Behaviour Change Strategies to Influence Antimicrobial Prescribing in Acute Care
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Research Objectives:

- Understand the cultural and contextual influences that shape HCW behaviours in acute care settings
- Understand how these behaviours impact on Infection Prevention and Control (IP&C) and prudent antimicrobial prescribing outcomes
- Develop multimodal behaviour change interventions that will consider barriers and facilitators to behaviour change
- Evaluate behaviour change interventions and their impact on infection outcomes
Systematic Review of Antimicrobial Drug Prescribing in Hospitals

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Interventions to improve antibiotic prescribing practices for hospital inpatients (Review)


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The Cochrane Collaboration
Wiley
What’s missing?

- Necessary to understand the factors that influence prescribing behaviour and decisions
- Address human factors
- Adopt a whole-system approach to support optimal prescribing choices.
- Supporting choice architecture.

Charani et al JAC 2010

Decision architecture....
• Guidelines and policy developed to help decision making
• These provide knowledge and awareness

BUT.....

They may not shift attitudes and change practice

• The goal should be to make prudent prescribing the default and routine practice
• Do we need to investigate habitual behaviour as a first step to changing it?
• ‘Mindlines not guidelines’ Gabbay, Le May 2004 BMJ 329

Recognise Factors affecting behaviour:
• Personal, Social, Environmental
Policies and guidelines are not enough. . . .

J Carthey et al BMJ 2011; 343
Social Construct of Prescribing

- A social process
- Under influence of many determinants
- Collateral impact not tangible at prescriber/patient level
- Theories of behaviour change considered?
  - Many theories out there
  - No definition in healthcare
• Behavioral interventions: Developing systems that address human factors (decision aids, desired action is the default, habits and patterns used in design, process clearly specified, takes advantage of pathways).
  Rear R 2006 HSR 41.4,1677-89,
  Pronovost et al HSR 41:4 1599-1617

• Nudge -R Thaler and C Sunstein
  Pronovost- “critical information for doctors was not being presented in a format that is easy for the brain to retrieve in critical situations........”

• Behavioural Economics…
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• Behavioural Economics…
• Behaviour change a key element of optimising antibiotic prescribing
• Systematic reviews to date do not assess behaviour change
• An expanded approach to systematic review methodology developed
  – Inclusion of both qualitative and quantitative literature (1999-2009)
  \[(E. Charani et al CID 2011)\]
  – Expanding and Integrating Quality Criteria for Systematic Review of Multiple Study Designs within Healthcare: The ICROMS Tool: it builds on criteria established in the literature:
    ▪ The Cochrane Risk of Bias Tool for randomised controlled trials;
    ▪ The EPOC (Effective Practice and Organisation of Care) criteria for controlled and non-controlled before-and-after and controlled and non-controlled interrupted time series;
    ▪ Epidemiology studies (Gordis 2000) for prospective cohort studies;
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Behavior Change Strategies to Influence Antimicrobial Prescribing in Acute Care: A Systematic Review

Findings..

- Interventions to optimize antimicrobial prescribing behaviour are of poor quality and are not based on robust theoretical science.
- Behaviour and social science research is underutilized in the development of antimicrobial prescribing interventions.
- Qualitative evidence highlights the influence of social norms, attitudes, and beliefs on antimicrobial prescribing behaviour.
- When designing and evaluating interventions in antimicrobial prescribing, these influences on prescribing are generally not considered.
• These findings stress the need for multidisciplinary research to investigate the utilization of behavioural and social sciences to assess prescribing behaviour and set standards.

• The lack of this approach may be a contributing factor to the challenges that beset interventions aiming to influence prescribing behaviour and optimize antimicrobial prescribing.
Need a different approach to interventions?

- Work with healthcare professionals to improve the choice environment
- Environment of shared knowledge

**Recommended Elements of an Intervention to Target Behavioural Change in Antibx Prescribing**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Descriptor</th>
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<tbody>
<tr>
<td>Conduct primary research</td>
<td>Engage in multidisciplinary primary research. Include expertise from social and behavioral sciences (41) to identify the key behavioral determinants of antimicrobial prescribing in the target audience in whom a change in behavior is desired.</td>
</tr>
<tr>
<td>Tailor interventions</td>
<td>Use data from primary research to identify key behavioral determinants and tailor interventions to (1) address identified barriers and (2) enhance the facilitators of the desired behavior change.</td>
</tr>
<tr>
<td>Evaluate intervention outcomes</td>
<td>Evaluate the effectiveness of interventions to bring about prescribing behavior change.</td>
</tr>
<tr>
<td>Address sustainability</td>
<td>Monitor the long-term adoption and implementation of the intervention and recognize the importance of building sustainability into the intervention model.</td>
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Findings echoed in IPC

Psychological and social marketing frameworks are applied in qualitative studies, but rarely in intervention studies

1. Experiential and habitual nature of IPC behaviours: cannot be addressed as rational processes by interventions
2. Need to take into account social and cultural factors that affect behaviour in the design, implementation and reporting of interventions
3. Need to target the intervention to segmented groups of HCWs

Addressing Antibiotic Stewardship as an organisational change issue need to consider:

• Issues and agendas: Political science concept of a crowded decision making agenda;

• Power and influence: Specialists and generalists, Who ‘owns’ antibiotic stewardship? Coalition building needs?

• Governance framework

• Roles and relationships: difficult move from a narrow technical role to a broader strategic role, coalition of supporters

• Organisational culture and learning

• Supporting Knowledge bases

Qualitative Research

- Face to face semi-structured interviews with 39 healthcare staff across four hospitals
- Interviews conducted by experienced researchers
- Deductive and inductive approach in analysis
- Open coding used to identify relevant categories
- Weekly meetings to discuss the data and emerging themes
- Prevention of dilution of analysis by pre-specified conceptual models
- Inter-rater reliability between 85-100%
- Final themes agree to by all three researchers
Understanding the Determinants of Antimicrobial Prescribing Within Hospitals: The Role of “Prescribing Etiquette”

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Background. There is limited knowledge of the key determinants of antimicrobial prescribing behavior (APB) in hospitals. An understanding of these determinants is required for the successful design, adoption, and implementation of quality improvement interventions in antimicrobial stewardship programs.

Methods. Qualitative semi-structured interviews were conducted with doctors (n = 10), pharmacists (n = 10), and nurses and midwives (n = 10) in 4 hospitals in London. Interviews were conducted until thematic saturation was reached. Thematic analysis was applied to the data to identify the key determinants of antimicrobial prescribing behaviors.

Results. The APB of healthcare professionals is governed by a set of cultural rules. Antimicrobial prescribing is performed in an environment where the behavior of clinical leaders or seniors influences practice of junior doctors. Senior doctors consider themselves exempt from following policy and practice within a culture of perceived autonomy decision making that relies more on personal knowledge and experience than formal policy. Prescribers identity with the clinical groups in which they work and adjust their APB according to the prevailing practice within these groups. A culture of “noninterference” in the antimicrobial prescribing practice of peers prevents intervention into prescribing of colleagues. These sets of cultural rules demonstrate the existence of a “prescribing etiquette,” which dominates the APB of healthcare professionals. Prescribing etiquette creates an environment in which professional hierarchy and clinical groups act as key determinants of APB.

Conclusions. To influence the antimicrobial prescribing of individual healthcare professionals, interventions need to address prescribing etiquette and use clinical leadership within existing clinical groups to influence practice.

Keywords. prescribing etiquette; antimicrobial prescribing; prescribing behavior.

1. Non-interference with the prescribing decisions of colleagues: Reluctance to interfere with the prescribing decisions of colleagues. In the case of antimicrobial prescribing there is a reluctance to interrupt antimicrobial prescriptions started by colleagues. This recognises the autonomous decision making process of prescribing.

2. Accepted non-compliance to policy: Deviations from policy recommendations are tolerated and put in the context of the prescriber’s experience, expertise and the specific clinical scenario. This leads to hierarchy and expertise, and not policy as determinants of prescribing practice behaviours.

3. Hierarchy of prescribing: Prescribing as an activity is performed by junior doctors. But it is the senior doctors who decide what is prescribed.
Multidisciplinary approach has primarily included:

- Infectious Disease Physicians
- Clinical Microbiologists
- Clinical or Infectious Disease Pharmacists
- Epidemiologist
- At times, infection prevention and control teams

**Can nurses contribute to antimicrobial stewardship?**
Covering more Territory to Fight Resistance: Considering Nurses' Role in Antimicrobial Stewardship

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3. Southport and Ormskirk Hospital NHS Trust, UK
4. Imperial College Healthcare NHS Trust, London, UK

Abstract

The potential contribution nurses can make to the management of antimicrobials within an inpatient setting could impact on the development of antimicrobial resistance (AMR) and healthcare associated infections (HCAIs). Current initiatives promoting prudent antimicrobial prescribing and management have generally failed to include nurses, which subsequently limits the extent to which these strategies can improve patient outcomes. For antimicrobial stewardship (AS) programmes to be successful, a sustained and seamless level of monitoring and decision making in relation to antimicrobial therapy is needed. As nurses have the most consistent presence in patient care, they are in the ideal position to provide this level of service. However, for nurses to truly impact on AMR and HCAIs through increasing their profile in AS, barriers and facilitators to adopting this enhanced role must be contextualised in the implementation of any initiative.
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1) Structures, lines of responsibility and high-level notification to the Board.
2) Operational delivery of an antimicrobial strategy- with operational standards of good antimicrobial stewardship.
3) Risk assessment for antimicrobial chemotherapy.
4) Clinical governance assurance
5) Education and training
6) Antimicrobial pharmacist -with systems in place for ensuring optimum use.
7) Patients, Carers and the Public-address information needs
Caution- Monitor unintended Consequences

• Must ensure patients receive early effective treatment and prompt care not compromised.
• Should build in balances/checks, mechanisms to mitigate and monitor potential unintended consequences, poorly treated infections etc.
• Deliver on the Surviving sepsis care bundle- (Obtain blood cultures prior to antibiotic administration and administer broad-spectrum antibiotic, within 3 hrs of A&E admission) – yet ensure subsequent de-escalation
• Improved monitoring of clinical outcomes
In summary

- Interventions need to be guided by hypothesis
- Better understanding of the determinants of antimicrobial prescribing
- Needs to be out into the social context
- No gold standard stewardship model
- Successful interventions need to be based on theories
- Need to construct theories that are
  - Generalisable
  - Achievable
  - Evidence-based