HOW TO MAKE STEWARDSHIP WORK IN YOUR HOSPITAL?

Marlies Hulscher
Professor Quality of Care for infectious and inflammatory diseases

Antibiotic stewardship

‘Coordinated interventions designed to continuously measure and improve the appropriate use of antibiotic agents by promoting the selection of the optimal antibiotic drug regimen including dosing, duration of therapy, and route of administration’.

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Implementation Science

- Implementation science is the study of methods to promote the integration of research findings and evidence into healthcare policy and practice
- It seeks to understand the behavior of healthcare professionals and other stakeholders as a key variable in the sustainable uptake, adoption, and implementation of evidence-based interventions
- AKA: translation of evidence into practice

http://fic.nih.gov/News/Events/implementation-science/Pages/faqs.aspx

Implementation problem

Evidence, guidelines, innovations, best practices, etc. are not applied in practice, so that 30-50% of individuals do not receive appropriate care, or receive contraindicated care (20-30%)

Table 1. Performance levels of quality indicators for antibiotic use in CAP

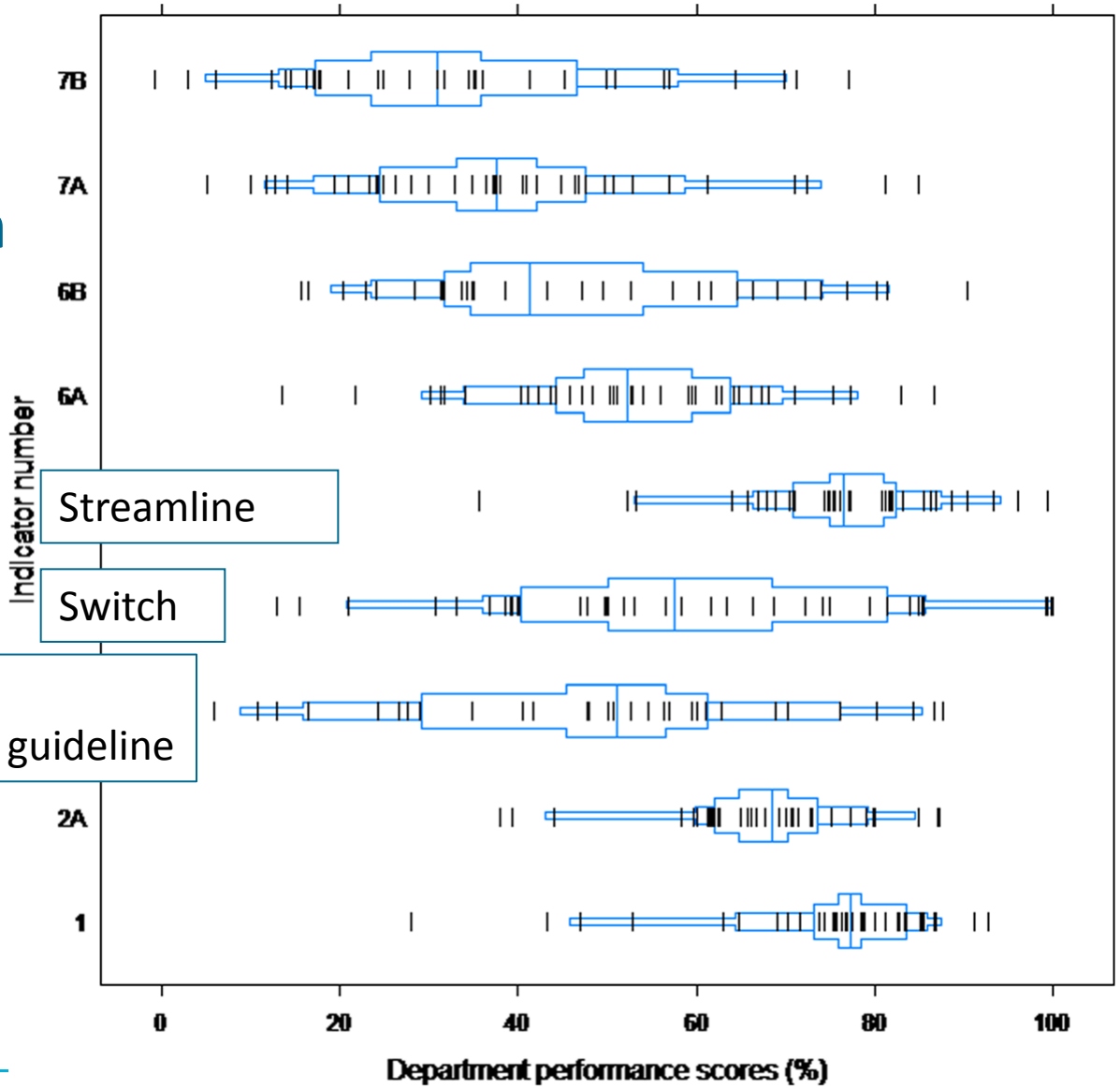
Quality indicator	Adherence (median, %)	Range (eight hospitals, %)	Supporting evidence[b]
1. Timely initiation of antibiotic therapy (within 4 h after presentation)	68	36–87	B
2. Empirical antibiotic regimen according to national guidelines	45	5–59	B
3. Adapting dose and dose interval of antibiotics to renal function	77	40–100	D
4. Switching from iv to oral therapy, according to existing criteria and when clinically stable	81	35–93	B
5. Changing broad-spectrum empirical into pathogen-directed therapy (streamlining therapy)	80	50–100	C
6. Stopping antibiotic therapy after three consecutive days of defervescence[a]	11	2–32	D
7. Taking two sets of blood samples for culture	57	48–67	B
8. Obtaining sputum samples for Gram stain and culture	54	24–100	D
9. Urine antigen testing against *Legionella* spp. upon clinical suspicion	84	67–100	B

498 CAP patients, 8 hospitals
internal & respiratory wards

Schouten JA et al. JAC 2005

1964 patients with complicated UTI

38 Dutch wards
19 hospitals



Spoorenberg et al. BMC Infect Dis 2015

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1890 adult patients treated for a suspected bacterial infection

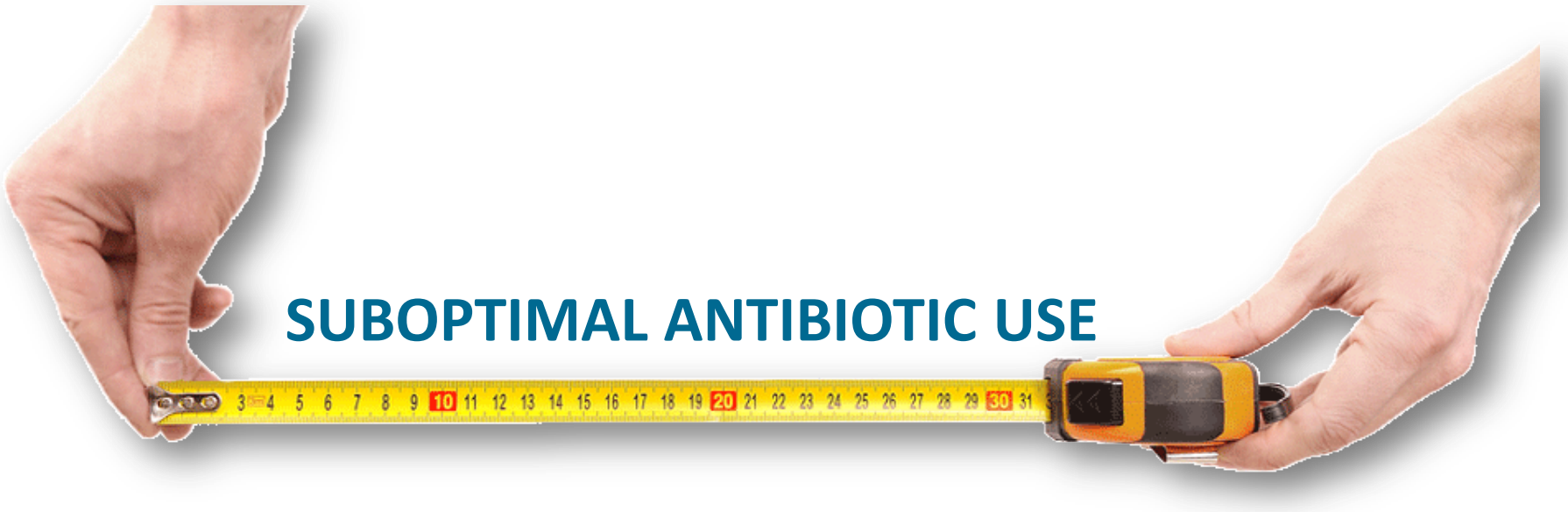
non-ICU departments
22 hospitals

Table 7
Performance of the applicable quality indicators in the 22 Dutch hospitals

Indicator	n/N	Performance % (range)
1. Prescribe empirical antibiotic therapy according to guideline	563/1361	41 (24–58)
2. Before starting antibiotic therapy, two sets of blood cultures should be taken	674/1890	36 (9–59)
3. When starting antibiotic therapy, cultures should be taken from suspected sites of infection	595/1217	49 (33–73)
4. An antibiotic plan should be documented in the case notes at the start of antibiotic therapy	1145/1890	61 (23–98)
5. Antibiotic therapy should be switched from i.v. to oral therapy within 48–72 hr	134/422	32 (5–50)
6. Empirical antibiotic therapy should be changed to pathogen-directed therapy if culture results become available	228/453	50 (21–85)
12. Local antibiotic guidelines should correspond to the national antibiotic guidelines, but should deviate based on local resistance patterns	0/20	0 (63–94[a])

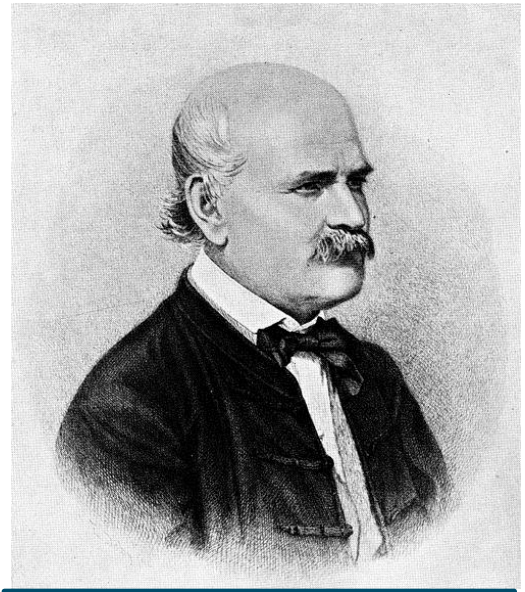
[a] Not one hospital had local guidelines that corresponded to the national guidelines completely, so performance was 0%, but the % of overlap between the local and the national guidelines ranged from 63–94%, with a mean of 80%.

Bosch CMA, et al. CMI 2016



HOW TO IMPROVE ANTIBIOTIC USE IN DAILY PRACTICE?

Implementation before 1980



Semmelweis
(1818-1865)

- Professional education and restricted access to the profession
- Self-regulation of the profession

EDUCATION

Implementation in the 1980s

Richard Grol

Influence from behavioural sciences, focus on:

- Individual performance as health

AUDIT & FEEDBACK

- Communication with patients and colleagues (Peer review groups & Doctor-patient relationship)
- Medical audit: quality assessment

Implementation in the 1990s I

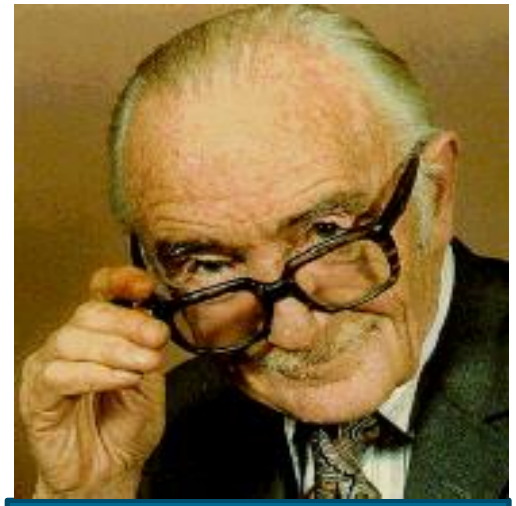
Donald Berwick

Influence from business and management:

- Quality management
- Disease management
- Process / System redesign

ORGANIZATIONAL CHANGE

Implementation in the 1990s II



Archie Cochrane

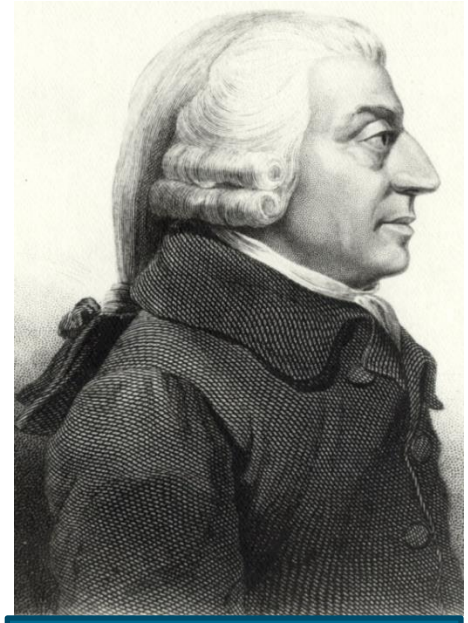
Influence from clinical epidemiology:

- Randomized trials
- Systematic reviews to inform

GUIDELINES

- Methodological guidelines

Implementation in the 2000s



Adam Smith
(1723-1790)

Influence from economics and system perspectives

- Competion enhances quality and efficiency

TRANSPARENCY / FINANCIAL INCENTIVES

- Strict quality control

Implementation since 2010

Trisha Greenhalgh

Patients want, and are expected, to be actively involved in their care:

DECISION SUPPORT/SELF-HELP PROGRAMS

Implementation since 2010

Michael Porter

Achieving high value for patients is the overarching goal of health care delivery:

- shift focus from volume of services delivered
- ed per
- e care
- e rewards providers for efficiency in achieving good outcomes while creating accountability for substandard care

MEASURE, REPORT, AND COMPARE OUTCOMES

WHAT BEHAVIOUR CHANGE INTERVENTION WORKS BEST?

There is NO magic bullet

No magic bullets: a systematic review of 102 trials of interventions to improve professional practice

Andrew D. Oxman, MD, MSc; Mary Ann Thomson, BHSc(PT);
David A. Davis, MD; R. Brian Haynes, MD, PhD

Abstract • Résumé

Objective: To determine the effectiveness of different types of interventions in improving health professional performance and health outcomes.

Data sources: MEDLINE, SCISEARCH, CINAHL and the Research and Development Resource Base in CME were searched for trials of educational interventions in the health care professions published between 1970 and 1993 inclusive.

Conclusion: There are no "magic bullets" for improving the quality of health care, but there are a wide range of interventions available that, if used appropriately, could lead to important improvements in professional practice and patient outcomes.

Overview of systematic reviews

Effective Health Care Bulletin (1999). Getting evidence into practice. Effective Health Care Bulletin, 5(1). London, Royal Society of Medicine Press

Systematic review

Grimshaw et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. Health Technol Assess 2004;8(6).

Grimshaw et al. Implementation Science 2012, 7:50

Systematic review of systematic reviews

17 systematic reviews on the effectiveness of behaviour change intervention to improve AB use

- 5 in acute hospital care
- 5 in specific hospital departments (3 ICU, 2 paediatrics)
- 3 on specific infections
- 4 on one specific behavioural change

HOW TO SELECT BEHAVIOUR CHANGE INTERVENTION THAT RESULTS IN DESIRED CHANGE IN YOUR ICU/STUDY?

Behaviour change theories

- IMPACT theories describe factors that are assumed/hypothesized to relate to behavior and how to effectively influence these factors
- PROCESS theories describe what activities to perform to change behavior

Model for planning change

Grol.
BMJ 1997

Define appropriate care and measure current performance

↓

Analyze determinants of appropriate care (or not)

↓

Develop an improvement strategy based on this diagnosis

↓

Develop plan, execute, evaluate this improvement strategy

Model for planning change

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Define appropriate care and measure current performance

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Analyze de ot)

DIAGNOSTIC PHASE

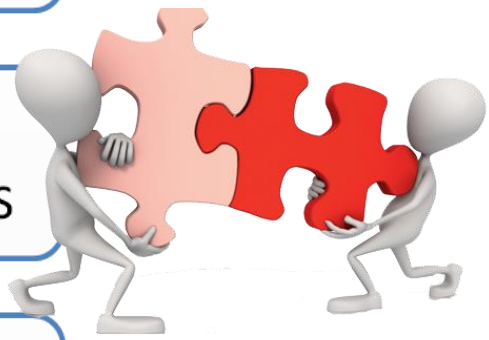
Develop ar s diagnosis

↓

Develop plan, execute, evaluate this improvement strategy

Tailoring of interventions to improve appropriate care

1. Identification of barriers and enablers for implementation
2. Matching implementation interventions to barriers and enablers
3. Apply and assess tailored implementation interventions

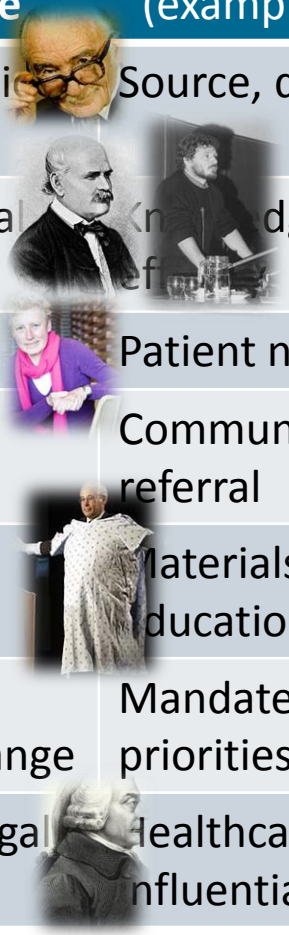


For instance …

- Education of health professionals, if they lack knowledge or skills
- Computerized reminders, if forgetting is the problem
- More nurses (budget), if lack of physician time is the problem
- ….

Checklist to identify determinants of practice

Determinants of practice		(examples)
1	Guideline/innovati factors	Source, quality of evidence, feasibility
2	Health professional factors	dge, awareness, skills, intention, motivation, self-
3	Patient factors	Patient needs, preferences, beliefs, motivation
4	Professional interactions	Communication, team processes, referral
5	Incentives and resources	laterials, financing, information, ducation
6	Capacity for organisational change	Mandates, authority, leadership, rules, priorities
7	Social, political, legal	ealthcare budget, contracts, legislation, nfluential persons, corruption



Flottrop et al. Implementation Science 2013; 8: 35.

What determinants influence appropriate use (or not) of antibiotics?

Review

Antibiotic prescribing in hospitals: a social and behavioural scientific approach

Marlies E J L Hulscher, Richard P T M Grol, Jos W M van der Meer

Antibiotics have dramatically changed the prognoses of patients with severe infectious diseases over the past 50 years. However, the emergence and dissemination of resistant organisms has endangered the effectiveness of antibiotics. One possible approach to the resistance problem is the appropriate use of antibiotic drugs for preventing and treating infections. This Review describes how the volume and appropriateness of antibiotic use in hospitals vary between countries, hospitals, and physicians. At each specific level—cultural, contextual, and behavioural—we discuss the determinants that influence hospital antibiotic use and the possible improvement strategies to make it more appropriate. Changing hospital antibiotic use is a challenge of formidable complexity. On each level, many determinants play a part, so that the measures or strategies undertaken to improve antibiotic use need to be equally diverse. Although various strategies for improving antibiotic use are available, a programme with activities at all three levels is needed for hospitals. Evaluating these programme activities in a way that provides external validity of the conclusions is crucial.

Lancet Infect Dis 2010; 10: 167–75

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Introduction

The advent of antibiotics, which are some of the most successful drugs in medicine, dramatically altered the prognoses of patients with bacterial infections. Their

resistant strains). Unnecessary use of antimicrobial agents, and use of the newest, broad-spectrum antibiotics when narrow-spectrum and older agents would suffice can lead to increases in resistance, harm patients, and

Hulscher et al, Lancet Infectious Diseases 2010

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‘One size does not fit all’

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IMPLEMENTATION = TAILORING