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How do we do research that is useful and used?

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Plan

- Why are most research findings false?
- How can we make more research findings true?
- How can we make more research useful?
- How can we increase the chance it gets used?

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Why do and/or use research?

- We are motivated to give the best care we can
- We are ideally placed
- We experience the uncertainties at first hand
- We are graduates
- We need a better evidence base to inform our practice
- It is enriching and enjoyable!

… but let's make it research that's likely to give us true findings that are useful and used!

Open access, freely available online

Essay

Why Most Published Research Findings Are False

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Essay

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ESSAY

Why Most Clinical Research Is Not Useful

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Why Most Published Research Findings are False

- Single studies gain a lot of attention in the media but are rarely conclusive

MMR DOCS IN U-TURN

Dramatic retraction KOs autism link

ANTI-MMR SCIENTISTS CHANGE THEIR MINDS

Major U-turn on triple jab risk

Retraction from MMR authors

Colleagues withdraw support for doctor who sparked MMR scare

Jab scare climbdown

MMR research scientists retract link with autism

MMR authors deny finding autism link

MMR doctors disown Wakefield study

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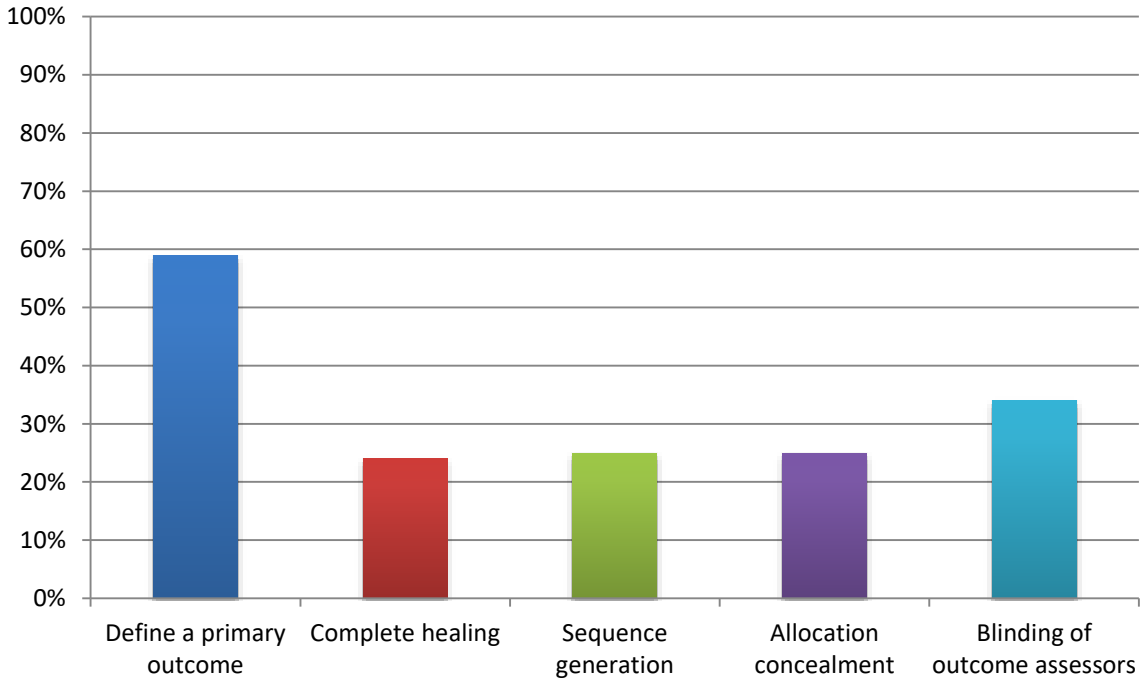
Why Most Published Research Findings are False

- Single studies gain a lot of attention in the media but are rarely conclusive
  - We need to look at *all* the research addressing the same research question
- Most research is biased (will tend to produce results that don't reflect the truth) due to design, data, analysis or presentational factors (usually unintentional)
  - We need to do *better research* and only use the good stuff
  - Most quantitative studies are too small and they are less likely to be true
- Insufficient replication of research by independent teams

Quality of Trials in Wound Care



- 167 trials in wound care
- Median duration of follow up 12 weeks
- Median sample size 63

Hodgson et al, Funding source and the quality of reports of chronic wounds trials: 2004 to 2011. Trials 2014.

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How can we make more research true?

Box 1. Some Research Practices that May Help Increase the Proportion of True Research Findings

- Large-scale collaborative research
- Adoption of replication culture
- Registration (of studies, protocols, analysis codes, datasets, raw data, and results)
- Sharing (of data, protocols, materials, software, and other tools)
- Reproducibility practices
- Containment of conflicted sponsors and authors
- More appropriate statistical methods
- Standardization of definitions and analyses
- More stringent thresholds for claiming discoveries or "successes"
- Improvement of study design standards
- Improvements in peer review, reporting, and dissemination of research
- Better training of scientific workforce in methods and statistical literacy

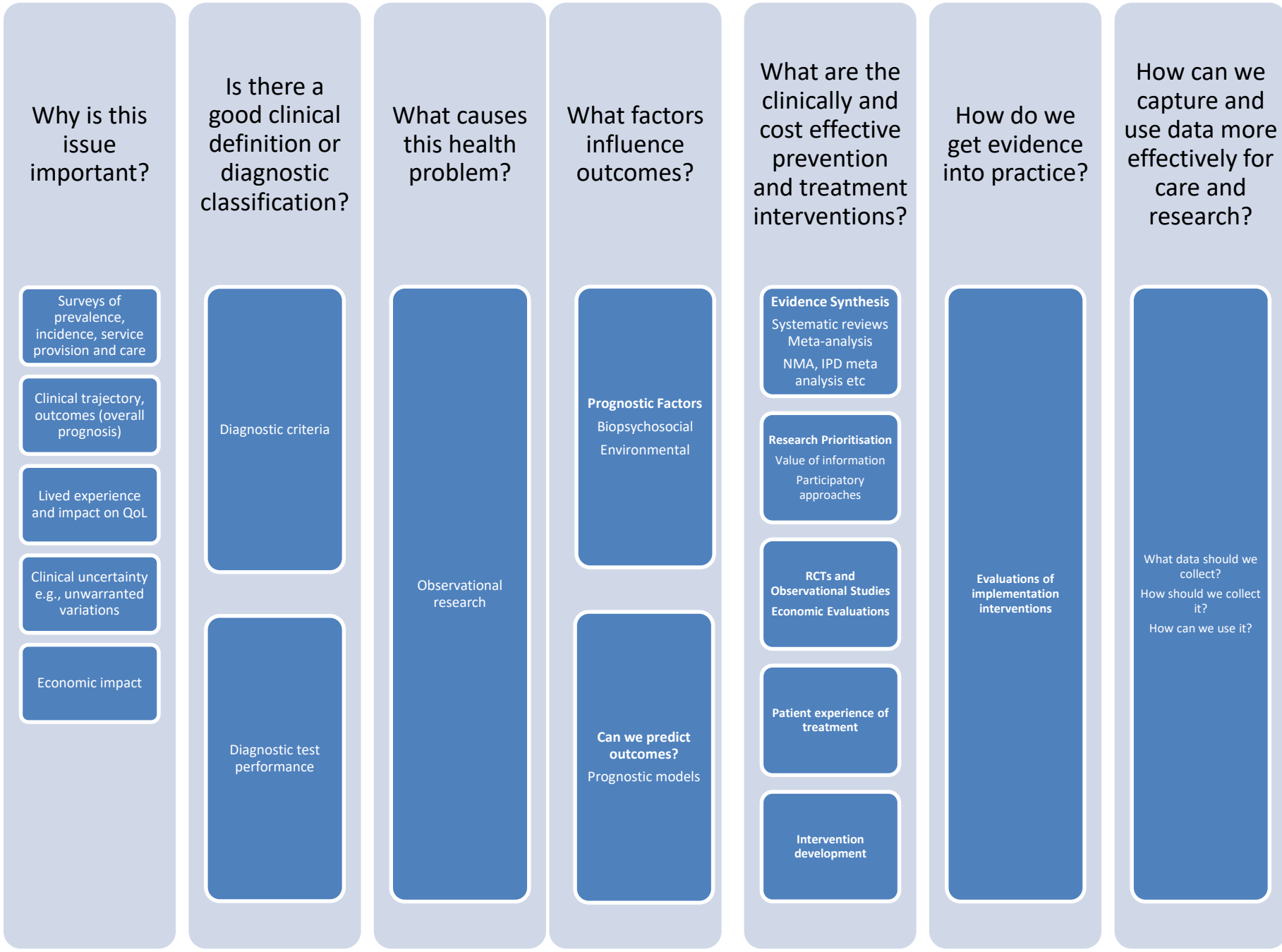
Ioannidis JP. How to make more published research true. PLoS Med 2014; 11(10)

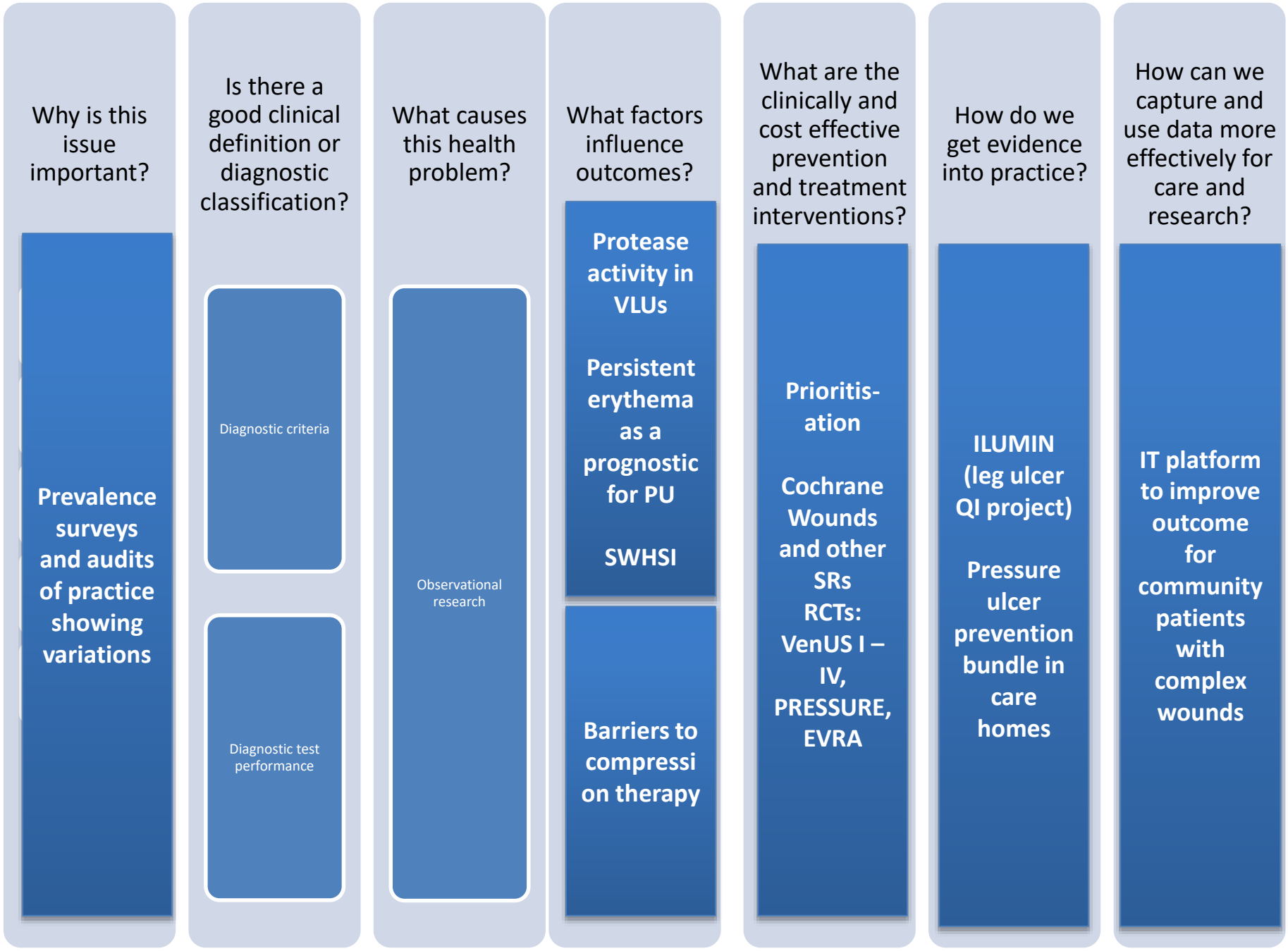
An idiot will never learn from his mistakes, a smart person will learn from his mistakes, but a genius will learn from other people’s mistakes

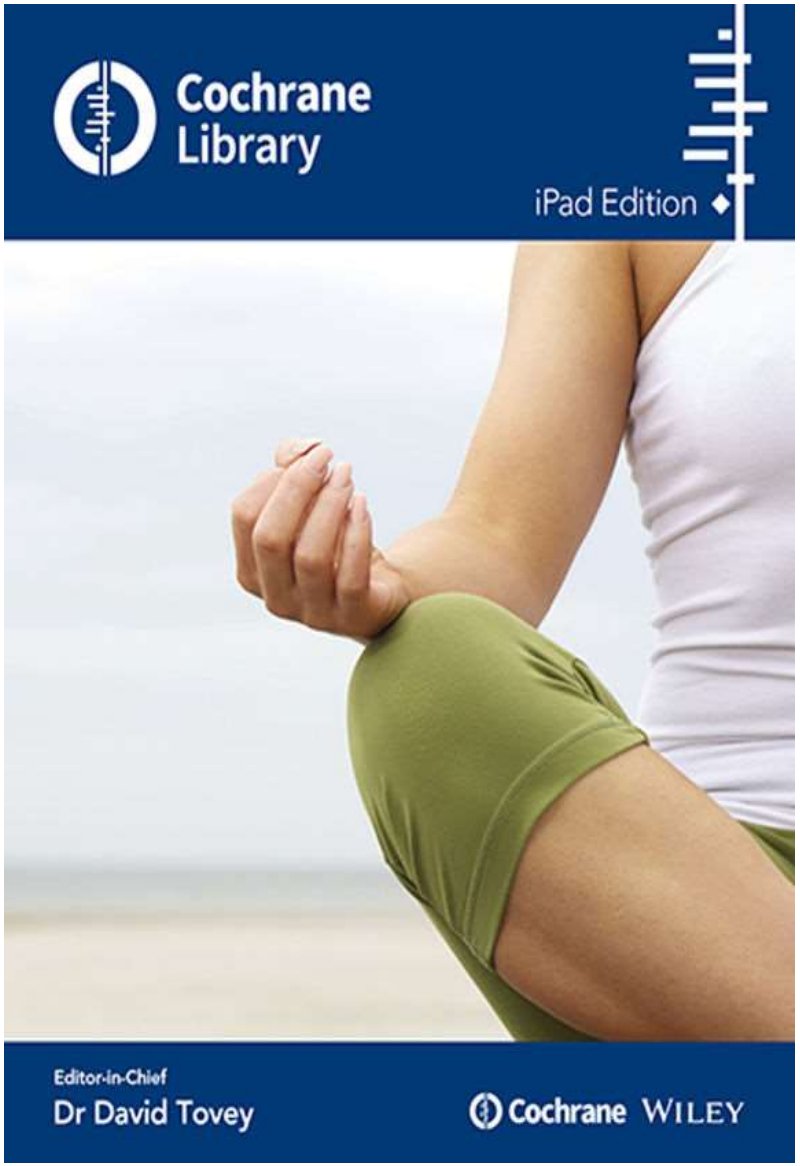
Unknown

How can we make more research useful?

- All clinical research should be preceded by a systematic review (or update)
- Avoid previous mistakes (systematic review)
- Based on priorities/information needs of patients, clinical decision-makers, policy makers and variations in practice
- Research in large teams with the right skills
- Replication is good and important
- Measure the things that are meaningful and valid
- Make sure it is big enough and/or deep enough
- Make sure it is pragmatic (grounded in the real world)
- Publish it to international reporting standards


Why is this issue important?
Surveys of prevalence, incidence, service provision and care
Clinical trajectory, outcomes (overall prognosis)
Lived experience and impact on QoL
Clinical uncertainty e.g., unwarranted variations
Economic impact
Is there a good clinical definition or diagnostic classification?
Diagnostic criteria
Diagnostic test performance
What causes this health problem?
Observational research
What factors influence outcomes?
Prognostic Factors
Biopsychosocial
Environmental
Can we predict outcomes?
Prognostic models
What are the clinically and cost effective prevention and treatment interventions?
Evidence Synthesis
Systematic reviews
Meta-analysis
NMA, IPD meta analysis etc
Research Prioritisation
Value of information
Participatory approaches
RCTs and Observational Studies
Economic Evaluations
Patient experience of treatment
Intervention development
How do we get evidence into practice?
Evaluations of implementation interventions
How can we capture and use data more effectively for care and research?
What data should we collect?
How should we collect it?
How can we use it?


Why is this issue important?
Prevalence surveys and audits of practice showing variations
Is there a good clinical definition or diagnostic classification?
Diagnostic criteria
Diagnostic test performance
What causes this health problem?
Observational research
What factors influence outcomes?
Protease activity in VLUs
Persistent erythema as a prognostic for PU
SWHSI
Barriers to compressi on therapy
What are the clinically and cost effective prevention and treatment interventions?
Prioritis-ation
Cochrane Wounds and other SRs
RCTs: VenUS I – IV, PRESSURE, EVRA
How do we get evidence into practice?
ILUMIN (leg ulcer QI project)
Pressure ulcer prevention bundle in care homes
How can we capture and use data more effectively for care and research?
IT platform to improve outcome for community patients with complex wounds



How do we ensure research gets *used*?

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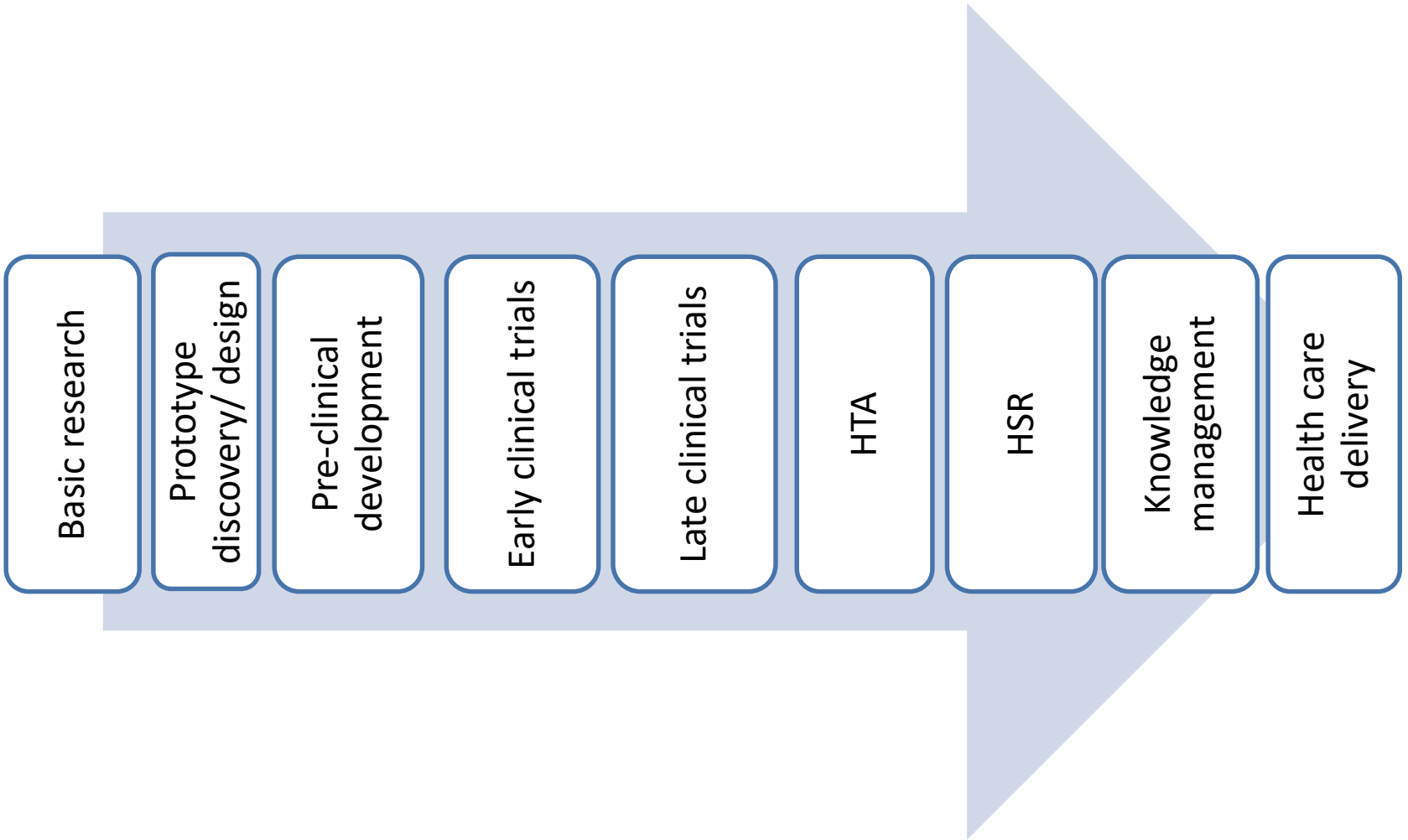
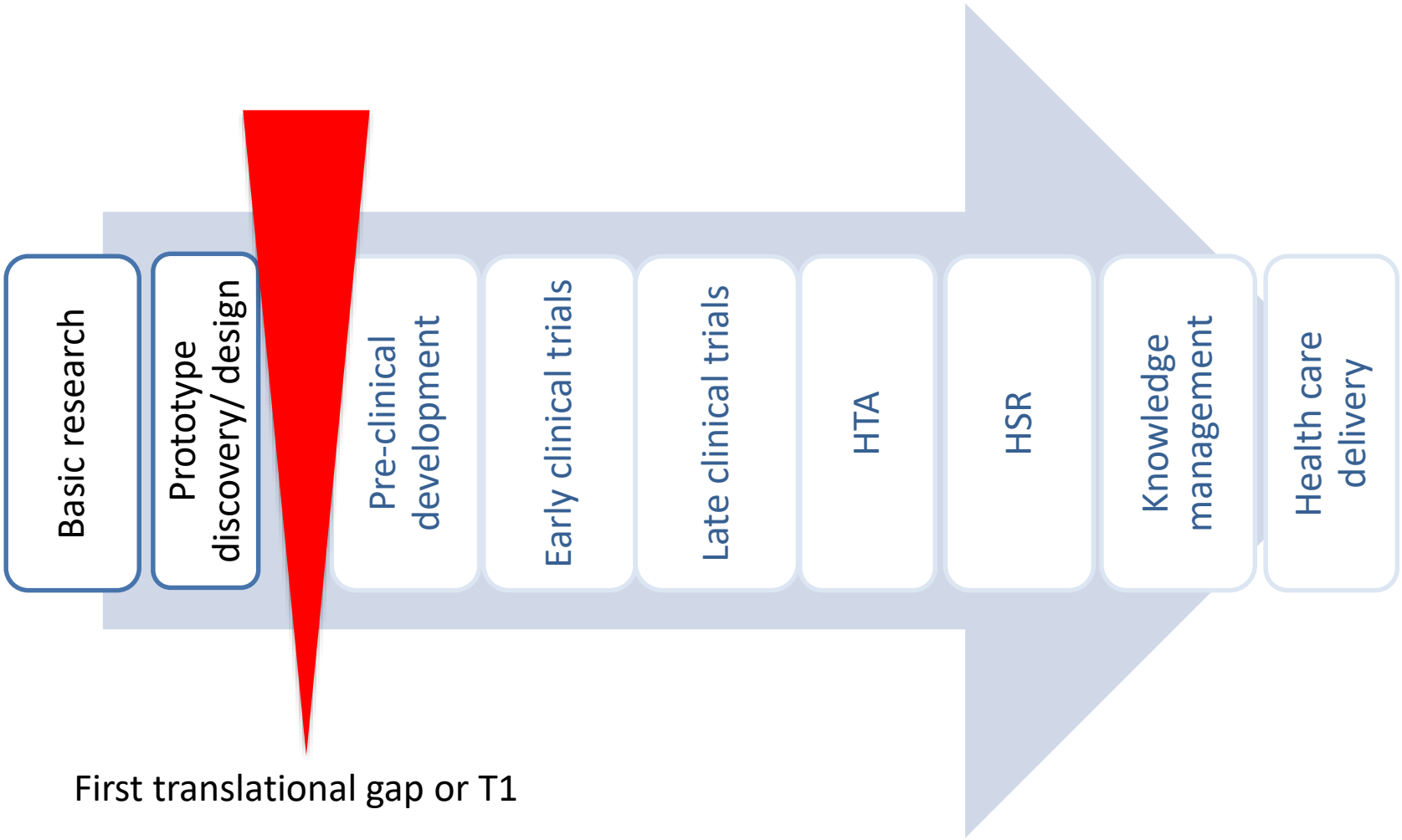
The "Evidence Pipeline"



Cooksey D (2006) A review of UK health research funding. London: HM Treasury.

…then we realised it was blocked or fractured



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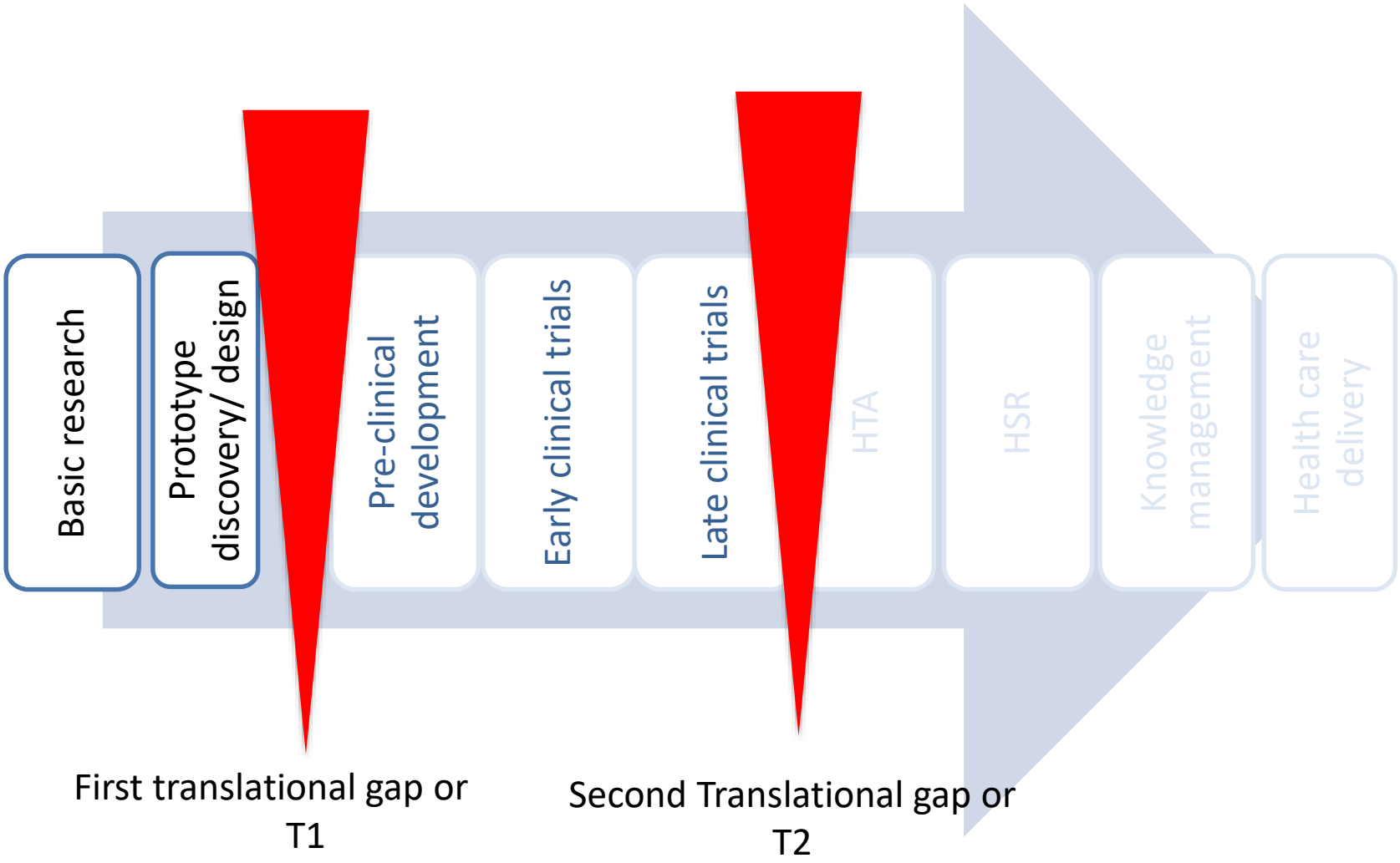
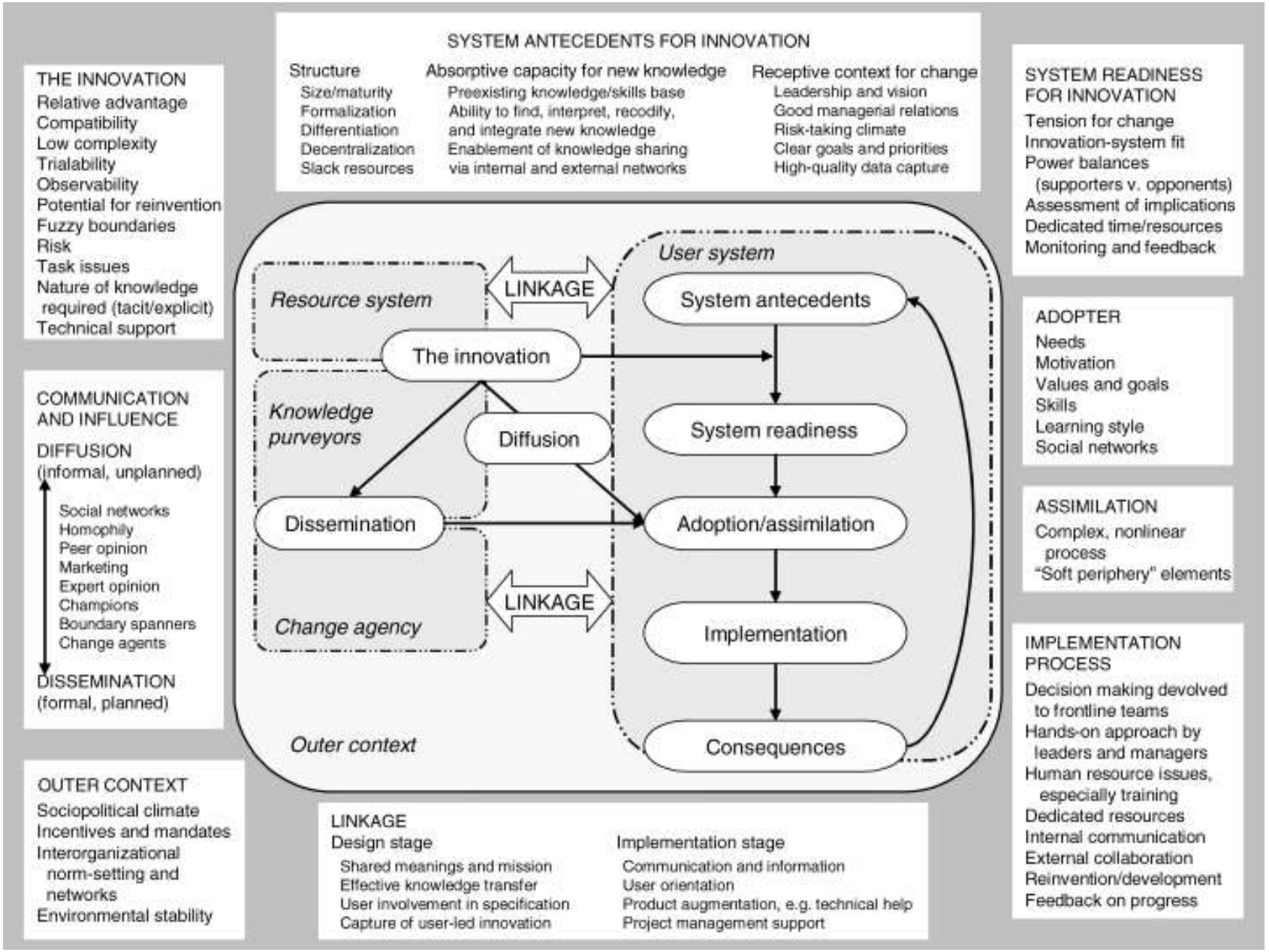
…in one or two places





Greenhalgh (2004) Milbank Quarterly 82; 581-629.

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Examples from nursing and therapies

- Few studies observing distance between evidence and practice
- Many surveys of self-reported competence and performance report lack of confidence, skills, time, ability to read and interpret research
- Variations in care are one indication of uncertainty

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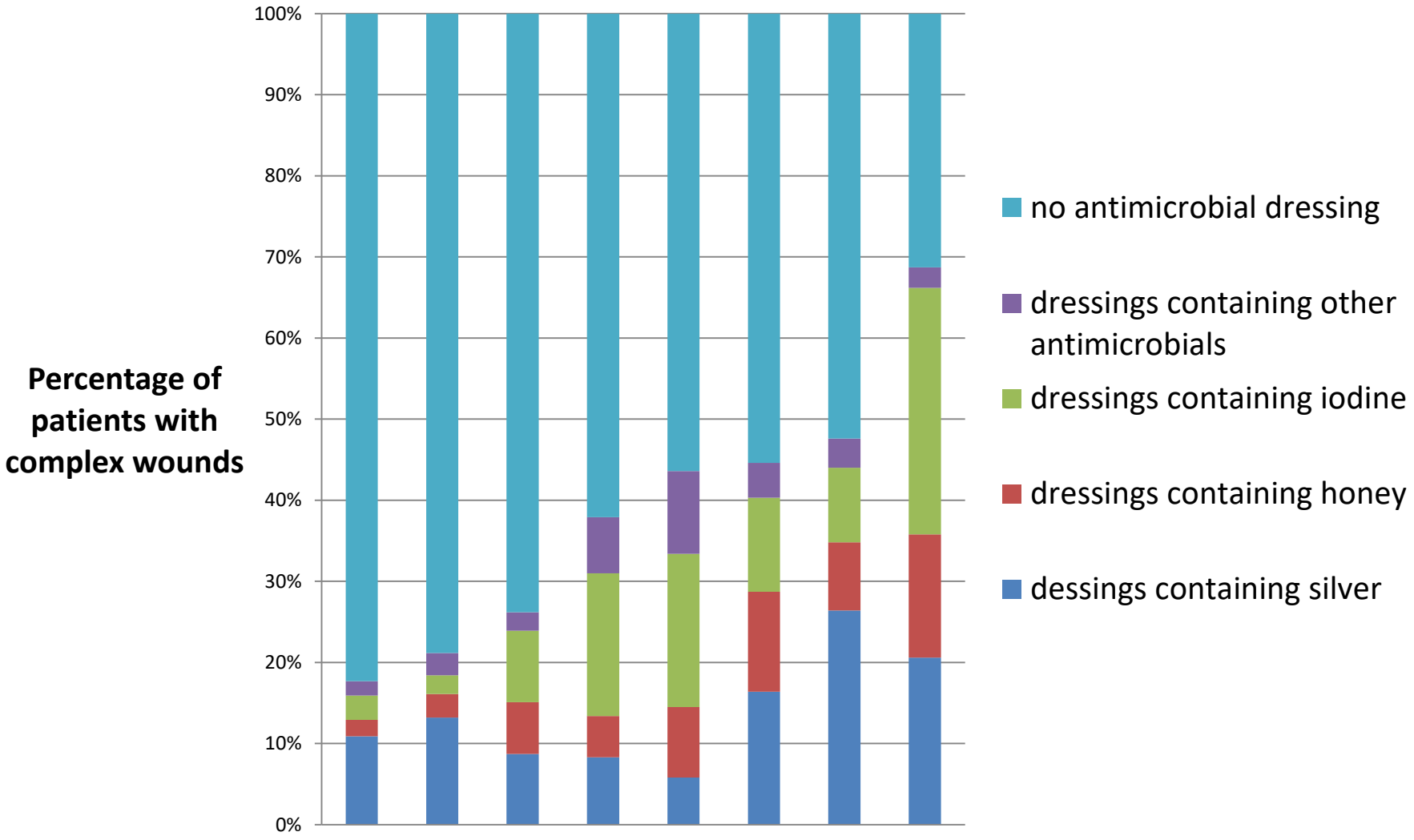
Variation in the use of antimicrobial primary dressings for patients with complex wounds, by area (GM CLAHRC)



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- Actionable results (even if the action is “no action”)
- In a priority topic for end-users
- High quality research (like to be true) which is generalisable
- Disseminated in an accessible way
- Co-produced with target end users

Closing the gap between research and practice

- **Interventions**
  - Clinical practice guidelines
  - Audit and feedback
  - Education
  - Local opinion leaders
  - Reminders
  - …its complicated…no magic bullet (there are systematic reviews in the Cochrane Library)

Incentives for collaboration

For healthcare partners

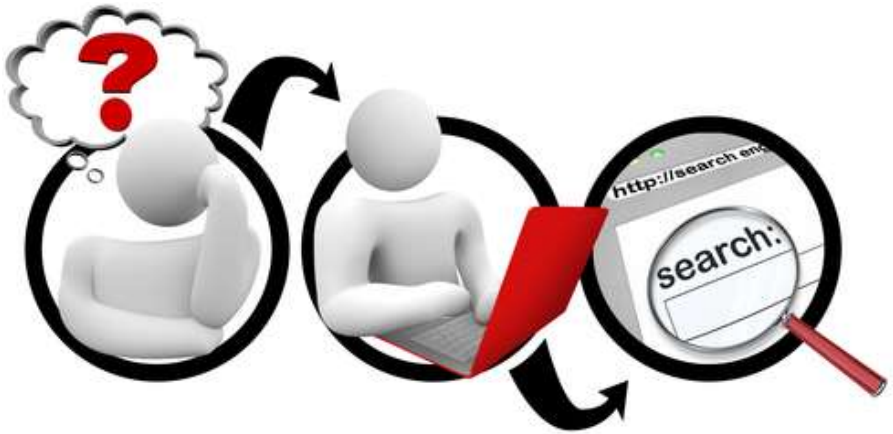
- Help with delivery of evidence-based health care (quality, safety, efficiency)
- Ability to influence the research agenda

For academics

- Laboratory or test bed (including access to patients and services)
- Opportunity to have "impact"
- Access to research funds

Bibliometrics incentivise both (in theory)

Other important differences between us



How we view the role of research evidence in decision making

Our communities of practice

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Knowledge, what knowledge?

- Explicit knowledge: *"know that"*
  - Research evidence, facts, communicable
- Tacit knowledge: "*know how*"
  - Expertise, skills, experience
- Academics and clinicians use both but probably with different balance
- Health care professionals prefer and rely on tacit knowledge
- Explicit knowledge rarely viewed as a solution
- Tacit and explicit knowledge are distinct

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Communities of Practice

- "*A group of people who share a concern, a set of problems or a passion about a topic*" (Wenger et al, 2002)
- Researchers and health care professionals work in distinct CoPs
- Knowledge transmitted easily ***within*** CoP but not between
- Health care professionals don't necessarily see research findings as a visible solution to real-world problems

Kislov, Harvey & Walshe (2011) Implementation Science 6:64.

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Research collaborations between practitioners and researchers

- Premise:
  - Closer working eliminates the “gap” and benefits both
  - Co-produced knowledge more likely to be used
  - The development of a research-ready culture may enhance adoption of research findings more broadly

Co-Production of Research Evidence

- Moving away from conceptualising a “know-do gap”
- Researchers and practitioners working together on research
- Develop people who can “bridge” knowledge transfer between CoPs – **“boundary spanners”**

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Case Study: Sarah

- My research collaboration with a clinical nurse specialist and service lead “Sarah” began late 1990s
- Initially site lead for RCT
- Then she studied for MSc Evidence Based Practice
- Solid research collaboration (bidirectional)
- 35 papers in PubMed including 6 Cochrane reviews, 3 papers in Lancet or BMJ
- Collaboration won considerable funding including 4 RCTs, 3 programme grants
- Good uptake of findings into practice

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What worked?

- Rooted not parachute research – bottom up
- Co-production often with Sarah generating the research questions
- Senior management support; a Trust with research aspirations
- Sarah is a “boundary spanner” who understands both cultures, languages and is clinically credible
- Sarah has power, authority and ability to influence upwards, downwards and across

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What didn't work so well?

- Didn't take time to understand each other's cultures and pressures fully
- Didn't work together to develop strategy
- Didn't agree some working principles
- Poor availability of data to demonstrate impact on care delivery and patient outcomes

Case Study 2: CLAHRCs

- 5 year NIHR funded collaborative partnerships between NHS and universities
- Goals of high quality research, translation of research findings into practice and capacity development
- Bidding process required high level organisational buy-in
- Evaluation concluded crucial determinants of success were
  - historical relationships
  - building *real teams* which takes time
- Competing cultures of academia and health service delivery
  - need legitimate *boundary spanners*

Rycroft Malone et al, 2015

Characteristics of high performing research units

- Emphasis on recruitment and retention of excellent staff
- Training and mentorship; reward good performance
- Strong social and ethical values
- Leaders with accountable autonomy
- Living strategies that are real and owned
- Encourage and enable researchers to initiate collaborations organically not top down

King's College London and RAND Europe, 2015

Creating and sustaining successful research collaboration

Researchers

- Target clinical collaborators who are strong leaders of successful clinical teams and eager to research
- Together develop and invest in teams for co-production; shared values, strategy, principles

Creating and sustaining successful research collaboration

Health services

- Recognise value of research and **research-based** innovation
- Recognise, develop, support the boundary spanners in your organisation (clinical academic careers)

Creating and sustaining successful research collaboration

Funders

- Funding of co-production models
- Capacity development to create more "boundary spanners" with complementary skills (at both T1 and T2)
- More research into knowledge mobilisation including into knowledge brokerage roles

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Conclusions

- New research should be preceded by a good synthesis of existing research and avoid previous flaws
- Better quality
- Addressing questions that are important to the end-users
- Disseminated accurately and clearly
- Closer collaboration between researchers and practitioners – clinical academics and boundary spanners – *co-production*