COMMUNITY-LEVEL ANTIBIOTIC ACCESS AND USE IN LOW- AND MIDDLE-INCOME COUNTRIES; FINDING TARGETS FOR SOCIAL INTERVENTIONS TO IMPROVE RATIONAL ANTIMICROBIAL USE

Addis Ababa

November 11 - 2015

Yearly deaths due to antimicrobial resistance (AMR) by 2050

Jim O'Neill 2014
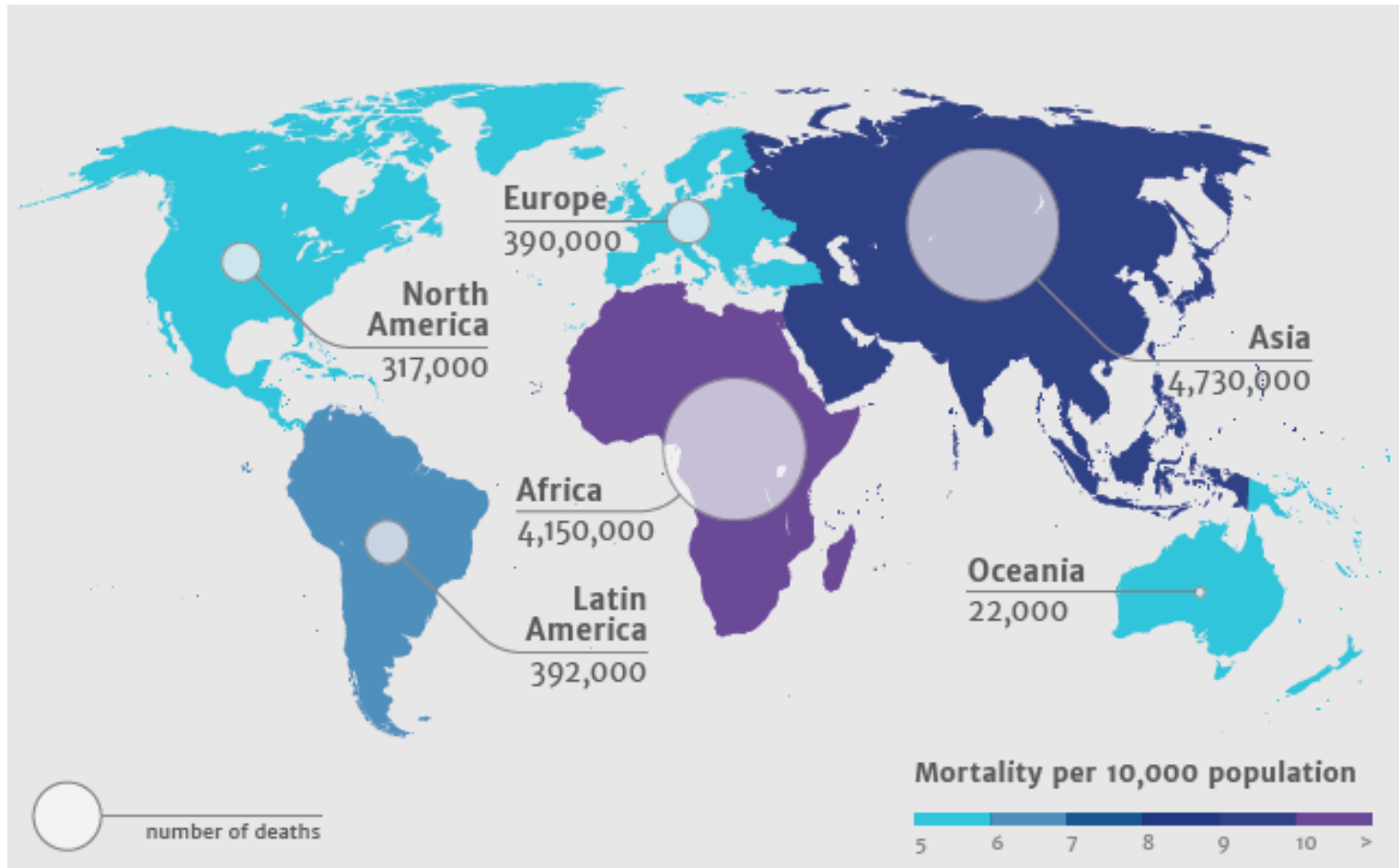
World Health Assembly

World Health Assembly addresses antimicrobial resistance, immunization gaps and malnutrition

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New release

25 MAY 2015 ¦ GENEVA – The World Health Assembly today agreed resolutions to tackle antimicrobial resistance; improve access to affordable vaccines and address over- and under-nutrition.

Tackling antimicrobial drug resistance

Delegates at the World Health Assembly endorsed a global action plan to tackle antimicrobial resistance – including antibiotic resistance, the most urgent drug resistance trend. Antimicrobial resistance is occurring everywhere in the world, compromising our ability to treat infectious diseases, as well as undermining many other advances in health and medicine.

The plan sets out 5 objectives:

- improve awareness and understanding of antimicrobial resistance;
- strengthen surveillance and research;
- reduce the incidence of infection;
- optimize the use of antimicrobial medicines;
- ensure sustainable investment in countering antimicrobial resistance.

- Inappropriate antibiotic use common in LMIC
- Variations among LMIC, many unknowns
- INDEPTH infrastructure ideal to study this in detail

Antimicrobial resistance and INDEPTH

- AMR considered an issue since 2009
  - Pune – India: Workshop Oct 2009
  - Cox Bazaar - Bangladesh Workshop April 2010
  - Johannesburg – South Africa Oct 2013

-> focus on antibiotic use in LMIC communities
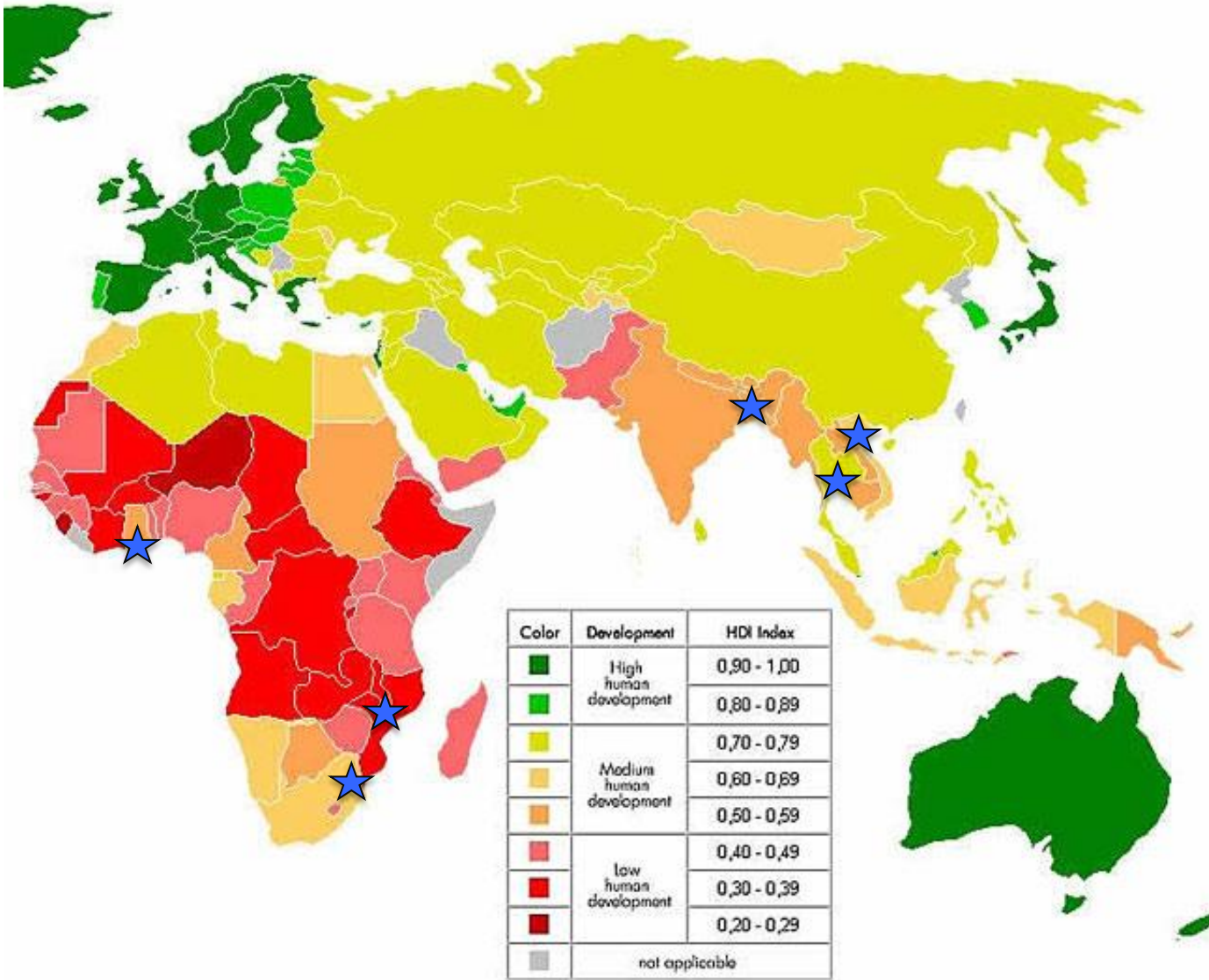
Community antibiotic use

Research questions

1. Who are the main suppliers of antibiotics in LMIC communities and which antibiotics are supplied?

2. What are the social, cultural and economic factors that affect antibiotic demand and use in the LMIC communities and how do these differ between them?

3. What is the level of community awareness in LMIC communities about antibiotics, antibiotic resistance and their indications for use?

4. What are the health care-seeking behaviours that lead to antibiotic demand and use in LMIC communities?

Selected LMIC sites – INDEPTH network

Color	Development	HDI Index
■	High human development	0,90 - 1,00
■		0,80 - 0,89
■		0,70 - 0,79
■	Medium human development	0,60 - 0,69
■		0,50 - 0,59
■		0,40 - 0,49
■	Low human development	0,30 - 0,39
■		0,20 - 0,29
■	not applicable	

⭐ : site

Selected countries - indicators

	LIC		MIC-L		MIC-U	
	Bangladesh	**Mozambique**	**Vietnam**	**Ghana**	**Thailand**	**South Africa**
Total population (2013)	156,595,000	25,834,000	89,709,000	25,905,000	67,010,000	53,157,000
Gross national income per capita (World Bank $, 2013)	1,010	610	1,740	1,770	5,340	7,410
Human development index * (2013)	0.56 medium	0.39 low	0.64 medium	0.57 medium	0.72 high	0.66 medium
Life expectancy at birth m/f (years, 2013)	70/71	49/51	71/80	60/62	71/78	55/59

- Selected 2 countries per income category: LIC, MIC-U, MIC-L
- With similar resources, countries differ in what they can achieve with it.
- How is the resource of antibiotics used in communities of each country?

Theoretical framework: Sen's
Capability Approach

facilitates understanding of how resources are translated into outcomes
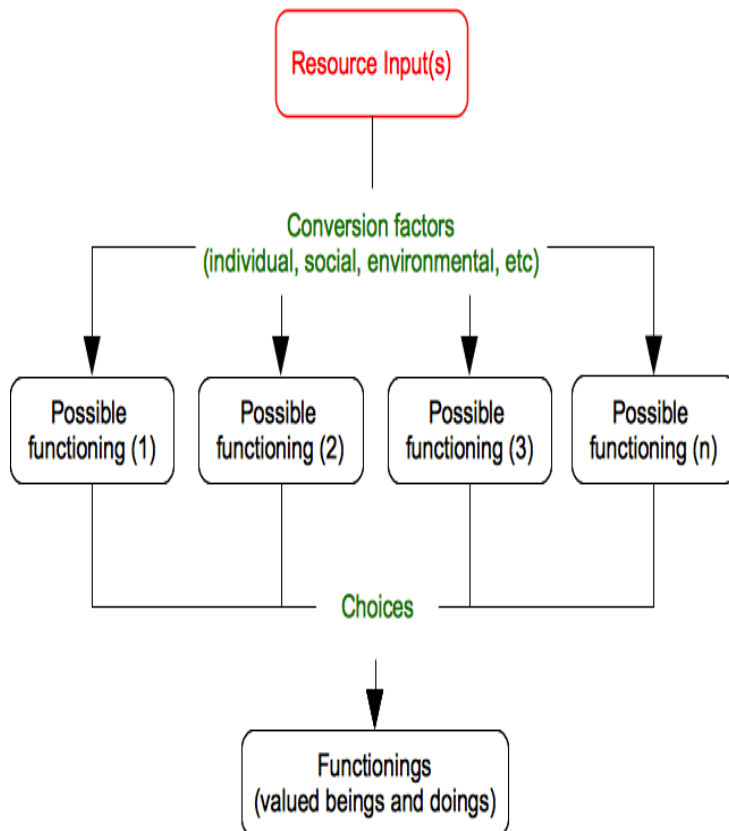
Resources*:*
- Antibiotic availability: level and nature

Conversion factors:
- *Individual*: education, gender, age, illness, knowledge;
- *Cultural*: local understandings of health and health care;
- *Social*: norms that can facilitate/inhibit access;
- *Economic*: financial means to obtain antibiotics;
- *Political*: policies and regulations;
- *Environmental*: availability and accessibility.

Choices:
- The range of choices people make will be identified through the qualitative interviews and FGDs, and subsequently quantified through our survey.

Functioning:
- (Valued) patterns of actual use of the antibiotic resource

Study Design: A mixed methods approach

 – Qualitative and quantitative data are mutually supportive, and can inform each other
 – Multiple perspectives can help develop a rich picture of antibiotic use in the community
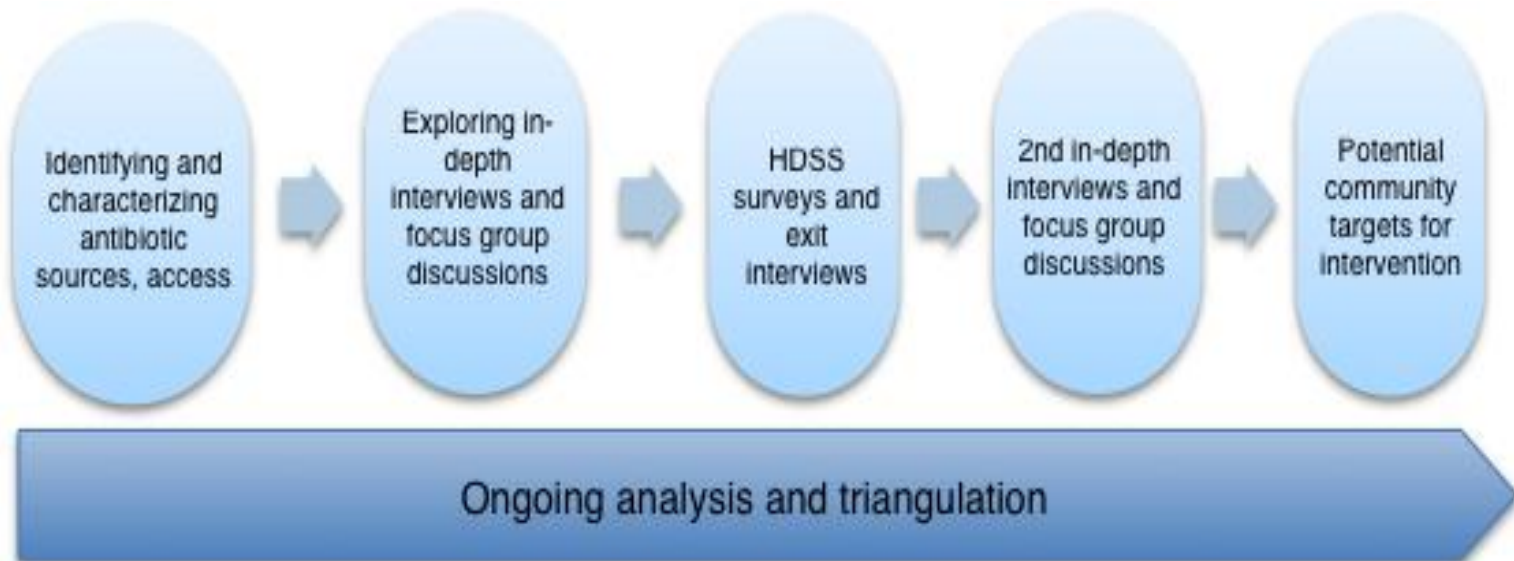
Data collection at each HDSS

| Stage 1:

Mapping exercise, supply side	• Identification of all outlets in each study area, both legal and illegal • Semi-structured interviews with vendors
	• Availability and price of 5 essential antibiotics
	• Indicators of antibiotic quality: Packaging, storage, expiry dates, and patient information for the 5 essential antibiotics

| Stage 2:

Exploring social, cultural and economic factors; customer exit interviews	• Qualitative research:
	    o 8 FGDs (stratified by gender and age) per site
	    o 20 in-depth interviews (10 men, 10 women for demand side) per site
	    o 20 in-depth interviews with supply side of antibiotics per site

	• Drug outlet exit interview: Up to 900 antibiotic encounters from 20 outlets will be observed every other month over a year

| Stage 3:
Community awareness of antibiotics and health-seeking behaviour	• Longitudinal survey of 1000 households (~4000 individuals) per HDSS site 3-4 times for one year

| Stage 4:

Towards a community intervention	• Qualitative research, investigating and explaining any discrepancies identified between reported and observed antibiotic use:
	    o 4 FGDs per site
	    o 10 in-depth interviews per site

Data analysis

Quantitative data

- Antibiotic access: presence of essential antibiotics at pharmacies
- Drug outlet exit interviews: defined daily dose of antibiotics per 100 surveyed patients
- Associations of antibiotic use with socio-demographic variables will be examined at the household and individual level.

Qualitative data

- Thematic analysis of FGDs and in-depth interviews
- Analysis done by individual sites and in groups

Triangulation

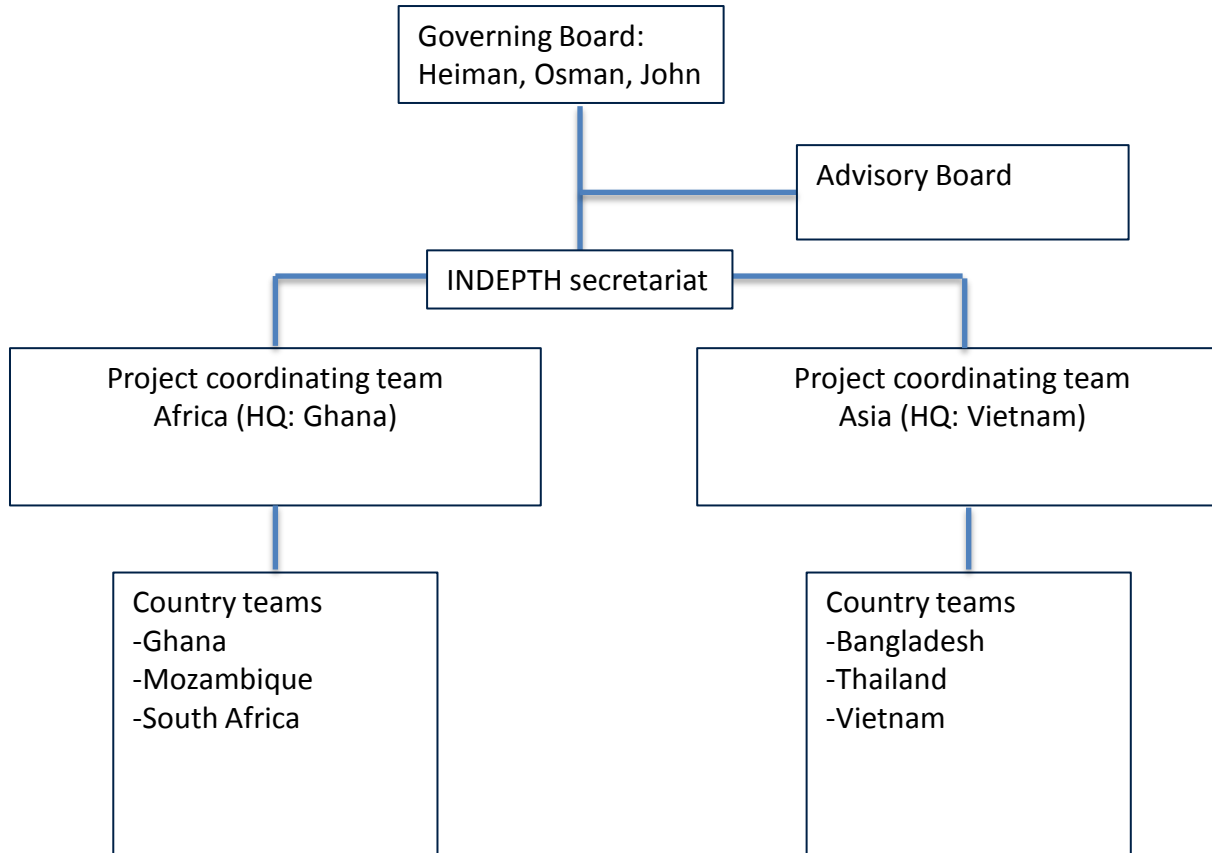- Developing a comprehensive picture
- Explaining discrepancies

Expected outcomes

- Framework to study antibiotic use in LMIC
- Targets for community based interventions to improve antibiotic use
- Engagement with national and international policymakers

What – when?

Activity		Year 1												Year 2												Year 3					
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30
Meetings PIs and advisory board and stakeholders	■											■																■		
Site visit by coordinators/Pis												■																		
Finalize protocols and IRB submission	■	■	■																											
Developing interview guide for FGDs and in-depth		■	■																											
Training study staff				■	■	■					■									■										
Pilot					■																									
Characterizing antibiotic sources, exploratory					■	■	■	■	■	■																				
Analysis qualitative work, including analysis workshop							■	■	■	■																				
Design for longitudinal survey and drug outlet										■	■																			
Longitudinal survey cohort													■	■	■	■	■	■	■	■	■	■	■							
Drug outlet exit interview													■		■		■		■		■		■							
Closing qualitative work																					■	■	■	■						
Overall analysis and reporting																									■	■	■	■	■	■

Organisation

Acknowledgements

Name	Affiliation	Task & expertise
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A delicate balance
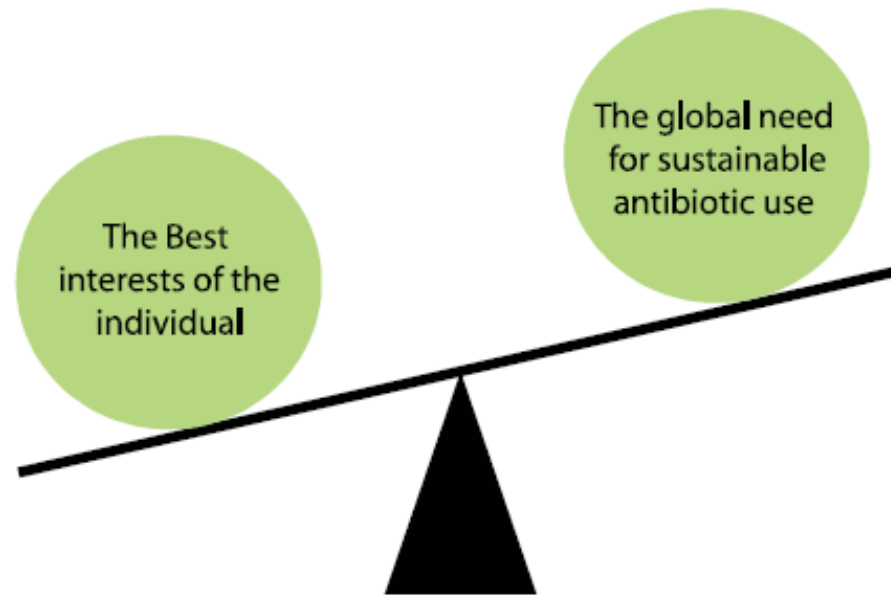
Antibiotic effectiveness is a valuable natural resource, like clean water or forests.

All antibiotic use, appropriate or not, 'uses up' some of the effectiveness.

But antibiotics are also lifesavers and we need access to them.

Thank you

- A major and expanding global health problem
- A comprehensive research strategy
- A strong mix of expertise
- A unique range of participating communities