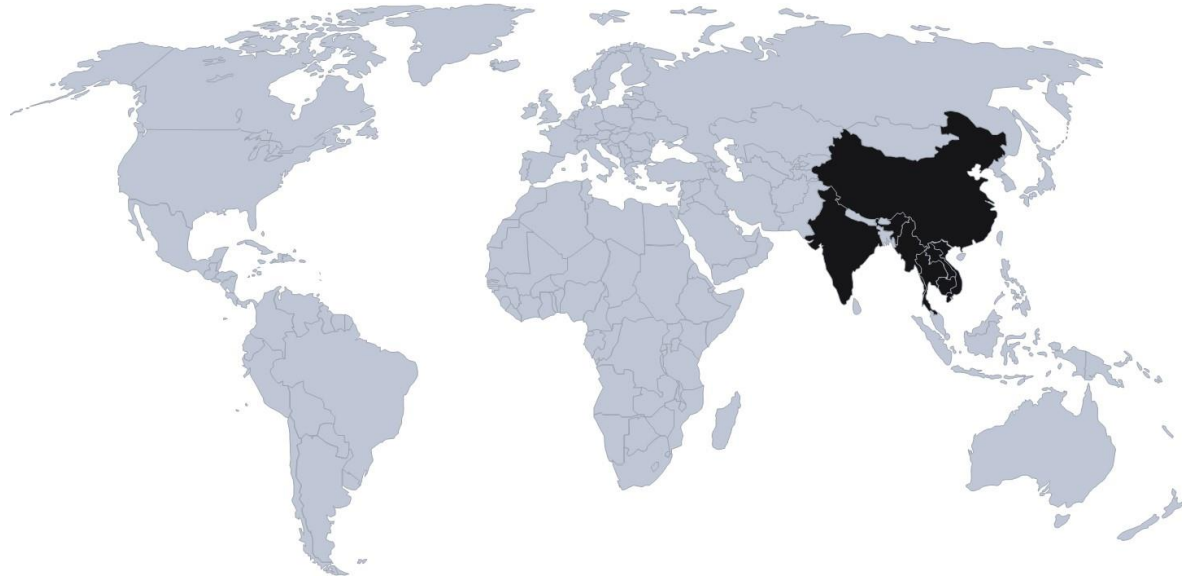# What if hardship causes drug resistance?

A development studies research agenda to inspire innovative global health policy solutions

Dr Marco J Haenssgen | University of Warwick | 02 June 2020

Background

Personal background

- Development studies and management

- Interdisciplinary and mixed-methods research

- Interest in health behaviour and contextual change

- Geographical focus on Southeast Asia

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Decrease Demand

Stimulate Supply

"*We need to:*

1.
*Undertake a massive global public awareness campaign*"

(The Review on Antimicrobial Resistance, 2016, p. 17)

Motivation for this seminar

- AMR as globally recognised health priority

- Policy response shaped by focus on intuitive solutions with potentially harmful overemphasis of individual knowledge deficits

- Starting point: *AMR policy is development policy*

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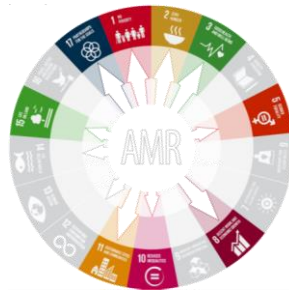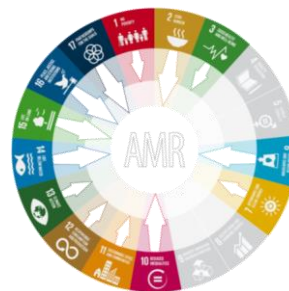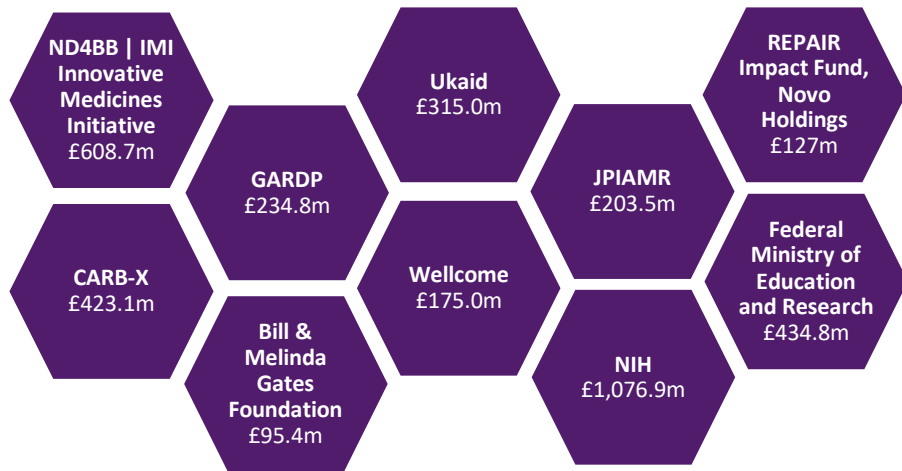
Motivation for this seminar

- Extensive funding pledges
- Behavioural science and non-medical approaches
- Improved measurement of disease burden
- Subscription-based financing models
- Pharmaceutical companies pulling out of development

ND4BB | IMI Innovative Medicines Initiative £608.7m

Ukaid £315.0m

REPAIR Impact Fund, Novo Holdings £127m

GARDP £234.8m

JPIAMR £203.5m

CARB-X £423.1m

Wellcome £175.0m

Federal Ministry of Education and Research £434.8m

Bill & Melinda Gates Foundation £95.4m

NIH £1,076.9m

Berthe, F. C. J., Wadsworth, J., Thiebaud, A., Marquez, P. V., & Baris, E. (2019). *Pulling together to beat super-bugs: knowledge and implementation gaps in addressing antimicrobial resistance*. Washington, DC: World Bank.
Clift, C. (2019). *Review of progress on antimicrobial resistance: background and analysis*. London: Chatham House.
Limmathurotsakul, D., Dunachie, S., Fukuda, K., Feasey, N. A., Okeke, I. N., Holmes, A. H., et al. (2019). Improving the estimation of the global burden of antimicrobial resistant infections. *The Lancet Infectious Diseases, 19*(11), E392-E398. doi: 10.1016/S1473-3099(19)30276-2
Pinder, R., Sallis, A., Berry, D., & Chadborn, T. (2015). *Behaviour change and antibiotic prescribing in healthcare settings: literature review and behavioural analysis*. London: Public Health England.
https://www.businessinsider.com/major-pharmaceutical-companies-dropping-antibiotic-projects-superbugs-2018-7?r=US&IR=T

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Interdisciplinary issues consistently obscured by the primacy of biomedicine

Governance

- Individualistic and knowledge deficit biases
- What counts as actionable data
- Securitisation of health
- Inter-sectorial cooperation beyond One Health
- North-South relationships
- Hegemonic medical discourses and practices

Economic

- Economic frameworks for drug development
- Assessing costs and benefits of drug resistance
- Economic contexts shaping medicine use and behaviour
- Production and marketing systems for agri- and aquaculture

Social

- Relationships of "experts" vs. "lay people"
- Social purposes and political appropriation of health technologies
- Non-health solutions for health problems
- Ethical dilemmas in medicine prescription and use
- Unintended social consequences of medical intervention

Environmental

- Human-animal co-existence
- Drug disposal behaviour
- Role of climate change, biodiversity loss, pollution
- Impact of development processes on environmental factors of AMR
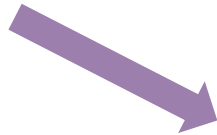
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Conceptual issues
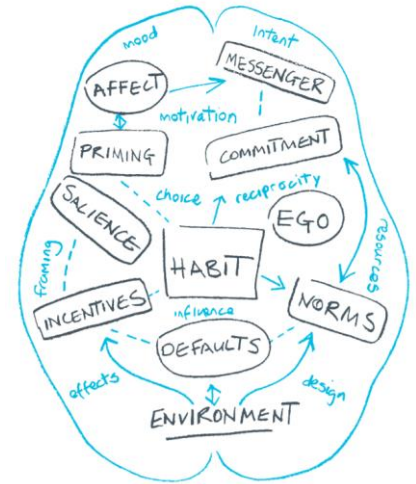
Some basic premises

1. The **landscape** of healthcare providers is **fragmented** and obscure.
2. Preferences and **means to access** healthcare **vary** within the population.
3. When navigating these obscure health systems, **people share a social space** within which they **collaborate** and **compete**.
4. New healthcare solutions at the patient – health system interface will always have to **compete with existing solutions**.
5. Social, economic, and technological **change** can affect treatment-seeking behaviours in **unforeseen** ways.
6. Solutions for "problematic behaviour" need **not** be **confined to the health sector**, but they can plausibly have similarly (or more effective) substitutes in other sectors.

Behaviour as: **Decision making**

Dolan, P., Hallsworth, M., Halpern, D., King, D., Metcalfe, R., & Vlaev, I. (2012). Influencing behaviour: the mindspace way. *Journal of Economic Psychology, 33*(1), 264-277. doi: 10.1016/j.joep.2011.10.009

Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. Implementation Science, 6(1), 42. doi: 10.1186/1748-5908-6-42
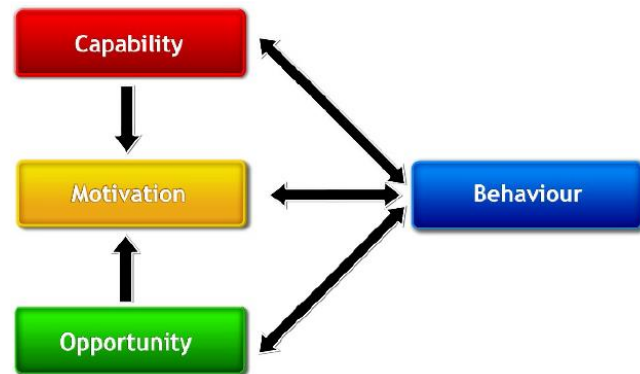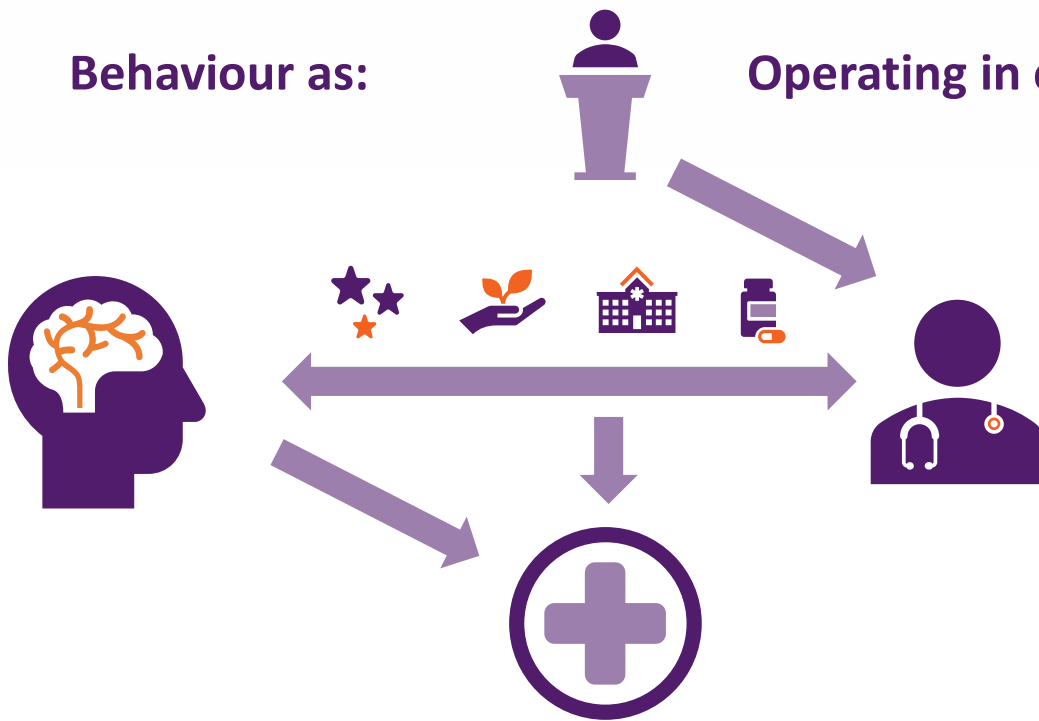
Behaviour as: Response to adversity

Berthe, F. C. J., Wadsworth, J., Thiebaud, A., Marquez, P. V., & Baris, E. (2019). *Pulling together to beat super-bugs: knowledge and implementation gaps in addressing antimicrobial resistance*. Washington, DC: World Bank.

Behaviour as: **Resistance**
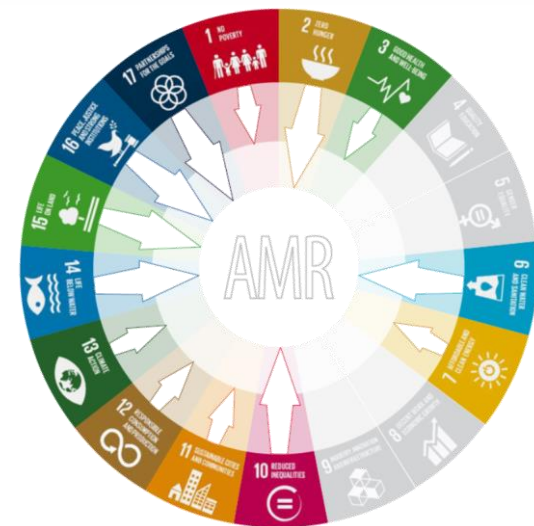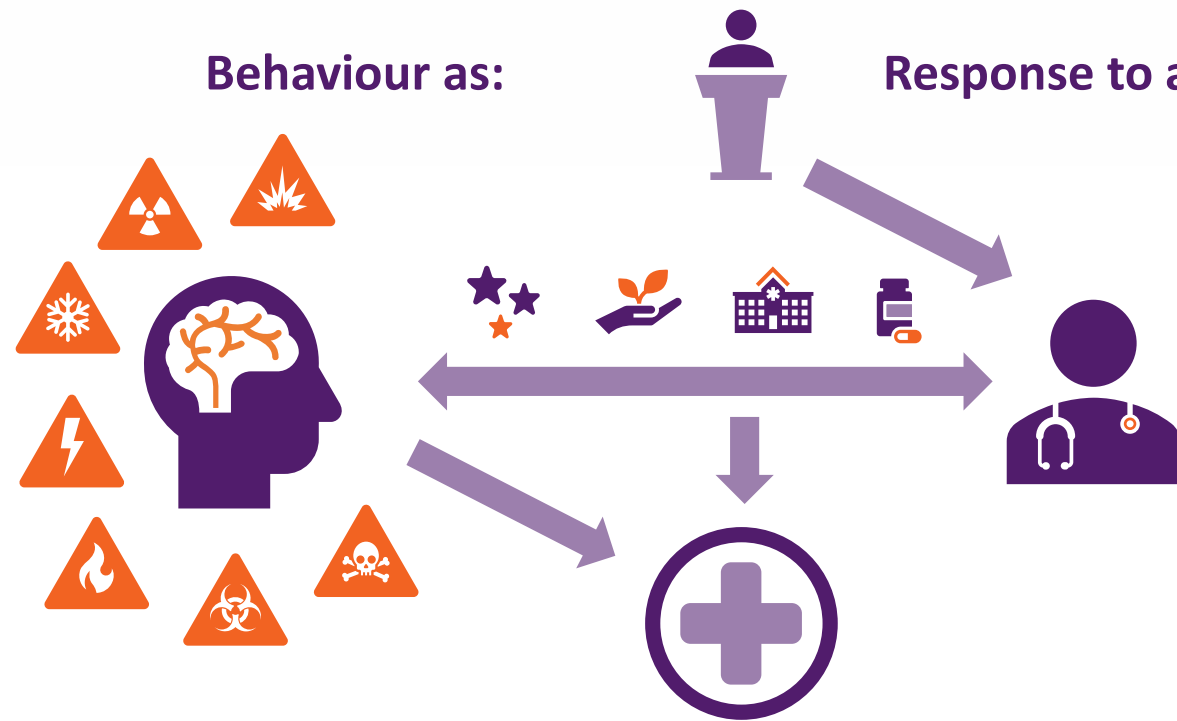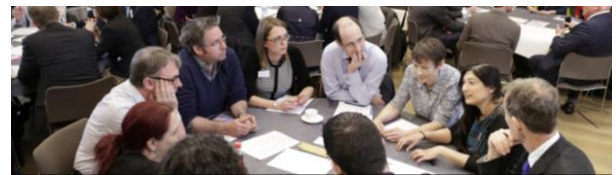
"The goal is not to move people from the bottom of the coin to the top, because both positions are unfair. Rather, the goal is to **dismantle the systems** (i.e., coins) **causing these inequities**." (Nixon, 2019:3)

privilege

Top of the coin
- You have advantage others do not
- You did not earn it
- You have it because of who you happen to be

The coin
- The social structure that produces and maintains inequality
  e.g., sexism, racism, ableism

system of inequality

oppression

Bottom of the coin
- You have disadvantage others do not
- You did not earn it
- You have it because of who you happen to be

https://www.imperial.ac.uk/patient-safety-translational-research-centre/patient--public-involvement/

Nixon, S. A. (2019). The coin model of privilege and critical allyship: implications for health. *BMC Public Health, 19*(1637). doi: 10.1186/s12889-019-7884-9

Hardship: poverty, marginalisation, precarity, stress?

Poverty	Marginality / Marginalisation	Precarity	Stress
• Relative concept • "Being deprived" • Typically considered in one-dimensional terms as monetary poverty • Represents barriers to healthcare access	• Relative concept (static / dynamic) • "Being situated at the social / economic / political / ecological / geographic margins of society" • Intrinsically multi-dimensional	• Absolute concept • "Pernicious self-dependence, undermining control over life & ability to flexibly respond to crises" • Focused on work, but also applies to livelihoods in high-/ middle-/ low-income countries	• Absolute concept • Evidenced to be linked to sub-optimal decision-making processes • Argued to be one main mechanisms underlying precarity (owing to work focus), but similarly applies to experience of poverty

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Study data

Overview of related projects

- **Antibiotics and Activity Spaces**

- The social role of biomarker testing

- Supply-induced demand for antibiotics among marginalised populations

- What if precarity causes drug resistance?

- (Mobile phone diffusion and rural healthcare access in India & China)
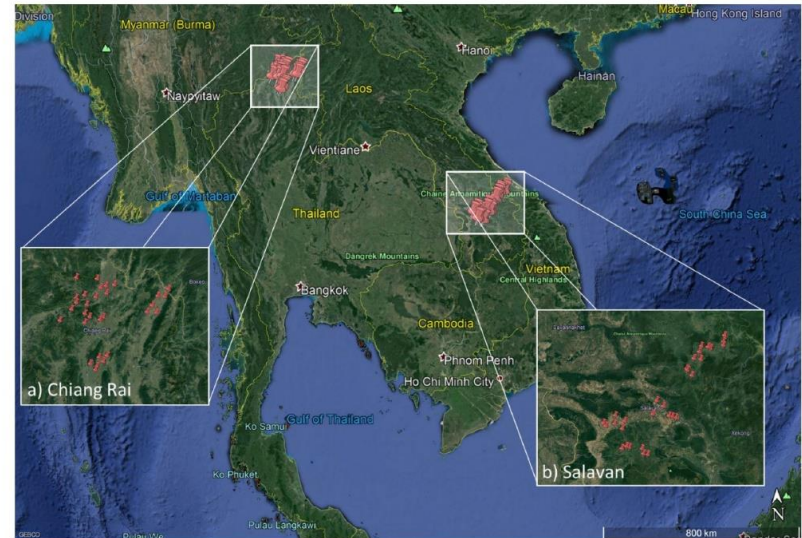
Field sites and sampled villages in Thailand and Lao PDR.

Relevance of Southeast Asia for AMR

- Geographic origin of antimalarial resistance

- Thailand "posterchild" in tackling AMR, but region (incl. TH) persistently labelled hotspot and at "high risk" of AMR

- 110m int'l tourist arrivals, 9% of global int'l air passengers in 2016 – risk of cross-border spread (e.g. multi-drug-resistant *Neisseria gonorrhoeae*)
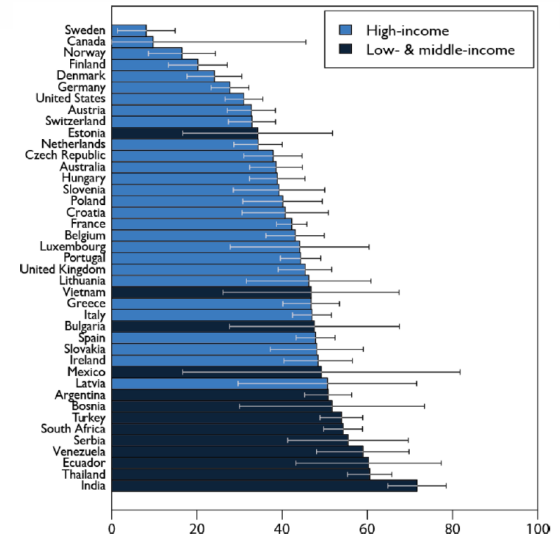
Figure 2 Drug Resistance Index (DRI) across countries.

Klein, E. Y., Tseng, K. K., Pant, S., & Laxminarayan, R. (2019). Tracking global trends in the effectiveness of antibiotic therapy using the Drug Resistance Index. *BMJ Global Health, 4*(2), e001315. doi: 10.1136/bmjgh-2018-001315

Thailand and Lao PDR

	Thailand	Lao PDR	LMIC average
Gross domestic product per capita (US$ in purchasing power parity)	$17,910 (2017)	$7,038 (2017)	$11,013 (2017)
Poverty rate (US$1.90/day, in purchasing power parity)	0% (2017)	23% (2012)	12% (2015)
Poverty rate (US$5.50/day, in purchasing power parity)	8% (2017)	85% (2012)	55% (2015)
Literacy rate (% of adult population)	93% (2015)	85% (2015)	84% (2016)
Mobile phone subscriptions (per 100 people)	176 (2017)	54 (2017)	99 (2017)
Access to at least basic sanitation (% of population)	95% (2015)	73% (2015)	62% (2015)
Total health expenditure (US$ per capita in purchasing power parity)	$635 (2016)	$155 (2016)	$534 (2016)
Out-of-pocket health expenditure (US$ per capita in purchasing power parity)	$77 (2016)	$72 (2016)	$219 (2016)
External health expenditure (US$ per capita in purchasing power parity)	$1 (2016)	$28 (2016)	$7 (2016)
Life expectancy at birth (years)	75 (2017)	67 (2017)	71 (2017)
Under-5 mortality rate (per 1,000 live births)	10 (2017)	63 (2017)	43 (2017)

ITU. (2019). Country ICT data: Mobile-cellular subscriptions. Retrieved May 13, 2019, from International Telecommunication Union Web site: https://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2018/Mobile_cellular_2000-2017_Dec2018.xls
World Bank. (2018). World databank. Retrieved October 4, 2018, from http://databank.worldbank.org/data/home.aspx

Survey research methods

Rural Chiang Rai & Salavan

Representative satellite-aided multi-stage sampling

5,885 survey participants

50 cognitive interviews

Single-/multi-level regression Difference-in-difference analysis

Social network analysis

Qualitative triangulation

Public engagement activities
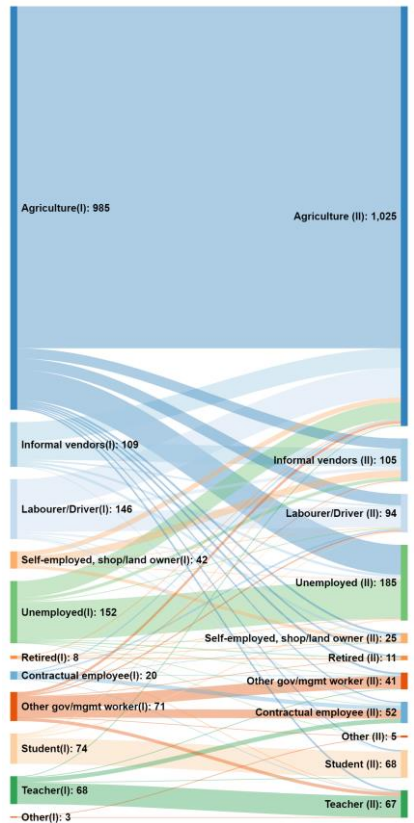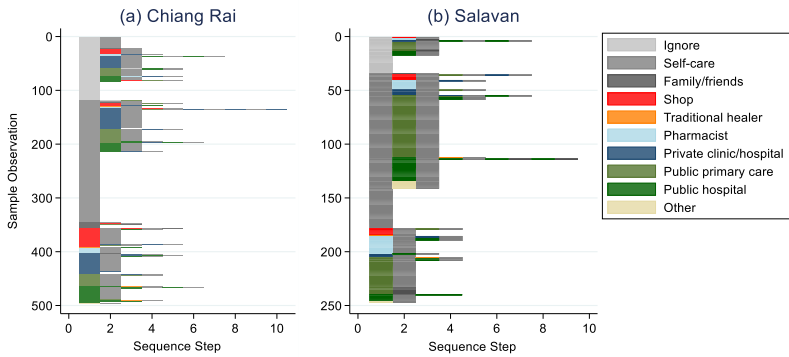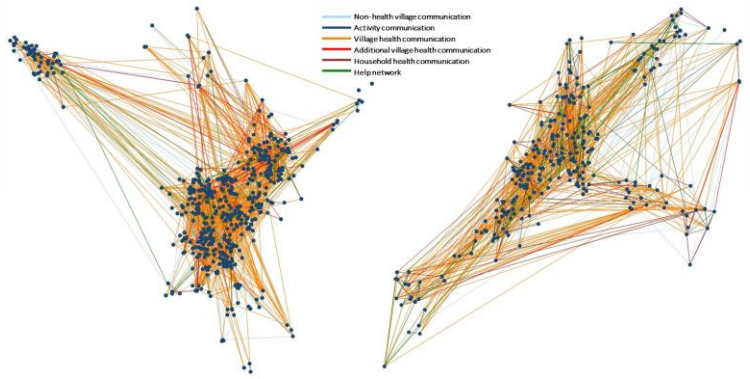
Data
Data
Data

Flow diagram created using *SankeyMATIC:* http://sankeymatic.com/build/

Education

Marginalisation

Precarity

Contextual change

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Education

BMJ Open

Antibiotic knowledge, attitudes and practices: new insights from cross-sectional rural health behaviour surveys in low-income and middle-income South-East Asia

"knowledge of antibiotics was positively associated with antibiotic consumption from private sources in Chiang Rai and from public and informal sources in Salavan"

60 villages
2141 observations
964 illness episodes

Marco J Haenssgen,[1,2,3,4] Nutcha Charoenboon,[5] Giacomo Zanello,[6,7] Mayfong Mayxay,[8,9,10] Felix Reed-Tsochas,[3,4,11] Yoel Lubell,[1,5] Heiman Wertheim,[12,13] Jeffrey Lienert,[3,4,14] Thipphaphone Xayavong,[15,16] Yuzana Khine Zaw,[17] Amphayvone Thepkhamkong,[8] Nicksan Sithongdeng,[8] Nid Khamsoukthavong,[8] Chanthasone Phanthavong,[8] Somsanith Boualaiseng,[8] Souksakhone Vongsavang,[8] Kanokporn Wibunjak,[5] Poowadon Chai-in,[5] Patthanan Thavethanutthanawin,[5] Thomas Althaus,[1,5] Rachel Claire Greer,[5,18] Supalert Nedsuwan,[19] Tri Wangrangsimakul,[18,20] Direk Limmathurotsakul,[20] Elizabeth Elliott,[21,22] Proochista Ariana[1]

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a) Commonly mentioned names for antibiotics

Chiang Rai: Anti-inflammatory medicine, Germ killer, Antibiotic (official term), "Hero" (Heromycin) / TC-Mycin, "Corlam" (Chloramphenicol), Capsule medicine, Pain reliever, "Amoxi" / "Moxi" (Amoxicillin), "Ampi" (Ampicillin), "Peni" (Penicillin), "Tetra" (Tetracycline), "Para" (Paracetamol) / Sara / Tiffy, Other names, "Don't know"

Salavan: "Ampi" (Ampicillin), Antibiotic (official term), "Amok" / "Moxi" (Amoxicillin), "Tetra" (Tetracycline), "Gulolam" (Chloramphenicol), "Sepasin" (Cephalexin), "Peni" (Penicillin), "Para" (Paracetamol) / Veracold, Pain reliever, "Hero" (Heromycin), Anti-inflammatory medicine, Capsule medicine, Other names, "Don't know"

b) Commonly mentioned purposes for antibiotics

Chiang Rai: Sore throat, External wounds, Inflammation, Muscle pain, body aches, Cough, Whatever the doctor suggests, Fever, Cold, flu, runny nose, Stomach conditions, Fighting infections / germs, Non-human use (plants, animals), Skin conditions, Headaches, migraine, Diarrhoea, Other, "Don't know"

Salavan: External wounds, Cough, Fever, Sore throat, Stomach conditions, Cold, flu, runny nose, Inflammation, Headaches, migraine, Muscle pain, body aches, Skin conditions, Diarrhoea, Whatever the doctor suggests, Fighting infections / germs, Non-human use (plants, animals), Other, "Don't know"

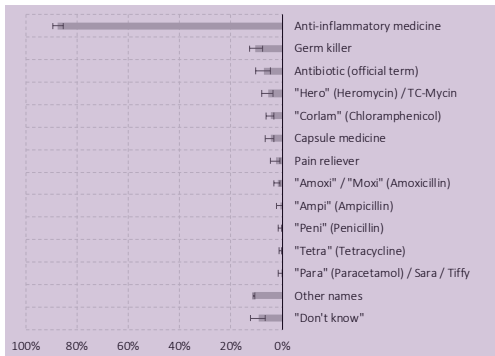Percent of rural population who recognised antibiotics

Education

Fragmented notions of antibiotics & drug resistance **complicate awareness raising**

N = 1851. including respondents who indicated that they had seen the presented medicine (i.e. common antibiotics) before. Population-weighted statistics. Multiple response permitted. Error bars indicate 95% confidence interval

a) Commonly mentioned names for antibiotics

Chiang Rai

- Anti-inflammatory medicine
- Germ killer
- Antibiotic (official term)
- "Hero" (Heromycin) / TC-Mycin
- "Corlam" (Chloramphenicol)
- Capsule medicine
- Pain reliever
- "Amoxi" / "Moxi" (Amoxicillin)
- "Ampi" (Ampicillin)
- "Peni" (Penicillin)
- "Tetra" (Tetracycline)
- "Para" (Paracetamol) / Sara / Tiffy
- Other names
- "Don't know"

Salavan

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- "Gulolam" (Chloramphenicol)
- "Sepasin" (Cephalexin)
- "Peni" (Penicillin)
- "Para" (Paracetamol) / Veracold
- Pain reliever
- "Hero" (Heromycin)
- Anti-inflammatory medicine
- Capsule medicine
- Other names
- "Don't know"

b) Commonly mentioned purposes for antibiotics

Chiang Rai

- Sore throat
- External wounds
- Inflammation
- Muscle pain, body aches
- Cough
- Whatever the doctor suggests
- Fever
- Cold, flu, runny nose
- Stomach conditions
- Fighting infections / germs
- Non-human use (plants, animals)
- Skin conditions
- Headaches, migraine
- Diarrhoea
- Other
- "Don't know"

Percent of rural population who recognised antibiotics

Salavan

- External wounds
- Cough
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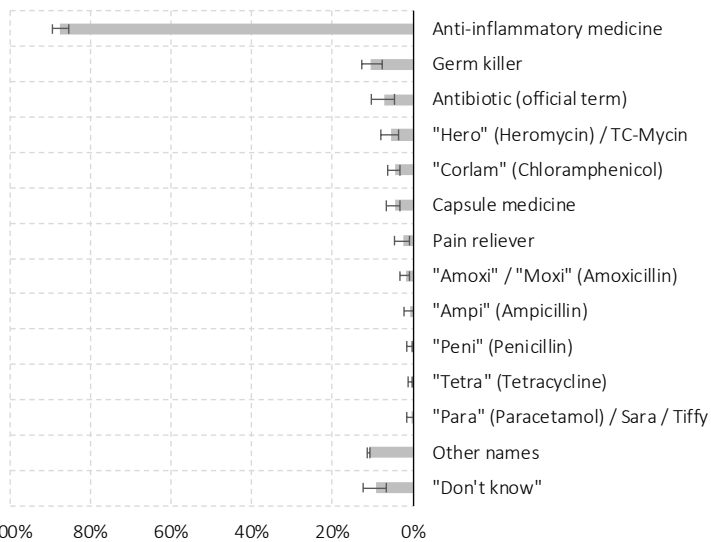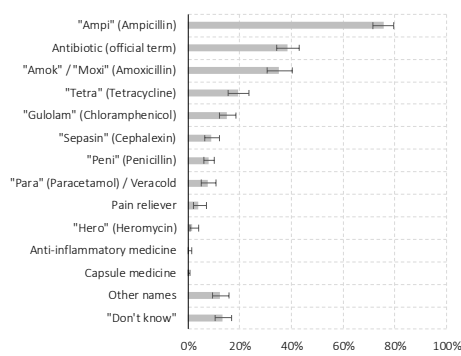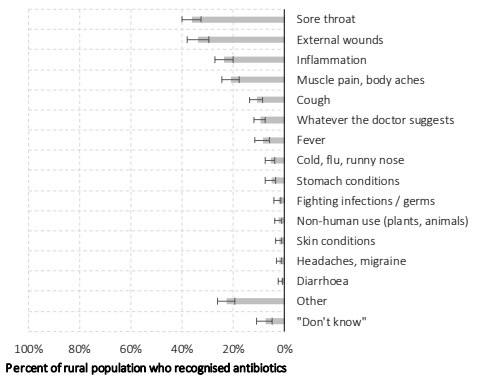
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a) Commonly mentioned names for antibiotics

Chiang Rai
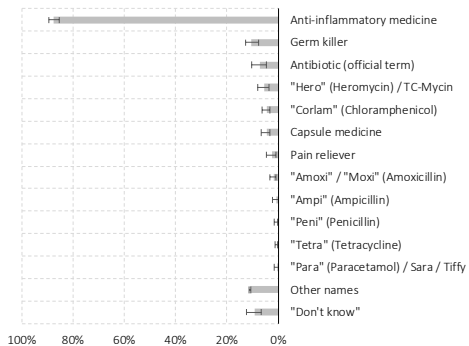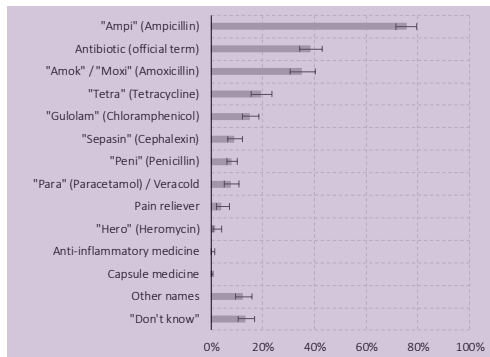
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- "Tetra" (Tetracycline)
- "Para" (Paracetamol) / Sara / Tiffy
- Other names
- "Don't know"

100% 80% 60% 40% 20% 0%

Salavan

- "Ampi" (Ampicillin)
- Antibiotic (official term)
- "Amok" / "Moxi" (Amoxicillin)
- "Tetra" (Tetracycline)
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0% 20% 40% 60% 80% 100%

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b) Commonly mentioned purposes for antibiotics

Chiang Rai

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- Stomach conditions
- Fighting infections / germs
- Non-human use (plants, animals)
- Skin conditions
- Headaches, migraine
- Diarrhoea
- Other
- "Don't know"

100% 80% 60% 40% 20% 0%

Percent of rural population who recognised antibiotics

Salavan

- External wounds
- Cough
- Fever
- Sore throat
- Stomach conditions
- Cold, flu, runny nose
- Inflammation
- Headaches, migraine
- Muscle pain, body aches
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0% 20% 40% 60% 80% 100%

Percent of rural population who recognised antibiotics

N = 1851. including respondents who indicated that they had seen the presented medicine (i.e. common antibiotics) before. Population-weighted statistics. Multiple response permitted. Error bars indicate 95% confidence interval

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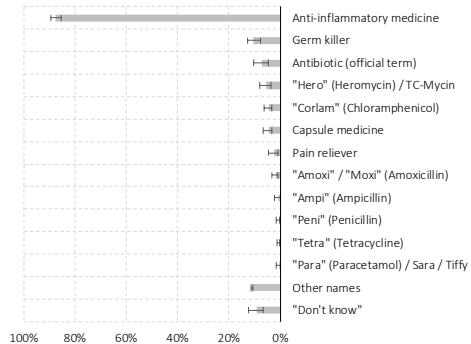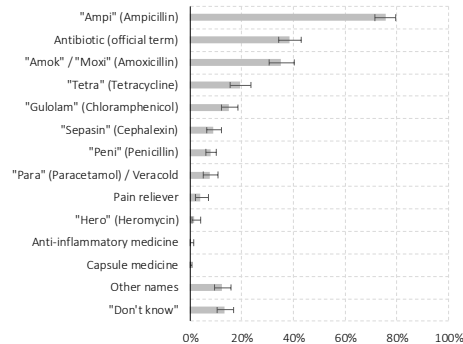
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b) Commonly mentioned purposes for antibiotics

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- Non-human use (plants, animals)
- Skin conditions
- Headaches, migraine
- Diarrhoea
- Other
- "Don't know"

Percent of rural population who recognised antibiotics

Salavan:
- External wounds
- Cough
- Fever
- Sore throat
- Stomach conditions
- Cold, flu, runny nose
- Inflammation
- Headaches, migraine
- Muscle pain, body aches
- Skin conditions
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Percent of rural population who recognised antibiotics

(right chart):
- Sore throat
- External wounds
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a) Commonly mentioned names for antibiotics

Chiang Rai
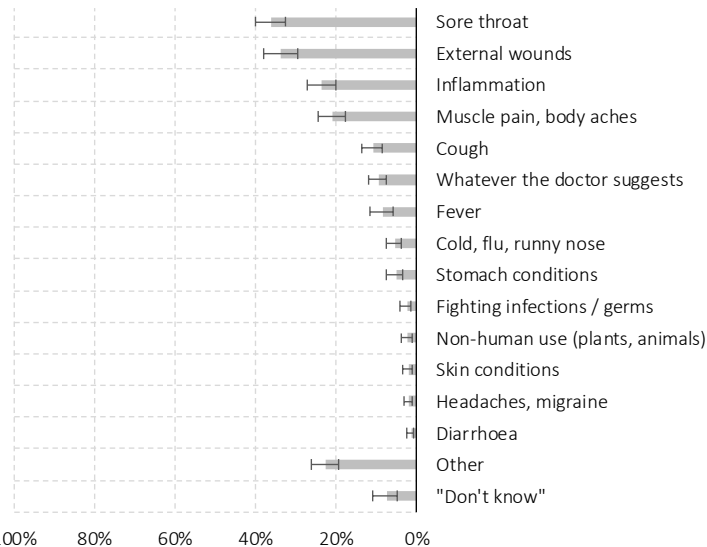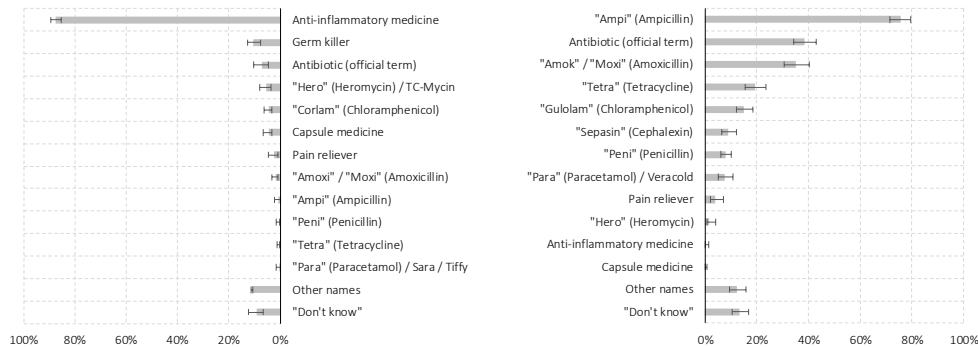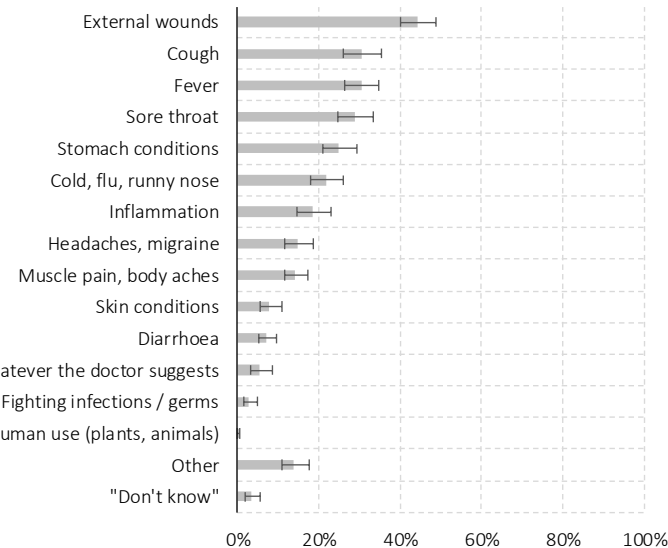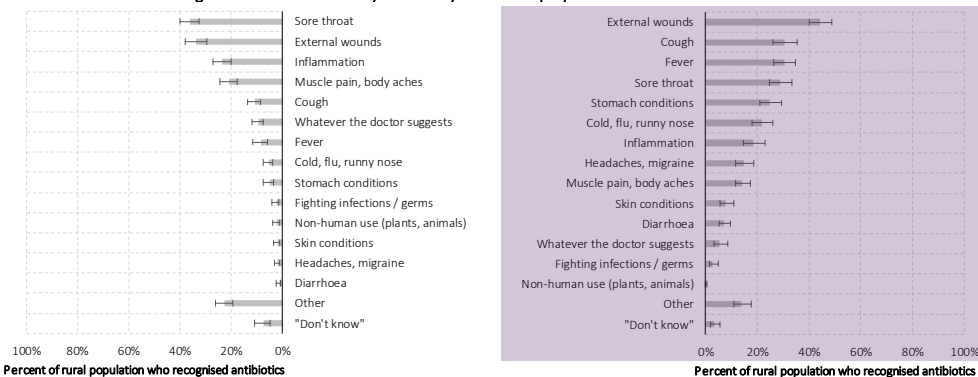
- Anti-inflammatory medicine
- Germ killer
- Antibiotic (official term)
- "Hero" (Heromycin) / TC-Mycin
- "Corlam" (Chloramphenicol)
- Capsule medicine
- Pain reliever
- "Amoxi" / "Moxi" (Amoxicillin)
- "Ampi" (Ampicillin)
- "Peni" (Penicillin)
- "Tetra" (Tetracycline)
- "Para" (Paracetamol) / Sara / Tiffy
- Other names
- "Don't know"

Salavan

- "Ampi" (Ampicillin)
- Antibiotic (official term)
- "Amok" / "Moxi" (Amoxicillin)
- "Tetra" (Tetracycline)
- "Gulolam" (Chloramphenicol)
- "Sepasin" (Cephalexin)
- "Peni" (Penicillin)
- "Para" (Paracetamol) / Veracold
- Pain reliever
- "Hero" (Heromycin)
- Anti-inflammatory medicine
- Capsule medicine
- Other names
- "Don't know"

b) Commonly mentioned purposes for antibiotics

Chiang Rai

- Sore throat
- External wounds
- Inflammation
- Muscle pain, body aches
- Cough
- Whatever the doctor suggests
- Fever
- Cold, flu, runny nose
- Stomach conditions
- Fighting infections / germs
- Non-human use (plants, animals)
- Skin conditions
- Headaches, migraine
- Diarrhoea
- Other
- "Don't know"

Percent of rural population who recognised antibiotics

Salavan

- External wounds
- Cough
- Fever
- Sore throat
- Stomach conditions
- Cold, flu, runny nose
- Inflammation
- Headaches, migraine
- Muscle pain, body aches
- Skin conditions
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- Other
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Percent of rural population who recognised antibiotics

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- Skin conditions
- Diarrhoea
- Whatever the doctor suggests
- Fighting infections / germs
- Non-human use (plants, animals)
- Other
- "Don't know"

N = 1851. including respondents who indicated that they had seen the presented medicine (i.e. common antibiotics) before. Population-weighted statistics. Multiple response permitted. Error bars indicate 95% confidence interval

Antibiotic use episodes across field sites and channels of antibiotics access, by attitude towards buying over-the-counter antibiotics
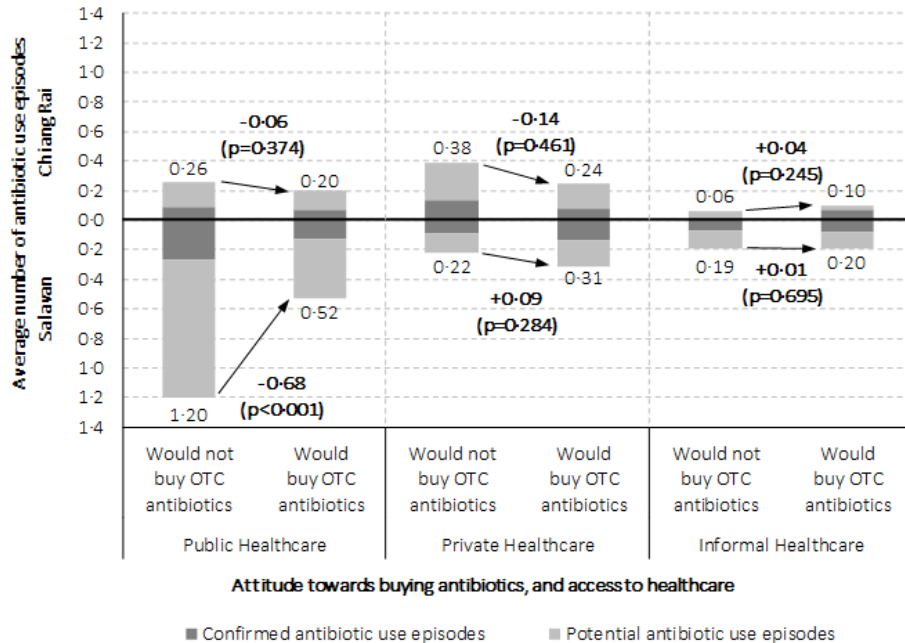
N = 964. Population-weighted statistics. Group comparison using Wilcoxon rank-sum tests. Arrows illustrate differences and do not imply a causal relationship. OTC=over-the-counter.

Education

Fragmented notions of antibiotics & drug resistance **complicate awareness raising**

Ambiguous links between antibiotic use and education / attitudes **undermine campaign logic**

Marginalisation

60 villages
2141 observations
964 illness episodes

You've Got a Friend in Me: How Social Networks and Mobile Phones Facilitate Healthcare Access Among Marginalised Groups in Rural Thailand and Lao PDR

Work in progress

Marco J HAENSSGEN [a, b, f, *]
Nutcha CHAROENBOON [c, g]
Giacomo ZANELLO [d, e, h]

"disproportionate uptake of public healthcare among marginalised groups with social and mobile phone support"

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Social		Economic	Spatial	
Education	Ethnicity	Household wealth	Travel time	Remoteness

Marginalisation

(using a 5-dimensional index)

Marginalisation is **common**

Graphs by Field Site

Chiang Rai — Salavan

Fraction of Villages / Marginalisation Index
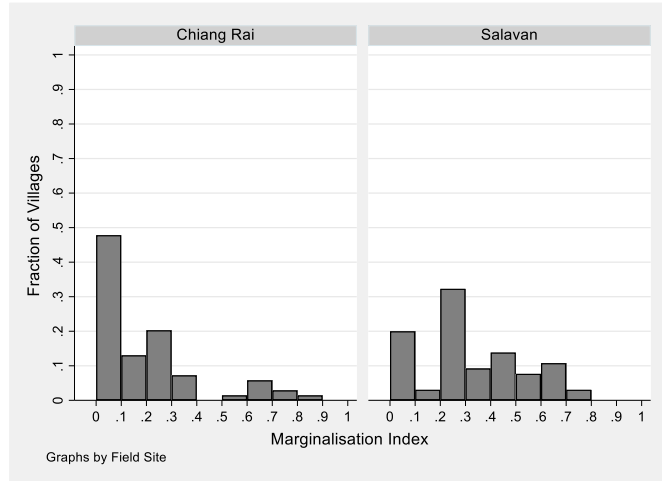
N = 134 (administrative villages). Population-weighted statistics.
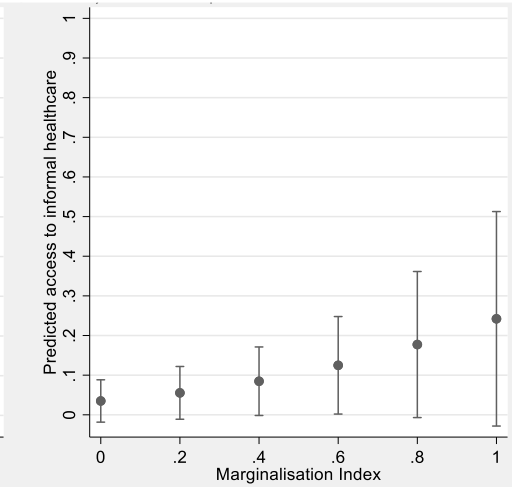
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Private healthcare   Informal healthcare

(Salavan)

N = 964. Predicted results. Error bars indicating 95% confidence interval.

Marginalisation

Marginalisation is **common**

M linked to **lower private** and **higher public** healthcare

Public healthcare | Private healthcare | Informal healthcare
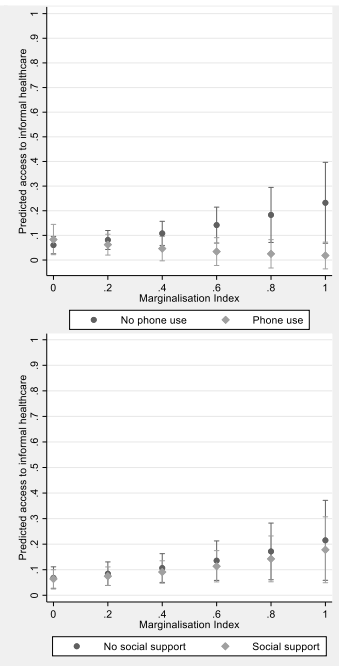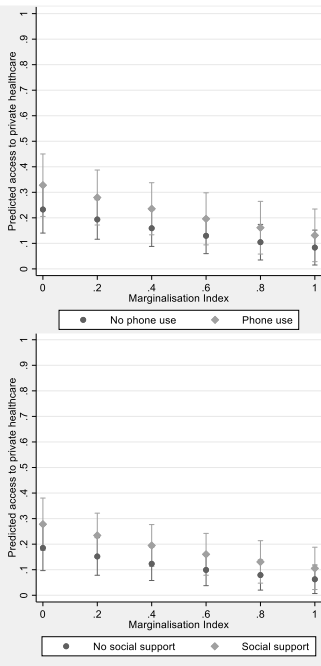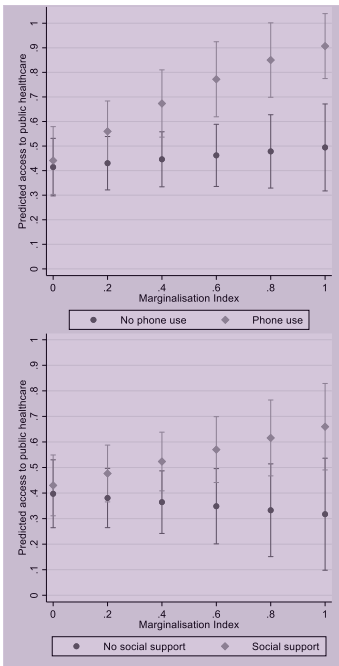
Mobile phones

Social support

Marginalisation

Marginalisation is **common**

M linked to **lower private** and **higher public** healthcare

Tech and social support linked to **higher public healthcare access** for M'ed groups

N = 964. Predicted results. Error bars indicating 95% confidence interval.
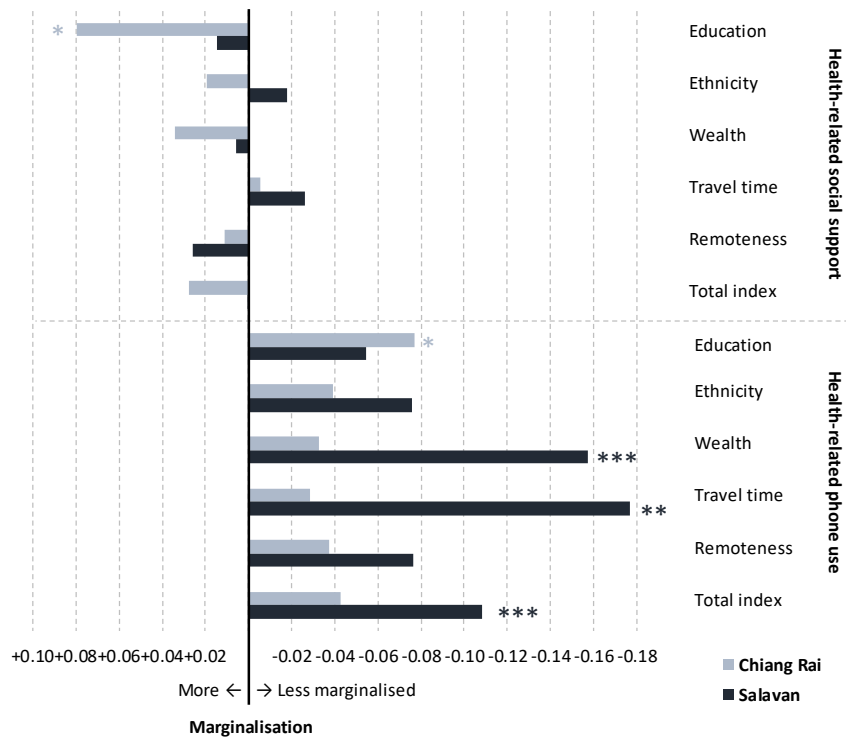
Marginalisation

Marginalisation is **common**

M linked to **lower private** and **higher public** healthcare

Tech and social support linked to **higher public healthcare access** for M'ed groups

But: **inequitable** phone uptake

N = 964. Population-weighted statistics. Hypothesis tests using Pearson X^2 tests for binary variables and two-sided *t*-tests for total marginalisation index. *p < 0.1, **p < 0.05, ***p < 0.01.

Precarity

5 villages
1421 illness episodes

Precarity and clinical determinants of health behaviour and antibiotic use in Southeast Asia

Work in progress

Marco J HAENSSGEN [a, b, f, *]

Nutcha CHAROENBOON [c, g]

Thomas ALTHAUS [d, e, h]

"patients experiencing precarity were significantly more likely to engage in clinically sub-optimal forms of antibiotic use in the presence of situational facilitators"

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- Healthcare access
- Informal healthcare
- Antibiotic use
- Clinically inadvisable access
- Clinically inadvisable antibiotic use

Outcomes

- Infection
- Respiratory symptoms
- Common cold
- Fever
- Neurological sympt.
- Digestive presentation
- Uro-gynaecol. sympt.
- Traumatism

Clinical presentation

- Insecure income
- Inflexible work
- No adults in HH
- No health social network
- No HH mobile phone
- No advanced motor transport

Precarity

- No formal education
- Minority ethnicity
- Bottom 20% wealth

Marginalisation

- Social support
- Any phone use
- Advanced motor transport

Facilitation (during illness)

- Illness severity/duration
- Illness of child/adult
- Sex of respondent
- Distance to formal care

Other controls

Precarity

(using a 6-dimensional index)

Precarity among **clinical** factors, **marginalisation**, **facilitators**
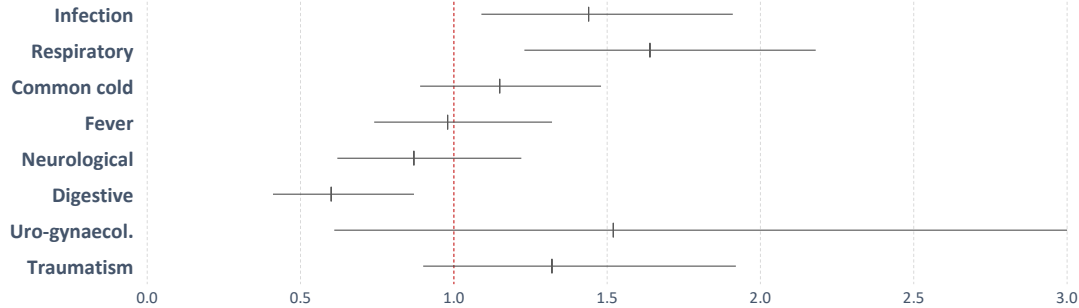
Any formal or informal healthcare access during illness episode
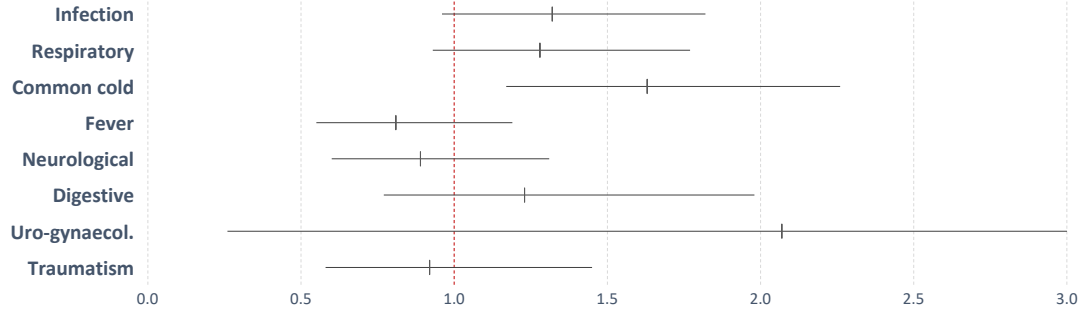
(forest plot with categories: Infection, Respiratory, Common cold, Fever, Neurological, Digestive, Uro-gynaecol., Traumatism; x-axis 0.0 to 3.0)

At least one antibiotic use episode during illness

(forest plot with categories: Infection, Respiratory, Common cold, Fever, Neurological, Digestive, Uro-gynaecol., Traumatism; x-axis 0.0 to 3.0)

N = 1421. Adjusted odds ratio with 95% confidence intervals, controlling for marginalisation, facilitation, field site, and other control variables.
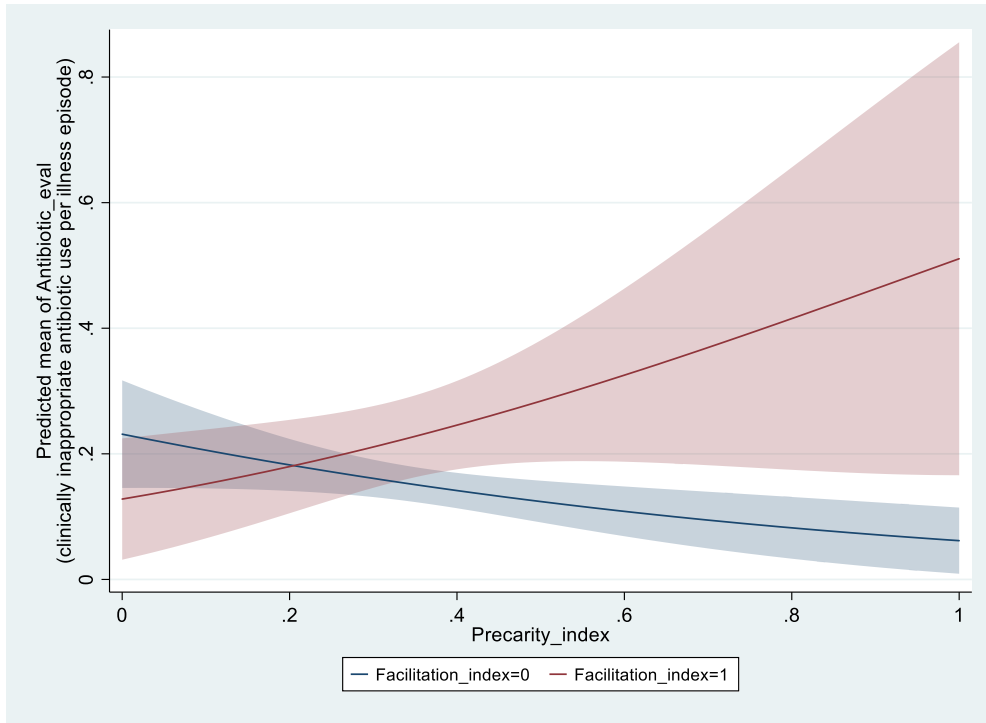
Precarity

Precarity among **clinical** factors, **marginalisation**, **facilitators**

Antibiotics linked to **infections** and **respiratory symptoms**

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Predicted mean of Antibiotic_eval (clinically inappropriate antibiotic use per illness episode) plotted against Precarity_index, with lines for Facilitation_index=0 and Facilitation_index=1.

Precarity

Precarity among **clinical** factors, **marginalisation**, **facilitators**

Antibiotics linked to **infections** and **respiratory symptoms**

Clinically inappropriate AB use driven by **situational facilitators in presence of precarity**

N = 1421. Predicted and interpolated results, controlling for marginalisation, clinical determinants, field site, and other control variables. Shaded areas indicate 95% confidence intervals.

Contextual change

"the process of digital inclusion delivers tools that intensify the competition for scarce healthcare resource among deprived populations"

Rural India wide
2005 – 2012
24,006 observations

The struggle for digital inclusion: Phones, healthcare, and marginalisation in rural India
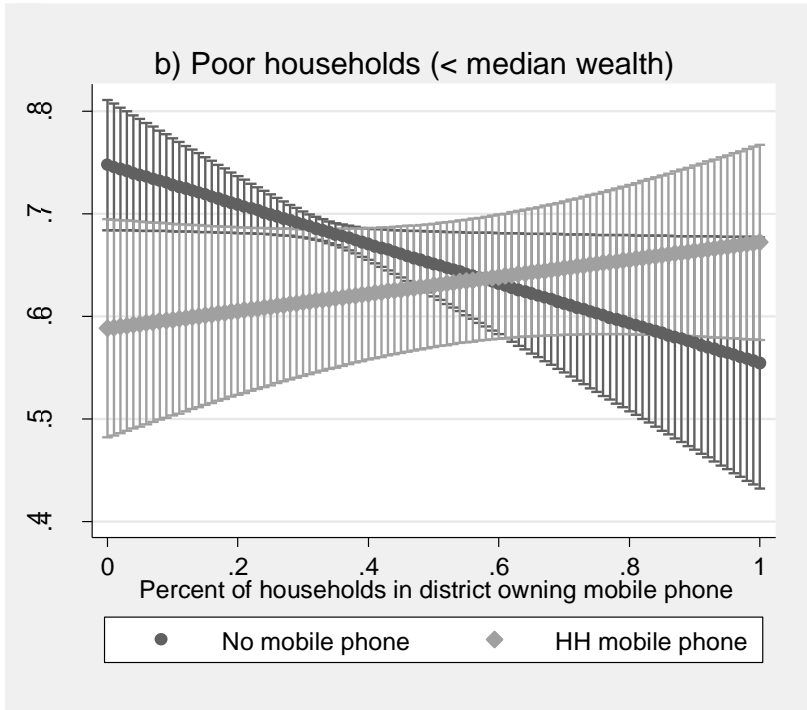
Marco J. Haenssgen [a,b,c,d,*]

97 villages
6683 observations
3056 illness episodes

What Global Health Policy can Learn From Strategic Management: Tackle Antimicrobial Resistance

Work in progress

Marco J HAENSSGEN [a, b, c, *]

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b) Poor households (< median wealth)

Percent of households in district owning mobile phone

● No mobile phone   ◆ HH mobile phone

Contextual change

Tech diffusion **raises healthcare barriers** for excluded segments.

N = 24,006. Predicted relationship between district-level phone diffusion, household phone ownership, and private healthcare access.
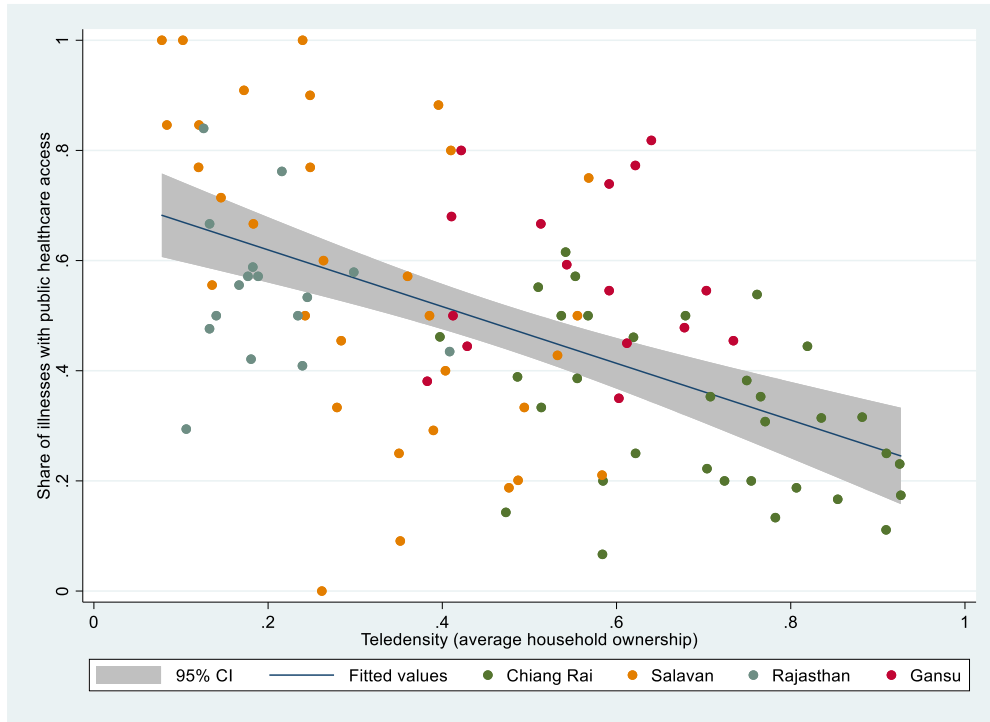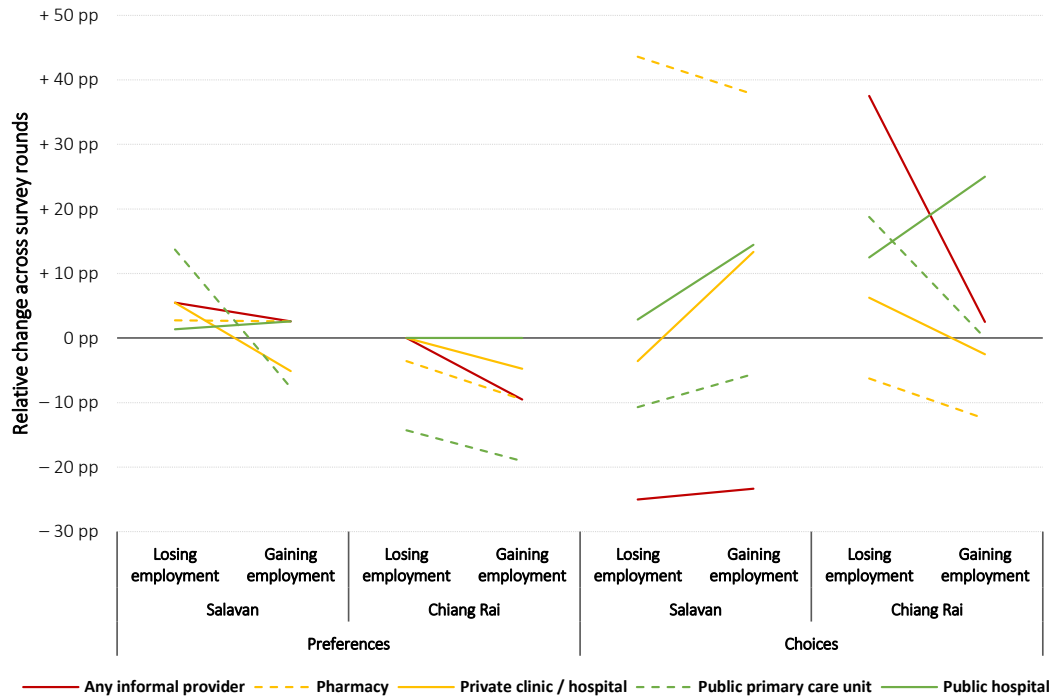
N = 97. Trendline indicating linear fit with 95% confidence interval in grey. Data aggregated from 3056 illness episodes across all field sites.

Contextual change

Tech diffusion **raises healthcare barriers** for excluded segments.

Widespread **phone use** links to **lower public healthcare** access.

N = 876. Period change compared across people who lost and gained employment.

Contextual change

Tech diffusion **raises healthcare barriers** for excluded segments.

Widespread **phone use** links to **lower public healthcare** access.

Job loss raises demand for healthcare but pushes people **away from hospitals**, towards primary & informal providers.

Policy implications

Summary
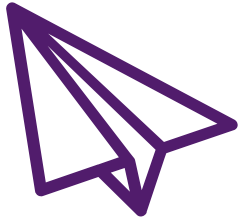
"Massive awareness campaigns" speak to **a fraction of health behaviours**

Ungoverned **contextual change** entails unforeseeable & potentially **problematic health behaviour**

Health policy alone is **unable to solve contextual drivers of AMR**

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So what?

Understand the drivers of human behaviour before trying to alter them.

- Steer away from **neo-colonial and elitist** interventions by checking your privilege and taking local populations serious

- Involve local social scientists and development workers to **understand health behaviours**

- Consciously **avoid biased interventions** (urban bias, modernisation bias, knowledge deficit assumptions)

Explore the role of AMR-sensitive interventions as health policy alternative.

- **Social and labour protection schemes** (e.g. sick leave) could alleviate pressure to depend on "quick fix" pharmaceuticals

- **Access to finance** (e.g. cash transfer programmes) could help overcome healthcare access constraints

- **Community outreach** through development organisations could help to ground interventions in local context

We don't know nearly enough about AMR!

Opportunities for future research

Opportunities for future research

Ethnography
- Conceptual development of "precarity" across contexts
- Gradual transformation of livelihoods
- Lived experiences of various dimensions of precarity, both on the side of patients and healthcare providers

Longitudinal secondary data analyses
- Macro-level relationship between contextual change that mitigates/reinforces precarious livelihoods and aggregate health behaviours / outcomes
- E.g. event study of sub-national labour law impacts on aggregate antibiotic consumption

Observational mixed-method research
- Documenting (on the micro level) the complex treatment-seeking behaviours; gradual and seasonal fluctuations in social structure, livelihoods, community interactions, and their relationship to behaviours; evolving patient – provider interactions

Experimental / intervention research
- Micro-level relationship between (health) policy and behavioural outcomes
- Community-level development interventions and their impact on precarity and behaviour, even if this impact is not originally intended

Evaluation research
- Broaden knowledge base on limitations and unintended consequences of knowledge-deficit approaches
- Use balanced and transparent evaluation criteria: from effectiveness and efficiency towards broader impact, relevance, coherence, and sustainability of health action

Thank you.

Questions?

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Web: http://warwick.ac.uk/mjhaenssgen

Dr Marco J Haenssgen | University of Warwick | 02 June 2020

Backup: Survey data overview

Country	Survey design	Villages	Respondents	Illness episodes	Degree of representation
1. China	3-stage cluster random sample (09-10/14)	16	400	356	Rural Gansu province, 2 districts (2,700,000 adults)
2. India	3-stage cluster random sample (08-09/14)	16	398	315	Rural Rajasthan state, 2 districts (1,900,000 adults)
3. Lao PDR	3-stage cluster random sample (02-05/18)	30	983	356	Rural Salavan province (190,000 adults)
4. Thailand	3-stage cluster random sample (12/17-03/18)	30	1,158	608	Rural Chiang Rai province (522,000 adults)
5. Lao PDR	2-round census survey (12/17-02/18 & 03-05/18)	2	2,480	796	All adult members of 2 villages (1,342 adults)
6. Thailand	2-round census survey (11-12/17 & 03-04/18)	3	1,264	625	All adult members of 2 villages (694 adults)
Total		**97**	**6,683**	**3,056**	

Graphs by Survey Site
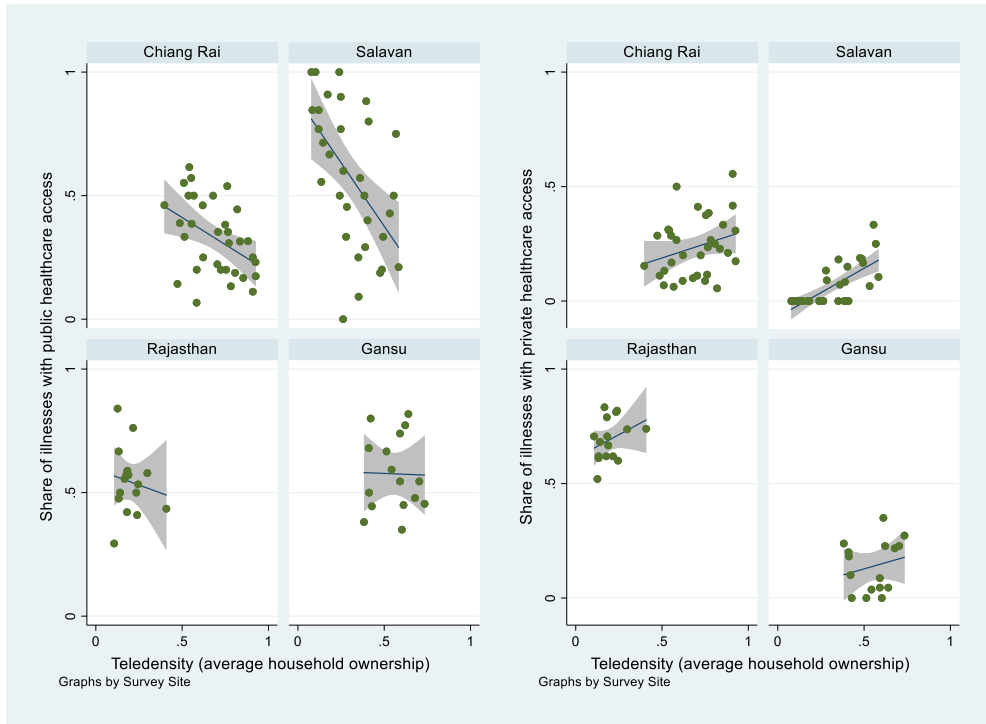
Backup: Contextual change

Whereas public healthcare access and village-level mobile phone diffusion were linked negatively in most field sites, private healthcare access had a mildly positive association with phone diffusion.

N = 97. Trendline indicating linear fit with 95% confidence interval in grey. Data aggregated from 3056 illness episodes across all field sites.