

Quantitative and qualitative research in infection control

A role for both

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A bit of revision

The 5 steps of Evidence Based practice “Sicily Statement”:

1. Clearly define the problem
2. Retrieve the best evidence
3. Critically appraise for validity, relevance, applicability
4. Apply results in practice, adapting for the local context
5. Evaluate

Current State of Evidence

“The IDSA guideline recommendations are primarily based on low-quality evidence derived from nonrandomized studies or expert opinion”

- ✓ 50% of the recommendations in the current guidelines are supported by level III evidence (derived from expert opinion).
- ✓ Evidence from observational studies (level II) supports 31% of recommendations
- ✓ Evidence based on randomized clinical trials (level I) constitutes 16% of the recommendations

What about infection control research?

- Number of papers written identifying research priorities for infection control (SHEA white paper, CRE workshop)
- Majority of recommendations based on expert opinion

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SHEA/IDSA PRACTICE RECOMMENDATION: EXECUTIVE SUMMARY

A Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals: 2014 Updates

Some examples from the compendium

Strategies to Prevent CAUTI

- I. Basic practices for preventing CAUTI: recommended for all acute care hospitals
 - A. Provide appropriate infrastructure for preventing CAUTI
 1. Provide and implement written guidelines for catheter use, insertion, and maintenance (quality of evidence: III).
 2. Ensure that only trained, dedicated personnel insert urinary catheters (quality of evidence: III).
 3. Ensure that supplies necessary for aseptic technique for catheter insertion are available and conveniently located (quality of evidence: III).

Strategies to Prevent CDI

- I. Basic practices for prevention and monitoring of CDI: recommended for all acute care hospitals
 1. Encourage appropriate use of antimicrobials (quality of evidence: II).
 2. Use contact precautions for infected patients, single-patient room preferred (quality of evidence: III for hand hygiene, II for gloves, III for gowns, III for single-patient room).
 3. Ensure cleaning and disinfection of equipment and the environment (quality of evidence: III for equipment, III for environment).
 4. Implement a laboratory-based alert system to provide immediate notification to infection prevention and control and clinical personnel about newly diagnosed CDI patients (quality of evidence: III).
 5. Conduct CDI surveillance and analyze and report CDI data (quality of evidence: III).

The Gap

We need better evidence

We need to implement and evaluate appropriately to add to the evidence base

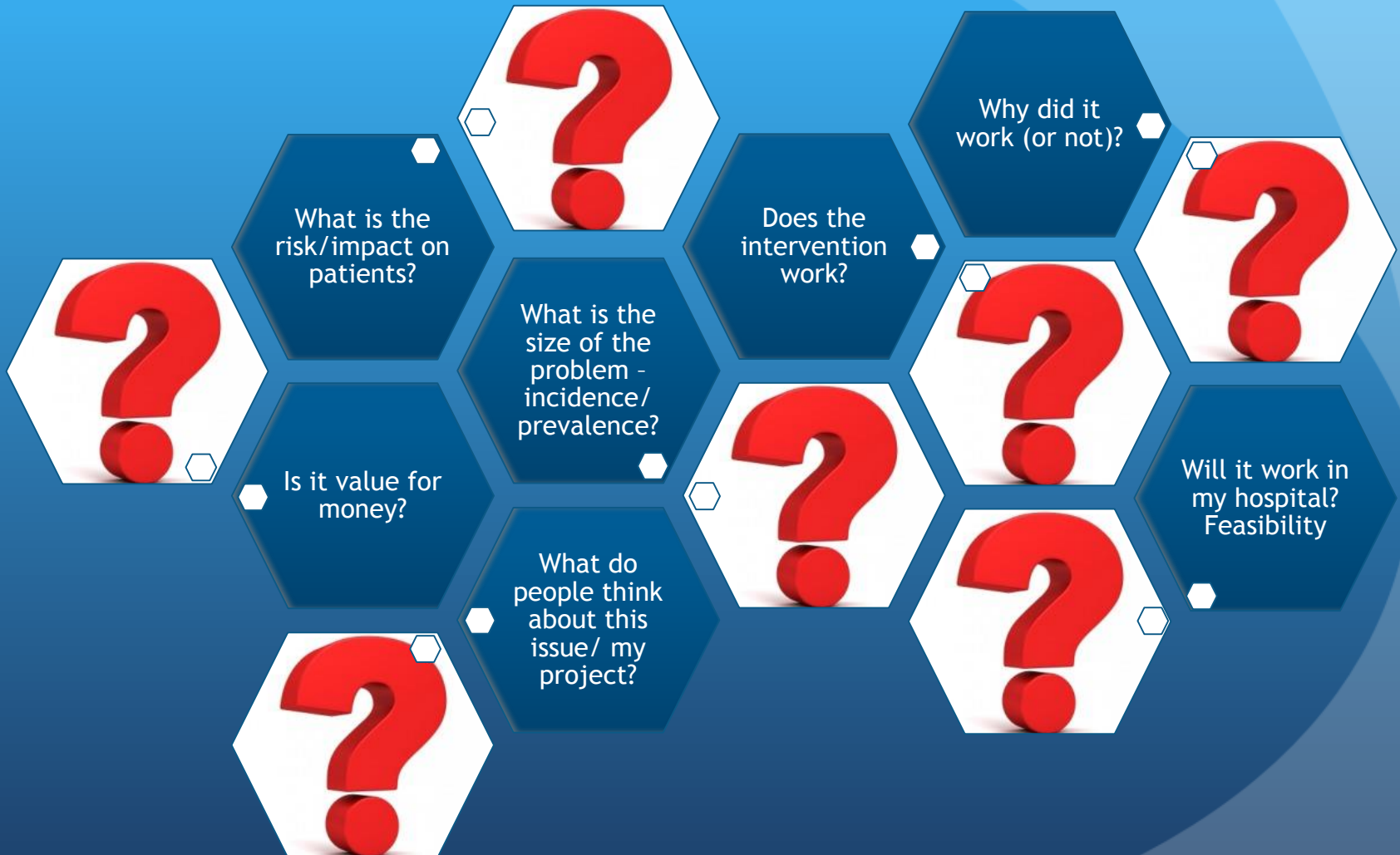
We need to value different research approaches - but focus above all on quality



The basics

- Validity, relevance, applicability!
- Design the best study you can with the resources you have
- But first:
 - Need to be clear on the question
 - Need to match the question to the study type

What is your question?



Comparing study approaches(adapted from Forman et al, 2008)

	QUALITATIVE	QUANTITATIVE
Goal	Discovery oriented, holistic, to understand processes and assumptions	Measure and define relationships among variables
Data collection	Open ended	Pre-defined
Research process	Iterative and emerging	Sequential and fixed
Sampling	Purposeful	Representative
Data Analysis	Often inductive/ interpretive	Deductive
How data is reported	As themes	As frequencies and results of statistical tests
How data from study is relevant to population	Transferability to similar settings	Generalised from sample to population

Qualitative research designs

Benefits:

- ✓ Provide explanations for processes that underlie statistical correlations
- ✓ Inform development of interventions
- ✓ Inform translational research designs through understanding of how interventions will work to produce desired outcomes (or undesired ones)

But:

- Harder to get national competitive funding
- May result in multiple single site studies about a single topic

Mixed methods research

- Not just collection of two types of data
- Need a team with both quantitative and qualitative expertise
- Can be very time consuming

Pop quiz and discussion

- We want you to participate today.
- Have a think about the following scenarios, and what type of research you need....
- Old school “audience response” - show of hands
- We will then discuss

You have observed an increasing number of SSI....

- You would like to find out the extent of the issue
- There have been some discussions about antibiotic prophylaxis not being used appropriately. You want to confirm this and find out why
- You want to implement a new bundle to reduce infections
- You want to evaluate the bundle

QUAL, QUANT OR BOTH?

Every year you participate in Antibiotic Awareness Week, but you have doubts as to whether the message is getting through.

- You want to find out what your clinicians and patients really know and think about AMR
- You want to evaluate your campaign resources

QUAL, QUANT OR BOTH?

Your hand hygiene auditing budget has been cut...

- You have been asked to trial an automated system to find out:
 - Does it work?
 - Is the information useful to inform practice?
 - How much it would cost to run

QUAL, QUANT OR BOTH?

Conclusion

- Good evidence is important - without it Evidence-Based Practice is impossible
- We need to do research that is valid, relevant and applicable
- We need to carefully choose study designs based on a clearly defined research question.
- Consider when to use quant, qual, or both!

Useful Articles

- ✓ Forman et al (2008). Qualitative research methods: Key features and insights gained from use in infection prevention research *Am Journal Infect Control*. 36:764-71
- ✓ Harbarth, S. (2010). Infection prevention research in Europe: recent advances and future priorities. *Infect Control Hosp Epidemiol* 31(S1):S11-S13
- ✓ Harder et al. Evidence-based decision-making in infectious diseases epidemiology, prevention and control: matching research questions to study designs and quality appraisal tools.(2014) *BMC Medical Research Methodology*, 14:69
- ✓ Henderson DK & Palmore TN. (2010). Critical gaps in knowledge of the epidemiology and pathophysiology of health care associated infections. *Infect Control Hosp Epidemiol* 31(S1):S4-S6.
- ✓ Khan et al. Quality and strength of evidence of the IDSA clinical practice guidelines. *Clin Infect Dis*. (2010) 51 (10): 1147-1156.
- ✓ Page, K et al. (2012). Key priorities for Australian infection control: summary of finding from the launch of the Centre for Research Excellence in reducing healthcare associated infections. *Healthcare Infection* 17:133-135.
- ✓ Sadar, N et al. (2014). The evolving landscape of healthcare-associated infections: recent advances in prevention and a road map for research. *Infect Control Hosp Epidemiol* 35:480-493.
- ✓ Sinaii, N. for Research Committee of SHEA. (2010). Charting the course for the future of science in healthcare epidemiology: results of a survey of the membership of the SHEA. *Infect Control Hosp Epidemiol* 31:669-675.

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