



# prACTice MATTERS

A collaboration of Cornell University, University of Rochester, and New York State Center for School Safety

## What Do We Mean by “Evidence”?

by Mary Maley

The increased use of evidence in public health decision making has created renewed focus on what the term “evidence” means. In this article, we briefly consider what constitutes evidence, as well as how the types of evidence come together to support decision making.

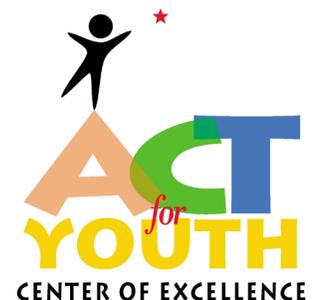
### What is Evidence?

There are many types of evidence:

- **Research evidence**, also called **empirical evidence**, comes from rigorously designed studies that collect data to address a specific research question (see *Glossary of Research Studies* on page 3). Examples include randomized control trials (RCTs), quasi-experimental studies, cohort studies, case-control studies, and case reports. These studies may provide quantitative (numerical) and/or qualitative (non-numerical) data.
- **Practice-based evidence** includes **experiential evidence** (derived from professional experience and expertise) and **contextual evidence** (derived from local data sources indicating the usefulness, feasibility, and acceptability of an innovation). Examples of practice-based evidence include case studies, pilot studies, formative evaluation studies, and reports from intermediaries and practitioners on interventions and approaches that demonstrate potential for success (Puddy & Wilkins, 2011).

### Standards for Evidence

Standards for evidence vary according to the context in which the research is being conducted and the ability to employ a rigorous study design. The highest



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quality evidence is characterized by well-designed empirical studies or systematic review of all of the studies investigating a given research question. For example, many prevention programs have incorporated research evidence into practice with the use of **Evidence-Based Programs**, which have been found to be effective based on the results of peer-reviewed evaluations, typically using randomized control trials or quasi-experimental designs (Cooney et al., 2007). RCTs are often considered the gold standard, but these studies can be expensive, lengthy, and/or not ethically feasible, putting this methodology beyond the reach of many researchers. When RCTs are not available, practitioners and policy makers must evaluate the available evidence to guide decision making.

## Criteria for Evaluating Evidence

We can evaluate evidence by looking into its quality, the expertise of investigators and reviewers, and its relevance to the question at hand:

- **Quality:** Are study methods appropriate and rigorous enough relative to the research question?
- **Expertise:** What are the qualifications of those conducting the study? Have findings been vetted through peer review and disseminated through conference presentation and/or journal publication?
- **Relevance:** Does the evidence contribute to the research question in sufficient depth and breadth?

## Evidence-based Decision Making

Evidence-based decision making is the integration of the best available research evidence with the best available practice-based evidence, including both experiential and contextual evidence, to identify the most appropriate strategies for implementation (Puddy & Wilkins, 2011).



Fig. 1 (Puddy & Wilkins, 2011)



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## Glossary of Research Studies

**Randomized control trial** - Study participants with similar profiles are chosen, then randomly assigned to groups receiving different “treatment” conditions (i.e., those who receive the intervention of interest, those who receive a different intervention, or those who receive no intervention).

**Quasi-experimental study** - Study participants are assigned to non-randomized treatment groups by the researcher.

**Cohort study** - A group is followed over a long period of time, often to identify risk factors for a condition.

**Case-control study** - A group with a particular condition is compared to a group without the condition.

**Case report** - An individual case, often one with unusual or novel conditions, is described in detail.

**Case study** - An event, group, or individual is described and analyzed.

**Pilot study** - A preliminary study is conducted to determine feasibility of an approach before scaling up.

**Formative evaluation study** - A preliminary study is conducted to identify factors that will improve an intervention.★

## References

Cooney, S. M., Huser, M., Small, S., & O'Connor, C. (2007). *Evidence-based programs: An overview*. University of Wisconsin. Retrieved from: <http://www.human.cornell.edu/outreach/upload/Evidence-based-Programs-Overview.pdf>

Puddy, R. W., & Wilkins, N. (2011). *Understanding evidence part 1: Best available research evidence: A guide to the continuum of evidence of effectiveness*. Retrieved from the Centers for Disease Control and Prevention website: [http://www.cdc.gov/violenceprevention/pdf/understanding\\_evidence-a.pdf](http://www.cdc.gov/violenceprevention/pdf/understanding_evidence-a.pdf)

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