LEGEND: Evidence Appraisal of a Single Study

All Domains

Bench Study

Reviewer: **Today's Date:** **Final Evidence Level:**

Project/Topic of your Clinical Question:

Article Title:

Year: **First Author:** **Journal:**

Do the study aim/purpose/objectives and inclusion/exclusion criteria assist in answering your clinical question? ☐ Yes ☐ No ☐ Unknown

- Study Aim/Purpose/Objectives:
- Inclusion Criteria:
- Exclusion Criteria:

Is a bench study congruent with the author's study purpose above? ☐ Yes ☐ No ☐ Unknown

When reading the bolded questions, consider the bulleted questions to help answer the main question.

If you are uncertain of your skills in evidence evaluation, please consult a local evidence expert for assistance:

- CCHMC Evidence Experts

Unfamiliar terms can be found in the LEGEND Glossary.

Validity

Are the results of the Bench Study valid?

1.	**Was there a theoretical basis for the experiment** *(i.e., biologic or physiologic plausibility)***?**	☐ Yes	☐ No	☐ Unknown
2.	**Were the parameters used based on industry standard or relevant literature?** • If not, was there a substantive argument for using a different parameter?	☐ Yes	☐ No	☐ Unknown
3.	**Was the study conducted in the field rather than a controlled, laboratory environment?**	☐ Yes	☐ No	☐ Unknown
4.	**Were the study methods appropriate?**	☐ Yes	☐ No	☐ Unknown
5.	**Were valid and reliable instruments/methods used to measure the results?** • Was evidence provided to support the validity and reliability?	☐ Yes	☐ No	☐ Unknown
6.	**Was there freedom from conflict of interest?** • Sponsors, Funding Agency, Investigators	☐ Yes	☐ No	☐ Unknown

Comments on Study Validity:

Reliability

Are these valid study results important?

7.	**Was the description of the methods adequate to allow reproducibility?**	☐ Yes	☐ No	☐ Unknown
8.	**Was enough data provided to support study conclusions?**	☐ Yes	☐ No	☐ Unknown

9. **What were the main results of the bench study?** *(e.g., Helpful data: Page #, Table #, Figures, Graphs)*

10. **Was appropriate allowance made for uncertainties in the analysis?**
    - What were the measures of statistical uncertainty *(e.g., precision)*?
      (Were the results presented with Confidence Intervals or Standard Deviations?)

11.	**Were the results statistically significant?**	☐ Yes	☐ No	☐ Unknown

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Comments on Study Reliability:

Applicability *Can I apply these valid, important study results to my patients?*

12. Can the results be applied to my population of interest? ☐ **Yes** ☐ **No** ☐ **Unknown**

- Can the results of the bench study be translated to the clinical setting?
- Are the results relevant to my population or question of interest?

13. Would you include this study/article in development of a recommendation? ☐ **Yes** ☐ **No** ☐ **Unknown**

Comments on Study Applicability:

Additional Comments or Conclusions *("Take-Home Points")*

Quality Level / Evidence Level

- *Consider each "No" answer and the degree to which this limitation is a threat to the validity of the results, then check the appropriate box to assign the level of quality for this study/article.*
- *Consider an "Unknown" answer to one or more questions as a similar limitation to answering "No," if the information is not available in the article.*

The Evidence Level is:

☐ **Good Quality Bench Study** [5a]
☐ **Lesser Quality Bench Study** [5b]

☐ **Not Valid, Reliable, or Applicable**

Adjust the level, if the domain of your clinical question is different than the domain of the study's clinical question.
(See the entire Table of Evidence Levels or consult a local evidence expert for assistance.)

Final Evidence Level:
Rationale for adjustment:

Table of Evidence Levels

DOMAIN OF CLINICAL QUESTION	TYPE OF STUDY / STUDY DESIGN																			
	Systematic Review Meta–Analysis	Meta-Synthesis	RCT*	CCT*	Qualitative Study	Psychometric Study	Cohort – Prospective	Cohort – Retrospective	Case – Control	Longitudinal (Before/After, Time Series)	Cross – Sectional	Descriptive Study Epidemiology Case Series	Quality Improvement	Mixed Methods Study	Decision Analysis Economic Analysis Computer Simulation	Guidelines	Case Reports N-of-1 Study	Bench Study	Published Expert Opinion	Local Consensus Published Abstracts
All Domains	1a 1b											4a 4b		2/3/4 a/b	5a 5b	5a 5b	5a 5b	5a 5b	5a 5b	5

+ *RCT = Randomized Controlled Trial; CCT = Controlled Clinical Trial*

Development for this appraisal form is based on:

1. Denzen, N. & Lincoln. Y. (2005). The Sage Handbook of Qualitative Research, Sage Publications: Thousand Oaks, California.
2. Freshwater, D. (2004). Deconstructing Evidence Based Practice, Routledge: New York: New York.
3. Guba, Y. & Lincoln, E. (1989). Fourth Generation Evaluation, Sage Publications: Newbury Part, California.
4. Leininger, M (1991). Culture care diversity and universality: A theory of Nursing, National League for Nursing Press: New York
5. Leininger, M. & McFarland, M. (2006). 2nd Ed. Culture care diversity and universality: A worldwide nursing theory. Jones & Bartlett Publishers: Sudbury, Mass.
6. Lincoln, Y. & Guba, E. (1985). Naturalistic Inquiry, Sage Publications: Newbury Park, California.
7. Morse, J., Swanson, J., & Kuzal, A. (2001). The Nature of Qualitative Evidence, Sage Publications: Thousand Oaks, California.
8. Guyatt, G.; Rennie, D.; Evidence-Based Medicine Working Group.; and American Medical Association.: Users' guides to the medical literature : a manual for evidence-based clinical practice. *Users' guides to the medical literature : a manual for evidence-based clinical practice:* "JAMA & archives journals." Chicago, IL, 2002
9. Melnyk, B. M. and E. Fineout-Overholt (2005). Evidence-based practice in nursing & healthcare : a guide to best practice. Philadelphia, Lippincott Williams & Wilkins.
10. Lohr, K. N. and T. S. Carey (1999). "Assessing "best evidence": issues in grading the quality of studies for systematic reviews." Joint Commission Journal on Quality Improvement 25(9): 470-9.
11. Fineout-Overholt, E. and L. Johnston (2005). "Teaching EBP: asking searchable, answerable clinical questions." Worldviews Evid Based Nurs 2(3): 157-60.
12. Jerosch-Herold, C. (2005). "An evidence-based approach to choosing outcome measures: a checklist for the critical appraisal of validity, reliability and responsiveness studies." British Journal of Occupational Therapy 68(8): 347-53.
13. Phillips, et al: Oxford Centre for Evidence-based Medicine Levels of Evidence, 2001. Last accessed Nov 14, 2007 from http://www.cebm.net/index.aspx?o=1025.
14. Fineout-Overholt and Johnston: Teaching EBP: asking searchable, answerable clinical questions. *Worldviews Evid Based Nurs,* 2(3): 157-60, 2005.
15. Clark, E., Burkett, K., & Stanko-Lopp, D. (2009, Dec). Let Evidence Guide Every New Decision (LEGEND): an evidence evaluation system for point-of-care clinicians and guideline development teams [CCHMC LEGEND development]. J Eval Clin Pract, 15(6), 1054-1060.