

Healthcare Information & Decision Equation: Information → Decision → Action → Outcome
Is it true → Is it useful → Is it usable?

Delfini on Evidence-based Practice and the 5 Hallmarks: "Evidence-based medicine is the use of the scientific method and application of valid and useful science to inform health care provision, practice, evaluation and decisions. The use of science is required to help reduce medical uncertainty, increase predictability and inform about the probability of benefit or harm to whom." Hallmarks: 1) systematic search; 2) critical appraisal; 3) crafting of conclusions; 4) transparency; 5) currency. Delfini educational pearls, primers and tools are available for all aspects of ↓ EB/VB-CQI work.

The 10 Phases of Evidence- & Value-based Clinical Quality Improvement (EB/VB-CQI)

Phase 1: Organizational Readiness, Phase 2: Clinical Improvement Project & Team Selection, Phase 3: Project Outline
 Phase 4: **Evidence Review** ↓, Phase 5: Clinical Content Development, Phase 6: Impact Assessment, Phase 7: Communication
 Tools Development, Phase 8: Implementation: Create, Support and Sustain Change, Phase 9: Measure and Report,
 Phase 10: Update and Improve

Evidence Review: The 5 "A"s of Evidence-based Practice

1. Ask: Create highly specific and focused key questions to frame the work. Consider PICOTS: patient/population, intervention, comparator, outcomes, timing, setting. For actual search: condition/intervention 2. Acquire: Apply time-saving filters. Type of clinical question drives appropriateness of study type. 3. **Appraise** ↓: All scientific sources should be appraised for validity (closeness to truth) and usefulness (benefit to patients). 4. Apply: Phases 5 through 9 of EB/VB-CQI. 5. "A"s Again: Phase 10 of EB/VB-CQI

Appraise all Types of Information Sources

1. **Primary Studies** ↓: Original research
2. **Secondary Studies:** Studies of studies such as systematic reviews and meta-analyses
3. **Secondary Sources:** Information sources that reference primary or secondary studies

The 3 Basic Steps of Critical Appraisal to Obtain Usable Evidence: Relates to All Types of Information Sources

1. What is the best kind of **study design** to answer my clinical question? Experiment or observation?
 - a. Efficacy and safety of interventions of prevention, screening, therapy = experiments (ideal = randomized controlled trials, or RCTs, especially for efficacy)
 - b. Diagnostic testing = experiments for efficacy, observational for test accuracy (ideal = cross-sectional)
 - c. Natural history of disease and prognosis, potentially safety = observational studies
2. How well are the studies done – are they **valid**?
 - a. Evaluate the potential of bias, confounding or chance to explain or affect the study results
 - i. Bias = anything that systematically leads away from truth (meaning not by chance)
 - ii. Confounding = special type of bias where two variables are associated, creating a confusion
 - iii. Chance = outcomes by the operation of random happenstance
3. For valid studies, how useful are the **results**?
 - a. Consider the 5 areas of clinically significant benefit: morbidity, mortality, symptom relief, emotional or physical functioning, and health-related quality of life, or intermediate markers with a direct causal chain
 - b. Consider the size of benefit along with other **key considerations** ↓, favoring direct/absolute values

The 4 Phases of Primary Studies: Experiments—Look for Bias, Confounding and Chance Impacts In—

1. Selection of Subjects, 2. Performance, 3. Data Collection & 4. Assessment of Outcomes

Evidence Grading

- Summarizes usability. Many systems available. Review for meaning, validity and usefulness. May be applied to conclusions, studies or overall levels of evidence such as for clinical recommendations.
- Delfini system: A, B, BU, U=uncertain (~90%); U is not used for efficacy

Key Considerations for Decision-Making Include—

Patient perspectives & preferences: Benefits, harms, risks, costs, uncertainties, alternatives, satisfaction

Provider perspectives & preferences: Satisfaction, acceptability and clinical considerations (includes adherence issues, potential for abuse, dependency issues, tolerability, ease of use, abuse potential, etc), likely appropriate application and actionability (e.g., FDA approval, affordability, external relevance, circumstances of care, able to apply, tools available)

Other triangulation issues: May include accreditation issues, clinician dissatisfaction, community standards, cost, ethical considerations, liability and risk management issues, marketing, media or press issues, medical community impacts, medical-legal, patient considerations (eg, convenience, satisfaction, dissatisfaction, unmet need, special populations, etc.), public relations, purchasing issues, regulatory, research realities (eg, likelihood that no evidence will be able to answer clinical questions, etc.), utilization (eg, impacts of provider change including demand, do you have the capacity to support this change, impact of substitution, etc.) , overall impact on the health care organization