Evidence, Governance, Performance
Challenges for Education and Research

Nino Cartabelloutta
GIMBE Foundation
"All healthcare decisions should be evidence-based"
To patients this is a natural expectation

For professionals this is an impossible dream

Glasziou P, Haynes RB. ACP J Club 2005
Gaps between knowledge and practice
2001: IOM identified 3 types of gaps

- Overuse
- Underuse
- Misuse
Eliminating Waste in US Health Care

Donald M. Berwick, MD, MPP
Andrew D. Hackbarth, MPhil

6 categories of wastes...

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overuse of ineffective health interventions</td>
<td>26%</td>
</tr>
<tr>
<td>Fraud and abuse</td>
<td>21%</td>
</tr>
<tr>
<td>Pricing failures of health technologies</td>
<td>19%</td>
</tr>
<tr>
<td>Underuse of effective health interventions</td>
<td>12%</td>
</tr>
<tr>
<td>Administrative complexity</td>
<td>12%</td>
</tr>
<tr>
<td>Failures of care coordination</td>
<td>10%</td>
</tr>
</tbody>
</table>

...more than 20% of healthcare expenditures
Performance

Evidence

Governance

EBHC
All healthcare systems need...

Producing and using high-quality and trustworthy EVIDENCE

- Primary research
- Systematic reviews
Delivering an evidence-based, high-value, cost-conscious healthcare applying the systemic approach to clinical GOVERNANCE, which integrates synergic tools:

- Evidence-based Practice
- Clinical practice guidelines and care pathways
- Clinical audit and quality measures
- Risk management
- Health technology assessment
- CME and CPD
- Patient involvement
- ...
All healthcare systems need... 

Measuring the **PERFORMANCE** of healthcare for accountability and openness, through multidimensional sets of indicators:

- Safety
- Efficacy
- Appropriateness
- Patient involvement
- Equity and accessibility
- Efficiency
- Productivity
What challenges for education and research about

- Evidence
- Governance
- Performance
What challenges for education and research about

- Knowledge generation
- Knowledge management
- Knowledge translation

in health care?
Outline

1. Knowledge generation
Necessary Research
Omission bias

Necessary Research
The risk of bias from omitted research

Evidence must be independently sought and free of economic interests

BMJ VOLUME 321  7 OCTOBER 2000
OMISSION BIAS

• Shifting sponsored research agenda from industry interests to health needs
• Sustaining public-private research projects
• Encouraging international alliances for research governance
• Enhancing comparative effectiveness research
• ...

CHALLENGE
OMISSION BIAS

• Setting research priorities using "sources of grey zones"
  - DUET: Database of Uncertainties about the Effects of Treatments
  - Cochrane reviews with inconclusive results
  - Weak recommendations of clinical practice guidelines

• Involving patients and clinicians to identify research priorities
  - James Lind Alliance "top 10 uncertainties"
Necessary Research

Planned Research
Publication bias

Planned Research
PUBLICATION BIAS

• Requiring, by incentives and regulation
  - the registration and publication of protocols for all clinical trials at inception
  - the publication of full reports of completed trials

• Promoting the registration of observational studies

• ...
Published Research
Critical appraisal

- Preliminary
- Not valid
- Not relevant
- Not applicable
- Best evidence

BIAS

COIs
BIAS

• Improving the quality of primary research
  - Design
  - Conduction
  - Analysis
  - Reporting

• ...

CHALLENGE
CONFLICTS OF INTEREST

• Exploring better ways to manage COIs, more than disclosure
• Improving integrity and transparency of research with new means
• ...

CHALLENGE
Avoidable waste in the production and reporting of research evidence

Lancet 2009; 374: 86-89

Iain Chalmers, Paul Glasziou

Figure: Stages of waste in the production and reporting of research evidence relevant to clinicians and patients
1. Knowledge generation

2. Knowledge management
Seventy-Five Trials and Eleven Systematic Reviews a Day: How Will We Ever Keep Up?

Hilda Bastian¹, Paul Glasziou², Iain Chalmers³

¹ German Institute for Quality and Efficiency in Health Care (IQWiG), Cologne, Germany, ² Centre for Research in Evidence-Based Practice, Faculty of Health Sciences, Bond University, Gold Coast, Australia, ³ James Lind Library, James Lind Initiative, Oxford, United Kingdom

Summary Points

- When Archie Cochrane reproached the medical profession for not having critical summaries of all randomised controlled trials, about 14 reports of trials were being published per day. There are now 75 trials, and 11 systematic reviews of trials, per day and a plateau in growth has not yet been reached.
Getting information off the Internet is like taking a drink from a fire hydrant.

Mitchell Kapor
<table>
<thead>
<tr>
<th>Needs</th>
<th>KM strategy</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep updated</td>
<td>Proactive</td>
<td>Pre-appraised resources</td>
</tr>
<tr>
<td>Clinical problem solving</td>
<td>Reactive</td>
<td>Databases</td>
</tr>
</tbody>
</table>

*Cartabello A. Rec Prog Med 1998 (modified)*
Knowledge management

Scanning

Searching

Pro-active

Reactive

Muir Gray JA. Churchill Livingstone 1997
Knowledge Management

Muir Gray JA. Churchill Livingstone 1997 (modified)
Accessing preappraised evidence: fine-tuning the 5S model into a 6S model
Synthesizing Evidence
Shifting the Focus From Individual Studies to the Body of Evidence

M. Hassan Murad, MD, MPH
Victor M. Montori, MD, MSc

JAMA, June 5, 2013—Vol 309, No. 21
Studies
Synopses of Studies
Syntheses
Synopses of Syntheses

ACP Journal Club®
The Best New Evidence for Patient Care™

ACP JOURNALWISE®

Synopses of Syntheses

Evidence-Based Medicine
EBM
Evidence-Based Nursing
EBN
Evidence-Based Mental Health
EBMH

Centre for Reviews and Dissemination
GIMBE
EVIDENCE FOR HEALTH
KNOWLEDGE MANAGEMENT

• From the first years of undergraduate education:
  - instilling attitudes to recognize own knowledge gaps and to fill them by reactive KM strategies
  - teaching and formally verifying KM skills
• Improving usability of evidence through new "formats"
• Exploring new technologies to get evidence during clinical consultation (mHealth)
• Confirming the CDSS worth staying the apex of the 6S pyramid
• ...
Effect of Clinical Decision-Support Systems

A Systematic Review

Tiffani J. Bright, PhD; Anthony Wong, MTech; Ravi Dhurjati, PhD; Erin Bristow, BA; Lori Bastian, MD, MS; Remy R. Coeytaux, MD, PhD; Gregory Samsa, PhD; Vic Hasselblad, PhD; John W. Williams, MD, MHS; Michael D. Musty, BA; Liz Wing, MA; Amy S. Kendrick, RN, MSN; Gillian D. Sanders, PhD; and David Lobach, MD, PhD


Features of effective computerised clinical decision support systems: meta-regression of 162 randomised trials

Pavel S Roshanov medical student¹, Natasha Fernandes medical student², Jeff M Wilczynski undergraduate student³, Brian J Hemens doctoral candidate⁴, John J You assistant professor⁴⁶⁷, Steven M Handler assistant professor⁵, Robby Nieuwlaat assistant professor⁴⁵, Nathan M Souza doctoral candidate⁴, Joseph Beyene associate professor⁴⁵, Harriette G C Van Spall assistant professor⁶⁷, Amit X Garg professor⁴⁸⁹, R Brian Haynes professor⁴⁷¹⁰

BMJ 2013;346:f657 doi: 10.1136/bmj.f657 (Published 14 February 2013)
Outline

1. Knowledge generation
2. Knowledge management
3. Knowledge translation
Some innovations are adopted very quickly, even without evidence.

Other innovations are rarely and unlikely adopted despite good evidence.
Why Don't Physicians Follow Clinical Practice Guidelines?
A Framework for Improvement

Michael D. Cabana, MD, MPH
Cynthia S. Rand, PhD
Neil R. Powe, MD, MPH, MBA
Albert W. Wu, MD, MPH
Modena H. Wilson, MD, MPH
Paul-André C. Abboud, MD
Haya R. Rubin, MD, PhD
The paths from research to improved health outcomes

ACP J Club 2005;142:A8-10
Evid Based Med 2005;10:4-7
Evid Based Nurs 2005;8:36-8
Leakage in the pipeline
Leakage in the pipeline

Even with high rates of transfer between stages, there may be little impact on patient outcomes.

80% transfer at each of 7 stages
21% \((0.8^7 = 0.21)\)

Glasziou P, Haynes RB. ACP J Club 2005
• All reported knowledge management challenges
• ...
• "Persuade" professionals with means other than unbiased evidence
• Identifying methods to “vaccinate” clinicians against poor evidence
• ...

![Diagram showing awareness and acceptance of evidence](image)
• Switching from explanatory to large pragmatic trials
• Validating tools for applying generic recommendations of guidelines to individual patients
• Teaching decision-making strategies to balance benefits and harms of application of evidence to individual patients
• ...

[Diagram showing levels of awareness, acceptance, and applicability]
• Improving description of health interventions in clinical trials
• Training on health innovations integrated in CME and CPD activities
• Evaluating standards of professional competence to deliver complex health interventions
• ...

CHALLENGE
Poor description of non-pharmacological interventions: analysis of consecutive sample of randomised trials

Tammy C Hoffmann associate professor of clinical epidemiology, Chrissy Erueti assistant professor, Paul P Glasziou professor of evidence-based medicine
• Tailoring multifaceted strategies to change professional and organizational behaviors

• ...

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(image of a bar chart titled "Challenge" with stages: Aware, Accepted, Applicable, Able, Acted on)
Cochrane EPOC Group

Cochrane Effective Practice and Organisation of Care Group conduct systematic reviews of interventions designed to improve the delivery, practice and organisation of health care services

- Professional
- Financial
- Organisational
- Patient-oriented
- Structural
- Regulatory
• Using patient decision aids to get an evidence-based persuasion
• Incorporating patient preferences in clinical practice guidelines
• Financial incentives to patients 
• ...

![Graph showing awareness, acceptance, applicability, ability, action taken, and agreement levels]
Evidence-Based Persuasion
An Ethical Imperative

David Shaw, PhD
Bernice Elger, MD
Decision aids for people facing health treatment or screening decisions (Review)

Research evidence is necessary but insufficient for making patient care decisions. An effective but toxic Hindsight bias, cognitive dissonance, and regret can reduce the validity of surveys of preferences in

JAMA  Published online October 28, 2013
• Using effective strategies to improve adherence to drugs and other health interventions
• Teaching these strategies to increase treatment adherence at undergraduate level
• ...

[Graph showing stages of adherence: Aware, Accepted, Applicable, Able, Acted on, Agreed, Adhered to]
Medication Nonadherence
A Diagnosable and Treatable Medical Condition

Zachary A. Marcum, PharmD, MS
Mary Ann Sevick, ScD, RN
Steven M. Handler, MD, PhD

JAMA, May 22/29, 2013—Vol 309, No. 20
1. KNOWLEDGE CREATION

- **1\(^{st}\) generation**: primary studies
- **2\(^{nd}\) generation**: systematic reviews
- **3\(^{rd}\) generation**: products, tools
  - clinical practice guidelines
  - patients decision aids
2. ACTION CYCLE

- Identify problem
- Identify, review, select knowledge
- ACTION CYCLE (Application)
- Adapt knowledge to local context
- Assess barriers to knowledge use
- Select, tailor, implement interventions
- Monitor knowledge use
- Evaluate outcomes
- Sustain knowledge use
• Involving all stakeholders
• Scoring problems relevance
• Using formal consensus methods
• ...
• What knowledge? CPG, SR, HTA
• How to select knowledge? Using AGREE, AMSTAR, INAHTA Checklist
• Integrating various sources of knowledge → medico-legal risks?
• ...

Identify problem

Identify, review, select knowledge
Avoiding that "adapting" is intended as "legitimating local practices"

Validating the ADAPTE and CAN-IMPLEMENT instruments

Defining the lowest threshold of local adapting

Defining a taxonomy for adapting variables: structures, technologies, organizations, professionals, etc

...
• Increasing knowledge from qualitative research
• Reaching a consensus of taxonomies and frameworks for barriers and facilitators
• ...
• Developing systematic approaches for mapping barriers to interventions
• Filling grey zones about KT interventions and improving their applicability
• ...

Select, tailor, implement interventions
• Reporting clinical details in medical charts
• Developing high quality clinical databases
• Validating process indicators
• Defining targets of appropriateness related to evidence levels
• ...

Monitor knowledge use
• Linking outcome research and KT research
• Standardizing outcome measurements
• Developing high-quality clinical databases
• Improving risk-adjustment
• ...
• Identifying effective methods to sustain the use of knowledge
An ideal evidence-based world, addressing all challenges would allow to:

- Commission, conduct and publish more relevant and high-quality research, reducing wastes
- Improve individual knowledge management
- Implement the whole KT process to improve:
  - appropriateness of health interventions, reducing wastes due to overuse and underuse
  - patient outcomes
  - sustainability of health systems
Possible
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