

# 2012 Military Health System CONFERENCE



## Are Your Support Programs for Service Members Effective?

### The MHS: Healthcare to Health

Defense Centers of Excellence for Psychological Health & Traumatic Brain Injury (DCoE)

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**DEFENSE CENTERS OF EXCELLENCE**

For Psychological Health & Traumatic Brain Injury

# Conflict of Interest Disclosure



Has no real or apparent  
conflicts of interest to report.

Beata Barci, MHS, MS

Ricky Brathwaite, MS

Julie Briski, MSPH, BSN

Samantha Crowe, PhD

Lauren Honess-Morreale, MPH

Liz Oswald, PhD

Theresa Spitzer, PhDc

Lyndsay Stauffer, MBA

# Introducing a systematic process for program evaluation



- Session Objectives: by the end of this workshop, you will be able to:
  - Understand the 7-step program evaluation framework as described
  - Apply this program evaluation framework to assess the effectiveness of your programs

# Overview of the topics we will discuss today



- Introduction
- Define program evaluation
- Discuss a 7-step evaluation process, illustrated through a sample case study
  1. Review Program Information
  2. Develop Evaluation Questions
  3. Design Evaluation
  4. Address Logistical Issues
  5. Gather Data
  6. Analyze Data
  7. Generate Feedback

# Ground rules and housekeeping



- Ground rules
  - Everyone may speak; respect the speaker
  - Avoid sidebar discussions
  - End point first
  - Record your questions and ask at end of session
  - Parking lots
- Workshop materials
- Activities and interactive sessions

# We would like to get to know you



What organization do you represent?

Select one of the following:

- A. U.S. Air Force
- B. U.S. Army
- C. U.S. Coast Guard
- D. U.S. Navy/Marine Corps
- E. U.S. Public Health Service
- F. Other Organization

# We would like to get to know you



Have you ever performed an evaluation of a program?

- A. Yes
- B. No
- C. No, but planning to perform one within the next 6 months

# Program Evaluation assesses feasibility and effectiveness



**Program Evaluations** are individual systematic studies conducted periodically or on an ad hoc basis to assess how well a program is working.

- They are often conducted by experts external to the program, either inside or outside the agency, as well as by program managers
- A program evaluation typically examines achievement of program objectives in the context of other aspects of program performance

*Source: GAO, 2011 – Performance Measurement and Evaluation: Definitions and Relationships*



# These seven steps are key to Program Evaluation



# Why should we perform a Program Evaluation?



# Conducting a Program Evaluation can provide multiple benefits



- Potential Benefits:
  - A program evaluation can help determine “what works” and “what does not work.”
  - A program evaluation can showcase the effectiveness of a program –helping to establish it as a “Best Practice”
  - A program evaluation can improve quality of services provided to participants
- Evaluation results can be used to further improve program performance and demonstrate impact

# Introduction to Case Study: *Ready Minds*



**Program Description:** The *Ready Minds* program has a primary goal of promoting readiness among service members with deployment related conditions through education and behavioral health interventions.

*Ready Minds* program services have been designed to:

1. Identify and treat psychological health concerns
2. Screen and provide referrals for co-morbid conditions (e.g., traumatic brain injury).

# Case Study: *Ready Minds* program objectives



*Ready Minds* promotes service member readiness by:

- 1) Increasing knowledge and education surrounding behavioral health disorders
- 2) Providing interventions to service members with psychological health disorders
- 3) Identifying other co-morbid health issues and referring service members to other specialty clinics as appropriate

# Step 1



**Review  
Program  
Information**

Develop  
Evaluation  
Questions

Design  
Evaluation

Address  
Logistical  
Issues

Gather  
Data

Analyze  
Data

Generate  
Feedback

## Review Program Information

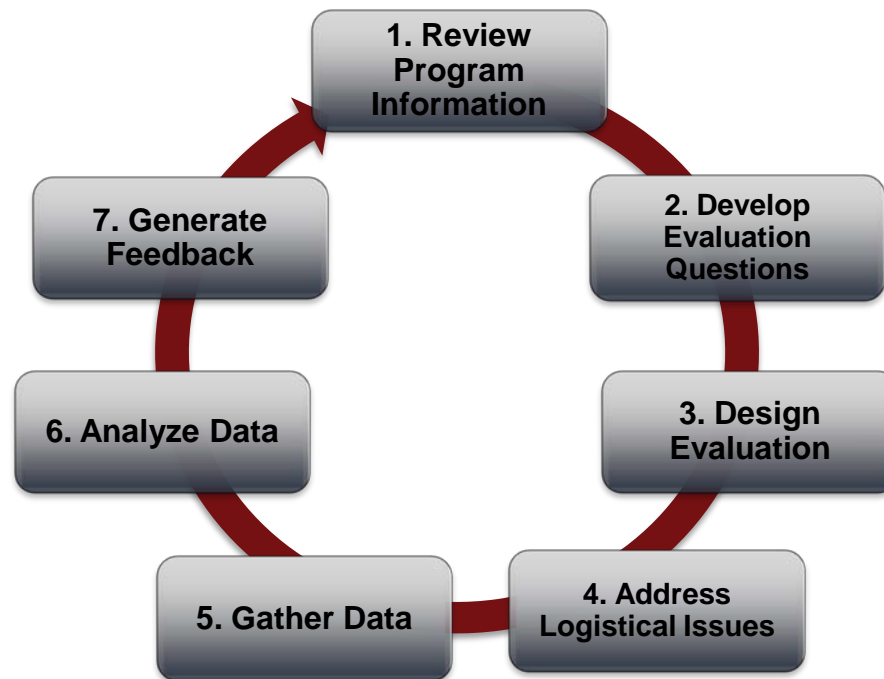
# The 7-step evaluation process can be divided into three phases



## Preparation

## Execution

## Feedback





# Exercise: Evaluation Planning

From your experience, what are some potential barriers to program success?

- A. Insufficient planning
- B. Inadequate project definition / scope
- C. Insufficient funding
- D. Lack of leadership support or involvement
- E. Inability to contain costs
- F. Inadequate resource allocation (staff and equipment)
- G. Failure to assess risks



# Program Evaluation begins with reviewing program information



The review of program information should include:

1. Review of the program's background-including mission and objectives
2. Identification of stakeholders and corresponding engagement strategies
3. Identification of program inputs-including staff, space and budget



# Collect information on Program Background



- Scope of the Program
  - Mission
  - Current goals & objectives
  - Challenges and successes
  - Current metrics and reporting requirements
- Context of the Program
  - Other programs addressing the same issue
  - Degree of scrutiny from command and public
  - Other relevant environmental factors



# Consider the program's various stakeholder groups



- Identify program stakeholders and determine when and how to engage each group
  - Participants/patients, Program staff, Command, HA/TMA
- Recognize and proactively address stakeholder interests that may be diverse or even divergent



# Describe the program inputs



- Typical types of input include
  - Staff (number and type of personnel, unfilled positions, level of training, volunteers, etc)
  - Facilities / Equipment (amount of space available, shared spaces, medical devices, supplies, etc)
  - Budget (fiscal resources)
  - Educational Materials (teaching materials, curriculum, etc)



# Case study: Review program information for *Ready Minds*



## The Facts

- *Ready Minds* has been in place for four years at Camp Somewhere.
- Staff numbers have increased from 9 to 22 in the past two years
- More than 1,500 participants have been served to date
- BUMED is requesting data that shows how well the program is operating and to what extent the program is meeting its goals

# Case Study: *Ready Minds* *Mission and Objectives*



## *Ready Minds* Mission:

“We are dedicated to the evaluation and care of Wounded Warriors with Psychological Health disorders”

## *Ready Minds* Objectives:

- Increase participant’s knowledge and education surrounding their behavioral health issues
- Provide interventions that alleviate psychological health disorders
- Identify other co-morbid health issues and refer to other specialty clinics as appropriate

# Case Study: *Ready Minds* program services



*Ready Minds* services include:

- Intake interviews and diagnostic evaluations
- Screening for co-morbid conditions and referrals to other specialties as appropriate
- Behavioral health information sessions
- Therapies (Individual & group therapy; Medications)
- Educational material dissemination
- Self-paced online courses

# Case Study: Review of Program Information



What type of information can be gathered during a review Program information for *Ready Minds*?

- A. Program objectives
- B. Staff perceptions of program outcomes
- C. Staffing levels
- D. Current budget and shortfalls
- E. A and C only
- F. All of the above



# Case Study: *Ready Minds* program inputs



## *Ready Minds* Inputs include:

- **Staff**-2 Psychiatrists, 3 Psychologists; 5 LCSWs; 5 Technicians/Corpsmen, 4 Case Managers, 3 Administrative Staff
- **Facilities / Equipment**- 16 Provider offices, 3 group rooms (shared with another clinic), 2 biofeedback setups, dedicated projector for classes
- **Budget**- \$4.5 million per fiscal year, mostly allocated to staff salaries
- **Educational Materials**- Commercially available treatment manuals and books, access to online courses through other DoD resources, etc

# Case Study: Review Program Information



Patients will care about several aspects of a program. Which of the following metrics do you think the patient stakeholders of *Ready Minds* will care about most?

- A. Staff satisfaction
- B. Wait times for appointments
- C. Percentage of patients returned to duty
- D. Reduction in symptoms of disorders
- E. Cost-benefit

# Review Program Information: Key Takeaways



- Gather detailed information about the program as the first step in conducting the evaluation
- Items to consider to fully understand the program background and context:
  - Program Background: program leaders provide overview of program, challenges and successes
  - Stakeholder Analysis: understand there may be more than one group, with different perspectives
  - Program Resources: identify the inputs that the program has on hand to scope the evaluation plan

# Step 2



Review Program  
Information

**Develop  
Evaluation  
Questions**

Design  
Evaluation

Address  
Logistical  
Issues

Gather  
Data

Analyze  
Data

Generate  
Feedback

## Develop Evaluation Questions

# Developing Evaluation Questions is the second step



- Begin by reviewing information obtained in Step 1 (“Review Program Information”) to ensure clear understanding of program goals and objectives
- Then, talk to stakeholders to understand the drivers of the evaluation
  - Who is requesting the evaluation?
  - What is the intended purpose?
  - How will the information be used?
  - Are there any secondary objectives?

# Are program goals grounded in the MHS strategic goals?



Reflecting on the command's mission, you may ask:

***“What impacts will we have on our patients as we work to support the mission?”***

# What are the program's goals and objectives ?



## Objectives:

- Roadmap
- Objectives express intended outcomes in specific terms

## Goals: Desired End State

- Skills
- Knowledge
- Behavioral Outcomes

# Understanding what makes a SMART objective



Developing Effective Objectives		
Objective	SMART?	Explanation
Substance dependence in program participants will decrease.	N	Not specific and could be measured in multiple ways, each with different interpretations. It is not time-bound.
Thirty percent of program participants will use substances within moderation.	N	Evidence shows moderate alcohol consumption is not achievable for substance abusers. It is not clear how this would be measured, nor is it time-bound.
Participants will maintain abstinence from alcohol and other substances during the 28-day program.	N	Does not specify how outcomes will be measured.
Participants will maintain abstinence from alcohol and other substances, as measured by self-report and weekly drug testing, during the 28-day program.	Y	Meets all the SMART criteria, including how outcomes will be measured.



# Setting evaluation goals



- Now that the program's goals and objectives have been identified and understood, the challenge is to identify the evaluation's goals.
- Determine what types of questions need to be answered
  - Process, outputs, outcomes
  - Stakeholder sources can provide input

# What will the evaluation measure?



- Identifying what the evaluation questions measure:
  - *Processes: How we deliver services*
    - Do we receive enough referrals? Do we have enough providers to see patients?
  - *Outputs: What we do and Who we reach*
    - Provide counseling, develop products, facilitate workshops to beneficiaries (Active Duty, Retirees)
  - *Outcomes: What is the impact*
    - What are the short and medium term results?  
What is the ultimate impact?

# Outcome measures



- Program evaluation with an *outcomes* focus is increasingly important in the current fiscal climate.
- An outcomes-based evaluation assesses if your program is performing the *right* activities to bring about the outcomes needed by your patients.

# Determine evaluation focus



- Critical evaluation questions
  - How will you know if you have accomplished the objectives of your program?
  - Who will use the evaluation results and how?
  - What factors may help or hinder your ability to accomplish your objectives?
- Evaluation questions may be shaped from many sources
  - Chain of Command, Staff, Patients, Other programs
  - Sources of funding

# Case study: Develop Evaluation Questions



## Potential evaluation questions for *Ready Minds*:

- Process Questions:
  - Does the program have sufficient numbers of staff?
- Output Questions:
  - How many group therapy sessions have been completed?
- Outcome Questions:
  - Are patients with depression or PTSD showing improvement?
  - Are the majority of patients being returned to full duty?

# Case study: Develop Evaluation Questions



- *Ready Minds* leadership needs to build evaluation questions from its program objectives
- Program Objectives:
  - Increase participants' knowledge and education surrounding behavioral health issues
  - Provide interventions that alleviate psychological health disorders
  - Identify other health issues and refer to other specialty clinics

# Case study: Develop Evaluation Questions



- *Ready Minds* leadership needs to build evaluation questions from its program objectives
- Program Objectives:
  - Increase participant's knowledge and education surrounding behavioral health issues
  - Provide interventions that alleviate psychological health disorders
  - Identify other health issues and refer to other specialty clinics

# Exercise



- In building their evaluation question, the *Ready Minds* evaluation team recognized the program objective was not constructed in SMART format:

***“Provide interventions that alleviate psychological health disorders”***

- What SMART concepts could be applied?

***“After six months of treatment, patients with PTSD will have a 50 percent decrease in the severity of PTSD as measured by a validated tool”***



# Case study: Develop Evaluation Questions



- Evaluation question: *“Has Ready Minds achieved its program objective of a 50 percent decrease in severity of PTSD after 6 months of treatment as measured by a validated tool?”*

# Exercise



How should one address program aspects that will not be included?

- A. Just don't mention those aspects
- B. Note aspects outside of scope of evaluation
- C. Seek additional support
- D. All of the above

# Develop Evaluation Questions:

## Key takeaways



- Prior to developing *evaluation* goals, review *program* objectives to determine if they are SMART and aligned to the organization
- Understanding the drivers of the evaluation will help in developing evaluation questions
- Organize evaluation questions based on the desired measure (process & outcome)
- Remain focused on the primary purpose of the evaluation and revisit and revise the goals and questions as necessary

# Step 3



Review Program  
Information

Develop  
Evaluation  
Questions

**Design  
Evaluation**

Address  
Logistical  
Issues

Gather  
Data

Analyze  
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Generate  
Feedback

## Design Evaluation

# Identifying the proper tool(s) drives the evaluation design



- Evaluation design requires both an understanding of the appropriate questions and approach as well as identification of necessary evaluation tools
- Tools should be chosen based on the relevance to the specific evaluation question(s), health focus, population and priorities



# Selecting the metrics that best fit your evaluation questions



Factors to consider when selecting metrics for the evaluation include:

- Budgets of time and money
- Training requirements
- Length of time to administer data collection tools
- Availability and accessibility
- Types of data yielded
  - Qualitative vs. quantitative
  - Process, output, outcome



# Select appropriate data tools to match the data to be collected



- During the design phase, program leaders choose appropriate data collection instruments to match the data to be collected, including:
  - Questionnaires, surveys, checklists
  - Interviews
  - Documentation reviews
  - Focus groups
  - Case studies
  - Database queries

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**"Brothers at War" Documentary**  
Workbook Questions

**Q1.** What part of this film did you most strongly identify with?

Care	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Stigma	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

**Q2.** Which scenes best illustrate your experience?

- What parallels can you draw from the experiences illustrated in the film and your personal experiences?
- Exercise: prepare for family talk.
- Write about an experience or tell a story you would like to share with family members after they see the film.

Care	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Stigma	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

**Q3.** What are some of the good times you remember from your time in country?

- Play the "O.C." scenes and the Gun scene in Chapter 7.

Care	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Stigma	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

# Recommended tools will vary depending on the program



Tool	Description	Problem Area	Administration Method	Administration Time	Continuum
<b>Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT)</b>	The test battery measures multiple aspects of cognitive functioning following a concussive event; attention span, working memory, sustained and selective attention time, response variability, non-verbal problem solving and reaction time.	TBI	Clinician administered	20-25 minutes	Screen/Assess; Diagnose
<b>Clinician-Administered PTSD Scale (CAPS)</b>	The CAPS is the gold standard in PTSD assessment. The CAPS is a 30-item structured interview that corresponds to the DSM-IV criteria for PTSD. The CAPS can be used to make a current (past month) or lifetime diagnosis of PTSD or to assesses symptoms over the past week.	PTSD	Clinician administered	45-60 minutes	Screen/Assess; Diagnose
<b>Dizziness Handicap Inventory (DHI)</b>	The DHI tool assesses for dizziness, a symptom reported in approximately 80% of TBI cases. The test can be broken down into three parts (functional, emotional, physical) and can be scored	TBI	Self-report	5-10 minutes	Screen/Assess; Diagnose
<b>PTSD Checklist-Military Version (PCL-M)</b>	The PCL is a 17-item self-report measure of the 17 DSM-IV symptoms of PTSD. The PCL has a variety of purposes, including: screening individuals for PTSD, diagnosing PTSD, monitoring symptom change during and after treatment.	PTSD	Self-report	5-10 minutes	Screen/Assess; Diagnose



# Evaluation Design Methods



## Experimental

- Experimental designs use random assignment to compare the outcome of an intervention on one or more groups with an equivalent group or groups that did not receive the intervention.

## Quasi-Experimental

- Quasi-experimental designs use comparison groups to draw causal inferences but do not use randomization to create the treatment and control groups.

## Descriptive

- Descriptive evaluations describe how the program functions and what the program intends to accomplish. They help to identify similarities across programs as well as key differences.

# Experimental evaluation provides information on causal relationships



## Experimental and quasi-experimental evaluation designs:

- Allow for causal and correlational relationships to be made between program services and outcomes of measures
- Experimental design\* includes randomizing who will receive the intervention and the control; quasi-experimental does not randomize.



**Purpose of experimental evaluation:** To reach summative evaluations and determine causality or correlations

### Evaluation activities include:

- Analysis of existing data
- Survey, interview or focus groups
- Preliminary outcome measures (e.g., pre- and post-testing)
- Extended statistical analysis (e.g., correlation)

*\* Note: Experimental design is typically considered research and therefore subject to more stringent approvals*

# Descriptive evaluation provides a review of program operations



## Descriptive evaluation designs:

- Explore the performance of program and provide feedback on services, outputs and outcomes
- Can be used to review and refine program processes, goals and objectives

**Purpose of descriptive evaluation:** In-depth description of program characteristics, resources, processes, outputs and outcomes

**Evaluation activities include:**

- Analysis of existing data
- Survey, interview, focus groups, case study
- Preliminary outcome measures (i.e., pre- and post-testing)



# Each design will produce a range of assessments and results



There are four types of evaluation results:

1

2

3

4

Strengths	Lessons Learned	Opportunities	Effectiveness Measures
<ul style="list-style-type: none"><li>Program accomplishments and milestones</li><li>Unique and successful design attributes</li></ul>	<ul style="list-style-type: none"><li>Implemented improvements or adjustments</li><li>Transferable innovations</li></ul>	<ul style="list-style-type: none"><li>Recommendations for development</li><li>Application of best practices</li></ul>	<ul style="list-style-type: none"><li>Clinical and statistical significance of data</li><li>Cost-effectiveness analysis (if applicable)</li></ul>

# Final evaluation design should consider additional elements



Other significant elements of evaluation design include:

- Determining the level of technical assistance
  - Consult with the command's biostatistician to determine feasibility of design
- Establishing a sampling plan
  - A sampling plan defines the scope of the evaluation (sample vs. census)
- Structuring a budget for the evaluation that accounts for costs of both time and money

# Case study: Design Evaluation



- *Ready Minds* selected a quasi-experimental study design to obtain data regarding whether or not they were meeting their objectives
- As previously identified, they focused on the program objective, “*After six months of treatment, patients with PTSD will have a 50 percent decrease in the severity of PTSD as measured by a validated tool.*”

# Exercise



If you were the *Ready Minds* evaluator, what data could you use to determine if patients are improving?

- A. Survey of clinicians providing treatment
- B. Focus groups with patients
- C. Measures of symptom levels
- D. Percentage of patients no longer meeting diagnosis after treatment
- E. Any of the above

# Case study: Design Evaluation



- *Evaluation question: “Has Ready Minds achieved its program objective of a 50 percent decrease in severity of PTSD after 6 months of treatment as measured by a validated tool?”*
- Metrics selection:
  - There are several measures of PTSD severity, and vary based on:
    - Level of training required to administer or score
    - Amount of time to administer and score
    - Validity of the measure



# Case study: Design Evaluation



- *Ready Minds*-Metrics selection:
  - The program director chose to use the PCL-M as the measure of whether PTSD severity decreased after six months of treatment.
  - This selection was based on:
    - A review of the program’s staffing levels and current level of training in these measures
    - The fact that the PCL-M was already included in the intake assessment for the program, the staff are familiar with administration and scoring

# Design Evaluation: Key takeaways



- Evaluation design offers an opportunity to maximize the quality of the evaluation
- Metric and tool selection should be chosen based on the relevance to the specific evaluation questions
- Investing time in a quality design increases the chances that the evaluation will succeed by identifying procedures that are practical, politically viable and cost-effective

# Completion of Preparation Phase



## Preparation

## Execution

## Feedback

Review Program Information

Develop Evaluation Questions

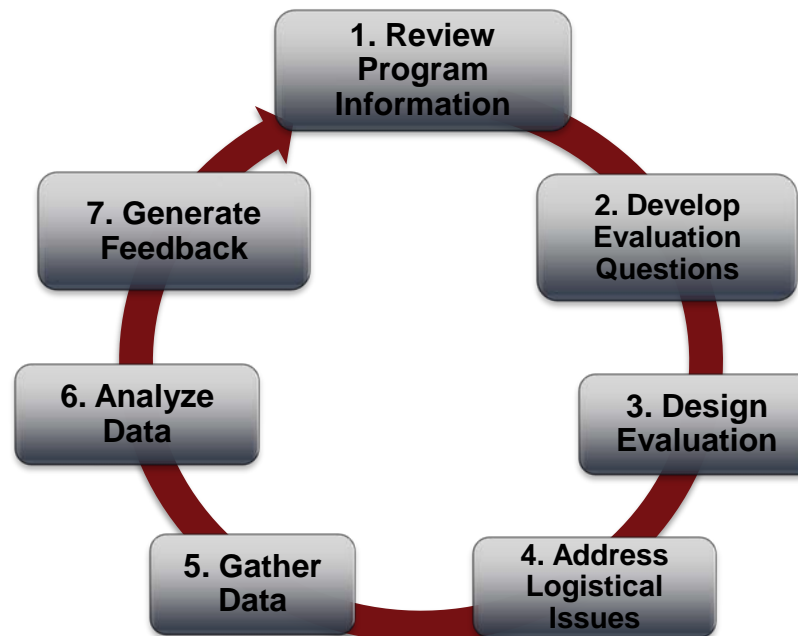
Design Evaluation

Address Logistical Issues

Gather Data

Analyze Data

Generate Feedback





# *Lunch Break*



# Begin Execution Phase

## Preparation

## Execution

## Feedback

Review Program Information

Develop Evaluation Questions

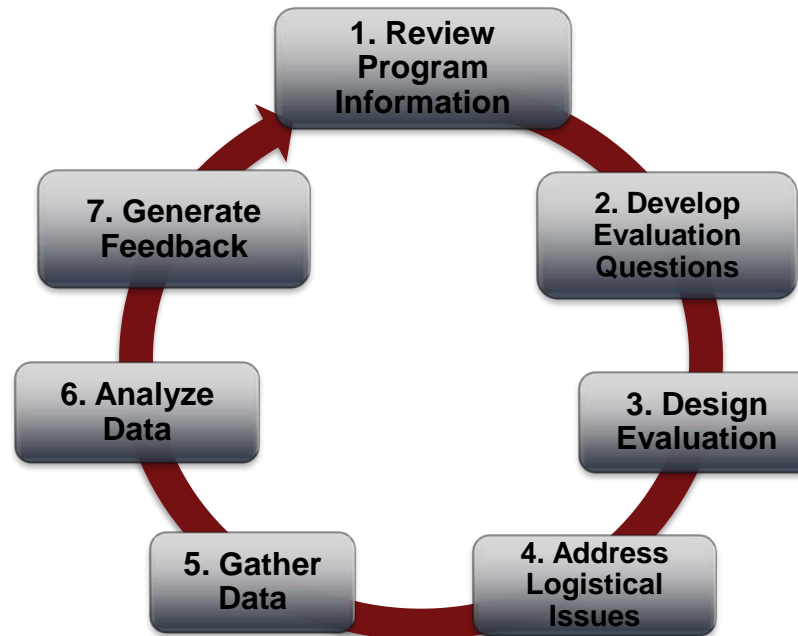
Design Evaluation

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# Step 4



## Address Logistical Issues

# What are the logistical issues of conducting an evaluation?



- Training needs
  - How, when and who will collect the data
- Data Management
  - Storage and security of data
  - Determine quantity of data
- Establishing protocols and approvals
  - Configure and confirm receipt of data

# Training data collectors



- Data collectors will require training to ensure they all collect information in the same way without introducing bias
  - Identify and train data collectors/staff
  - Ensure training is consistent, preferably conducted by the same trainer
  - Determine how and when staff will collect data
    - In an exam room?
    - At the beginning or end of a visit?



# Ensuring secure data management



- Establish the infrastructure for appropriate data storage and security measures
  - Paper sources (e.g. surveys, questionnaires, charts)
    - Filing cabinets, double-locked
    - Establish duration required to maintain data
  - Electronic sources (e.g. EHR, clinical results)
    - Encrypted databases
    - Conduct training requirements to access database
  - Securing all data
    - How will the integrity, security and confidentiality of the data be maintained?

# Securing data is crucial to privacy protection



## Encrypting and protecting program data is critical for the privacy of our service members

- Personally identifiable information (PII) refers to any information about an individual maintained by an agency, including name, address, photographs, social security, personal characteristics, etc.
- Data must be stored securely and safely to prevent loss or compromise



# How much data to collect?



- Consider the size of the change you are trying to detect
  - More data may be required to prove a smaller change
  - Large evaluations, with large sample sizes, usually mean higher cost and quantity of data
  - Amount of data will likely mirror the program's scope
    - Departmental, Directorate, Command, Region, Service
    - Variety of services being evaluated



# Protocols and standing operating procedures



- Prior to launching the evaluation, establish evaluation protocols and parameters of the study
- Formalize the protocol and confirm all definitions of evaluation terms into an SOP
  - Participant criteria, staff criteria
  - Disclosure
- If utilizing secondary data, confirm the accessibility and usability
- Resources for additional data:
  - Consult with Command's Healthcare Operations Office/Business Office
  - Funding sources may also collect helpful data

# Consider a pre-test prior to rollout



- Pre-test tools to confirm usability (e.g., questionnaires, survey instruments, informational documents)
- Assess feasibility of evaluation (e.g., survey fatigue)
- Identify and prevent or resolve potential problems
- Adjust evaluation design
- Assess how data are collected
- Gauge participation/response rates
- Evaluate completeness and quality of data

# Case study: Address Logistical Issues



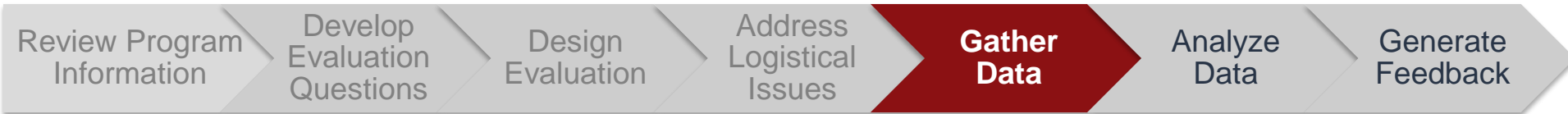
- *Ready Minds*-Logistical issues:
  - Training in administering and scoring the PCL-M was not necessary, it is already part of clinic intake
  - The program established a database on a secured network after obtaining approvals
  - Copies of the paper PCL-M were stored in a locked filing cabinet in the same room with patients records
  - The program developed a tracking system for bringing in patients at the six month mark to complete the second PCL-M

# Address Logistical Issues: Key Takeaways



- Plan ahead for data gathering, including: logistics of when/where data are collected and by whom
- Establish protocols to ensure consistency in data collection and storage
- Confirm available resources (e.g. data, staff)
- When using a new instrument, conduct a pre-test prior to launching a full-scale evaluation if possible

# Step 5



## Gather Data



# The fifth step in Program Evaluation is to Gather Data



- The purpose of data gathering is to:
  - Obtain information to keep on record
  - Make decisions about important issues
  - Pass information on to others
- Ensuring quality data gathering
  - Minimizes threats to validity
  - Produces data that are reliable, valid, and informative

# A good data gathering plan will ensure a viable collection process



## A data gathering plan:

- Summarizes the type of data to collect and methods to collect it
- Addresses applicable laws and regulations
- Implements a process for data monitoring and verification

**Assigning data  
collection  
personnel**

**Confirming data  
privacy and  
confidentiality**

**Establishing a  
data collection  
schedule**

**Creating a data  
monitoring plan**

# Standardizing data gathering will mitigate bias and ensure validity



- Data gathering plans **mitigate**:
  - Tool bias
  - Evaluator bias
  - Selection bias
- Data gathering plans **ensure**:
  - Internal validity
  - External validity



*When gathering data: remain aligned to the standardized plan to eliminate bias and ensure meaningful outputs*

# Sample threats to internal validity



Threats to internal validity	Description
<b>Maturation</b>	Changes in outcomes that are a consequence of time rather than of the program, such as participant aging
<b>History</b>	Events or conditions outside of the study that may affect a subject's performance on study measures or outcomes
<b>Mortality</b>	The loss of subjects from the study due to their initial non-availability or subsequent withdrawal from a study
<b>Regression to the mean</b>	The tendency of extreme scores to move towards the mean during the course of a study and/or as a result of repeated testing
<b>Instrumentation</b>	Changes in outcomes or measures as a result of changes to the instruments or their administration during the course of a study
<b>Repeated Testing</b>	Excessive familiarity with study measures, often as a result of multiple testing timepoints, may affect performance on these measures
<b>Selection bias</b>	When the treatment and control groups are statistically unequal in terms of one or more of the factors of interest at the beginning of a study

# Sample threats to external validity



Threats to external validity	Description
<b>Pre- and Post-test sensitization</b>	The presence of a pre-test and/or a post-test may affect subject responses
<b>Reactivity</b>	When a subject is aware of being part of a study and alters their behavior or responses as a result
<b>Order effects</b>	When using multiple measures, the order of presentation may affect subject responses
<b>Situational factors</b>	Situational variables (e.g. location, timing, group size, etc.) specific to a particular study may limit generalizability
<b>Sample characteristics</b>	Various aspects or traits of the study sample may not be reflective of the general population

# Data monitoring is an important component of data gathering



Consider the following questions:

1. Who will verify data accuracy, by what method, and how frequently?
2. Who will verify compliance with the program's plan, how will compliance be verified and how often?
3. Will a data monitoring committee be formed? Describe the committee (if applicable, include name, credentials, title, organization and contact information of each member)
4. What are the mechanisms for maintaining independence of judgment?

# Avoid these common pitfalls related to data gathering



- Relying on anecdotal evidence over validated data
- Applying inconsistent methodologies of data collection
- Utilizing improper transcription or improper coding of data



# Collect only the data relevant to the evaluation questions



- With many types of data and information available, it may become difficult to stay focused on the specific questions
- Continually ask:
  - How each piece of data will be used?
  - How it will fit with the other pieces of data?
  - How it will help answer the questions at hand?







# Case study: Gather Data

- Administrative staff are responsible for making copies of the PCL-M from intake paperwork
  - Score the measure and add score to the database
  - For incomplete scales-the administrative staff will consult with program manager on usability
- Providers will meet with patients at the six month point in treatment and administer and score the second PCL-M
  - Booking clerks and technicians will track and schedule these appointments

# Case Study Exercise: Gather Data



What is a data quality control procedure that *Ready Minds* staff can use?

- A. Have 25 percent of PCL-M scales re-checked by another provider for consistency
- B. Ensure staff use standardized wording when administering
- C. Perform monthly checks that data collection (PCL-M administration) schedule is being followed
- D. All of the above

# Gather Data: Key takeaways



- Data gathering should complement your program objectives
- Quality data gathering produces data that are reliable, valid and informative
- Not all data is good data; be judicious if tempted to continue expanding collection efforts

# Step 6



Review Program  
Information

Develop  
Evaluation  
Questions

Design  
Evaluation

Address  
Logistical  
Issues

Gather  
Data

**Analyze  
Data**

Generate  
Feedback

## Analyze Data

# What is data analysis?



- Data analysis is:
  - The process of organizing, classifying and interpreting collected data with the goal of uncovering useful information and drawing conclusions to support decision making
- Give priority to data analyses which:
  - Most clearly and accurately summarize the data relative to the purpose of the evaluation
  - Address the evaluation question(s)
  - Will be of greatest interest to stakeholders

# A data analysis plan should be developed early in the process



A data analysis plan helps to:

- Ensure that data collection instruments will yield the information needed to address evaluation questions
- Identify and align support tools needed for data analysis (hardware, software, subject matter experts), to aid in timely completion of the evaluation process

# The type of data analysis needed depends on a variety of factors



- Collection of quantitative versus qualitative data
- Availability of resources for analysis
  - Expertise, time, funding
- Types of evaluation questions identified
  - e.g., program utilization, user satisfaction, trends in these measures by time or by demographic
- Level of analytical rigor required for stakeholder satisfaction

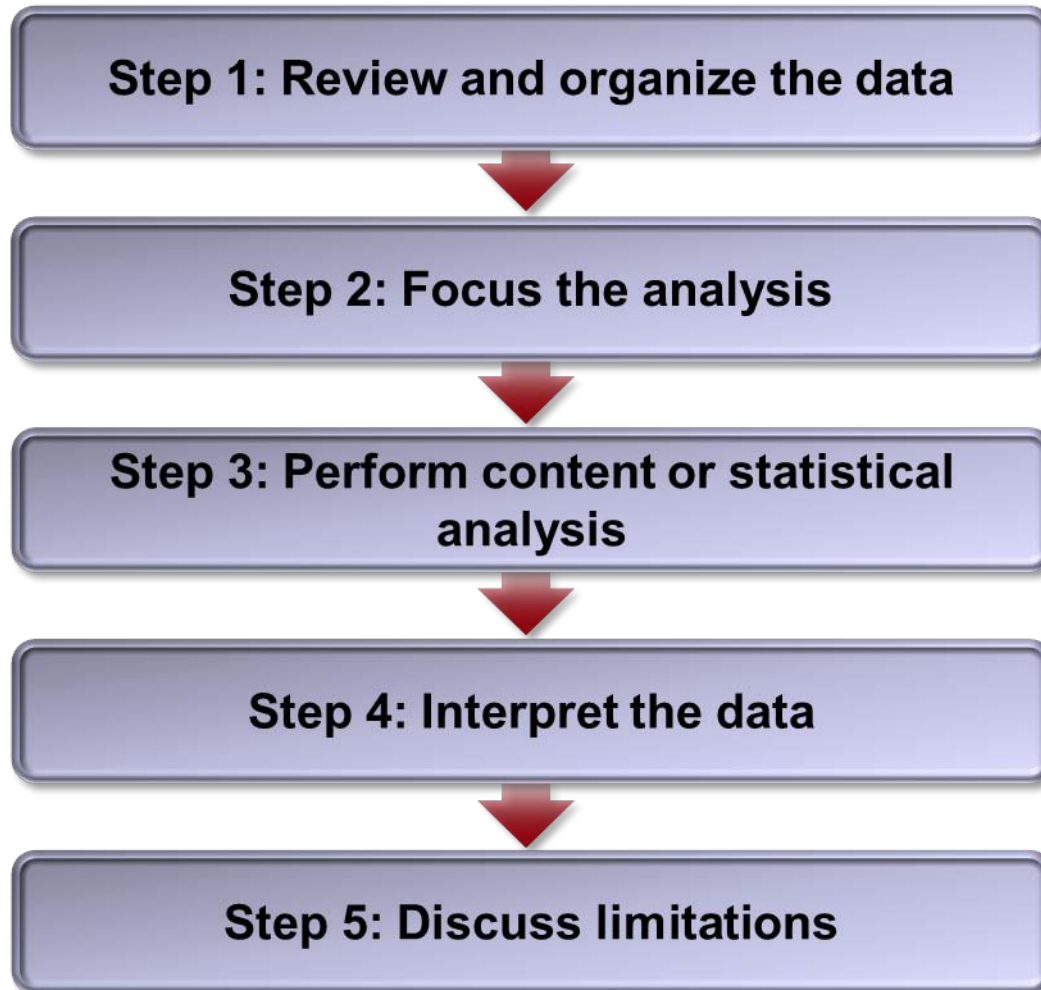
# Data analysis can be quantitative or qualitative



Quantitative	Qualitative
Numbers and statistics	Words, images or objects
Data is obtained from empirical measurements using structured, standardized and validated data-collection instruments	Data is obtained from open-ended responses, interviews, participant observations, field notes, reflections, etc.
Statistical analysis (e.g., frequencies, percentages, measure of central tendency and variability, correlation)	Content analysis (e.g., organizes data into coherent categories)
Identifies numerical values and statistical relationships	Identifies patterns, features, themes
Yields a statistical report with correlations, comparisons of means and statistical significance of findings	Yields a narrative report with contextual description; may include direct quotations from participants



# There are five steps to effective data analysis



# Steps 1&2: Review your data to focus the analysis



- Review data for completeness and to get an idea of the scope and depth of the data set
  - Missing values
  - Unexpected trends (possible bias)
- Focus the analysis according to evaluation questions (e.g., by survey question, topic, time period, event, individual, group)
- Validating focus against the evaluation design ensures analysis will meet evaluation needs

# Step 3: Analysis - Content analysis identifies qualitative data patterns



- Categorize data (e.g. survey responses) according to thematic codes
  - Coded themes or ideas may be pre-set based on the program evaluation goals or may appear as you work with the data (emergent categories)
- Group coded data by focus area to assess relative importance of themes or to draw relationships between or among themes

# Step 3: Statistical analysis identifies quantitative data relationships



- Use computer applications (e.g., SPSS, SAS, MS Excel, MS Access, etc.) to run statistical analysis on data
- Analyses may be descriptive or inferential:
  - Descriptive: Techniques to simplify, organize and summarize a dataset (e.g. measures of central tendency and variability)
  - Inferential: Attempts to generalize from the sample to the larger population (e.g., linear regression, t-test)
- Leverage available expertise to assist with the statistical analysis

# Calculation choice depends on evaluator questions



Question	Sample Calculations
What proportion of people responded in a particular manner?	Percentage (descriptive)
What was the average value of a particular measure?	Mean (descriptive)
What was the degree to which individual values varied from the mean?	Standard deviation (descriptive)
For each study group, what is the distribution of response values?	Histogram, pivot table (descriptive)
Is there a relationship between the values of two measured factors?	Regression analysis, correlation analysis (inferential)
Is the mean value for group/year 1 significantly different than the mean value for group/year 2?	T-test, analysis of variance (inferential)

# Exercise: Data analysis calculations



Data from focus groups that has been through a content analysis to identify themes and patterns is best described as...?

- A. Qualitative data
- B. Quantitative data

# Exercise: Data analysis calculations



Is there is a significant relationship between scores on a symptom inventory and scores on a measure of treatment compliance. 1) What type of analysis is this and 2) what is a likely statistical tool they will utilize?

- A. 1) Descriptive; 2) Median
- B. 1) Descriptive; 2) Correlation or Regression
- C. 1) Inferential; 2) Correlation or Regression
- D. 1) Inferential; 2) Standard Deviation

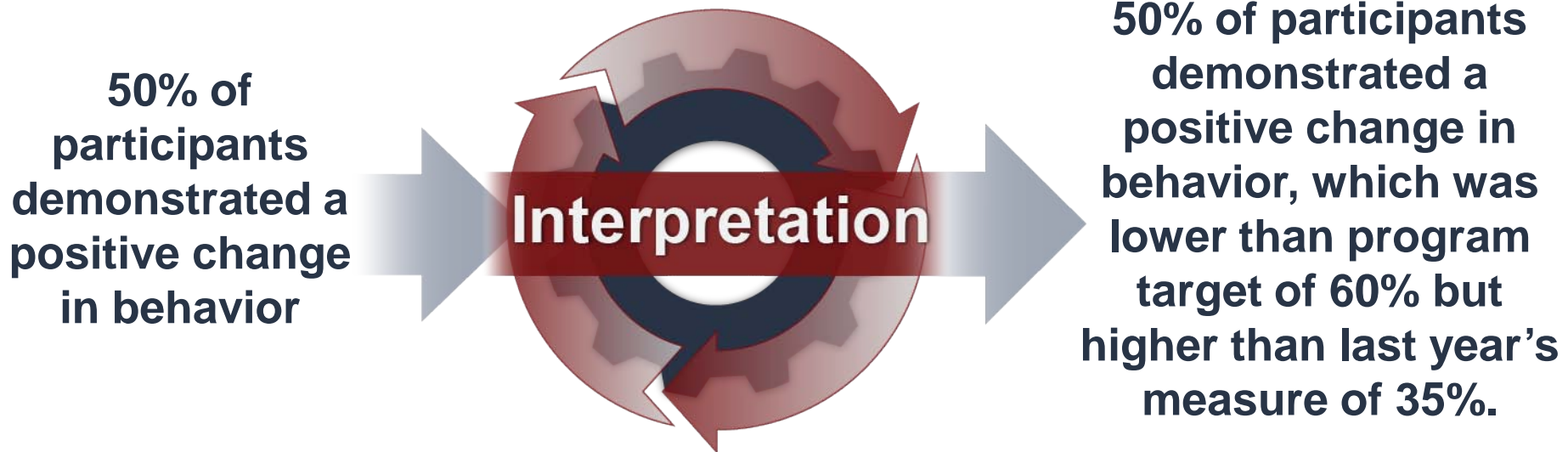
# Step 4: Interpret data in terms of program goals and objectives



- Interpretation is the process of attaching meaning to the data
- Interpretation aids stakeholder understanding and can guide program development



# Step 4: Interpret data in terms of program goals and objectives



# Step 5: Discuss limitations of the data analysis



- In reporting data, be honest and clear about its limitations
- Be aware of limits on claims you can make, such as:
  - Claims of causation require true experimental design
  - Generalization from sampled group to broader population requires consideration of the relative size and characteristics of the sampled group

# Case study: Analyze Data



- *Ready Minds* Program staff have input scores on the PCL-M from patient's intake forms, and again from the second assessment at the six month mark into a database
- After one year, there were 156 patients with PTSD who had completed six months of treatment and re-taken the PCL-M

# Case study: Analyze Data



- The program director was responsible for analyzing and interpreting the data, with assistance from a statistician in the command's performance improvement department
  - They used a paired sample T-test to determine whether there was a significant reduction in symptoms measured by the PCL-M
  - There was a statistically significant reduction in symptoms between the two assessment points

# Case study: Analyze Data



- The program director concluded there was a clear, statistically significant reduction in symptoms
- However, further analysis revealed that there was NOT a 50 percent reduction in symptoms
  - Mean PCL-M at intake- 70
  - Mean PCL-M at six months- 43
  - Therefore the mean score declined by 38 percent



# Case Study Exercise: Analyze Data

What are some potential factors that could explain the program not meeting its objective of 50 percent reduction in PTSD symptoms?

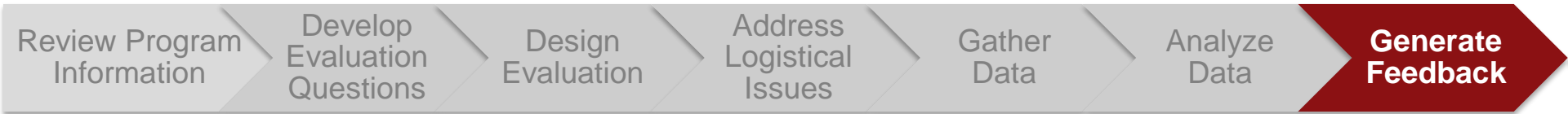
- A. Staff may not be using evidence based treatments (e.g., cognitive processing therapy)
- B. Patients may be non-compliant with treatment (e.g., not taking medications as prescribed or doing homework)
- C. Many patients may have recovered in under 6 months, and not captured in the evaluation
- D. All of the above

# Analyze Data : Key takeaways



- The data analysis techniques selected should be based on the type of data collected and the evaluation questions
- Be aware of and candid about the limitations of the data as well as the analysis
- Effective interpretation of data can provide meaningful guidance for program development and ongoing improvement

# Step 7



## Generate Feedback



# Create an actionable report of your findings



- Synthesize the results of the program evaluation into a formal report
- Determine if the program is meeting its objectives and act on these findings
  - Provide steps to take if evaluation indicates program objectives have not been met
  - Make recommendations for further improvement opportunities even if objectives have been met

# Document the information in an evaluation report



## Table of Contents

- **Executive summary**
- **Section 1: Program background**
  - Program Need
  - Services Provided
  - Goals and Objectives
  - Resources
- **Section 2: Evaluation Design**
  - Metric Selection
  - Statistical Methodology
  - Data Collection
- **Section 3: Evaluation results**
  - Strengths
  - Lessons learned
  - Opportunities
  - Effectiveness measures
- **Section 4: Summary and Conclusion**
- **References**
- **Appendix**

# Finalize and share the evaluation report with appropriate parties



- Share draft report with program leadership and request feedback
- Incorporate feedback into report as appropriate
- Obtain necessary approvals, including appropriate communication/public affairs offices
- Disseminate report to program leadership and other stakeholders

# Feedback keeps your stakeholders engaged in the process



- Engage stakeholders for input throughout the process
- Synthesize results to include in a broader program status communication
- Review evaluation results within the program context
  - Consider how these results inform future program need, structure, process and outcomes
  - If applicable, determine cost effectiveness



# Applying evaluation results: Positive findings



- When evaluation results demonstrate program is meeting its objectives, recommendations focus on:
  - Actions to maintain gains
  - Potential further analysis to determine which components of the program are most effective
  - Additional audiences or other programs that may benefit from collaboration or sharing of findings

# Applying evaluation results: Negative findings



- Evaluation results demonstrate program **is not meeting** its objectives:
  - Begin brainstorming what factors could be impacting the results
  - If likely causes can be identified, determine corrective actions that can be integrated into the program's process improvement initiatives

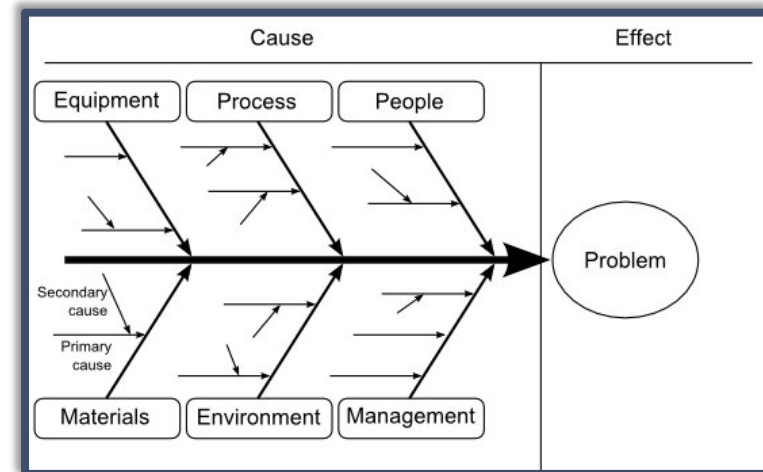
# Cause analysis seeks to determine factors that impact performance



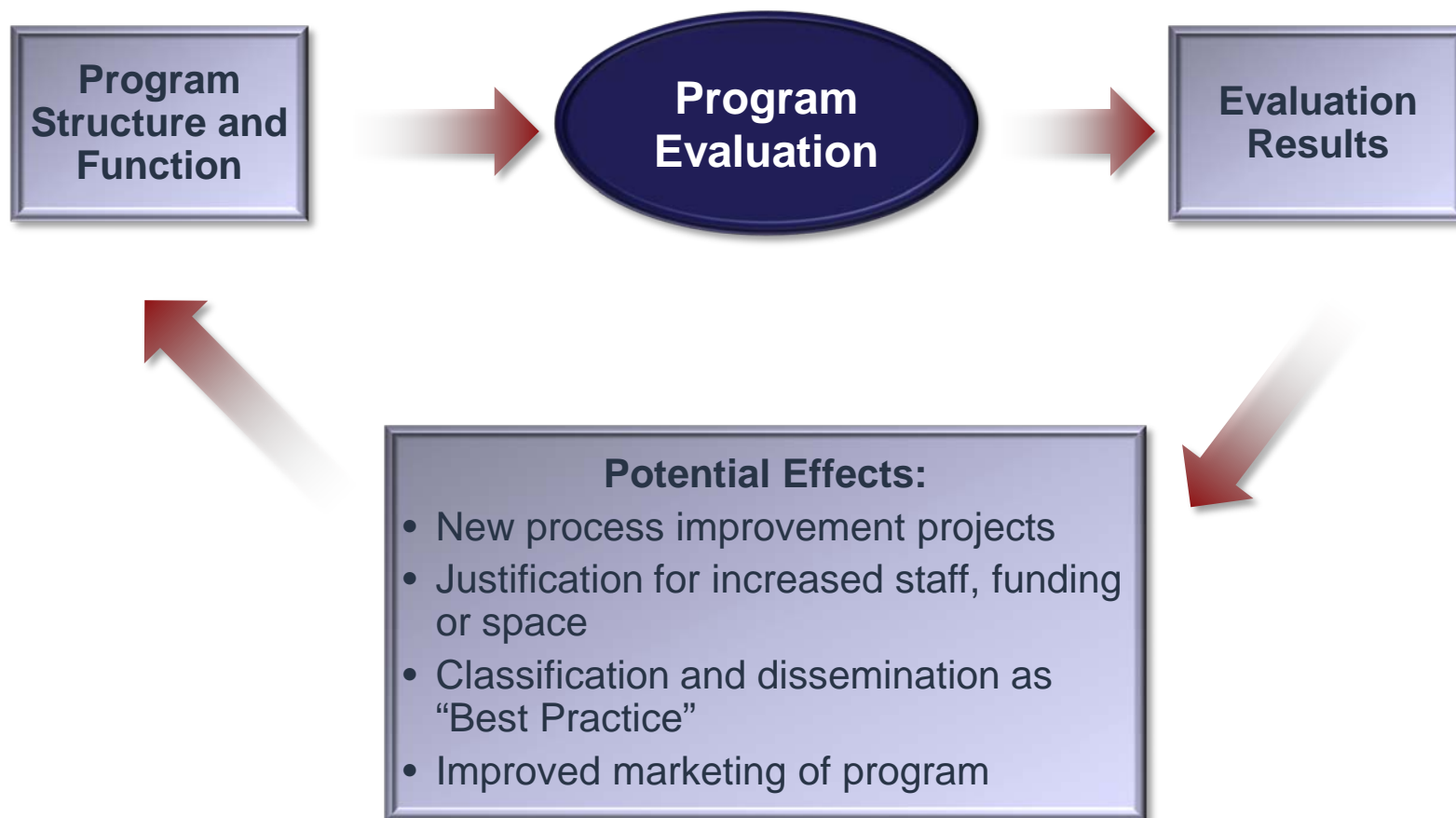
A cause analysis can be used to understand why objectives are not being met and identifies a path forward for improvement

■ Several Root Cause Analysis Tools are available

- Cause and Effect Diagram
- 5 Whys Exercise
- Causal Tree



# Program Evaluation is part of an ongoing feedback lifecycle





# Establishing mechanisms for periodic monitoring and feedback



- Following any program change OR on a quarterly basis, key program components should be mapped back to the institutional vision, mission and goals
- The program's existing Performance Improvement process provides a ready infrastructure for this ongoing monitoring
- Depending on the magnitude of changes adapted and outcome of the evaluation, additional periodic program evaluations may also be beneficial

# Case Study Exercise: Generate Feedback



If *Ready Minds*' failure to meet its objective was due to not using evidence based treatments, what can they do to address this?

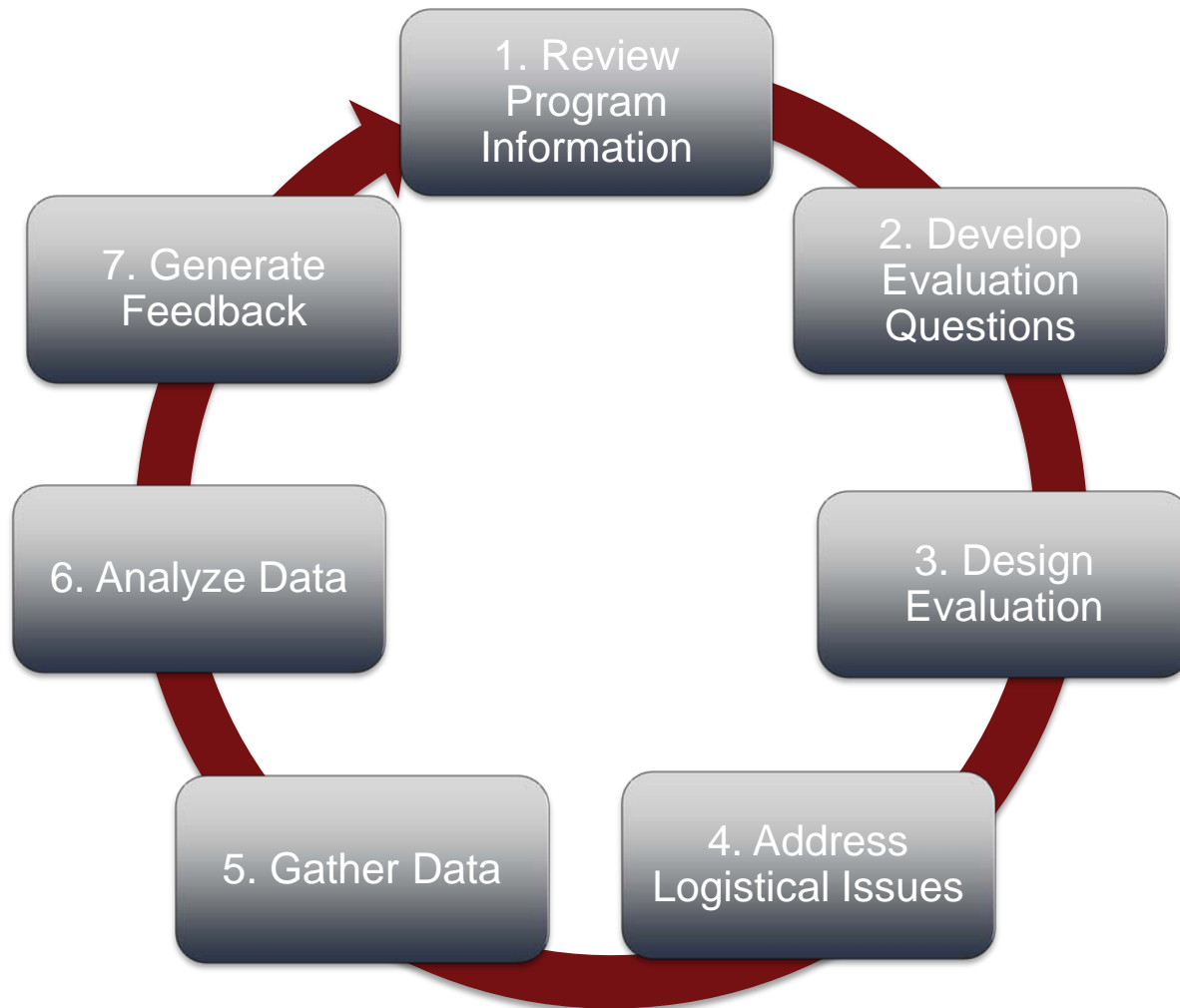
- A. Increase the amount of training for providers
- B. Fire staff members who have not been using evidence supported approaches
- C. Ensure that treatment manuals for evidence based treatments are available
- D. A and C only

# Generate Feedback: Key takeaways



- The findings of the program evaluation are most useful once they are codified into a formal report and communicated to stakeholders.
- Both positive and negative evaluation outcomes can yield meaningful feedback for ongoing program improvements.
- For greatest impact and ongoing support, leverage your program's Process Improvement infrastructure to implement and monitor changes.

# Wrap up and discussion





# Back Up Slides

# Successful program objectives must be SMART



<b>S</b> <b>(Specific)</b>	<b>M</b> <b>(Measurable)</b>	<b>A</b> <b>(Achievable)</b>	<b>R</b> <b>(Relevant)</b>	<b>T</b> <b>(Time-Bound)</b>
<ul style="list-style-type: none"><li>▪ Detailed, well-defined</li><li>▪ Do objectives specify what program needs to achieve?</li></ul>	<ul style="list-style-type: none"><li>▪ Numeric, observable</li><li>▪ Can you measure whether or not program is meeting the objectives?</li></ul>	<ul style="list-style-type: none"><li>▪ Actionable, appropriate</li><li>▪ Can objectives reasonably be attained given available resources?</li></ul>	<ul style="list-style-type: none"><li>▪ Considers population needs</li><li>▪ Do objectives relate to program's primary goals?</li></ul>	<ul style="list-style-type: none"><li>▪ Defined end point</li><li>▪ By when do you want to achieve the set objectives?</li></ul>