

PAINLESS PRACTICAL PRINCIPLES OF EVALUATION FOR COMMUNITY- BASED PROJECTS: COLLECTING AND USING DATA

Holly Ruch-Ross, ScD
Maureen Finneran, MSW



*"If you cannot measure it, you cannot improve it."
-Lord Kelvin*

American Academy of Pediatrics
ADVANCING THE HEALTH OF ALL CHILDREN



Presentation Objectives

This presentation is intended to help you:

- Identify ways to measure progress on program goals and objectives.
- Select tools and strategies for collecting information you need to evaluate your program.
- Analyze and use your program evaluation data.

What is our approach?

BASIC EVALUATION PRINCIPLES

Defining Evaluation

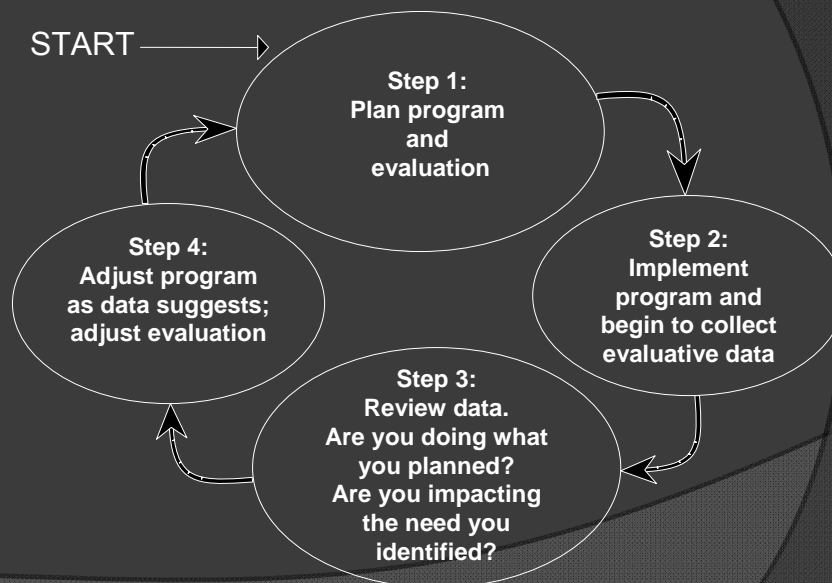
- When conducting an evaluation we use research methods to gather information that will be **actively used** for:
 - Program development and improvement
 - Program replication
 - Resource allocation
 - Policy decisions

Reasons to Evaluate

- **Checking Your Process:** Are you doing what you said you would do?
- **Determining Your Impact:** Are you having the desired effect in the target population?
- **Building Your Base of Support:** Can you generate information and evidence to share with funders and other stakeholders?
- **Replication Justification:** Is there evidence to support replication of this program?

5

The Evaluation Cycle



6

ASKING GOOD QUESTIONS

What information do I need to gather?

- Your logic model is a good starting point
- You need information for two broad purposes:
 - Documenting process
 - Assessing outcomes

Documenting Process

- ⦿ Describes what you are doing, and with/to/for whom
- ⦿ Essential for “fine-tuning” your program

9

Documenting Process

Some process questions:

- ⦿ Is implementation going as planned?
- ⦿ How many people are receiving services?
- ⦿ Who is receiving services?
- ⦿ What services are people receiving?
- ⦿ How many people are we referring to other providers?

10

Assessing Outcomes

- ◉ Measure change you hope is occurring
- ◉ Essential for demonstrating program success

11

Assessing Outcomes

Some outcome questions

- ◉ What has changed for participants in our program?
- ◉ Can we document an impact on our community?
- ◉ Can we measure improvement in the problem or need we sought to address?

12

Indicators

- An accepted measure of the outcome of interest.
- A measurable intermediate step or other approximation of an outcome.
- An observable correlate of the outcome of interest.
- May be used when the outcome itself is difficult to measure directly within the time frame of the project.

13

Outcomes and Indicators: Examples

Outcome	Indicator
Prevent pregnancy	Contraceptive compliance
High school graduation	School attendance, GPA
Reduce disease incidence	Immunization rate
Improve asthma management	Emergency room visits
Prevent dental caries	Plaque index
Reduce childhood obesity	BMI

14

Keeping Outputs, Outcomes and Indicators Straight

Output	Outcome	Indicator
Direct product of program activities	Change in the target population that result from the program	Intermediate step or approximation of an outcome
Reflects program implementation	Reflects program impacts	Reflects steps toward program impacts or proxy measures
Example: Parents attend an oral hygiene session	Example: Young children are free of dental caries	Example: Parents have knowledge of oral hygiene practices

15

Comparison Information

- ◉ Randomly assigned control group (the “gold standard”)
- ◉ Waiting list
- ◉ Local comparison group (a “convenience sample”)
- ◉ Community, state or national data
- ◉ Absolute standard
- ◉ Trend data
- ◉ Baseline data for program participants

16

Some Factors That May Affect Your Results

- History. Things that happen in your community outside your project.
- Passage of time. Natural maturation processes that occur over time.
- Selection bias. Bias introduced based on who is missed in service delivery and/or data collection.

17

Gathering Information: Information You Already Have

- What is already routinely collected by your organization?
- What charting, summaries or reporting are already carried out?
- Can you simplify or streamline your data systems?
- Do you (or your organization) already have background information about your participants?

18

Gathering Information: Existing Data in Your Community

- Many organizations collect some community level data
 - Local, county or state public health departments
 - Collaborating organizations
 - Other organizations in the community

19

Gathering Information: Data you will need to collect

- Who has the information?
- How can the source most easily share the information?
- Will service delivery staff conduct data collection?
- What is the timeframe?
 - Can the data collection schedule be tied to program activities?
- Can we use multiple strategies to gather important information?

20

Gathering Information: Data Collection Methods

	Description	Uses	Limitations
Interview	An interviewer asks a series of questions and records the answers.	Useful for in-depth probing and follow-up questions. Good for people who could not complete a questionnaire.	Labor intensive. Requires comfort with and trust in the interviewer. Does not feel private.
Questionnaire (survey)	A series of written questions answered in writing. Questions may be long or short answer.	Anonymous response is possible. Usually cost-effective.	The burden is on the respondent. Not well suited to "how" or "why" questions.
Knowledge assessment	A test of knowledge, most commonly as a pre- and post-test.	Quick, inexpensive indicator of program progress.	Questions must sample the correct domain and be appropriate for the target population.

21

Gathering Information: Data Collection Methods con't

	Description	Uses	Limitations
Biometric test	A physiologic measurement.	Usually highly reliable and well established for certain conditions.	Often relatively expensive.
Observation	A trained individual observes a phenomenon using a specific protocol.	Useful for assessing change in an environment or understanding a process.	Dependent on the expertise, objectivity and consistency of the observer.
Chart review	.Systematic extraction of information from existing patient or client records.	Existing information; no concern for scheduling, etc. Any sampling method can be used.	Labor intensive. Missing information is not recoverable.
Focus group	A professionally facilitated, focused discussion among a group of selected individuals.	Good for identifying concerns, needs, and barriers as well as a richer understanding.	Not necessarily representative. Language barriers can be an issue.

22

Selecting the Right Tools

- A tool, in evaluation and research, is a specific mechanism used to collect information; it is sometimes known as an instrument or a measure.
- Examples of types of tools include questionnaires, clinical checklists, computer programs, and observational rating scales.

23

Selecting the Right Tools

What makes a good tool?

- Simple
- Realistic
- Used consistently
- In a useful form
- Measures the right construct
- Appropriate for the target population
- Easy to administer in the setting

24

Selecting the Right Tools: Using Existing Tools

- Credibility
- Opportunity for comparison
- Well-established measures of constructs that are not directly observable
- Affordable
- Supported by the author

25

Selecting the Right Tools: Assessing the Quality of Tools

- Validity – a tool really measures what it is intended to measure.
- Reliability – a tool includes items that are related to one another and give a consistent estimate of the construct being measured.
- Standardization – a tool has been tested in one or more populations and there is information available to help interpret results.

26

Selecting the Right Tools: Finding Existing Tools

- ◉ Consider tools being used by programs with goals and objectives similar to yours
- ◉ Look for compendia of measures for specific disciplines
- ◉ Look at internet sites operated by organizations or institutions that conduct or support research and evaluation in your subject area.

27

Selecting the Right Tools: Designing Your Own Tools

- ◉ Adapt an existing tool
- ◉ Review the literature
- ◉ Talk to other programs
- ◉ Talk to those with experience or expertise
- ◉ Pilot test tools

28

Selecting the Right Tools: Qualitative Data

- ◉ Using qualitative data involves the collection of data in the form of words rather than numbers.
- ◉ Qualitative data is often used to supplement or help in the interpretation of quantitative data.
- ◉ Most commonly utilizes data collected in in-depth interviews or focus groups.

29

Selecting the Right Tools: Some Uses for Qualitative Data

- ◉ Develop insight into feelings, attitudes, opinions and motivations
- ◉ Understand and describe the local context of your program.
- ◉ Study selected issues in depth and detail.
- ◉ Obtain the broadest possible response to a question or issue.
- ◉ Gather rich information about a small number of cases.
- ◉ Put a human face on the program.

30

Planning Data Collection

- Best when integrated with service delivery.
- Be clear about who is collecting what information.
- Specify where data collection will occur.
- Use a tickler system to help staff keep track of what is due when.
- Have a system in place for tracking participants.
- Protect participant confidentiality.
- Do not collect information that you will not use.

31

Planning Data Collection: Guidelines

- Keep your data collection:
 - Simple – the sophistication of the evaluation should be appropriate for the scale of the program.
 - Focused – Do not collect any information you will not use.
 - Ethical – Protect the privacy and dignity of all participants.
 - Consistent – Information should be collected in the same manner for each person at each time point.

32

Managing Your Data

- Be clear about whose responsibility it is to manage data.
- Set up your system for storing information before you begin to collect it.
- Protect confidentiality.
- Begin data entry immediately.

33

Managing Your Data: Is Technology Your Friend?

- Involve technology as early as possible in the planning process.
- Keep it as simple as possible.
- Choose technology that will be around at least five years, and that is compatible with your current system.
- Make certain that your choices match the technical support that is available to you.

34

**YOU'VE GOT IT,
FLAUNT IT**

Approaching Data Analysis

Data analysis should follow directly from the questions you are trying to answer about your program.

A Reminder: Research vs. Evaluation

- **Research:** to conduct a careful, patient, systematic, diligent inquiry or examination in some field of knowledge, to establish facts or principles; to laboriously or continuously search after truth.
- **Evaluation:** to determine the worth of; to find the amount or value of; to appraise.

37

Analyzing Your Data: Assessing Data Quality

- Representativeness
- Completeness
- Comprehensiveness
- Cleanliness

38

Data Analysis: Two Rules

- Your data analysis flows directly from your program evaluation questions.
- Keep it as simple as possible.

39

Descriptive and Inferential Statistics

- Descriptive statistical methods are generally used to summarize numerical data collected from a group of interest, such as the proportion of the group that is female or their average score on a screening test.
- Inferential statistical analysis seeks to draw a conclusion about a population based on a sample from that population.

40

Statistical Significance

- Statistical significance means that a finding is unlikely to have occurred by chance.
- Tests of statistical significance are most often used in inferential statistics.

41

Analyzing Your Data: What is the Question?

- Review your logic model and your evaluation plan.
- If you are working with an analyst, he or she will be able to help you refine your questions.
- Specify your questions in terms of the data you have collected.

42

Approaching Data Analysis: Process Evaluation Questions

- ◉ Is the program being implemented as intended?
- ◉ Who participates in the program?
- ◉ What services are received?

43

Approaching Data Analysis: Outcome Evaluation Questions

- ◉ Did the intervention make a difference?
- ◉ What changes can be measured?
(knowledge, attitude, behavior, health status, incidence, prevalence)

44

Analyzing Your Data: A Few Simple Procedures

- Descriptive statistics in the form of percentages, averages and graphs summarize the information you have collected.
- Especially useful for describing the population served, the services that are used, and the status of program participants at a given point in time.

45

Analyzing Your Data: Frequency Distribution

- A simple tally or count of the number of times each level or score on a variable occurs in a sample or population.
- Most useful with variables that are nominal, or categorical.
- Easily presented as a bar graph or pie chart.

46

Analyzing Your Data: A Simple Frequency Distribution

Characteristics of Program Participants: Country of Origin

Country of Origin	Percentage
United States	22%
Mexico	37%
Honduras	22%
Senegal	9%
Other	10%
TOTAL	100%

47

Analyzing Your Data: Measures of Central Tendency

Measures of central tendency are used to summarize variables that are numerical, like age or a test score.

- Mean – the mathematical average
- Median – the center of the distribution when arranged in numerical order; half of the values are above the median and half are below it.
- Mode – the most common value.

48

Analyzing Your Data: Simple Measures of Central Tendency

Age and Pre and Posttest Scores of Program Participants

	Mean	Median	Mode
Age of mother (years)	20.9	19.7	20.0
Age of child (years)	4.2	3.8	3.9
Reading Readiness Score – Pretest	8.4	9.1	9.0
Reading Readiness Score – Posttest	10.3	10.1	10.2

49

Analyzing Your Data: Comparing Groups

Comparing groups allows you to:

- Control for or explore factors that may affect the success of your program
- Look at groups separately because you know or suspect differences among them that may affect their participation or the program's impact
- Use available comparison data to examine how participants in your program compare to the general population.

50

Analyzing Your Data: Comparing Groups

- For categorical data, cross-tabulation is the most common procedure.
 - Cross-tabulation is a tally, like a frequency distribution, but divided between groups.
 - Distributions are commonly compared using a chi-square statistic.
- For numerical data, means are usually compared and differences tested using a t-test.

51

Analyzing Your Data: A Simple Cross-tabulation

Enrollment in Health Care Insurance of Participating Families by
Project Staff

Family Enrolled in Health Care by Project Staff	Yes	No
United States	75%	25%
Mexico	55%	45%
Honduras	35%	65%
Senegal	20%	80%
Other	65%	35%

52

Analyzing Your Data: Change Over Time

- Need to have information at baseline and the follow up point of interest for all participants
- Must be able to match each participant across time points
- Analysis compares each participant to him or herself
- Can compare amount of change between groups

53

Analyzing Your Data: A Quick Guide on Statistical Methods

Summary of (Simple) Quantitative Statistical Procedures

	Usual Procedure	Test of Significance	Change over Time
<i>Numerical data</i>			
1 group	Mean	NA	Paired t-test
2 groups ¹	Comparison of means	t-test	
<i>Categorical (nominal) data</i>			
1 group	Frequency distribution	NA	McNemar test
2 groups ¹	Cross-tabulation	Chi-square	

¹Procedures are similar for more than two groups.

54

Analyzing Your Data: Qualitative Data

- Data reduction – focusing and simplifying the data to produce manageable “chunks.”
- Data display – assembling and organizing the data for drawing conclusions. Narrative text, but also graphs, matrices and charts.
- Conclusion drawing/verification – the process of extracting meaning from the data. Validity of conclusions depends on plausibility, sturdiness, and confirmability.

55

Using Your Findings: Making Decisions With Your Data

First: You know how the process has gone; are you satisfied with the integrity of the data?

Then:

- Look for consistency – do findings relate to one another in expected ways?
- Look for trends – does the progression over time make sense?
- Ask questions – do you understand the results well enough to explain them?
- Check with others – do other stakeholders, staff and participants agree that the findings make sense?

56

Using Your Data: Common Uses of Evaluation Information Among Community-Based Programs

- Improve services
- Advocate for service population
- Obtain funding
- Support replication
- Market services or organization
- Promote policy change

57

Using Your Data: Presenting Your Findings

- Consider your target audience
 - Community
 - Target population
 - Funders (current and potential)
 - Community partners
 - Professional colleagues
- Provide a context
 - Describe the program (use your logic model!)
 - Report how data were collected
 - Include any limitations or data quality issues

58

Using Your Data: Presenting Your Findings

- Simple messages work best
- Match detail to the audience
- Make presentations as visual as possible

59

Need More Help with Evaluation?

Look for “Evaluating Your Community-Based Program Part II: Putting Your Evaluation Plan to Work”

Online copies are available at: www.aap.org/EvalResources

60

A Little More Help With Statistics and Analysis

- The University of Wisconsin-Extension: Using Excel for analyzing survey questionnaires (<http://learningstore.uwex.edu/Using-Excel-for-Analyzing-Survey-Questionnaires-P1030C0.aspx>)
- Gornick L, Wollcott S. *The Cartoon Guide to Statistics*. New York, NY: HarperCollins, 2005
- Huff D. *How to Lie with Statistics*. New York, NY: WW Norton and Company, 1993
- The University of Wisconsin-Extension: Qualitative data analysis
- (<http://learningstore.uwex.edu/Analyzing-Qualitative-Data-P1023C237.aspx>)

61

Where to Find More Information...

- Evaluation Resources on the AAP Web site: www.aap.org/commpeds/resources/evaluation.html

You will find information on...

- Logic models
- Outcomes
- Questionnaire Design
- Evaluation measures & instruments

62