

Develop Tools

At the end of this module, you will be able to:

- ▲ Find data collection measures or tools that meet your needs (Step 3a).
- ▲ Develop new data collection tools or modify existing ones (Step 3b).
- ▲ Assess the quality of your data collection tools (Step 3c).

In Step 2, you established expectations for your program. After checking their feasibility, you developed your data collection plan. Then you completed a logistics plan by considering the tasks required to collect the data you need. To assess the feasibility of your data collection plan, you examined its resource implications. As part of the data collection plan you identified the type of tools that could collect the data you require. Step 3 focuses on the development of data collection tools.

Data collection tools are made up of measures. Before developing new tools, it is important to check to see if there are existing measures that meet your needs. Occasionally, you may even find an entire tool that you can use. Finding existing measures and tools is challenging and time-consuming, but saves time and improves the quality of your data in the long run. Step 3a offers some suggestions for finding existing measures or tools.

If there are no existing measures or tools, you will have to create a new tool. Chances are even if you do find existing ones, you will have to make some modifications. Step 3b explains the steps in developing a new data collection tool or modifying an existing one. All data collection tools involve asking questions and recording answers. The steps in tool development are: draft the questions; determine the type of response; select the response categories; and put the questions and answers together in a clear and easy-to-understand format.

Whether you create your own tool or use an existing one, it is important to assess its quality. Your evaluation is intended to produce data to assist you to make decisions about your program. You must feel confident that your decision is based on consistent measures. Step 3c discusses two ways to test data quality: the content and clarity test; and the stability reliability test.

STEP 3 a

Finding Existing Measures and Tools

Developing tools that collect high-quality data can be time-consuming. It is always a good idea to see if there are existing measures or tools that you can use. You may be able to save time and improve the quality of your data by using all or part of a tool that has already been used successfully.

How do you find existing measures and tools?

- Ask colleagues working in similar program areas.
- Check conference papers or proceedings, health unit or discipline-specific newsletters or PHERO, the *Public Health & Epidemiology Report Ontario*.
- Search the Internet (newsgroups, the World Wide Web or e-mail discussion lists).
- Systematically review the published literature.
- Check inventories of existing measures. One example is Ian McDowell and Clare Newell's *Measuring Health: A Guide to Rating Scales and Questionnaires* published by Oxford University Press in 1987.
- Ask university faculty or staff at system-linked research units and health information partnerships, etc.

Finding existing measures and tools can be difficult. If you have trouble, seek assistance from a librarian/information specialist or an evaluation specialist.

It is rare to find an entire tool that perfectly suits your needs. Most likely you will have to borrow a few measures from one or more tools. If you are not using an existing tool in its entirety, it is important to determine whether the individual measures you intend to borrow can be used on their own.

Sometimes individual measures can stand alone; other times, measures are not meaningful when they stand alone. Rather, they work within a group to measure a particular concept. This is often the case for rating scales or indices, which measure complex concepts like self-esteem, anxiety or quality of life. These groups of measures must remain intact. Think about an IQ test, for example. Many individual measures make up the IQ test, which when taken together measure intelligence. The individual measures, however, are not necessarily meaningful on their own. Do not assume that if you use a single measure from an existing scale that you will be measuring the same concept.

If you do find measures or tools that are relevant to your evaluation:

- refer to your *Expectations Worksheet* and review whether the measures or tools will be able to collect all of the data you need — if not, continue your search or work through Step 3b and develop your own measures from scratch; and
- review the validity and reliability tests with your evaluation specialist or epidemiologist — if the measure or tool is not of sufficiently high quality, continue your search or go to Step 3b (there is no point in replicating a poor data collection tool).

If you do find a good measure or tool, assess how well it addresses your unique evaluation questions and how well it will work in your particular situation, by completing the content and clarity test as discussed in Step 3c (also consider assessing stability reliability).

STEP 3 b

Developing Data Collection Measures and Tools

This section will help you figure out the questions and answers your tool should contain. The *Tool Worksheet* will guide you through this process. The *Tool Worksheet* can be used to develop all types of tools, including self-completed questionnaires, telephone surveys, focus groups, face-to-face interviews, activity logs, registration forms and attendance sheets. One of the completed *Tool Worksheets* from the evaluation of the Parenting Program is provided as an example.

Tool Worksheet			
Type of Tool: <i>Self-completed questionnaire</i>			
Expectations of the Program (copy from <i>Methods Worksheet</i>)	Individual Question on Tool	Type of Response (open or closed)	Pre-Set Response Categories (for closed-ended questions only)
<i>At least 70% of all participants rate the series as good or excellent</i>	<i>Overall, how would you rate the series?</i>	<i>Closed</i>	<i>Excellent Good Fair Poor</i>
<i>At least 70% of participants with high school education or less rate the series as good or excellent</i>	<i>What is the highest level of education you have completed?</i>	<i>Closed</i>	<i>Elementary school Some high school Completed high school Some college or university Completed college or university</i>
<i>Some suggestions for improvements in length, location, topics or other areas</i>	<i>What should be done to improve the series next time?</i>	<i>Open</i>	
<i>At least 70% of all participants say they would recommend the series to a friend</i>	<i>Would you recommend the series to a friend?</i>	<i>Closed</i>	<i>Yes No</i>
<i>At least 70% of participants think that their parenting skills improved</i>	<i>What impact has the series had on your ability to deal with your toddler?</i>	<i>Closed</i>	<i>Very positive Somewhat positive Somewhat negative Very negative No impact at all</i>
<i>At least 70% of participants think that their knowledge about parenting increased</i>	<i>What impact has the series had on your knowledge about parenting?</i>	<i>Closed</i>	<i>Very positive Somewhat positive Somewhat negative Very negative No impact at all</i>

Drafting the Questions

To get started, make one copy of the *Tool Worksheet* for each tool listed in the *Methods Worksheet*. Write the tool type at the top of the *Tool Worksheet* — for example, interview, self-completed questionnaire, registration form, etc. Then, in the first column, copy the expectations that were listed in the *Methods Worksheet* for that tool.

For each expectation, write one or more questions you want to ask the people who have the data you need. Some expectations will only require one question on a tool. For example, “In what year were you born?” is the individual question for the expectation “20% of participants are less than age 25.” Others will require several questions to tap all of the dimensions of an issue. To explore participants’ satisfaction, for example, it may be necessary to ask, “How satisfied were you with each of the following aspects of the sessions: start and finish time of the session; location; topics; time allowed for questions?”

Make sure that all questions on your tool relate back to the overall purpose of the evaluation and the specific evaluation questions and expectations. Remember, there must be a clear rationale for every single question.

Questions on the data collection tool must be easy to understand and clear. Keep in mind the following suggestions:

- Use simple and familiar words. Consider the vocabulary you are using and the literacy levels of the people from whom you are collecting data. A good rule of thumb is a Grade 6 reading level. Use good grammar.
- Keep questions short and to the point.
- Use standard wording for common questions such as demographics or health attitudes, behaviour or status. Check Statistics Canada Census questions or the National Population Health Survey for examples.
- Assess the need for translation into other languages.

Also see “Tips for Asking Questions” for practical suggestions on avoiding some common problems.

Tips for Asking Questions

Problem	Example	Solution	Example
Loaded questions	Do you support laws for bicycle helmets to save human lives?	Tone it down	Do you feel that bicycle helmet legislation is required to reduce injuries from bicycle crashes and/or collisions?
Compound question	How satisfied were you with the time and location of the sessions?	Break it down	How satisfied were you with the time of the sessions? How satisfied were you with the location of the sessions?
Double negatives	Do you agree or disagree with the following statement: Lack of measles immunisations is not a problem in Ontario.	Remove a negative	Do you agree or disagree with the following statement: Measles immunisation is a problem in Ontario.
Double-barrelled questions	Do you breastfeed to save money?	Ask it in stages	Do you breastfeed? If yes, why?
Leading questions	Most doctors believe that lack of exercise leads to heart disease. Do you agree?	Get rid of the bias	Do you agree or disagree with the following statement: Lack of exercise leads to heart disease.
Jargon or technical terms	Determinants of health	Say what you mean in everyday language	Factors which affect our health
Foreign phrases or slang	Raison d'être	Explain exactly what you mean	Purpose
Acronyms & abbreviations	PHN	Spell it out (at least the first time)	Public Health Nurse



Determining the Type of Response and the Response Categories

The next step on the *Tool Worksheet* is to select the type of response for each question. Read through this section and then complete the third and fourth columns of the *Tool Worksheet* for each individual question on the tool.

There are two ways to record answers to questions:

- with pre-set categories (closed-ended questions); or
- in people's own words (open-ended questions).

Closed-ended Questions

The response categories for closed-ended questions are pre-determined. Respondents select one or more existing categories. With closed-ended questions, it is possible to count the number of respondents who select each category and report statistics. This standardisation makes comparisons easier than with open-ended questions.

There are two main types of pre-set response categories — lists and scales.

With lists, two or more possible responses are listed and respondents are asked to pick the one that matches their answer. For some questions, respondents may be instructed to pick more than one answer. The following example illustrates this type of list.

Where did you hear about the Parenting Series? (pick all that apply)

- newspaper
- from a friend or family member
- radio
- television
- community resource centre
- doctor or nurse
- community organisation or group (e.g. library, church, etc.)

Sometimes lists are only *partially* closed-ended. This type of question usually includes an “other” category and prompts respondents to provide additional data. An “other” category can be used when you are not sure that you have covered every possible answer. Think carefully about the data you need — analysing partially closed-ended questions can be difficult. The following question is an example of a partially closed-ended question.

Which of the following have you learned as a result of the Parenting Series?

- how to take care of my child when she/he is sick
- new ideas for healthy, balanced meals
- tips for communicating effectively with my child
- how to set limits
- when to talk about sexuality with my child
- how to build my toddler's self-esteem
- other (please specify)

Unlike lists, which are in no particular order, the response categories for scales are ordered. Scales provide data about the *strength* of someone’s opinion or the *level* of their satisfaction. The first and last items in a scale should be opposites as in the following example, in which “excellent” is the opposite of “poor.”

Overall, how would you rate the series?

- excellent
- good
- fair
- poor

Tips for the Pre-set Response Categories of Closed-ended Questions

Common Problems	Example	Solution	Example
The respondent’s answer fits into more than one response category	Last week, how many times did you read the newspaper? <input type="checkbox"/> 1-2 <input type="checkbox"/> 2-3 <input type="checkbox"/> MORE THAN 3	Make sure response categories do not overlap	Last week, how many times did you read the newspaper? <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 OR MORE
Not everyone interprets response categories in the same way	How often do you read our health unit newsletter? <input type="checkbox"/> REGULARLY <input type="checkbox"/> OCCASIONALLY <input type="checkbox"/> NEVER	Build in a reference to time	How many issues of our health unit newsletter did you read last year? <input type="checkbox"/> 3-4 issues <input type="checkbox"/> 1-2 issues <input type="checkbox"/> NONE

Open-ended Questions

Open-ended questions do not have any pre-set response categories. Some data collection tools, such as focus groups, consist entirely of open-ended questions. Other types of tools, such as self-completed questionnaires, may contain a mixture of open-ended and closed-ended questions. Open-ended questions allow people to express themselves in their own words. This type of question is only appropriate when people are willing and able to express themselves in this way.

Unfortunately, open-ended questions are often difficult to summarise and interpret. You generally don’t count the number of times people say things. Instead, you look for broad themes.

The following question is an example of an open-ended question:

What did you learn as a result of the Parenting Series?

Putting the Tool Together

Once you have drafted the questions and determined the type of response, you are ready to put the tool together. Five completed tools from the evaluation of the Parenting Program are included in Appendix C — an attendance sheet, a self-completed questionnaire, a registration form, an activity log and a focus group guide. Refer to these examples as you put your data collection tools together. Remember — these are just examples and your data collection tools may look different, depending on your evaluation questions, who has the data you need and who is going to collect it.

How you put a tool together depends on its type. To put an attendance sheet together, for example, set up a table of rows and columns, as in the example from the Parenting Program — one column for the name of the participant and a column for each event for which you plan to record attendance. Put a title on the sheet, indicate some key program details (date and place, for example) and label each column.

Most other types of tools are not set up as a table with rows and columns. They consist of a series of questions and answers. These should begin with some kind of an introduction and instructions for completion. The introduction should include the purpose of the tool, the topics that the tool will cover, how to complete the tool, how long it will take and who will use the results.

Indicate clearly any questions that are not to be asked of everyone. These are called skips; for example, *If you don't currently smoke, skip to question 3.* Next, look at the questions on the *Tool Worksheet* and group those that deal with the same general topic areas. Each group of similar questions will be a separate section on the tool. Avoid having too many questions on the same topic, so people don't get irritated or bored. Put sections in a logical order; avoid jumping back and forth from one topic to the next. Introduce each section with a sentence or phrase to let people know you're moving on to a new topic area. This transition doesn't have to be long. It can be something as simple as, "Now I'd like to ask you about" or, "This next section deals with....." Tools such as self-completed questionnaires, mail surveys or focus groups should flow like a conversation.

Decide which section should go first. Capture people's attention with interesting, relevant and easy-to-answer questions that apply to everyone. Put a question that is potentially threatening, too personal, long or complex toward the end (e.g., age, income, sexual practices, alcohol consumption or drug use). To minimise the possible sensitivity of these questions, consider the following suggestions.

- Emphasise confidentiality.
- Make the response categories as broad as possible.
- Use non-judgmental wording.
- Explain why you are asking these questions.
- Consider alternative ways of asking these questions (e.g., ask what year they were born instead of how old they are).

- Use a preamble which softens the question and makes all possible responses socially acceptable (e.g., There are many things that influence a family's decision to breastfeed, and not all families can or do. Did you breastfeed your baby?).

Special Considerations for Self-Completed Tools

First impressions influence whether or not someone will complete a tool such as a self-completed questionnaire, registration form or mail survey. Consider the following tips for an attractive, professional, uncluttered look.

- Use a font that is easy to read.
- Use response categories that are easy to understand and easy to complete.
- Number each question clearly.
- Leave a blank space for open-ended responses (don't provide lines).
- Do not split questions between pages.
- Put questions in a different typeface, font or style so they stand out from the instructions or response categories.

A brief explanation should accompany tools that people fill out on their own. The explanation should be one page maximum. Make it look professional, but keep it friendly. It should address the following points.

- Who wants to know and why.
- What the tool is about.
- How long the tool will take to complete and what to do when they're done.
- How the data will be used.

STEP 3 **c**

Assessing the Quality of the Data Collection Tool

Once you have put your data collection tool together from scratch, or modified an existing one, it is critical to assess its quality. There are several ways to do this. This section discusses two: the content and clarity test, and stability reliability test. At a minimum, you should do the content and clarity test. If your resources permit, it would also be a good idea to examine the stability reliability.

The Content and Clarity Test

As the name implies, this test examines two important aspects of quality: content (is the tool measuring exactly what you want it to measure?) and clarity (is the tool easy to understand?). In all evaluations, you want to have confidence in the quality of your data. Therefore, the content and clarity test should always be done for new tools and existing tools that have been modified.



The content and clarity test is a review of the tool by two different groups of people. The first group is made up of “experts” who are knowledgeable about the general topic area of the tool. Usually about three to five “experts” is ample. The nature of people’s expertise varies from evaluation to evaluation. For the evaluation of the Parenting Program, the nurse leaders might be the “experts” in reviewing a self-administered questionnaire for program participants; because they are very familiar with the program’s activities, target groups and intended outcomes.

The second group is composed of people who are similar to those who will eventually provide you with real data. The number of people required varies tremendously; it depends on the type of tool and its complexity. You must decide what will make you confident that the tool is clear and that it is measuring what it is supposed to. It is generally safe to have about 10 people review it. You may need to have more if your tool has a lot of skips. On the other hand, if the tool is very simple and your respondents are very homogeneous, five is probably sufficient. Make sure that at least two people go through each line of questioning.

Ask each person in the two groups the following questions.

- Does the tool measure what it is supposed to?
- Are there any unnecessary measures included in the tool?
- Are the questions easy to understand and clear?
- Will people be able to answer the questions?
- Will people be able to follow the instructions?
- What is the quality of translation (if applicable)?
- Are there colloquial expressions that may not be understood?
- Is the font size and style easy to read?
- Are the response categories exhaustive?
- Will people have trouble remembering information needed to answer questions?
- Does the tool read smoothly and flow logically?
- Are the skip patterns easy to follow?
- Will the tool hold people’s interest?
- Are there any typographical errors or spelling mistakes?
- Are there any questions that may be culturally inappropriate?

Correct any problems that are uncovered in the content and clarity test. If the reviewers indicate that the tool doesn’t include all of the measures that it should or some measures that it shouldn’t, revisit the *Tool Worksheet*.

Stability Reliability Test

If you have developed new measures, it is a good idea to test their stability reliability. Stability reliability refers to the consistency of a measure. Examining stability reliability involves asking a sample of people to complete a data collection tool at one point in time, and then again later on. If a measure is reliable, then the data should be consistent between the two time periods (provided there haven't been any changes in whatever is being measured). It is important to check the reliability of all of the measures in your data collection tool. Some may be reliable, others may not be. Check with your evaluation specialist or epidemiologist for the numbers required and the proper analysis techniques for interpreting the results of the stability reliability test.

Key Points

- ▲ Using existing measures and tools can improve the quality of your data.
- ▲ There are a variety of data collection tools — all involve asking questions and recording answers.
- ▲ There are two types of questions: closed-ended, which have pre-set response categories, and open-ended, which allow people to express their answers in their own words.
- ▲ Assessing quality is an important part of the tool development process.

Quiz Yourself

- ▲ How can you find out if a data collection tool that might meet your needs already exists?
- ▲ List one advantage and one disadvantage of using open-ended questions.
- ▲ Name the two types of response categories for closed-ended questions. What is the difference between them?
- ▲ What types of questions should be asked at the end of a tool?
- ▲ Describe one way to assess the quality of a data collection tool.



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