Influencing Antibiotic Prescribing Behavior: Inpatient Settings

Julia E. Szymczak, PhD
Assistant Professor
Department of Epidemiology, Biostatistics and Informatics
Division of Infectious Diseases
Center for Health Incentives and Behavioral Economics
Perelman School of Medicine

Penn
University of Pennsylvania

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Disclosures

- I have no financial relationships to disclose in relation to this presentation

Objectives

- To explain what it means to take a sociological approach to studying antibiotic prescribing and stewardship
- To state what we know about the social determinants of antibiotic prescribing in inpatient settings and how this knowledge can be used to inform stewardship
- To identify gaps in knowledge that should be addressed in future research

Why think of antibiotic stewardship as a *sociological* endeavor?

"Our hospital leaders are always looking for an IT fix, you know, let's have a pop-up box or let's make it so the patient can't be transferred out of the unit until there is a stop date for the antibiotic. They are looking for this foolproof technological system. And yes, that is important, but ***I think we need to start focusing more on how we communicate this information, which is not something we were trained to do or even know much about.*** *I think* ***stewardship suffers from heavy-handed mannerisms****, like* ***'here come the antibiotic police.'*** *We need to change that perception…****we need to become great ambassadors.*** *We can't just be nagging, or clicking boxes, or forcing a pop up box.* ***We have to empower and engage prescribers.*** *It's not about nagging; it's about good news. "I'm giving you great skills. This will make your life easier. I'm empowering you."* ***We need guidance on how to engage and convince better to change behavior.****"*

-Excerpt from an interview with an ID physician at a community hospital
(Szymczak, Gerber & Hamilton study in progress)

A Sociologist Sees The Hospital as a Small Society

Charles Drew teaching interns and residents at Freedmen's Hospital in Washington, DC, 1947

- Behavior in healthcare organizations shaped by social dynamics of groups[1,2,3]
  - Conflict
  - Status inequality
  - Face-saving and emotion management
  - Identity work
  - Hierarchies
- Medical and healthcare workplaces have distinct cultures that shape decision making and behavior[4]

(1) Becker et al. 1961 *Boys in White*, (2) Bosk 1979 *Forgive and Remember*, (3) Freidson 1970 *The Profession of Medicine*, (4) Heimer & Staffen 1998 *For the Sake of the Children*

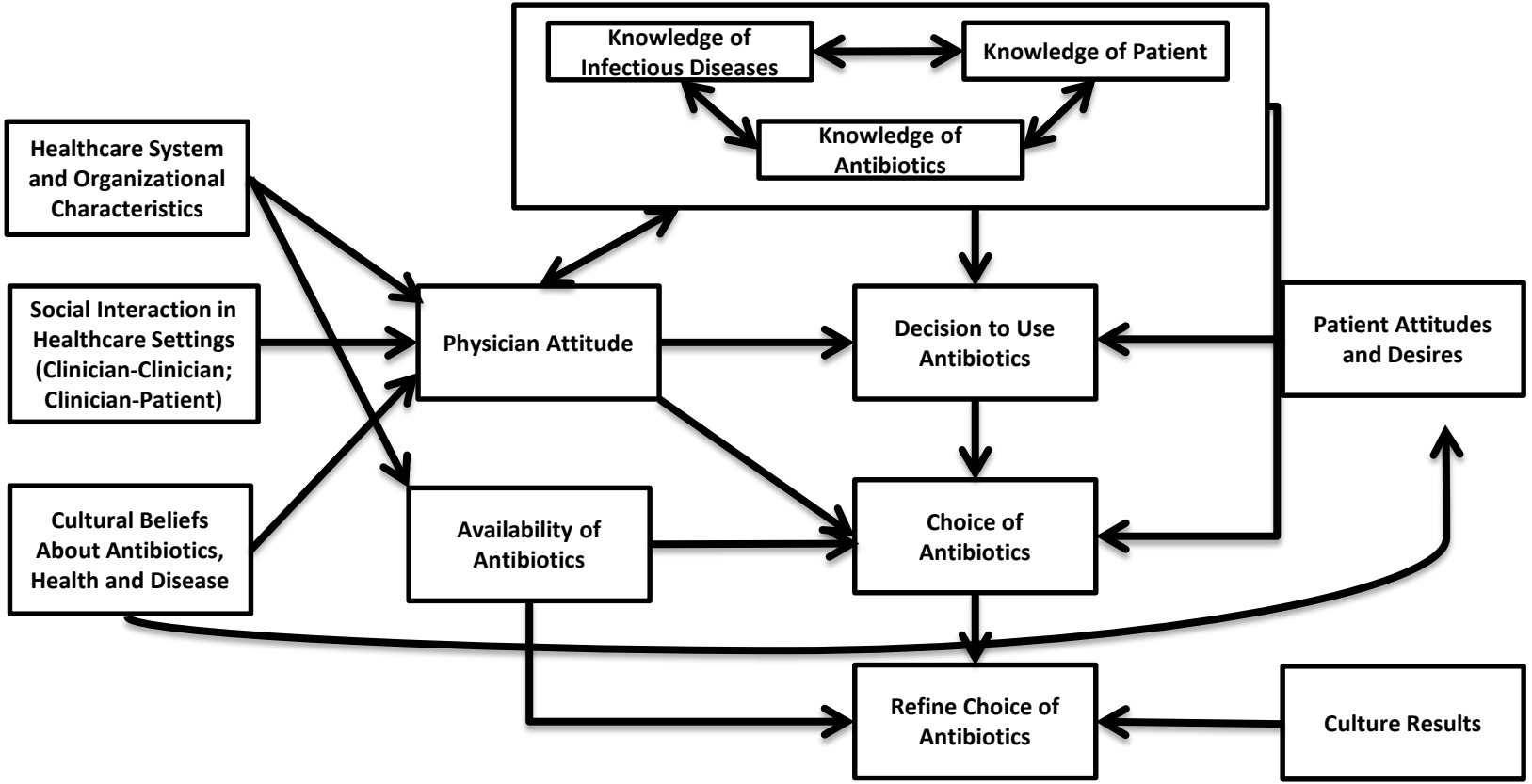
Antibiotic Stewardship and Behavior Change

- Antibiotic Stewardship interventions use different strategies (both persuasive and restrictive) to **change the prescribing behaviors** of frontline clinicians[1]
  - Education
  - Audit and Feedback
  - Restricted Formularies
  - Prior Approval

- Prescribing behavior is a complex, multifactorial process

(1) Davey et al. Cochrane database of systematic reviews 2017;2.

Conceptual Framework for Antibiotic Use



Adapted from Fishman, N. 2006. “Antimicrobial Stewardship” AJIC. 34(5)S1: S55-63.

Social Determinants of Antibiotic Prescribing in Inpatient Settings

- Emerging literature identifies factors that drive antibiotic prescribing decisions **beyond clinician knowledge** of appropriate practice or **medical need**

- Medical sociologists and anthropologists have long-identified that prescribing a drug is **a highly social as well as clinical act**[1, 2]

(1) van der Geest et al. Ann Rev Anthropology 1996 (25): 153-178. (2) Szymczak and Newland, "The Social Determinants of Antimicrobial Prescribing," Forthcoming in *SHEA Practical Implementation of an Antimicrobial Stewardship Program*

1.) Relationships Between Clinicians

- "Prescribing etiquette"[1, 2, 3]
  - Strong **norm of noninterference**[2, 4]
- Role of hierarchy
  - Junior physicians defer to attendings[5, 6]
- Opinion of senior colleagues and social networks[7] more influential than guidelines
  - Variation in attitudes by medical specialty[8]

(1) Charani et al. CID 2013:57, (2) Lewis et al. J R Soc Med 2009:102, (3) Armstrong et al. Soc Health Ill 2006:28, (4) Livorsi et al. ICHE 2015:36, (5) DeSouza et al. J Antimicrob Chemother 2006:58, (6) Charani et al. CID 2013:57, (7) Grant et al. Imp Sci 2013:8, (8) Cortoos et al. J Antimicrob Chemother 2008:62

2.) Risk, Fear, Anxiety and Emotion

- Perception that risk of under-treating > individual patient risk from receiving unnecessary antibiotics[1,2]
  - Adverse effects have limited impact on decision-making[3]
  - Broad spectrum antibiotics feel “safe,” overarching goal is “preventing disaster in next 24 hours”[4]
- Emotional desire to provide all immediate therapeutic options regardless of wider population consequences[5]

(1) May et al. ICHE 2014:35, (2) Bjorkman et al. Qual Saf Health Care 2010:19, (3) Livorsi et al. ICHE 2015: 36, (4) Laake et al. IDWeek 2013, (5) Broom et al. Soc Sci Med 2014:110

3.) (Mis)Perception of the Problem

- Survey research finds that clinicians perceive antibiotic overuse is a problem generally, but not locally[1,2,3,4,5]
- Exceptionalism[6]
  - Guidelines do not apply to my patients
  - My past experience and expertise trump guidelines[7]
  - Guidelines are “academic” and are not always practical in application[8]
  - Disbelief that one overprescribes[3,5]

(1) Giblin et al. Arch Intern Med 2004:164, (2) Wood et al. J Antimicrob Chemother 2013:68, (3) Abbo et al. ICHE 2011 32(7): 714-718, (4) Stach et al. JPIDS 2012 1(3):190-7, (5) Szymczak et al. ICHE 2014:35, (6) Charani et al. CID 2013:57; (7) Grant et al. Impl Sci 2013 8(72)

4.) Contextual and Environmental Factors

- Time pressures
  - Pressure to discharge quickly discourages a “watch and wait” approach[1]
- Competing priorities – patient satisfaction scores[2]
- Time of day[3]
  - Decision fatigue – erosion of self control over time (tired, hungry, etc.) – GPs make more inappropriate decisions later in the day

(1) Avorn et al. Ann Intern Med 2000:133, (2) May et al. ICHE 2014:35, (3) Linder et al. JAMA Internal Medicine 2014 174(12):2029-31

Implications for Stewardship

- Although stewardship interventions have been successful to a degree, we can do better
  - Direct educational approaches generally do not result in sustained improvement[1]
  - Restrictive policies can be circumvented
    - "Stealth dosing"[2]
    - Misrepresenting clinical information[3, 4, 5]
    - Combining non-restricted antibiotics to get desired coverage beyond stewardship recommendation

(1) Arnold et al. Cochrane Database of Systematic Reviews 2005:4, (2) LaRosa et al. ICHE 2007:28, (3) Calfee et al. Jour Hosp Infec 2003:55, (4) Linkin et al. ICHE 2007:28, (5) Seemungal et al. ICHE 2012 33(4): 429-431

Implications for Stewardship

- For sustainable change, clinicians need to internalize **new social norms**[1]
  - Antibiotics have an **image problem**
  - Openness to questioning and being questioned about prescribing decisions

- Social factors need to be considered in design and implementation of stewardship
  - To date, largely overlooked[2]

(1) Bosk et al. Lancet 2009:374, (2) Davey et al. Cochrane database of systematic reviews 2017;2.

From: **Behavioral Approach to Appropriate Antimicrobial Prescribing in HospitalsThe Dutch Unique Method for Antimicrobial Stewardship (DUMAS) Participatory Intervention Study**

JAMA Intern Med. 2017;177(8):1130-1138. doi:10.1001/jamainternmed.2017.0946

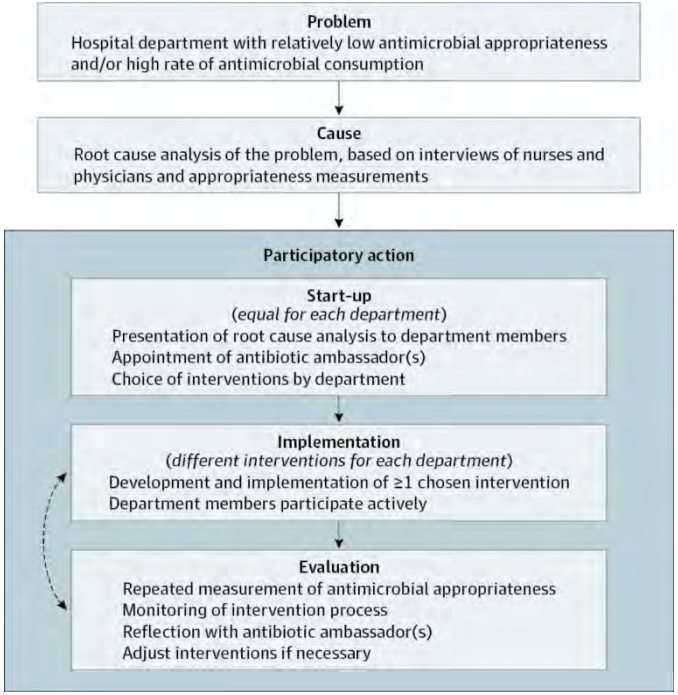
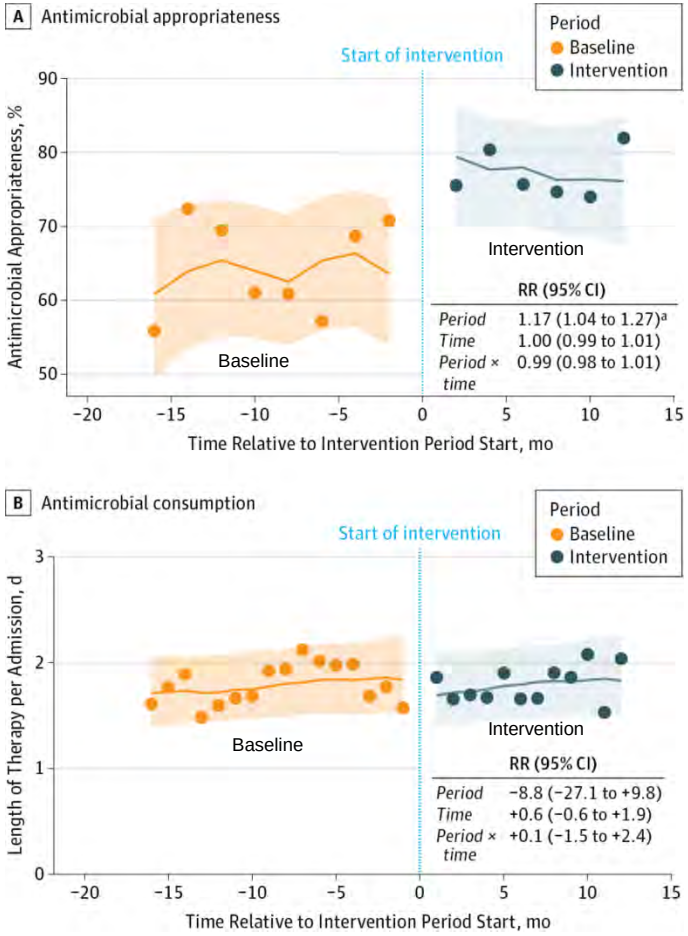


Figure Legend:

Intervention Approach Used in the Current Study

- Intervention draws on 3 behavioral principles
  - Respect for prescriber autonomy to avoid resistance
  - Inclination of people to value a product higher and feel more ownership if they made it themselves
  - Tendency for people to follow up on an active and public commitment



Future Research

- Need to use sociobehavioral theories and methods to move stewardship forward
  1.) **Factors that shape antibiotic prescribing**
      -novel targets for intervention
      -variation by clinical area, provider type, etc.
  2.) **Implementation in antibiotic stewardship**
      -communication best practices
      -design, delivery and framing of incentives based on science of human motivation and sociocultural dynamics of the medical profession

Future Research

- How do we develop interventions that produce behavior change by **modifying culture to change norms**?

- How do we design interventions that target the **emotional dimensions of antibiotic prescribing**?

- What are the **sociobehavioral dynamics** that characterize the optimal way of **doing stewardship**?