B, Prozziello A, Lucet JC, Lescure FX, Birgand G, Poda A, Singh S, and Holmes AH

Introduction

We report an international study investigating the challenges facing healthcare systems in the implementation of antimicrobial stewardship programmes (ASP), and the contextual determinants that shape and drive interventions.

Methods

Healthcare professionals responsible for implementing ASP in hospitals in England, France, Norway, India, and Burkina Faso were invited to participate as key informants (KI) in face-to face interviews. A piloted interview guide was used to conduct the interviews. Field notes from observations, and interview transcripts were analysed using grounded theory approach. Analysis and data collection were iterative and recursive, using constant comparison. Theoretical sampling was applied until categories were saturated. The categories and relationships within them were explored to develop the theoretical statements.

Results

61 KI from 42 hospitals were invited to participate. 52 KI from 24 hospitals (England 9 KI, 4 hospitals; Norway 13 KI, 4 hospitals; France 9 KI, 7 hospitals; India 13 KI, 7 hospitals; Burkina Faso 8 KI, 2 hospitals) participated in the study. The countries in this study represent different economies (**Figure 1**). Across Norway, France, England (high income countries) this study found country level consistency in the structures for ASP. In India and Burkina Faso (low/middle income countries) there were country level inconsistencies in access to antibiotics and ASP. The value of policy and guidelines was recognised, however in countries (England and France) with long-established ASP their utility was deemed less relevant. State support for ASP was perceived as essential in countries where it is lacking (India, Burkina Faso). In countries where the state is involved, it can be perceived as a barrier (England, France). Doctors remain universally recognised as leaders in ASP, with the evidence for nurse and pharmacist involvement limited to England. Professional boundaries dictate which specialties are involved in ASP, with the surgical specialty identified as most difficult to engage with. Despite challenges, one hospital in India provided the best example of interdisciplinary ASP, championed through organisational leadership (**Figure 2**). There components of ASP vary across the countries (**Table 1**).

Results continued

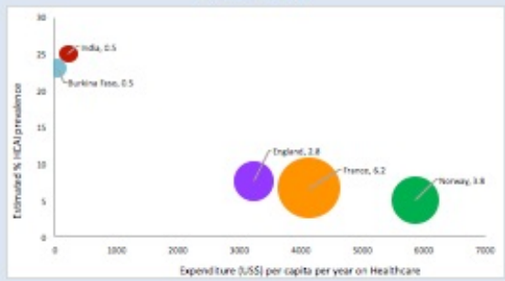

Figure 1 The estimated burden of Healthcare associated infections (HCAI), against the investment in healthcare and hospital beds per 1000 (represented by bubble size)

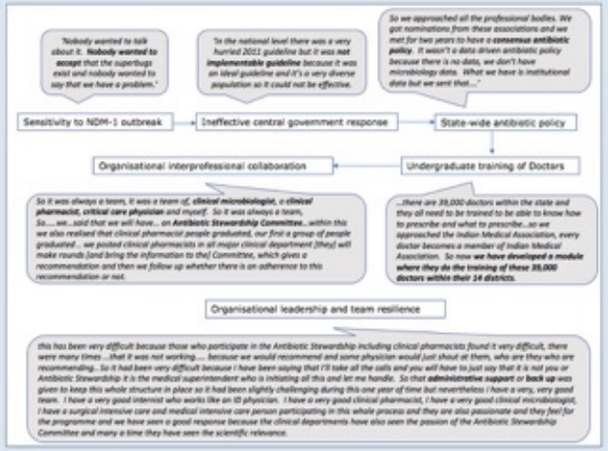

Figure 2 The development of the stewardship programme at the key study hospital in India, as recounted by the ASP staff

Results continued

The 2014 CDC Key components of stewardship	Norway	France	India*	England	Burkina Faso
Providing antibiotic prescribing guidelines	√ national	√ local	√ state-wide – not implementable	√ local	√ local
Leadership Commitment: resources.	√	√		√	
Accountability: Appointing a single leader responsible for program outcomes.	√	√		√	
Drug Expertise: Appointing a responsible pharmacist leader				√	
Action: Implementing at least one recommended action, (i.e. "antibiotic time out" after 48 hours).		√		√	
Tracking: Monitoring antibiotic prescribing and resistance patterns.	√	√		√	
Reporting: Regular reporting information on antibiotic use	√	√		√	
Education: Educating clinicians about resistance and optimal prescribing.	√	√	√ state level	√	√ limited

Table 1 The key stewardship activities present in each country

The developed healthcare systems have as a minimum initiated country level (Norway) or hospital level (England, France) antibiotic prescribing guidelines. In India, guidelines appear to be more acceptable if it is perceived that they are initiated by the government.

Conclusion

Worldwide ASP initiatives are affected by resource limitations, and entrenched professional hierarchies. Despite this, organisational champions and interdisciplinary collaboration can overcome the gaps in state level leadership to drive ASP.

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Acknowledgements: The NIHR Health Protection Research Unit in Healthcare Associated Infections and Antimicrobial Resistance at Imperial College London, and NIHR Imperial Biomedical Research Centre.
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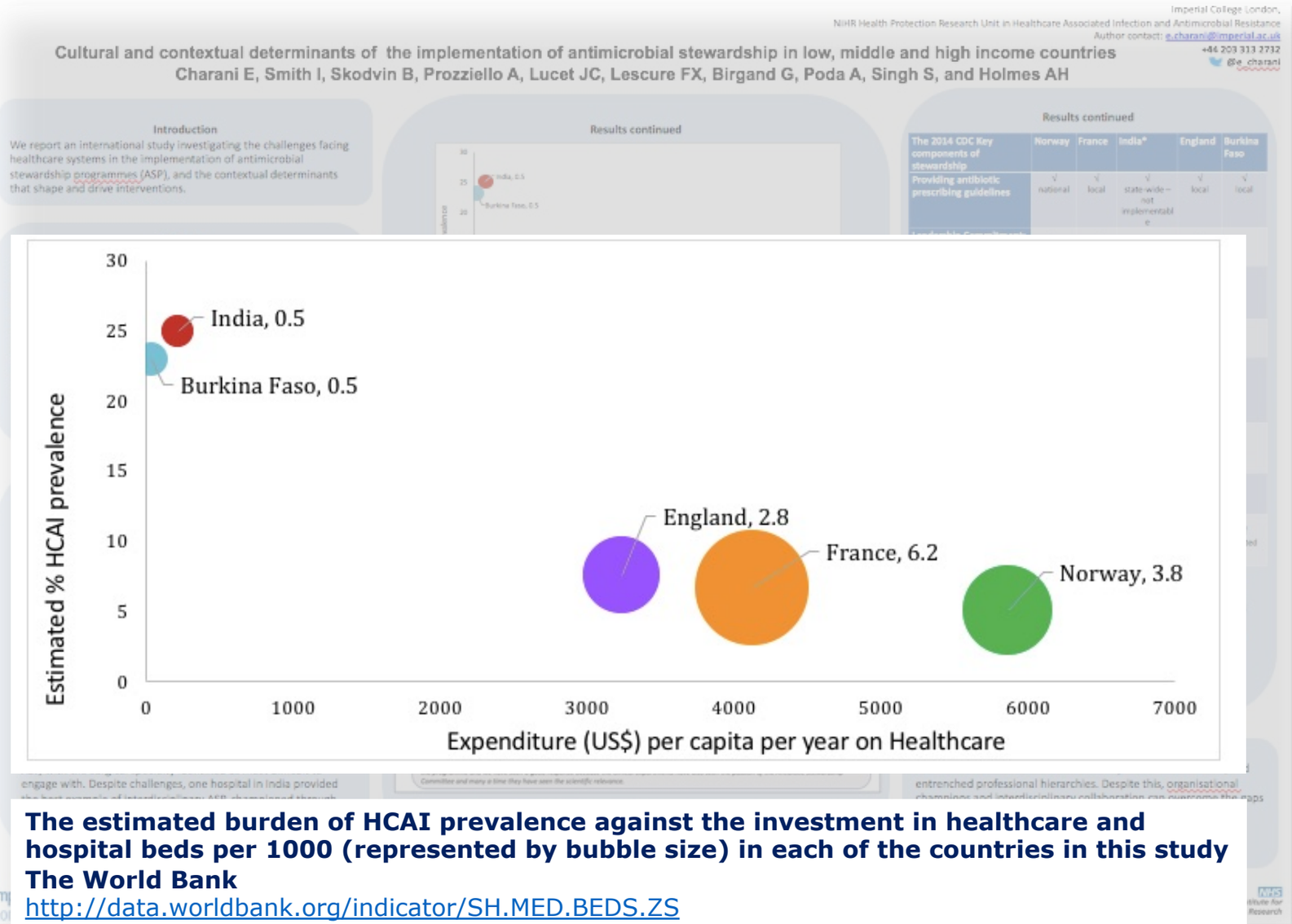

The estimated burden of HCAI prevalence against the investment in healthcare and hospital beds per 1000 (represented by bubble size) in each of the countries in this study
The World Bank
http://data.worldbank.org/indicator/SH.MED.BEDS.ZS

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Cultural and contextual determinants of the implementation of antimicrobial stewardship in low, middle and high income countries

Charani E, Smith I, Skodvin B, Prozziello A, Lucet JC, Lescure FX, Birgand G, Poda A, Singh S, and Holmes AH

Key finding:

Across all the countries, the surgical specialties were found to be most difficult to engage with on antibiotic stewardship

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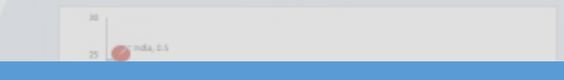

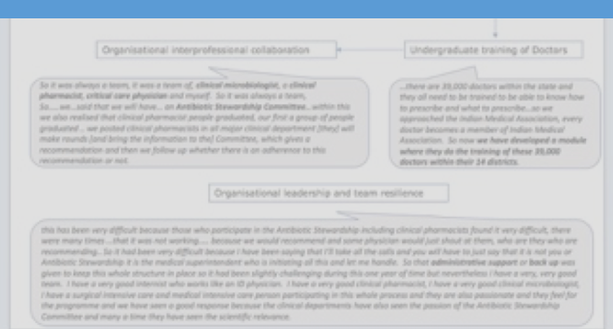

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Results continued

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Providing antibiotic	√	√	√	√	√
and optimal prescribing.					√

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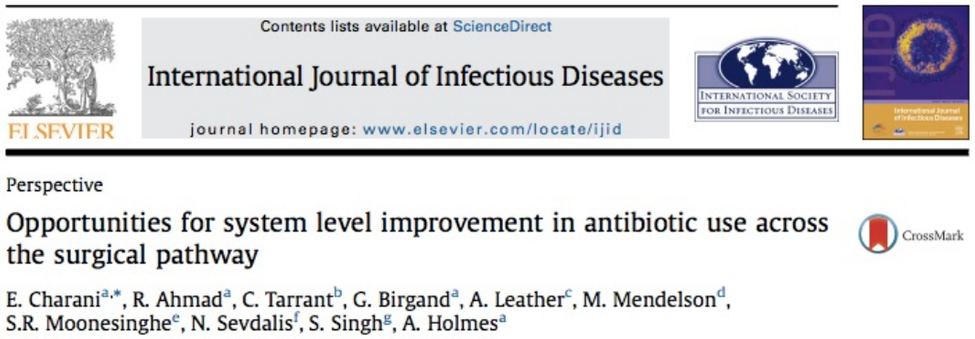

Perioperative care

Lack of clarity on **responsibility** for choice/dose/timing of prophylaxis

Ineffective **environmental precautions** to prevent HCAI

Lack of understanding on influence of **culture and team dynamics** on adoption of interventions e.g. WHO checklist

Post-operative care

Gaps in diagnosis and management of healthcare acquired infections

Lack of **access to antibiotics**

Follow-up care

Lack of consistency in methods of **surveillance** for antibiotic use, HCAI, SSI, AMR

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Knowledge gaps: what we still need to know to inform behaviour change interventions targeting antibiotic prescribing in surgery

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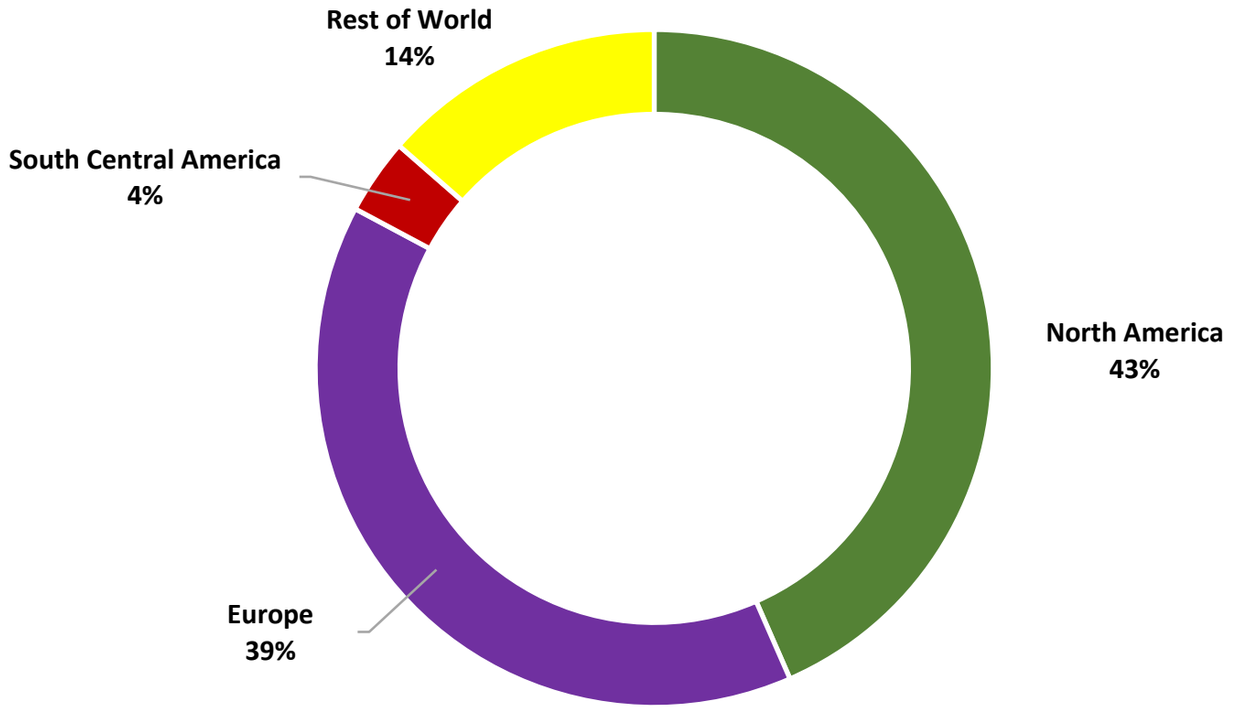
Cochrane included studies n=221



Cochrane Systematic Review, 2017

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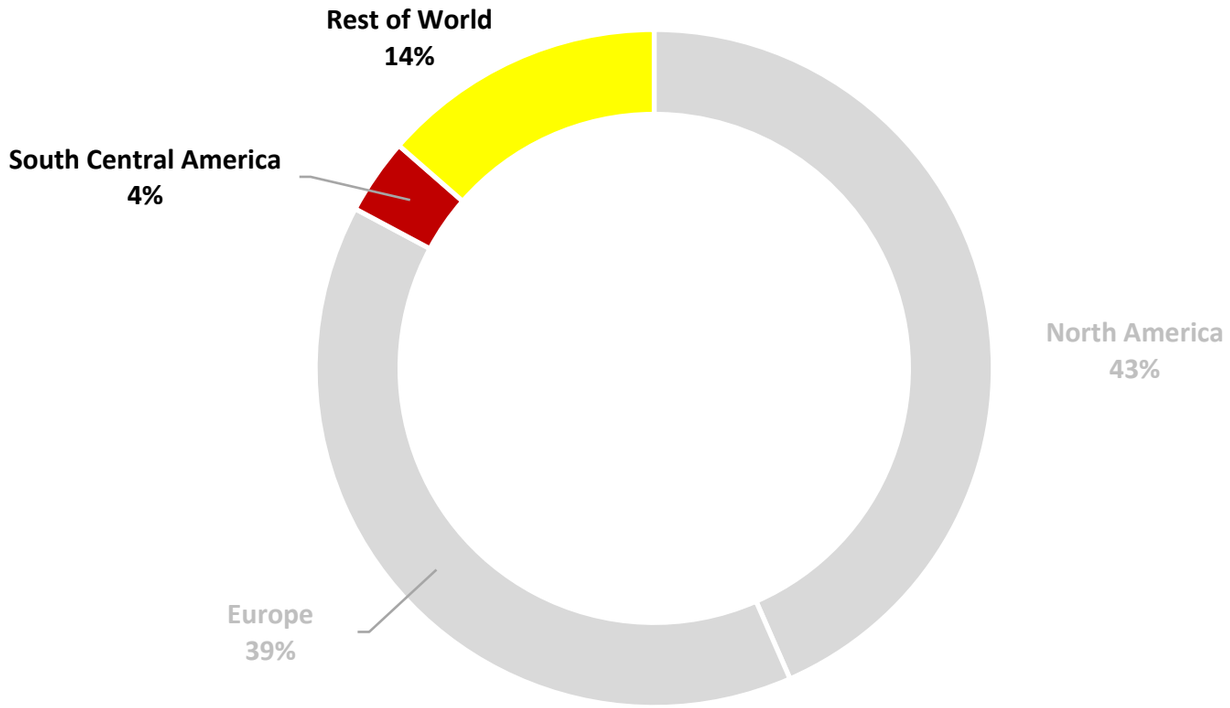
We need more evidence from LMIC



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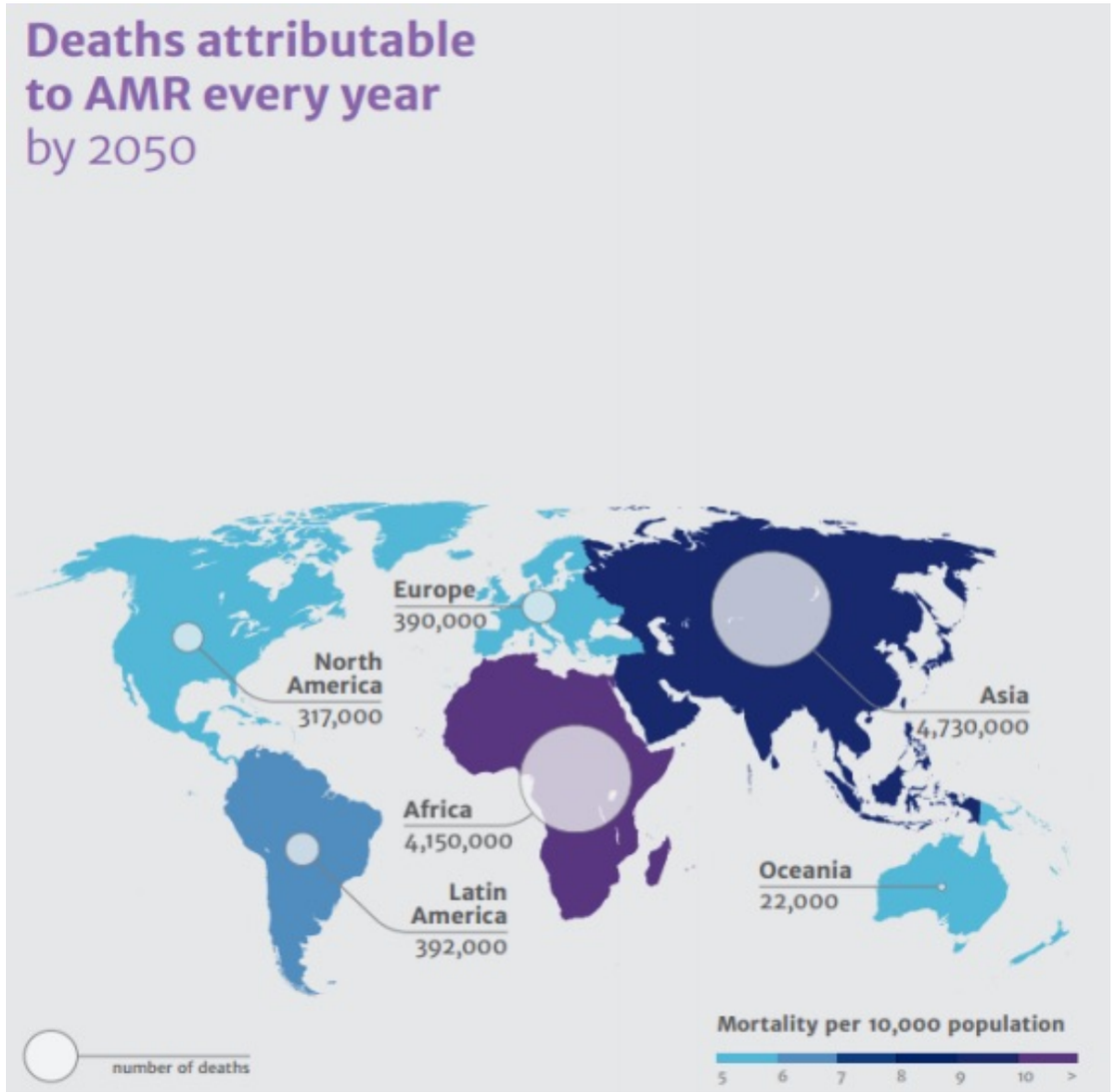

J O'Neill 2014

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ESRC Grant – Optimising antibiotic usage along surgical pathways: addressing antimicrobial resistance and improving clinical outcomes

ASPIRES Study

Aim: To address key drivers of Antimicrobial resistance by developing context-relevant preventative measures to reduce the risk of infection and optimise the use of antibiotics, coupled with tailored implementation strategies, along the entire surgical pathway.

GCRF Global Challenges Research Fund

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Multi-disciplinary

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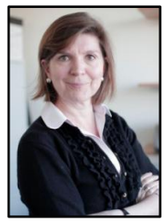


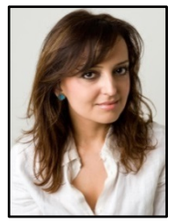


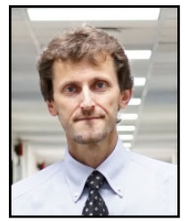

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University of Cape Town

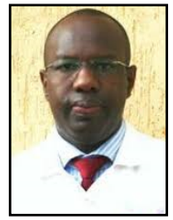

University of Hertfordshire

University of Leicester

Amrita Vishwa Vidyapeetham University


Royal College of Anaesthetists/ University College London Hospitals

Butare University Teaching Hospital

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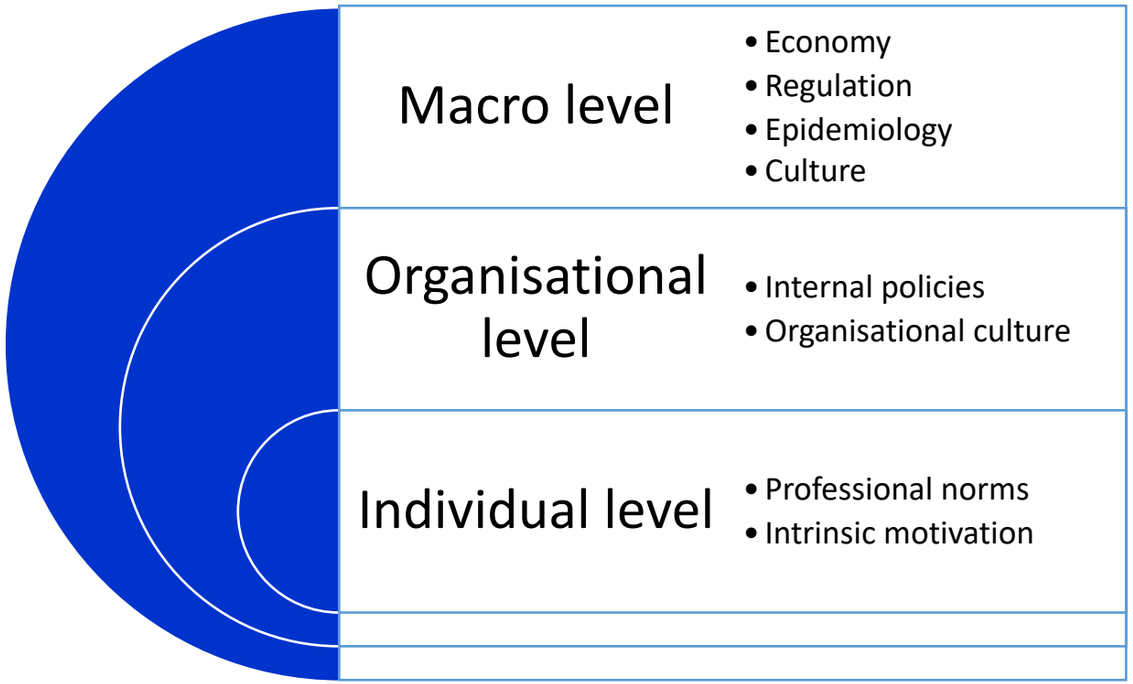
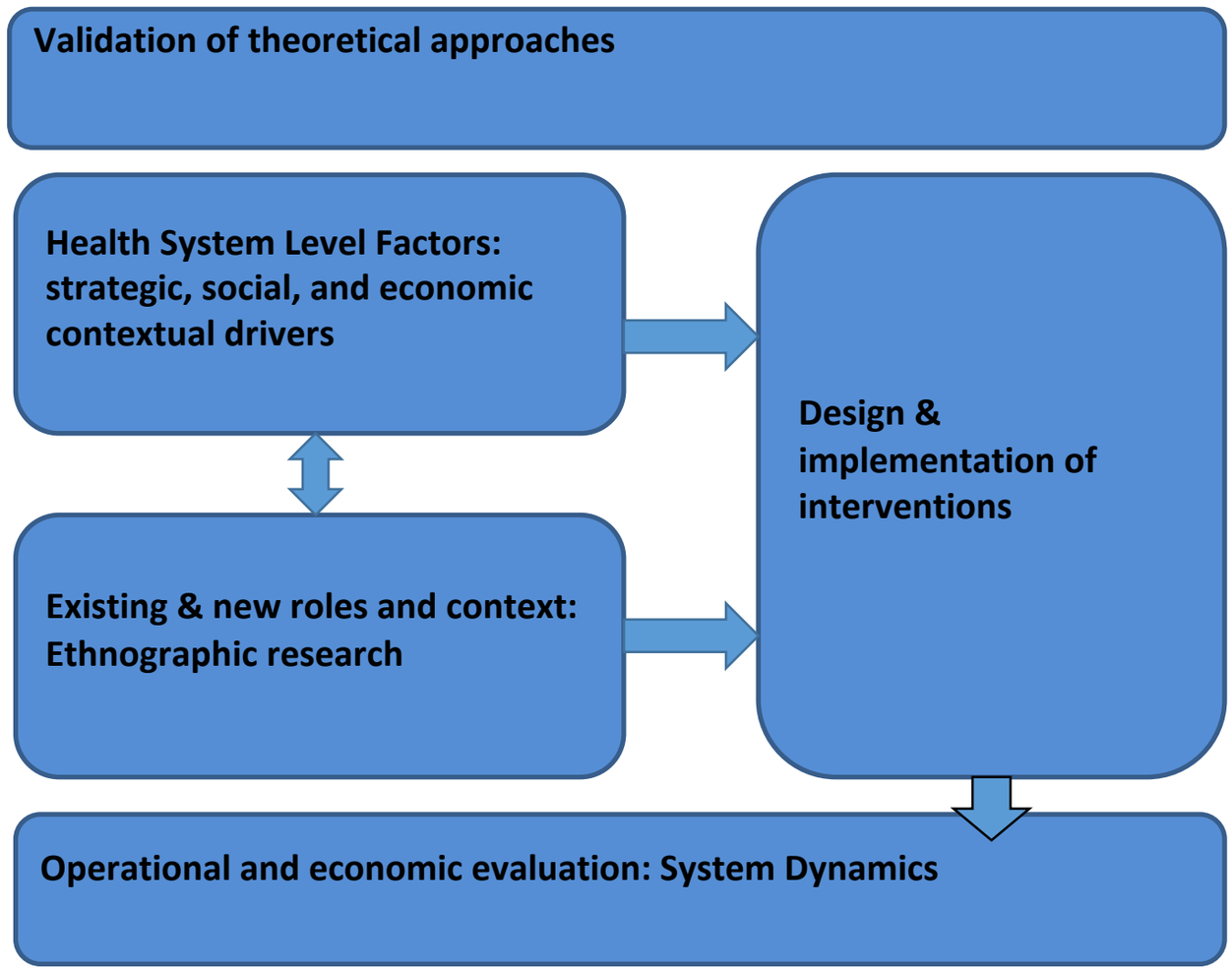
Multi-level influences



Ahmad: Optimising knowledge mobilisation surrounding antibiotic utilisation in the community setting
https://www.nihr.ac.uk/our-faculty/trainees/meet-some-of-our-trainees/meet-the-kmr-fellows/kmr-fellow-raheelah-ahmad.htm

Approach to inquiry



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Capacity Building and Strengthening in LMICs

- Training a **new generation of health leaders** in LMIC
  - Context aware and challenge led e.g. 1-2-1, e-learning, workshops
- Investigating pathways in LMIC
  - Ensures **country level healthcare needs are met**
- Strong support and mentorship structure
  - Allows for communication and **sharing knowledge** and experience
  - **Ownership** and flexibility in long-term planning
- Establish **validated governance** structures

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Thank you

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