The Social Determinants of Antimicrobial Prescribing: Towards a More “Human” Stewardship

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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 patient safety and quality improvement

• To review the social determinants of antibiotic prescribing and how they can be used to inform the development of stewardship interventions and inform future research

• Describe practical strategies to uncover and overcome social barriers to implementing antibiotic stewardship
A Sociologist Sees The Hospital as a Small Society

- Behavior in healthcare organizations shaped by social dynamics of groups\textsuperscript{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\textsuperscript{4}

FROM THE EDITOR-IN-CHIEF

Still Crossing The Quality Chasm—Or Suspended Over It?
BY SUSAN DENTZER

DATAWATCH

By Robert M. Wachter

Patient Safety At Ten: Unmistakable Progress, Troubling Gaps
How does culture and the social context influence efforts to improve the safety and quality of care?
Why study antibiotic use as a **sociological phenomenon**?
“If I see a patient a week after surgery, and there’s still a little redness, and Mom’s nervous I am inclined to just put the kid on the antibiotic. **It just makes everyone comfortable**, and then a week later, the redness is gone. Did I treat an infection or was there just some redness? Some inflammatory post-operative discharge? I don’t know. I’m more careful about how I give antibiotics than I used to be in the past. **You don’t want to be part of the societal issue of creating superbugs, but it is surprisingly difficult to look Mom in the face when she is convinced it’s infected and you’re trying to say ‘look, it’s not infected,’ when you don’t even know for sure yourself and a week later it could pus out and Mom’s like ‘see? Should have put her on antibiotics. I can’t believe you did this to my kid!’ That is what you imagine the scenario being if you don’t do something. **It’s so much easier to say ‘look, we’ll put her on a little antibiotic.’**”

-Interview, Pediatric General Surgeon

Quote Excerpt from Szymczak (2013) *The Complexity of Simple Things: An Ethnographic Study of the Challenges of Preventing Hospital-Acquired Infections*
KEEP CALM AND DO Antimicrobial Stewardship
• Antibiotic Stewardship (AS) interventions use different strategies (both persuasive and restrictive) to change the prescribing behaviors of frontline clinicians
  – Education
  – Audit and Feedback
  – Restricted Formularies
  – Prior Approval

• Prescribing behavior is a complex, multifactorial process
Conceptual Framework for Antibiotic Use

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.
Prescribing a Medicine is a Social Act

- Means of communication – demonstrates concern
- Expresses power and facilitates social control
- Produces income
- A prescription is a tool to help clinician navigate practical social challenges of care delivery
  - How to react to patient demands
  - How to project competence
  - How to manage uncertainty about cause/cure of sickness
  - How to end the clinical encounter

Social Determinants of Antibiotic Prescribing

1.) Relationships between clinicians
2.) Relationships between clinicians and patients
3.) Risk, fear, anxiety and emotion
4.) (Mis)perception of the problem
5.) Contextual and environmental factors
1.) Relationships Between Clinicians

- “Prescribing etiquette”\(^1, 2, 3\)
  - Strong **norm of noninterference**\(^2\)
    - Avoid altering other prescribers’ decisions
    - Ok to intervene on prescribing decisions that are **immediately harmful** but not for those that are **apparently inappropriate**

- Reluctance to provide critique/feedback/advice\(^4\)
  - Ok sometimes, but only in “appropriate” forum (handoffs)
  - Lack of opportunity to give face-to-face feedback

1.) Relationships Between Clinicians

• Role of hierarchy
  – Junior physicians defer to senior colleagues\(^1, \, 2\)

• Opinion of senior colleagues and social networks\(^3\) more influential than guidelines
  – Variation in attitudes by medical specialty\(^4\)

The Differences in Antibiotic Decision-making Between Acute Surgical and Acute Medical Teams: An Ethnographic Study of Culture and Team Dynamics

E. Charani,¹ R. Ahmad,¹ T. M. Rawson,¹ E. Castro-Sanchéz,³ C. Tarrant,² and A. H. Holmes¹

¹Health Protection Research Unit in Healthcare-Associated Infections and Antimicrobial Resistance, National Institute for Health Research, Imperial College London, and ²Department of Health Sciences, University of Leicester, United Kingdom

Are Surgeons Different? The Case for Bespoke Antimicrobial Stewardship

Julia E. Szymczak¹²

¹Department of Biostatistics, Epidemiology and Informatics, Perelman School of Medicine, University of Pennsylvania, and ²Division of Infectious Diseases, Hospital of the University of Pennsylvania, Philadelphia
2.) Patient Demand

• Clinicians identify patient pressure for antibiotics as major barrier to more judicious prescribing\(^1, 2, 3, 4\)
  – Especially in ambulatory settings and pediatrics

2.) Patient Demand

- Why capitulate to patient pressure?\textsuperscript{1,2}
  - Want to please patient
    - Don’t want patients to go home “empty-handed”
    - Competing performance measures – fear of leadership sanctions following poor patient satisfaction scores\textsuperscript{3}
  - Explaining why antibiotics are not necessary is too time-consuming and unrewarding
  - Fear medicolegal sanctions

2.) Patient Demand

- Evidence to suggest that clinicians overestimate patient demand for antibiotics\(^1,2\)

- Patients becoming more aware (and wary) of antibiotic overuse\(^3,4\)
  - Primary concern is gaining clarity about symptoms

- Clinicians prescribe on the basis of perceived rather than actual patient expectations\(^5,6\)

Perception that risk of under-treating > individual patient risk from receiving unnecessary antibiotics\textsuperscript{1,2}

- Potential adverse effects of antibiotics have limited impact on decision-making\textsuperscript{3}

Resident risk perceptions re: broad spectrum abx\textsuperscript{4}

- Overly dire consequences for initiating coverage that is too narrow
- Broad spectrum drugs feel “safe,” more “comfortable”
- Overarching goal is “prevention of disaster in next 24 hrs”

3.) Risk, Fear, Anxiety and Emotion

• Emotional desire to provide all immediate therapeutic options regardless of wider population consequences\(^1\)
  
  – Shaped by face to face interactions with patients and their families
  
  – The “pull” of social relationships stronger than the “push” of guidelines or restrictive policies

4.) (Mis)Perception of the Problem

- Numerous survey studies find that clinicians perceive antibiotic overuse is a problem generally, but not locally\textsuperscript{1,2,3,4}

Numerous survey studies find that clinicians perceive antibiotic overuse is a problem generally, but not locally\(^1,2,3,4\)

Other medical specialties responsible for overuse\(^5\)

“**Antibiotic overuse is a big problem, but pediatricians are probably the least offenders. Family practitioners, internists, ER doctors and the staff at urgent care or minute clinics, those are the greatest offenders.**”

-Interview, Primary Care Pediatrician

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4.) (Mis)Perception of the Problem

- Exceptionalism\(^1\)
  - Guidelines do not apply to my patients
  - My past experience and expertise trump guidelines\(^2\)
  - Guidelines are “academic” and are not always practical in application\(^3\)
  - Disbelief that one overprescribes\(^3,4\)

\(^1\) Charani et al. CID 2013:57; \(^2\) Grant et al. Implementation Science 2013 8(72); \(^3\) Szymczak et al. ICHE 2014:35; \(^4\) Abbo et al. ICHE 2011 32(7): 714-718
4.) (Mis)Perception of the Problem

- Antibiotic resistance a macro problem but of limited concern at the bedside
  - Resistance is a “theoretical”\(^1\) or “intellectual”\(^2\) concern, not a practical one
  - Emergent problems take precedence

5.) Contextual and Environmental Factors

• Time pressures
  – Pressure to discharge quickly discourages a “watch and wait” approach\(^1\)
  – Practice volume and throughput pressures discourage communication with patients\(^2\)

• Ease of accessing diagnostic testing systems and ability to act on the results

• Time of day\(^3\)
  – Decision fatigue – erosion of self control over time (tired, hungry, etc.) – GPs make more inappropriate abx decisions later in the day

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Why should we care about the social determinants of antibiotic prescribing?
Implications for Stewardship

- Although AS 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 AS recommendation
  
  - Audits can be “gamed”\(^6\)

Stewardship from the ground up instead of top-down?
Implications for Stewardship

• For lasting change, clinicians need to internalize **new social norms** surrounding antibiotic prescribing\(^1\)

  – What is considered “prudent”
  – Antibiotics have an **image problem**
    • “We’ll just put her on a *little antibiotic*”
    • Adverse effects underappreciated\(^2\)
  – Openness to questioning and being questioned about prescribing decisions

\(^{1}\) Bosk et al. Lancet 2009:374;
\(^{2}\) Livorsi et al. ICHE 2015:36(9)
Implications for Stewardship

• When developing any QI intervention, need to understand
  – attitudes, motivation and intentions of those whose behavior is the target of change\(^1\)
  – local social/environmental context\(^2\)

• Despite evidence to suggest the importance of these factors, frequently overlooked in design and implementation of AS interventions\(^3\)

Can we work with culture and context to make sustainable changes in antibiotic prescribing behavior?
Participatory Action Research: The Dutch Unique Method for Antimicrobial Stewardship (DUMAS)
From: Behavioral Approach to Appropriate Antimicrobial Prescribing in Hospitals: The Dutch Unique Method for Antimicrobial Stewardship (DUMAS) Participatory Intervention Study


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
How do we change social norms around antibiotic prescribing?
Make a Commitment

Original Investigation
Nudging Guideline-Concordant Antibiotic Prescribing
A Randomized Clinical Trial

Daniella Meeker, PhD; Tara K. Knight, PhD; Mark W. Friedberg, MD, MPP; Jeffrey A. Linder, MD, MPH;
Noah J. Goldstein, PhD; Craig R. Fox, PhD; Alan Rothfeld, MD; Guillermo Diaz, MD; Jason N. Doctor, PhD


- RCT of behavioral intervention to encourage the judicious use of antibiotics for acute respiratory infections

- 5 outpatient primary care clinics in Los Angeles

- Intervention = display of poster-size commitment letters in exam rooms for 12 weeks
Your health is important to me.

That's why I'm signing the “Get Smart Guarantee.”

Antibiotics don't work for viral infections like the common cold, most coughs, and most sore throats. Taking antibiotics when they don't work can do more harm than good by causing stomach upset, diarrhea, or allergic reactions.

I guarantee I will do my best to prescribe antibiotics only when you need them.

Antibiotics can be life-saving, but bacteria are becoming more resistant. If we're not careful about how we prescribe and use the antibiotics we've relied on for years, they might not work for us in the future.

To learn more visit cdc.gov/getsmart.

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<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Poster Condition</th>
<th>Control Condition</th>
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<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Final Measurement</td>
</tr>
<tr>
<td>Inappropriate prescribing rate, % (95% CI)</td>
<td>43.5 (38.5 to 49.0)</td>
<td>33.7 (25.1 to 43.1)</td>
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<tr>
<td>Absolute percentage change, baseline to final measurement (95% CI)</td>
<td>−9.8 (0.0 to −19.3)</td>
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<tr>
<td>Difference in differences between poster condition and control (95% CI)</td>
<td></td>
<td>−19.7 (−5.8 to −33.04)</td>
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Abbreviation: ARI, acute respiratory infection.

*Adjusted for demographic characteristics and insurance status.

b *P* = .02 for the difference.
Why Did the Commitment Poster Work?

• It was informed by a sociobehavioral theory of how humans act.

• Individuals who make public commitments to specific behaviors are more likely to follow through with those expressed intentions.

• Two psychological factors drive the effectiveness of public commitment:
  - People place a high value on consistency and follow through with their public commitments to avoid disapproval by their peers.
  - Publicly committing to a behavior causes people to identify the behavior with their self-image, which enhances personal dedication to performing that behavior.
Thinking Sociologically about Stewardship

• Investigate motivations of frontline prescribers

  – Reinterpret resistance and recalcitrance

  – How do those that resist define the problem? \(^1\)

  – Try to understand what is at stake surrounding behavior that is target of change and what people want to preserve\(^2\)

Thinking Sociologically about Stewardship

• Explore social dynamics that characterize optimal way of “doing stewardship”

  – Leverage the power of face to face interaction
    • Trust accumulates over time based on repeated interactions
    • “Handshake stewardship” has shown promise without relying on restriction or preauthorization – fostering a culture of more judicious prescribing

• Use of antibiotics shaped by social, behavioral and contextual factors

• More attention needs to be paid to these factors
  – How they unfold in day to day work of stewardship
  – Qualitative research to identify novel sociobehavioral targets for intervention
  – Develop social tools for stewardship that address adaptive challenges, communication, conflict
  – Explicitly address and plan for social dynamics when implementing a stewardship program
Questions?

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Getting unnecessary antibiotics in Lusaka, Zambia while doing research in Summer 2016