

Supplement 1. Approach to combining elements of CFIR and behavioral science to obtain and analyze qualitative interview data.

- 1) Developed our conceptual model: Clinician **interprets** a patient sign/symptom as “possible bacteremia” → **orders** a blood culture → **initiates antibiotics**. Decisions made during **interpretation** and/or **ordering** can lead to **blood culture overuse** → **antibiotic overuse** → **patient harm** (adverse drug events, toxicity, antibiotic resistance).
- 2) Generated specific potential triggers for overuse during the interpretation and/or ordering phases of this model.
- 3) Hypothesized the determinants of overuse that may be driving those decisions during interpretation and/or ordering.
- 4) Mapped those determinants to elements of two scientific frameworks to define, organize, and assess for these determinants; allowing for emergence of additional determinants de novo from the interview data.

Potential trigger for overuse	Hypothesized determinant of overuse	Scientific basis for this hypothesis
<b>Interpretation</b> - Sign/symptom actually unrelated to bacteremia	Clinicians have inadequate knowledge/beliefs of non-bacteremia causes of symptoms	CFIR – individual (knowledge/beliefs)
<b>Interpretation</b> - Sign/symptom not evaluated in full clinical context	Clinicians conform to typical practices in a unit (eg, do not examine a patient before ordering cultures, always culture for fever)	CFIR – inner setting (culture)
<b>Interpretation/Ordering</b> - Clinician-specific factors may outweigh patient-specific factors	Clinicians desire to take action rather than to observe a patient  Recent experience with another patient with bacteremia impacts evaluation of current patient’s symptoms	Cognitive bias – commission bias  Cognitive bias - outcome bias
<b>Ordering</b> – Factors external to the patient influence blood culture decision	Participation in national sepsis collaborative increases likelihood of blood culture decision	CFIR – outer setting (external policy incentives)

Definitions of CFIR domains are taken from Damschroder LJ et al’s Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implement Sci.* 2009;4(1):50.

Definitions of cognitive bias are taken from Blumenthal-Barby JS and Krieger H’s Cognitive Biases and Heuristics in Medical Decision Making: A Critical Review Using a Systematic Search Strategy. *Med Decis Making.* 2015; 35(4), 539–557.