

HRSA Health Workforce Training Program EVALUATION TOOLKIT



Health Workforce Training Program Evaluation Toolkit

Introduction

The goal of the HRSA Health Workforce Training Programs is to train clinicians to deliver high-quality care. This toolkit suggests ways to track trainee outcomes and your program's ability to meet the Three Part Aim goals of improving patient experience and access, lowering cost, and raising quality of health care services. We believe evaluation is the key to the sustainability. As we build the workforce of the future, it is important that programs construct evaluations that clearly measure long-term outcomes on trainees and patients.

Who should use this resource?

This toolkit should be used by the health workforce grant evaluation planning and implementation team. Evaluation is best done as a collaborative effort among stakeholders, including those involved in data collection and evaluation decisions.

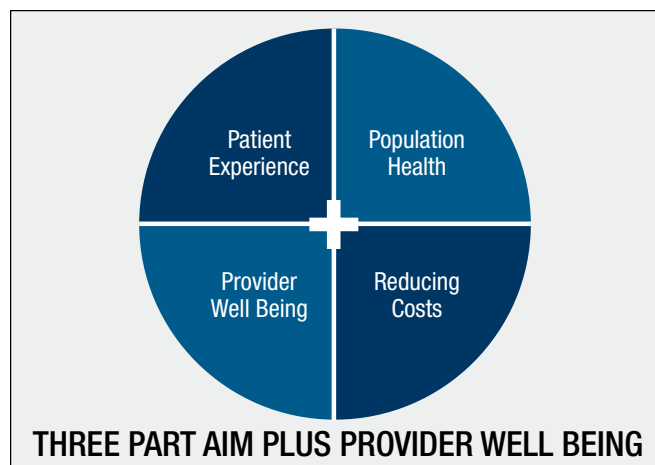
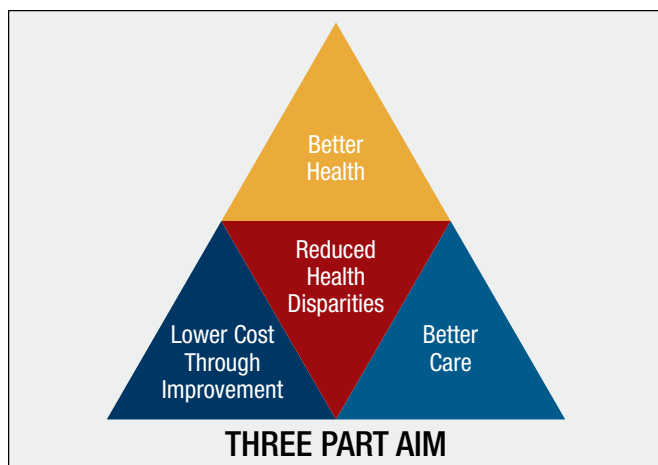
When should it be used?

This toolkit is designed for grantees in the grant-planning phase and in the evaluation process after a program award. The toolkit can be accessed by:

- 1) Downloading the entire toolkit as a PDF file.
- 2) Accessing modules individually to address specific questions, depending on your phase of evaluation.

Addressing the Three Part Aim Plus Provider Well Being

HRSA's funding announcement for the Primary Care Training Enhancement program states the goal of "working to develop primary care providers who are well prepared to practice in and lead transforming healthcare systems aimed at improving access, quality of care and cost effectiveness."



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The National Quality Strategy promoted by the Department of Health and Human Services is an overarching plan to align efforts to improve quality of care at the national, State, and local levels. Guiding this strategy is the Three Part Aim which is to provide better care, better health/healthy communities and more affordable care.¹ Recently, there has been discussion of adding a fourth aim, “provider well being”, which adds improving the work life of clinicians and staff to the goals.²

The 2014 Clinical Prevention and Population Health Curriculum Framework, developed through consensus of educators, created a framework for integration of the Three Part Aim into health professional education.³ These guidelines acknowledge that going forward more educational content should focus on population health. Elements of population health have been integrated across accrediting bodies such as the American Association of Colleges of Nursing and the American Association of Medical Colleges.

The engagement of the health care workforce is of paramount importance in achieving the primary goal of the Three Part Aim Plus Provider Well Being—improving population health. Health workforce programs should assess the ways they are preparing future clinicians to provide services that improve patient experience, population health, cost effectiveness, and provider well-being. This toolkit provides examples for health workforce grantees to consider as they evaluate the ability of their programs to achieve the Three Part Aim Plus Provider Well Being.

A note on language

HRSA health workforce programs support a variety of schools and health professionals. Funded programs serve a range of health professional students and have a wide variety of designs. For this reason, we strive to use terminology that applies across programs. Throughout this guide the term trainee will be used to apply to the student or learner regardless of his/her profession or level of education.

1 <https://www.amia.org/sites/amia.org/files/Report-Congress-National-Quality-Strategy.pdf>

2 Bodenheimer T, Sinsky C. From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider. *Annals of Family Medicine*. 2014; 12(6): 573-576.

3 Paterson MA, Falir M, Cashman SB, Evans C, Garr D. Achieving the Triple Aim: A Curriculum Framework for Health Professions Education. *Am J Prev Med*. 2016;49(2):294-296.

Engaging Stakeholders for your Health Workforce Training Program Evaluation

INTRODUCTION: Why is engaging stakeholders important to your health workforce training evaluation?

Stakeholders can help—or hinder—your health workforce training evaluation before it is conducted, while it is being conducted, and after the results are collected. Stakeholder roles include:

- Responsibility for day-to-day implementation of health workforce training program activities.
- Advocating or approving changes to the health workforce training program that the evaluation may recommend.
- Continuation and funding or expansion of the health workforce training program.
- Generating support for the health workforce training program.

STEP 1: Who are the health workforce training program evaluation stakeholders and how do you identify them?

Stakeholders are all of the people who care about the program and/or have an interest in what happens with the program. There are 3 basic categories of stakeholders:

1. **Those interested in the program operations.**
2. **Those served or affected by the health workforce training programs.**
3. **Those who will make decisions based on evaluation findings to improve, enhance, or sustain the health workforce training program.**

To identify stakeholders, you need to ask:

- Who cares about the health workforce training program and what do they care about?
- Which individuals or organizations support the program?
- Which individuals or organizations could be involved that aren't aware of the program?

Use the *Identifying Key Stakeholders* worksheet listed in the resources section (example on page 2).

Use the following checklist to involve key stakeholders throughout the health workforce training program evaluation process.

- Identify stakeholders using the three broad categories (those affected, those involved in operations, and those who will use the evaluation results).
- Identify any other stakeholders who can improve credibility, implementation, and advocacy, and make funding decisions.
- Engage individual stakeholders and/or representatives of stakeholder organizations.
- Create a plan for stakeholder involvement and identify areas for stakeholder input.
- Target selected stakeholders for regular participation in key activities, including writing the program description, suggesting evaluation questions, choosing evaluation questions, and disseminating evaluation results.

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PCTE Program example

INNOVATION

Team rounding in the nearby hospital and a special weekly clinic session with medical, pharmacy, and social service appointments for the recently discharged. The rounding interdisciplinary team will include trainees (medical students, residents, and social work students) as well as attending physician/preceptors.

OBJECTIVE

Reduce readmissions for high risk patients with multiple chronic diseases, thus decreasing Medicaid spending.

Identifying Key Stakeholders example

	CATEGORY	STAKEHOLDERS	
1	Who is affected by the program?	<i>Medical students Residents Health center administration</i>	<i>Social work students Clinical preceptors State Medicaid</i>
2	Who is involved in program operations?	<i>Faculty directors and teaching staff Alumni office Health center administration</i>	<i>Junior faculty/fellows Senior faculty Health system leadership</i>
3	Who will use evaluation results?	<i>Program leadership Clinical training sites Grants and development office</i>	<i>HRSA Program Partners (i.e. Schools of Social Work) Peers in the medical education field</i>

Which of these key stakeholders do we need to:

Increase credibility of our evaluation	Implement the interventions that are central to this evaluation	Advocate for institutionalizing the evaluation findings	Fund/authorize the continuation or expansion of the program
<i>Alumni offices Peers in the medical education field</i>	<i>Clinical preceptors Faculty</i>	<i>Medical students Residents Clinical preceptors State Medicaid office</i>	<i>Program leadership State Medicaid office Health care system/hospital</i>

STEP 2: What to ask stakeholders?

You must understand the perspectives and needs of your stakeholders to help design and implement the health workforce training evaluation. Ask them the following questions:

- Who do you represent and why are you interested in the health workforce training program?
- What is important about the health workforce training program?
- What would you like the health workforce training program to accomplish?
- How much progress would you expect the health workforce training program to have made at this time?
- What are critical evaluation questions at this time?
- How will you use the results of this evaluation?
- What resources (i.e., time, funds, evaluation expertise, access to respondents, and access to policymakers) could you contribute to this evaluation effort?

The answers to these questions will help you synthesize and understand what program activities are most important to measure, and which outcomes are of greatest interest. Use the *What Matters to Stakeholders* worksheet listed in the resources section to identify activities and outcomes. An example is listed below.

What Matters to Stakeholders example

STAKEHOLDERS	What activities and/or outcomes of this program matter most to them?
<i>Medical students/residents</i>	<i>Being prepared for residency/being prepared for practice</i>
<i>Alumni office</i>	<i>Retention and long term engagement of medical students</i>
<i>Program leadership</i>	<i>Retention of medical students Engaging students in selecting primary care Exposure of all students to working in underserved settings</i>
<i>Health center administration</i>	<i>Reducing unnecessary readmissions</i>
<i>State Medicaid</i>	<i>Reducing spending due to unnecessary readmissions</i>

TOOL 1.1

Identifying Key Stakeholders

CATEGORY		STAKEHOLDERS
1	Who is affected by the program?	
2	Who is involved in program operations?	
3	Who will use evaluation results?	

Which of these key stakeholders do we need to:			
Increase credibility of our evaluation	Implement the interventions that are central to this evaluation	Advocate for institutionalizing the evaluation findings	Fund/authorize the continuation or expansion of the program

TOOL 1.2

What Matters to Stakeholders?

STAKEHOLDERS	What activities and/or outcomes of this program matter most to them?

Describe the Program

INTRODUCTION: Describe your health workforce training program

The purpose of this module is to fully describe your health workforce training program. You will want to clarify all the components and intended outcomes of the health workforce training program to help you focus your evaluation on the most important questions.

STEP 1: Describe your health workforce training program and develop SMART objectives

Think about the following components of your health workforce training program:

- **Need.** What problem or issue are you trying to solve with the health workforce training program?
- **Targets.** Which groups or organizations need to change or take action?
- **Outcomes.** How and in what way do these targets need to change? What specific actions do they need to take?
- **Activities.** What will the health workforce training program do to move these target groups to change and take action?
- **Outputs.** What capacities or products will be produced by your health workforce training program's activities?
- **Resources and inputs.** What resources or inputs are needed for the activities to succeed?
- **Relationship between activities and outcomes.** Which activities are being implemented to produce progress on which outcomes?
- **Stage of development.** Is the health workforce training program just getting started, is it in the implementation stage, or has it been underway for a significant period of time?

Using a logic model can help depict the program components. Also known as a program model, theory of change, or theory of action, a logic model illustrates the relationship between a program's activities and its intended outcomes. The logic model can serve as an "outcomes roadmap" and shows how activities, if implemented as intended, should lead to the desired outcomes.

A useful logic model:

- Identifies the short-, intermediate-, and long-term outcomes of the program and the pathways through which the intervention activities produce those outcomes.
- Shows the interrelationships among components and recognizes the influence of external contextual factors on the program's ability to produce results.
- Helps guide program developers, implementers, and evaluators.

SMART objectives

As you think about developing objectives within your logic model, the SMART objectives framework can help you write objectives that are clear, easily communicated, and measurable.

The acronym stands for:

- S Specific:** What exactly are we going to do?
- M Measurable:** How will we know we have achieved it?
- A Agreed upon:** Do we have everyone engaged to achieve it?
- R Realistic:** Is our objective reasonable with the available resources and time?
- T Time-bound:** What is the time frame for accomplishment?

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Example SMART objectives for a health workforce training program:

- The program will mentor five primary care residents' provision of team-based care over the course of a year. Their team-based care competency will be measured by a self-assessment tool in months 1 and 12 of the program.
- The program will expose all medical trainees to enhanced competency in social determinants of health including screening for health literacy and barriers to care; participating in collaborative visits with pharmacists and behavioral health care providers; and referring to social workers for non-medical barriers. Trainees will be exposed to these approaches in a four-week module and knowledge of these approaches will be measured through participation in a minimum of five screenings, five collaborative visits, and five referrals.

STEP 2: Develop a logic model

A useful logic model is simple to develop if you have identified the following information for your health workforce training program.

- **Inputs:** Resources crucial to implementation of the health workforce training program.
- **Activities:** Actual events or actions done by the health workforce training program.
- **Outputs:** Direct products of the health workforce training program activities, often measured in countable terms. For example, the number of trainees who participate in a complex care management team meeting or the number of community providers who participate in population health forums.
- **Outcomes:** The changes that result from the health workforce training program's activities and outputs. Consider including outcomes that measure your program's success in stages (e.g., short-term: increased number of trainees who have knowledge of population health management tools; intermediate-term: increase in patients at clinical preceptor sites who have proactive patient education visits for chronic disease management; long-term: number of graduates who opt to work in a primary care setting that uses population health data for patient outreach and screening).
- **Stage of development:** Programs can be categorized into three stages of development: planning, implementation, and maintenance/outcomes achievement. The stage of development plays a central role in setting a realistic evaluation focus in the next step. A program in the planning stage will focus its evaluation differently than a program that has been in existence for several years.

Basic logic model components



Methodology for logic model development

To stimulate the creation of a comprehensive list of these components, use one of the three following methods.

1. Review any information available on the health workforce training program—whether from mission/vision statements, strategic plans, or key informants—and extract items that meet the definition of activity (something the program and its staff does) and of outcome (the change you hope will result from the activities).
2. Work backward from outcomes. This is called “reverse” logic modeling and is usually used when a program is given responsibility for a new or large problem or is just getting started. There may be clarity about the “big change” (most distal outcome) the program is to produce, but little else. Working backward from the distal outcome by asking “how to” will help identify the factors, variables, and actors that will be involved in producing change.
3. Work forward from activities. This is called “forward” logic modeling and is helpful when there is clarity about activities but not about why they are part of the program. Moving from activities to intended outcomes by asking, “So then what happens?” helps elucidate downstream outcomes of the activities.

Use the identifying components worksheet listed in the resources section to help you develop a logic model for your health workforce training program. An example from the University of South Alabama's health workforce training program is listed below.

Identifying components example

	ACTIVITIES What will the program and staff do?	OUTCOMES What are the desired outcomes of the program?	SEQUENCING When are these outcomes expected (short, intermediate, long term)?
1	<i>Improve practice performance in caring for complex patients</i>	<p><i>Increased number of complex patients under care management.</i></p> <p><i>Increased number of patients screened for substance abuse.</i></p> <p><i>Increased number of patients seen in a group office setting.</i></p> <p><i>Reduction in unnecessary admissions for health system.</i></p>	<p>Short-term: <i>Increased number of complex patients under care management.</i></p> <p><i>Increased number of patients screened for substance abuse.</i></p> <p><i>Increased number of patients seen in a group office setting.</i></p> <p>Intermediate-term: <i>Reduced number of unnecessary admissions for health system.</i></p> <p>Long-term: <i>Care delivered by graduates and learners measured by well-being and other markers above 80th percentile.</i></p>
2	<i>Provide modular education for all learners on population health, care of complex patients, and improved patient engagement.</i>	<p><i>Increased number of residents who have knowledge of team-based care of complex patients.</i></p> <p><i>Increased number physicians who have extensive team-based population health.</i></p> <p><i>Reduced number of ED visits.</i></p> <p><i>Care delivered by graduates and learners measured by well-being and other markers above 80th percentile.</i></p>	<p>Short-term: <i>Increased number of residents who have knowledge of team-based care of complex patients.</i></p> <p><i>Increased number physicians who have extensive team-based population health.</i></p> <p>Intermediate-term: <i>Reduced number of ED visits.</i></p> <p>Long-term: <i>Care delivered by graduates and learners measured by well-being and other markers above 80th percentile.</i></p>
3	<i>Provide intense educational opportunity for medical students regarding value-based care.</i>	<p><i>Increased number of students in value-based care track.</i></p> <p><i>Increased number of students interested in value-based care.</i></p> <p><i>Residency graduates taking leadership positions in primary care.</i></p>	<p>Short-term: <i>Increased number of students in value-based care track.</i></p> <p>Intermediate-term: <i>Increased number of students interested in value-based care.</i></p> <p>Long-term: <i>Increased residency graduates taking leadership positions in primary care.</i></p>

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Once you have the information outlined in the table, you can develop the sample logic model for your program. The University of South Alabama's logic model is shown on page 5 as an example.

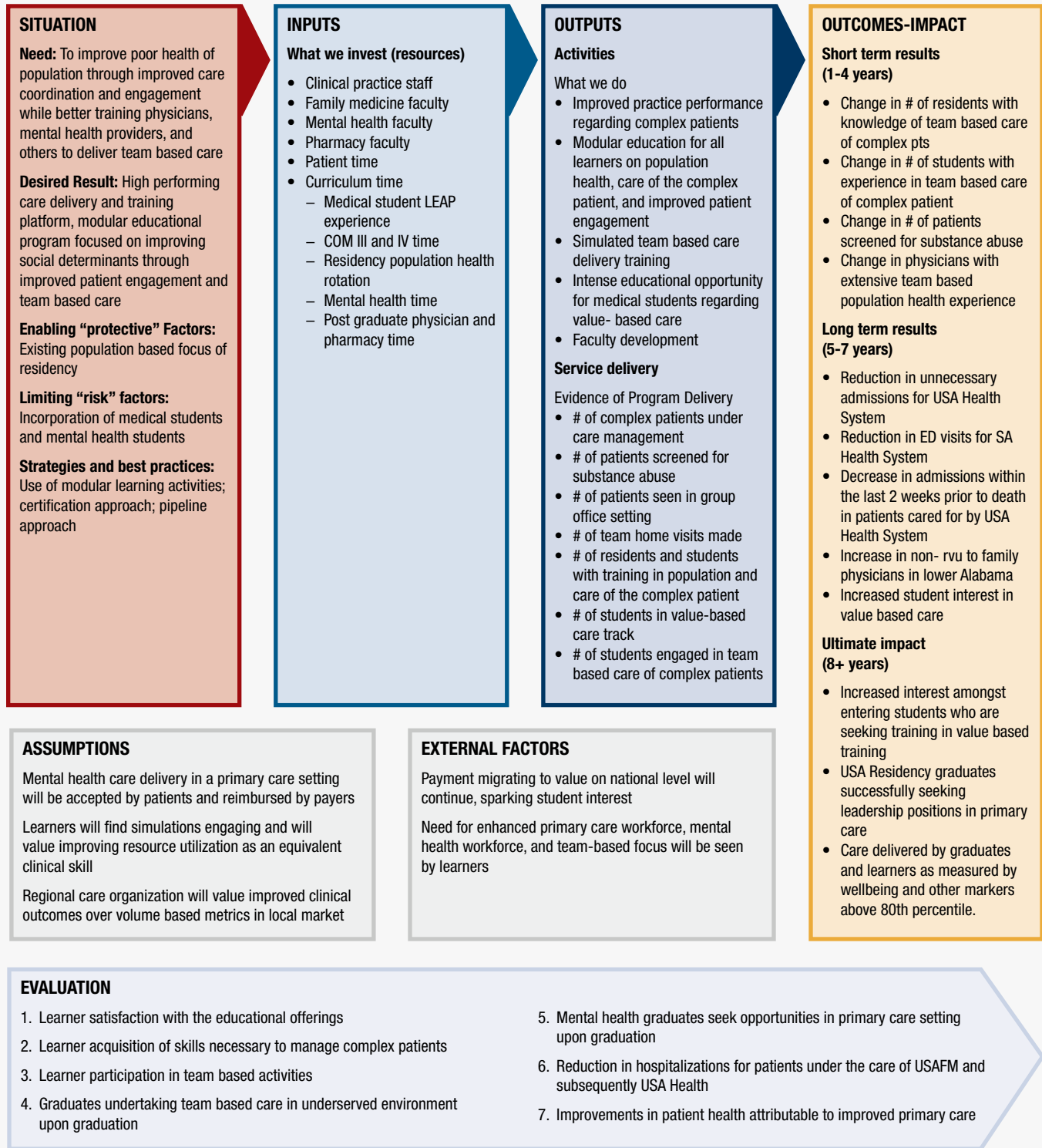
STEP 3: Using and updating your logic model

A logic model provides a critical framework for evaluators and implementers to monitor a program over time. It is not a static tool. Tracking indicators for each step in the logic model helps determine whether resources are sufficient and whether activities are being implemented according to plan. This process identifies areas for program refinement, mid-course corrections, and/or technical assistance to support ongoing program implementation.

Examples of the types of information that may provide mid-term feedback to change program implementation:

- Student focus groups on experience in working with complex patients indicate that they want more experience to feel confident in their skills.
- Patient surveys on care coordination approach identifies that patients would like better introduction and understanding of roles among their care team.
- Clinical process tracking data on number of patients screened for substance use shows improvement at one of the five clinical preceptor sites, and no change at the four remaining clinical sites.

Caring for the Complex Patient in the PCMH — University of South Alabama



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TOOL 2.1

Components of your logic model

	ACTIVITIES What will the program and staff do?	OUTCOMES What are the desired outcomes of the program?	SEQUENCING When are these outcomes expected (short, intermediate, long term)?
1			
2			
3			

Focus Evaluation Design

INTRODUCTION

The purpose of this module is to guide development of the evaluation purpose, questions, and findings. There may be evaluation questions that you will not have time or resources to answer in a single grant cycle. How do you prioritize? Now that you have developed your logic model and clearly defined your program, the next step is to focus the scope of your evaluation design.

STEP 1: Determine your health workforce training program stage of development

Identifying the stage of development of the program and/or its components will help you prioritize evaluation questions and approach. Health workforce training programs vary significantly in their stage of development and longevity. If your program is **established**, the emphasis of the evaluation might be to provide evidence of the program's contributions to its long-term goals. If you have a **new** program, you might prioritize improving or fine-tuning operations.

Program Development Stage Overview		
PROGRAM COMPONENT STAGE	EVALUATION PURPOSE	WHAT TO MEASURE
PLANNING STAGE (first year of program)	Determine best structure and design.	Process questions on how consistently program components were implemented, and which practices facilitated implementation.
IMPLEMENTATION STAGE (approximately 2–5 years into program) <i>*Some programs may be ready to assess maintenance in year 3, others later.</i>	Program is fully operational (i.e., no longer a pilot) and available to all intended trainees.	Implementation process and outcomes.
MAINTENANCE STAGE (3 or more years into program)	Measuring program results.	Short- and long-term outcomes.

Depending on your program's development stage you may want to include formative evaluation questions as part of your evaluation plan. For all Primary Care Training Enhancement (PCTE) evaluation plans, HRSA has asked grantees to measure long-term effects of the program- in particular on graduates' ability to support a transformed health care delivery system and the Three Part Aim plus provider well being (more information on using the Three Part Aim plus provider well being to frame your evaluation is on page 4 of this module).

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Prioritizing evaluation questions by stage of program development

For example, let's say as part of your health workforce training you are building a mentorship program and quality improvement project between community preceptors and trainees. Thinking through three stages of program development—planning, implementation, and maintenance—will help you prioritize your evaluation questions.

In a new program **planning stage**, formative evaluation questions may be process-oriented, e.g., “Was the preceptor orientation sufficient? Is there a better way to structure collaboration with and support of the preceptors? Should we require three structured meetings between preceptor mentors and trainees, or

should they be allowed to create custom schedules?”

In the **implementation stage**, the key questions might be, “How many quality improvement projects were completed? How did trainees and preceptors rate the program? What effects did the quality improvement projects have on clinical performance in the preceptor sites?”

In the **maintenance stage**, the program can begin to look at long-term outcomes of the projects. Include questions such as, “Did trainees apply what they learned to their clinic work? Did they take a leadership role in quality improvement in a primary care setting?”

Approaches to measurement of long-term outcomes

Measuring the long-term effects of your program on graduates can be done with some creativity and persistence. The graduate outcomes HRSA would like to see for the health workforce training program include placement in underserved areas, working with vulnerable and underserved populations, and leadership of graduates in supporting the transformation of the health care delivery system and achievement of the Three Part Aim. Tools for measurement include surveys of graduates and use of publicly available datasets, and for graduates who remain within your regional health system, locally available data. The following are some approaches you can consider for measuring long-term outcomes.

1. Revising your post-graduate survey to include questions on primary care leadership and practicing in reformed health care settings.

Sample questions:

- Do you lead quality improvement efforts at your organization?
 - Is the practice you work in PCMH-certified?
 - Do you use a population health management or panel management tool to risk-stratify your patients?
 - Do you receive information on cost of care as a participant in an accountable care organization or managed care plan?
2. Using publicly available data as a proxy for graduate outcomes. Public datasets can provide information on whether graduates are working in a setting that has embraced elements of a reformed health care system, and provide information on clinical quality and patient experience at that setting. Some of this information may be provided at the practice level, and some at the provider level.
 - If the practice site of your graduate is known, you can find out if the practice is PCMH-certified through NCQA site: <http://reportcards.ncqa.org/#/practices/list>.
 - In some states and regions, primary care practice quality information is publicly available. Examples include the state of Massachusetts Health Compass (HealthCompassma.org) which publishes both patient experience and clinical quality data at the practice level. GetBetterMaine.org publishes provider-level data on clinical quality and patient experience. Because these data sources are not uniformly available across states or providers, ease of use will depend on the geographic dispersion of your graduates. Other public information may be available in your region based on state or regional health reform efforts.

A resource of a sample tracking sheet for long-term outcomes is provided in Module 4: Gather Credible Evidence. For more guidance on long-term trainee tracking see:

Morgan, P., Humeniuk, K. M., & Everett, C. M. (2015). Facilitating Research in Physician Assistant Programs: Creating a Student-Level Longitudinal Database. *The Journal of Physician Assistant Education: The Official Journal Of The Physician Assistant Education Association*, 26(3), 130–135.

STEP 2: Assess program intensity

Consider the depth of the program intervention and its potential effect on trainee or patient clinical outcomes. A short-term shallow intervention is unlikely to affect results, trainee learning, or patient clinical outcomes, regardless of stage and maturity of implementation. Questions to think about include: How many trainees will it affect? Over what period of time? What is the level of exposure and intensity?

Consider the previous example of a preceptor program including a mentor and quality improvement project. The health workforce training program has given trainees the option to choose a quality improvement project with a four-month timeline. One trainee chooses adult diabetes management, one focuses on adolescent substance use screening, one on healthy eating counseling for children, another on eating counseling for adults, and the remaining two on child immunization rates. In this situation there is not a single clinical outcome that can assess impact across all trainees, nor is four months likely an adequate time to see a clinical impact. However, the programs that are focused on counseling or screening could assess process measure improvements in those areas.

STEP 3: Write priority evaluation questions

Consider the stage of development and intensity of the program. What outcomes are reasonable to expect and measure? Write the three most important evaluation questions.

STEP 4: Assess constraints

The following questions will help you determine if the priority evaluation questions can be answered during your grant period.

1. How long do we have to conduct the evaluation?
2. What data sources do we have access to already?
3. Will new data collection be required?
 - a. If yes, do we have people with skills and time to collect data?
 - b. Are there any technical, security, privacy, or logistical constraints to the data?

STEP 5: Finalize evaluation questions

Return to your logic model and finalize the evaluation questions for this grant cycle. You may have identified questions that can be put aside for future evaluation cycles or grant opportunities.

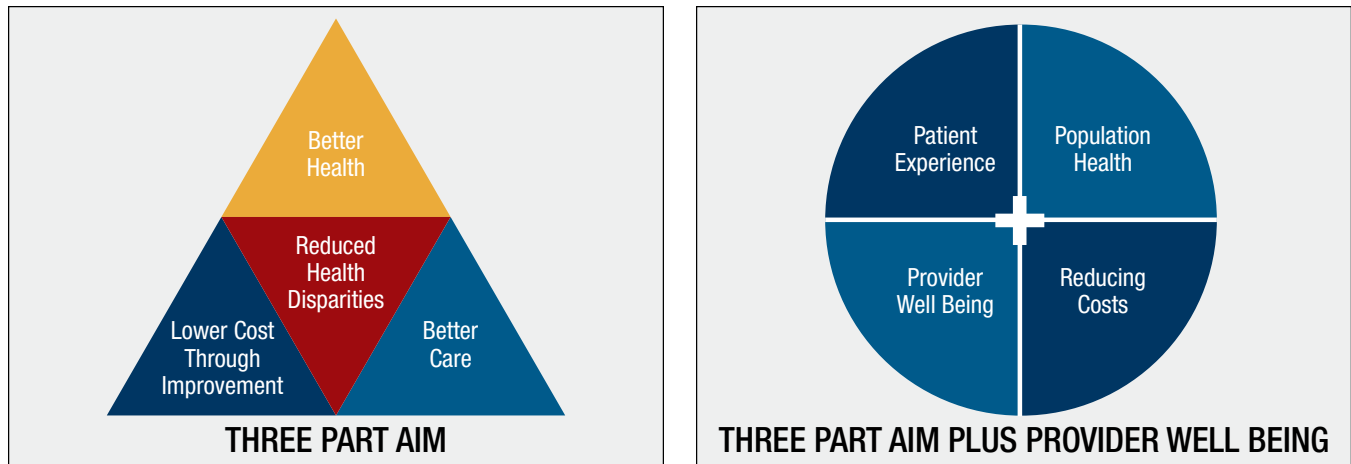
RESOURCES

Evaluation frameworks

Evaluation frameworks can provide an overall structure and vision for your evaluation. Two frameworks to consider in developing your evaluation are how to use the Three Part Aim to assess program elements in preparing trainees for health system transformation, and the RE-AIM framework to understand the program implementation process and context for replication and sustainability. More detail on these two frameworks is below.

Addressing the Three Part Aim plus Provider Well Being through evaluation

HRSA's funding announcement for the health workforce training program states the goal of “working to develop primary care providers who are well prepared to practice in and lead transforming healthcare systems aimed at improving access, quality of care and cost effectiveness.”¹



The National Quality Strategy promoted by the Department of Health and Human Services is an overarching plan to align efforts to improve quality of care at the national, State, and local levels. Guiding this strategy is the **Three Part Aim** which is to provide better care, better health/healthy communities and more affordable care.¹ Recently, there has been discussion of expanding to add provider well being, which incorporates improving the work life of clinicians and staff to the goals. PCTE programs should assess the ways that they are preparing future clinicians to provide services that improve patient experience, population health, cost effectiveness, and provider well-being.

The table on pages 6 and 7 includes examples of evaluation approaches. The Three Part Aim plus provider well being's focus on provider experience and assessing provider resiliency has been added to these resources, based on health workforce training programs' feedback and interest. The next module (Module 4: Gather Credible Evidence) will provide examples of related measures and indicators to consider within your evaluation.

RE-AIM Framework

The RE-AIM framework is a structured approach to identify critical and contextual elements related to translating evidence-based practices into real-world settings. It can provide a systematic approach for understanding how a program is “translated” to the health workforce training program, to what extent the experience of your program could be generalized to other primary care training programs, and how successes and challenges can inform future projects and initiatives.

More information on RE-AIM can be found at www.re-aim.org.

¹ Paterson MA, Falir M, Cashman SB, Evans C, Garr D. Achieving the Triple Aim: A Curriculum Framework for Health Professions Education. Am J Prev Med.2016;49(2):294-296.

Summary of RE-AIM Framework Components

R	Reach	Characteristics of those reached by the program intervention and those who are not reached; how representative of the general population are they?
E	Efficacy/ Effectiveness	Extent to which an intervention resulted in desirable outcomes (e.g., improved learning of key concept, mastering of skills, patient improvement).
A	Adoption	Who is/is not participating in the intervention (trainees, faculty, etc.), and how representative of the program are they?
I	Implementation	How was it done? Fidelity to model, changes, and why. Consistency and costs of implementation.
M	Maintenance	Sustainability and institutionalization of model.

Health workforce training RE-AIM Example

The multi-disciplinary program includes primary care residents from pediatrics, internal medicine, and family medicine. The program includes symposiums inviting community providers and is open to medical students and other trainees to encourage networking across disciplines and cross learning. Trainees participate in quality improvement projects of six months at a clinical site to enhance skills and apply knowledge on population health management and quality improvement.

In this example there are two separate activities within the grant period that could be looked at through the RE-AIM Framework. Below are example questions that may be used to frame the evaluation.

Example: Health workforce training RE-AIM

R	Reach	<p>SYMPOSIUM Who participates in the primary care symposium? What types of interactions between trainees occur?</p> <p>QUALITY IMPROVEMENT PROJECTS Which patients are included in trainee quality improvement projects?</p>
E	Efficacy/ Effectiveness	<p>SYMPOSIUM Were the learning objectives for the primary care symposium met?</p> <p>QUALITY IMPROVEMENT PROJECTS What were the clinical operational and/or clinical results of the trainee quality improvement projects? Were trainee skills to lead quality improvement projects enhanced?</p>
A	Adoption	<p>SYMPOSIUM AND QUALITY IMPROVEMENT PROJECTS How representative were the trainee participants of all trainees in primary care?</p>
I	Implementation	<p>SYMPOSIUM If the symposium model is used again, are there any changes to format or curriculum that should be considered?</p> <p>QUALITY IMPROVEMENT PROJECTS Were there differences in how trainees were supported on their quality improvement projects? Were there any adaptations to the trainee quality improvement program during the grant period? If yes, why? What was learned?</p>
M	Maintenance	<p>SYMPOSIUM What resources or collaboration will be needed to sustain the symposium model in future years?</p> <p>QUALITY IMPROVEMENT PROJECTS What was the reception of the clinical preceptor sites on including trainees as quality improvement leaders? Is there clinical practice support to continue the program?</p>

Addressing the Three Part Aim plus provider well being through evaluation

THREE PART AIM PLUS PROVIDER WELL BEING COMPONENTS	APPROACH	DESCRIPTION	EXAMPLES	SAMPLE MEASURES
Population health-reduced cost	Capitalize on health care enhancement initiatives in your state and region.	Many states and regions are collecting data from practices as part of their health care enhancement initiatives. Consider how these efforts might provide data for your evaluation efforts.	State Innovation Model Grants (SIM) Delivery System Reform Incentive Payment Program (DSRIP) Transforming Clinical Practice Initiatives (TCPCi) , also known as Practice Transformation Networks (PTN)	Data on clinical quality, cost of care (e.g., total cost of care for Medicaid enrollees by claims).
Population health-reduced cost	Use clinical measures reported by precepting sites to funders.	<p>Are you working with clinics that are part of an ACO or FQHC?</p> <p>You might use their quality metrics to assess the clinical quality of your health workforce training program participants.</p>	<p>All FQHCs must report the UDS clinical quality measures. These measures are reported at the clinic level, but your health center partner may be able to share provider-level data.</p> <p>ACO participation may provide clinics with monthly data including utilization from claims and clinical quality.</p>	Clinical quality measures of immunizations, cancer screenings, chronic disease care.
Population health	Patient-centered medical home (PCMH) transformation efforts provide specific information on practice-level quality of care and an organizational assessment of the training environment.	<p>Programs might assess the number of clinical training sites that have achieved recognition status</p> <p>-OR-</p> <p>Assess progress in attainment of specific core elements of PCMH recognition.</p>	<p>The NCQA PCMH recognition standards or alternatively, the Safety Net Medical Home PCMH assessment.</p> <p><i>Note: NCQA PCMH standards are updated regularly. Consider which will be used by your practice and evaluation process.</i></p>	<p>The NCQA PCMH program is divided into 6 standards that align with core components of primary care:</p> <ul style="list-style-type: none"> - PCMH 1: Enhance access and continuity - PCMH 2: Identify and manage patient populations - PCMH 3: Plan and manage care - PCMH 4: Provide self-care support and community resources - PCMH 5: Track and coordinate care - PCMH 6: Measure and improve performance
Patient experience	Use existing patient experience surveys whenever possible.	Many practices use patient experience surveys; some can separate results by provider. This allows provider-specific results to compare trainee patient experience ratings to clinic averages and other benchmarks.	<p>CAHPS (Consumer Assessment of Healthcare Providers and Systems)</p> <p>PAM (Patient Activation Measure)</p>	Communication between provider and patient.

Addressing the Three Part Aim plus provider well being through evaluation, continued

THREE PART AIM PLUS PROVIDER WELL BEING COMPONENTS	APPROACH	DESCRIPTION	EXAMPLES	SAMPLE MEASURES
Patient experience/access	Clinic operational data can be abstracted from standard reports or designed for evaluation purposes.	Improving patient access to acute care appointments. Use training logs to assess continuity of care with a single provider or team.	N/A	Wait-time for 3rd next available appointment. % of patient appointments with assigned care team.
Provider resiliency	Assessing student resiliency during the program can mark their preparedness for primary care and heighten awareness of resiliency for trainees and program.	Are you providing specific resiliency training or are you interested in understanding trainee capacity for resiliency?	There is interest in measuring provider resilience in primary care but there are no standards in validated tools. ² The Professional Quality of Life Scale (ProQOL) is the most commonly used measure of negative and positive effects of helping those who experience suffering and trauma.	Job satisfaction, self-fulfillment, anxiety, stress, and compassion. As a 1-page assessment tool there is low burden in use and distribution. The sensitivity of such questions requires careful administrative structuring to protect respondent privacy.

² Robertson HD, Elliott AM, Burton C, Iversen L, Murchi P, Porteous T, and Matheson C. Resilience of primary healthcare professionals: a systematic review. *British Journal of General Practice*. June 2016. 66(647).

Gather Credible Evidence

Now that you have developed a logic model for your health workforce training program, chosen an evaluation focus, and selected your evaluation questions, your next task is to gather the evidence. You want credible data to strengthen the evaluation judgments and the recommendations that follow. You should consider the following questions:

- What data will be collected? What are the **data indicators** that you will use for your evaluation?
- Who will collect the data, or are there existing sources you can use? How will you collect and access the data? What are the **data collection methods and sources**?
- What are the **logistics** for your evaluation? When will you collect the data (i.e., what is the timeframe)? How will the data be entered and stored? How will the security and confidentiality of the information be maintained? Will you collect data on all (trainees), or only a sample?
- How much data (**quantity**) do you need to collect to answer your evaluation questions?
- What is the **quality** of your data? Are your data reliable, valid, and informative?
- How often will data be analyzed? What is the **data analysis** plan?

STEP 1: Select your health workforce training data indicators

Process indicators focus on the activities to be completed in a specific time period. They enable accountability by setting specific activities to be completed by specific dates. They say what you are doing and how you will do it. They describe participants, interactions, and activities.

Outcome indicators express the intended results or accomplishments of program or intervention activities within a given time frame. They most often focus on changes in policy, a system, the environment, knowledge, attitudes, or behavior. Outcomes can be short-, intermediate-, or long-term.

Consider the following when selecting indicators for your health workforce training evaluation.

- There can be more than one indicator for each activity or outcome.
- The indicator must be focused and measure an important dimension of the activity or outcome.
- The indicator must be clear and specific about what it will measure.
- The change measured by the indicator should represent progress toward implementing the activity or achieving the outcome.

Example health workforce training program indicators

PROGRAM COMPONENT	INDICATOR
Simulated team-based care delivery training	PROCESS: Number of trainings OUTCOME: Increased trainee knowledge based on semi-annual survey assessment
Faculty development on interdisciplinary learning	PROCESS: Number of staff trained OUTCOME: Number of presentations and publications by faculty with research including interdisciplinary teams.

ADAPTED FROM: U.S. Department of Health and Human Services Centers for Disease Control and Prevention. Office of the Director, Office of Strategy and Innovation. Introduction to program evaluation for public health programs: A self-study guide. Atlanta, GA: Centers for Disease Control and Prevention, 2011. Available at: <http://www.cdc.gov/eval/framework/index.htm>



STEP 2: Select your data collection methods and sources

Now that you have determined the activities and outcomes you want to measure and the indicators you will use to measure progress on them, you need to select data collection methods and sources.

Consider whether you can use existing data sources (secondary data collection) to measure your indicators, or if you will need to collect new data (primary data collection).

Secondary Data Collection

Existing data collection is less time consuming and human resource intensive than primary data collection. Using data from existing systems has the advantages of availability of routinely collected data that has been vetted and checked for accuracy. However, you will have less flexibility in the type of data collected, and accessing data from existing systems may be costly. Examples of existing data sources that may be relevant for health workforce training evaluation:

1. Student tracking systems such as eValue that show demographics of patients that trainees have seen, and the health conditions of those patients.
2. Traditional and non-traditional sources for surveying graduates. Traditional surveys distributed through the alumni office, or (non-traditional) LinkedIn or Facebook groups.
3. Existing clinical data sources reported by organization. For safety-net clinics, this could be clinical performance measures reported through the Uniform Data System (UDS) to HRSA. These measures include chronic disease management and preventive health indicators for cancer screening, immunizations, behavioral, and oral health, and are reported on an annual basis for all patients within the health center organization. Consider other secondary sources available based on health care enhancement and payment based on value. Examples include measures being reported as part of participation in an accountable care organization, or for some organizations participating in CMS-funded practice transformation efforts, such as Comprehensive Primary Care Initiative (CPCi). Clinics that are part of a Medicaid Managed Care organization may receive summary claims data or clinical feedback on patient use of the hospital and emergency room.
4. Patient satisfaction surveys from the [Consumer Assessment of Healthcare Providers and Systems \(CAHPS\)](#), or other sources such as the Midwest Clinicians' Networks' [surveys specific to behavioral health and employee satisfaction](#).

Primary Data Collection

The benefit of primary data collection is that you can tailor it to your health workforce training evaluation questions. However, it is generally more time consuming to collect primary data. Primary data collection methods include:

- Surveys: personal interviews, telephone interviews, instruments completed by respondent received through regular or e-mail.
- Group discussions/focus groups.
- Observation.
- Document review, such as medical records, patient diaries, logs, minutes of meetings, etc.

Quantitative versus Qualitative Data

You will also want to consider whether you will collect quantitative or qualitative data or a mix of both.

Quantitative data are numerical data or information that can be converted into numbers. You can use quantitative data to measure your SMART objectives (for more on developing SMART objectives, see Module 3). Examples:

- **Number** of trainees.
- **Percent** of trainees who have graduated.
- **Average** number of trainees who pass boards on first attempt.
- **Ratio** of trainees to faculty.

Qualitative data are non-numerical data that can help contextualize your quantitative data by giving you information to help you understand why, how, and what is happening with your health workforce training program. For example, you may want to get the opinions of faculty, trainees, and clinic staff on why something is working well or not well. Examples include:

- **Meeting minutes** to document program implementation.
- **Interviews** with trainees, providers, faculty, or patients.
- **Open-ended questions** on surveys.
- **Trainee writing**, essays, or journal entries.
- **Focus groups** with former or current students.

Mixed Methods

Sometimes a single method is not sufficient to measure an activity or outcome because what is being measured is complex and/or the data method/source does not yield reliable or accurate data. A mixed-methods approach will increase the accuracy of your measurement and the certainty of your health workforce training evaluation conclusions when the various methods yield similar results. Mixed-methods data collection refers to gathering both quantitative and qualitative data. Mixed methods can be used sequentially or concurrently. An example of sequential use would be conducting focus groups (qualitative) to inform development of a survey instrument (quantitative), and conducting personal interviews (qualitative) to investigate issues that arose during coding or interpretation of survey data. An example of concurrent use of mixed methods would be conducting focus groups or open-ended personal interviews to help affirm the response validity of a quantitative survey. For more information on using mixed-methods approaches to evaluation, see “Recommendations for a Mixed-Methods Approach to Evaluating the Patient-Centered Medical Home.”¹

Matrix of potential evaluation areas and publicly available tools/measures

TOPIC	TOOL NAME	BRIEF DESCRIPTION	CONSIDERATIONS FOR USE
Team-based care	Team Development Measure Developed and distributed by PeaceHealth, a nonprofit health care system with medical centers, critical access hospitals, clinics, and laboratories in Alaska, Oregon, and Washington.	Measures a clinical team’s development level. Can be used as a performance measure to promote quality improvement in team-based health care. Levels determined by measuring firmness of components on a team.	Appropriate for variety of student types. Publicly available. Authors request permission for use.
Population health	Patient Centered Medical Home Assessment-A Developed by the MacColl Center for Health Care Innovation at the Group Health Research Institute and Qualis Health for the Safety Net Medical Home Initiative.	Helps sites understand current level of “medical homeness” and identifies opportunities for improvement. Helps sites track progress in practice transformation if completed at regular intervals.	Assess practice-level progress on providing a population health approach to primary care delivery.
Integration of primary care and behavioral health	Site Self-Assessment Developed by the Maine Health Access Foundation.	Measures integration of behavioral health and primary care at site level.	Could be used at practice-site level.
Community health	Methods and Strategies for Community Partner Assessment Developed for the Health Professions Schools in Service to the Nation program.	Assesses program engagement with community partners who provide service learning opportunities for trainees.	May be useful for PCTE programs that engage community health partners for student learning in community health programs (e.g., housing, food security, and legal advocacy).

¹ Goldman R.E., Parker D., Brown J., Eaton C., Walker J., & Borkan J. Recommendations for a Mixed-Methods Approach to Evaluating the Patient-Centered Medical Home. *Annals of Family Medicine*, 2015;13(2):168-75.

Example Data Indicators and Data Sources Worksheet

Use the following worksheet to identify the indicators and the data methods/sources for each component of your evaluation.

	LOGIC MODEL COMPONENTS IN EVALUATION FOCUS	INDICATOR(S) OR EVALUATION QUESTIONS	DATA METHOD(S)/SOURCE(S)
1	<i>Enhanced trainee knowledge and confidence in addressing social determinants of health.</i>	<i>Are trainees able to address social determinants of health?</i>	<i>Trainee journal reflections on ability to meet patient needs, before and after program implementation.</i>
		<i>Is the patient experience improved as a result of provider training?</i>	<i>Patient satisfaction surveys with questions on ability of care team to help them overcome housing/food/other barriers.</i>
2	<i>Interdisciplinary training enhances communication between trainees and learning to work as a team caring for patients with chronic conditions.</i>	<i>Do trainees opt to work in settings with interdisciplinary teams?</i>	<i>Graduate survey incorporates questions on team-based care.</i>
		<i>Are the clinical outcomes improved for patients with chronic disease?</i>	<i>Comparison of chronic disease indicators in interdisciplinary team patient panels with those at clinical sites without interdisciplinary teams.</i>

RESOURCES

Patient Experience Surveys

- CAHPS: [Consumer Assessment of Healthcare Providers and Systems](#). Available through the [Agency for Healthcare Research and Quality](#)
- Midwest Clinicians Network: [Surveys](#) of patient experience in medical, behavioral, and oral health and staff satisfaction.

Secondary Clinical Data Sources

- Uniform Data System (UDS): [Clinical quality measures](#) collected and reported by health centers.
- CMS Primary Care Transformation initiatives may be a source of data if your clinical sites are participating. Consider information from the [Primary Care Transformation Initiative and Multi-payer Advanced Primary Care Practice Demonstration](#) and the [Transforming Clinical Practice Initiative](#), which is supporting more than 14,000 clinical practices through September 2019.

TOOL 4.1

Data Indicators and Data Sources Worksheet

Use the following worksheet to identify the indicators and the data methods/sources for each component of your evaluation.

	LOGIC MODEL COMPONENTS IN EVALUATION FOCUS	INDICATOR(S) OR EVALUATION QUESTIONS	DATA METHOD(S)/SOURCE(S)
1			
2			
3			

TOOL 4.2

Data Collection Worksheet

Use the following worksheet to identify the data collection methods and sources, how data will be collected, and by whom.

	DATA COLLECTION METHOD/SOURCE	FROM WHOM WILL THESE DATA BE COLLECTED	BY WHOM WILL THESE DATA BE COLLECTED AND WHEN	SECURITY OR CONFIDENTIALITY STEPS
1				
2				
3				

Long-Term Trainee Tracking Worksheet

Sample trainee tracking template

Graduate name	Year	Program	Location of practice	Gender	Practice Type (hospital affiliate, FQHC, free clinic, private practice)	Percent of patients who are on Medicaid/uninsured	Leadership roles	Clinical quality information	Years of practice at current site

Justify Conclusions/Data Interpretation and Use

Why is this important?

Data interpretation is typically the role of the “researcher/evaluator” but involving stakeholders can lead to a deeper understanding of the findings, and more effective use of the data. If stakeholders agree that the conclusions are justified, they will be more inclined to use the evaluation results for program improvement. This module considers a process to interpret health workforce training data in collaboration with stakeholders.

STEP 1: Analyze and synthesize findings

Data analysis will be guided by the evaluation plan developed from your logic model and evaluation framework (detailed in Modules 2 and 3).

The analysis phase includes the following tasks:

- Organize and classify the quantitative and qualitative data collected. This includes the steps of cleaning data and checking for errors.
- Tabulate the data into counts and percentages for each indicator.
- Summarize data and include stratification if appropriate. At the trainee level you may stratify by trainee type, cohort, or practice site. For clinical data you may stratify by provider team, practice site, or patient demographics.
- Compare results with appropriate information. Depending on your evaluation design you may make comparisons over time using the same indicator, or may compare locations, practices, or cohorts of trainees. You may also compare results to established targets or benchmarks.
- If using mixed-methods analysis, take important findings from one source and compare to other sources.
- Present the results in an easily understandable manner, and tailor it to your audience.

Mixed-Methods Example

If you were asking these questions: Do trainees feel prepared to provide care to complex patients in a team-based environment? Do patients feel care is coordinated across team members?

A mixed-methods approach could pair the results from patient focus groups with results from trainee surveys on providing care in an interdisciplinary team-based environment. These results might also be paired with clinical outcomes for the patients such as patient blood pressure or depression screening scores.

Mixed-Method Analysis Example within health workforce training program: Transformed Primary Care through Addressing Social Determinants of Health

A health workforce training program has decided to focus on preparing students to address social determinants of health. The metric of interest for this program is assessing improvement of housing status, as the safety-net clinic has a large uninsured and transient population. As part of the program, evaluators are collecting data through a patient satisfaction survey, through focus groups with trainees at the beginning and end of the program, and through chart abstraction of the EHR. For the mixed-method analysis, they planned a pre-post quantitative analysis of the number of clinical training site patients who have “unstable housing” status. The focus groups with trainees provided information on resident experience in assessing and supporting patients without housing by connecting them to social work staff as part the interdisciplinary team. This was combined with data from surveys on patient experience accessing care and services. The combination of data sources will inform the quantitative data on “improved housing status.” If success is not as high as expected, the data from the student focus groups may indicate barriers, and the data from patients may provide information on ways the patients received assistance in improving access to housing. If housing status was not improved, patient feedback might indicate if other support was provided.

ADAPTED FROM: U.S. Department of Health and Human Services Centers for Disease Control and Prevention. Office of the Director, Office of Strategy and Innovation. Introduction to program evaluation for public health programs: A self-study guide. Atlanta, GA: Centers for Disease Control and Prevention, 2011. Available at: <http://www.cdc.gov/eval/framework/index.htm>



STEP 2: Setting program standards

Articulate the values that will be used to consider a program “successful,” “adequate,” or “unsuccessful.”

Program standards are the metrics by which the evaluation results will be assessed after completion of program data analysis. Using the example of a program that is addressing social determinants of health, consider whether the result of a 5 percent or a 50 percent increase in patients who have stable housing is a meaningful result. The purpose of including stakeholders in setting benchmarks is to understand what the users of evaluation findings consider meaningful. A faculty member, student, and patient may have different interpretations of whether increasing the percent of patients who have stable housing is successful at a 5 versus 50 percent level. Including stakeholders in developing the benchmark at the outset of the evaluation will set the team up for consensus on interpretation of findings at the end of the analysis.

- Think about what informs the choice of benchmarks. In addition to the value and interpretation of results by stakeholders, consider the external context that may inform the development of the benchmark.
- What is the average performance at similar practices/organizations?
 - Are there standards that the clinic is being held to by external funders?
 - Are there preset institutional goals for the metric?
 - What is realistic to achieve in the timeframe of the evaluation?

What is the approach if there is no benchmark?

Not all evaluation metrics will have an external benchmark or even a baseline for which to compare results. In cases where there is no external benchmark, consider whether data collected from multiple clinical sites within the organization can be a reference point. For example, if using a provider or trainee satisfaction survey that was tailored to the organization, comparison with other organizations may not be available but comparison across departments or sub-groups may provide insights to the data. When benchmark data is not available, conversation with stakeholders becomes a more important way to build consensus on what is meaningful change during the project period, and what can be achieved with time and resources available.

Example benchmarks per objective

OBJECTIVE 1: Develop skills to implement, evaluate, and teach practice transformation and population health among trainees.

Program standards:

- 100 percent of trainees will complete a practice transformation or population health project.
- Trainees will rate their satisfaction with the program components an average of 7 on a 10 point Likert scale.
- Trainees will have improved one clinical measure during the population health project.

OBJECTIVE 2: Evaluate quality and cost of care within the clinical training environments used by the trainees.

Program standards:

- Improve practice-level measures for two clinical quality measures over a 2-year period.
- Review use and cost data for 20 percent of patients in clinical training environments and include as part of trainee data review for population health.

STEP 3: Interpretation of findings and making judgements/recommendations

Judgments are statements about a program’s merit, worth, or significance that are formed when you compare findings against one or more selected program standards. As you interpret data and make recommendations, be sure to:

- Consider issues of context.
- Assess results against available literature and results of similar programs.
- If multiple methods have been employed, compare different methods for consistency in findings.
- Consider alternative explanations.
- Use existing standards as a starting point for comparisons.
- Compare actual with intended outcomes.
- Document potential biases.
- Examine the limitations of the evaluation.

The interpretation process is also aided by review of findings with stakeholders. Presenting the summarized data to stakeholders helps validate the conclusions and may offer new insights to the results. Most importantly it creates buy-in of the findings and any action steps to follow.

Engaging patients in interpretation

Patient perspectives and satisfaction are one component of assessing ability to meet the Three Part Aim. Not all health workforce training programs will include patient experience data, but those that do may be curious about how to involve patients in data interpretation. Sharing results with patients may be part of your project plan to include diverse stakeholder perspectives. Information might be shared through live presentation at a patient advisory group or patient advisory council meeting. Alternatively, summary results could be included in an infographic and posted at clinics or included in a patient newsletter. Although the latter option would limit direct feedback, it conveys that the organization values communication with patients, as well as its research and quality improvement efforts. For more information on patient advisory groups see the [Patient and Family Advisory Council Getting Started Toolkit](#).

Interpretation Guide

Example: Transformed Primary Care through Addressing Social Determinants of Health

Outcome of interest: Assessing trainees' role in addressing social determinants of health through improved housing status of patients.

POINTS TO CONSIDER IN INTERPRETATION OF DATA	SPECIFIC EXAMPLE FROM A HEALTH WORKFORCE TRAINING PROGRAM
Consider limitations to the data. Check data for errors.	The housing status data are pulled from an EHR. Consider limitations such as: <ul style="list-style-type: none"> • Are patients included if the status is left blank? • Are only those patients who saw a physician included? For example, if patients came in for lab tests or immunizations only, were they excluded? <p>Was the analysis limited to subgroups (e.g., cases with complete data, patients receiving medical services)?</p> <p>Ensure that your findings and interpretation are limited to the data available and are not overstated.</p>
Consider issues of context when interpreting data.	Were there changes in housing availability at local shelters or other policy changes that would affect the ability of increasing stable housing during the time period of study?
Assess results against available literature and results of similar programs.	Were there changes in the relationship with the local housing director, and collaborative meetings with community partners that would affect how trainees interacted with clinic to support housing for patients during the program period?
Assess results against available literature and results of similar programs.	Are there studies on the ability of interdisciplinary primary care teams to address unstable housing?
If multiple methods have been employed, compare different methods for consistency in findings.	Is there related literature that might be useful for reference? For example, similar studies conducted in other practice arrangements, other medical settings, etc.?
Consider alternative explanations.	How does patient reporting of housing status compare in the EHR to information collected through a log maintained by practice social workers? To what extent do the results from the EHR and provider logs tell a similar or different story about patient housing status?
Use existing standards as a starting point for comparisons.	If findings are different between EHR and social work log, explore underlying reasons.
Use existing standards as a starting point for comparisons.	Use standards for discussion but consider how the patient population or the program may be different from the standard. In the case of housing, standards may not be available, but the program may compare health outcomes between those with unstable housing to those that have achieved stable housing in the program.
Compare actual with intended outcomes.	If program goal was improvement of 50 percent, but 10 percent was achieved, use the mixed-method analysis of patient survey and student focus groups to explain the difference. Explore any unintended outcomes of the program.
Document potential biases.	For example, noting that students only worked with women and children because of the clinic hours.
Examine the limitations of the evaluation.	Document the time frame, sample size, missing data, and resource constraints that may limit data interpretation.

RESOURCES

- Patient and Family Advisory Council: Getting Started Toolkit. Created by Meghan West and Laurie Brown, Skunks Team. BJC Healthcare. Available at: http://c.ymcdn.com/sites/www.theberylinstitute.org/resource/resmgr/webinar_pdf/pfac_toolkit_shared_version.pdf
- AHRQ Health Information Technology Evaluation Toolkit. Available at: <https://healthit.ahrq.gov/sites/default/files/docs/page/health-information-technology-evaluation-toolkit-2009-update.pdf>
- IDRE Statistical Consulting Group Web site. Available at: <http://www.ats.ucla.edu/stat/>

TOOL 5.1

Justify Conclusions Worksheet

Source: CDC Program Evaluation for Public Health Programs: Self-Study Guide

	QUESTION	RESPONSE
1	Who will analyze the data (and who will coordinate this effort)?	
2	How will data be analyzed and displayed?	
3	Against what standards will you compare your interpretations in forming your judgments?	
4	Who will be involved in making interpretations and judgments and what process will be employed?	
5	How will you deal with conflicting interpretations and judgments?	
6	Are your results similar to what you expected? If not, why do you think they are different?	
7	Are there alternative explanations for your results?	
8	How do your results compare with those of similar programs?	
9	What are the limitations of your data analysis and interpretation process (e.g., potential biases, generalizability of results, reliability, validity)?	
10	If you used multiple indicators to answer the same evaluation question, did you get similar results?	
11	Will others interpret the findings in an appropriate manner?	

Use and Share Lessons

The ultimate purpose of program evaluation is to use the information to improve programs. Now that you have analyzed your data, you want to use the evaluation results to demonstrate the effectiveness of your health workforce training program, identify ways to improve the program, modify program planning, demonstrate accountability, and justify funding.

Follow these five steps to ensure that you are using your program data results effectively and communicating the lessons.

STEP 1: Make recommendations

Recommendations are actions that should be considered in response to an evaluation. Your recommendations will depend on the audience and the purpose of the health workforce training evaluation. If you have identified and engaged key audiences as outlined in Module 1, you will maximize the chances that your recommendations will be relevant and useful to them.

STEP 2: Prepare recommendations

Thoughtful preparation of recommendations can help:

- Strengthen your ability to translate new knowledge about your health workforce training program into appropriate action.
- Discuss how potential findings might affect decision making of the health workforce training program.
- Explore positive and negative implications of potential results and identify different options for program improvement.

STEP 3: Gather feedback

Gathering feedback of evaluation findings will create an atmosphere of trust among all your stakeholders. At the early stages in your evaluation, gathering and sharing feedback will keep everyone informed about how the program is being implemented and how the evaluation is going. As the evaluation progresses and preliminary results become available, sharing feedback will ensure

Uses of program evaluation data

- Describe program performance and outcomes.
- Compare outcomes to previous years.
- Compare actual outcomes with intended outcomes.
- Support realistic goal forming in the future.
- Support program planning in the future.
- Focus attention on important issues.

Application to health workforce training programs

- Better engage faculty in the program.
- Justify use of resources to administration.
- Engage and expand clinical preceptors and sites.
- Grant or research opportunities.
- Educate students on data use

that all stakeholders can comment on evaluation decisions. Valuable feedback can be obtained by holding discussions and routinely sharing interim findings, provisional interpretations, and draft reports. Recommendations may be shared in preliminary fashion and revised based on stakeholder feedback.

STEP 4: Follow-up

Follow-up refers to the support users need after receiving evaluation results and beginning to reach and justify their conclusions. Active follow-up with your stakeholders can achieve the following:

- Remind users of the intended purposes of the health workforce training program evaluation.
- Help to prevent misuse of results by ensuring that evidence is applied to the intended questions, not extrapolated to new questions (unless appropriate).
- Prevent lessons from becoming lost or ignored in the process of making complex or political decisions.

ADAPTED FROM: U.S. Department of Health and Human Services Centers for Disease Control and Prevention. Office of the Director, Office of Strategy and Innovation. Introduction to program evaluation for public health programs: A self-study guide. Atlanta, GA: Centers for Disease Control and Prevention, 2011. Available at: <http://www.cdc.gov/eval/framework/index.htm>



STEP 5: Disseminate results and lessons

Dissemination involves communicating the evaluation processes, results, and lessons to relevant audiences in a timely, unbiased, and consistent manner. You should tailor your report timing, style, tone, message source, vehicle, and format to your audiences.

Methods of getting the information to your audiences include:

- Mailings.
- Web sites.
- Community forums.
- Personal contacts.
- Listserves.
- Organizational newsletters.
- Meetings and conferences.
- Scholarly and professional publications.

Use the Communications Plan Worksheet listed in the resources section (example below) to help you identify your health workforce training audience and the most effective formats and channels for disseminating results to them.

If you develop a formal evaluation report to discuss your health workforce training evaluation findings, it must clearly, succinctly, and impartially communicate major components of the evaluation. The report should be written so that it is easy to understand and not lengthy or technical. You should also consider oral presentations tailored to various audiences.

TIP: Consider using a data dashboard as a way to effectively communicate evaluation results to leadership and your stakeholders. A great dashboard can showcase actionable information and focus a user's attention on the most important information on the page. This [document](#) provides information on how to develop an effective data dashboard.

Case example, by audience

Audience: health workforce training faculty

Purpose of evaluation: Assess mentorship program impact on trainee proficiency and skills to lead a population health quality improvement project.

Recommendation: Trainees want to be able to discuss population health quality improvement project results with interdisciplinary team. Include a facilitation skill module in next year's mentorship program.

Audience: Preceptor clinical sites

Purpose of evaluation: Assess mentorship program and trainee population health quality improvement project on clinical outcome of increased colorectal cancer screening.

Recommendation: Implement process improvements identified through trainee quality improvement project that demonstrated higher colorectal cancer screening rates.

Evaluation report outline

- Executive Summary
- Background and Purpose
 - Program background and rationale
 - Program purpose and activities
 - Key evaluation questions
- Evaluation Methods
 - Design
 - Sampling procedures
 - Measures or indicators
 - Data collection procedures
 - Data processing procedures
 - Analysis
- Results
- Discussion and Recommendations
- Limitations
- Conclusion

Example: Communication Plan Worksheet

I need to communicate to this AUDIENCE: The FORMAT that would be most appropriate:

Faculty

Short PowerPoint presentation

This CHANNEL would be most effective:

Spring faculty meeting

Communication Plan Worksheet

I need to communicate to this AUDIENCE:	The FORMAT that would be most appropriate:	This CHANNEL would be most effective:

Special Topics of Health Workforce Training Programming

Overview

Health workforce training grantees focus their enhanced training programs in a range of areas. Some of the most common are interdisciplinary training, integrated behavioral health, addressing social determinants of health, and population health. Some examples of the types of programs and evaluation approaches to each are described here, based on existing funded Primary Care Training Enhancement grantee programs. This module also provides tools and resources within these areas that may be helpful. Finally, this module includes an evaluation checklist to ensure you are ready for your health workforce training evaluation and provides corresponding resources to support your evaluation.

Enhanced training topics and sample evaluation questions and methods

Interdisciplinary training		
PROGRAM OBJECTIVE	EVALUATION QUESTIONS	EVALUATION APPROACHES
To prepare interdisciplinary teams of health professionals to test PCMH program innovations.	To what extent are trainees comfortable with PCMH concepts?	Trainee focus groups or questionnaire evaluations on PCMH core competency topics.
	What elements of PCMH do preceptor sites have in place?	Use of a PCMH self-assessment site level tool.
	What are the clinical outcomes related to PCMH at the preceptor sites?	Care coordination assessment from patient CG-CAHPS survey.
To prepare trainees to practice in high functioning multi-disciplinary teams.	Will trainees show an increased level of knowledge, attitude, and skills in working with team members of other disciplines?	Trainee assessments using a readiness scale for interprofessional learning.
	Do patients report higher satisfaction with care from interdisciplinary team?	Care coordination assessment from patient CG-CAHPS survey.

Integrated behavioral health		
PROGRAM OBJECTIVE	EVALUATION QUESTIONS	EVALUATION APPROACHES
Expose trainees to models of integrated behavioral health and primary care.	Do trainees trained in integrated behavioral health models have greater interest in practicing in primary care?	Trainee tracking of post-graduate training and employment through graduate surveys.
	Do preceptor sites of trainees advance in their development of integrated care programs?	Organizational level practice/site assessment of the components of integrated health using the MeHAF Site Self-Assessment tool or the Integrated Practice Assessment Tool (IPAT).
	Do patients have increased access to integrated care?	Practice level assessments of wait time for behavioral health appointments.
	What is the impact of integrated behavioral health on cost?	Data from Medicaid managed care on patient utilization of services.

ADAPTED FROM: U.S. Department of Health and Human Services Centers for Disease Control and Prevention. Office of the Director, Office of Strategy and Innovation. Introduction to program evaluation for public health programs: A self-study guide. Atlanta, GA: Centers for Disease Control and Prevention, 2011. Available at: <http://www.cdc.gov/eval/framework/index.htm>



Addressing social determinants of health

PROGRAM OBJECTIVE	EVALUATION QUESTIONS	EVALUATION APPROACHES
To prepare graduates to provide health education at the appropriate educational level.	How skilled are trainees in delivering health education?	Trainee assessment of skills through observation.
		Patient report of their experience in care and trainee skills through use of patient survey such as CG-CAHPS.
		Patient knowledge of medication risks assessed through survey of patients.
		Comparison of emergency department utilization among patients with patient education to those without patient education.

Population health and quality improvement

PROGRAM OBJECTIVE	EVALUATION QUESTIONS	EVALUATION APPROACHES
Enhance skills of multi-disciplinary trainees in population health and quality improvement.	Do patients who receive care by trainees and graduates of program experience higher levels of quality of care?	Select one to three clinical quality measures to assess at the trainee/preceptor level.
		Track one to three clinical outcomes for graduates that choose to work within the medical center system, and compare their clinical outcomes to non-graduates.
		Compare emergency department and inpatient utilization of patients empaneled with trained graduates compared to non-graduates of the program using Medicaid managed care data.
Provide trainees with the knowledge, skills, and professional development required to champion quality improvement and patient safety practices.	Are trainees exposed to and have experience in working in a team based environment that focuses on quality improvement?	Assessment of trainee preceptor environment for team based training using the Teamworks Perceptions Questionnaire.
	What improvements in quality are achieved by health workforce training trainee quality improvement projects?	Assessment of progress in trainee projects through selection of clinical measures appropriate to their project and tracking these measures over the quality improvement period.
Ensure trainees are trained on tools leveraging health IT to support screening, risk assessment, and use of patient registries.	Are trainees more adept at using population health management tools?	Focus groups with trainees on their experience in leading quality improvement projects.
	Are trainees exposed to a preceptor site utilizing data driven population health approaches to care?	Practice level assessment using the Analytics Capacity Assessment .

Matrix of interdisciplinary training and evaluation tools

Interprofessional Education		
TITLE	SOURCE	DESCRIPTION
TRAINING TOOLS		
National Center for Interprofessional Practice and Education	National Center for Interprofessional Practice and Education	The National Center supports evaluation, research, data, and evidence that ignites the field of interprofessional practice and education and leads to better care, added value, and healthier communities.
EVALUATION TOOLS		
National Center for Interprofessional Practice and Education-Assessment and Evaluation	National Center for Interprofessional Practice and Education	The National Center for Interprofessional Practice and Education has a robust library of resources for evaluation. A few of the resources are highlighted here as examples, but please see their library for more than 35 different instruments.
Assessing Health Care Team Performance: A Review of Tools and the Evidence Supporting Their Use	National Center for Interprofessional Practice and Education	A review of tools to assess health team work performance. Authors: Marlow S, Lacerenza C, Iwig C, Salas E.
Teamwork Perceptions Questionnaire (T-TPQ)	The Agency for Healthcare Research and Quality	TeamSTEPPS perceptions questionnaire is from the TeamSTEPPS® Instructor manual and assesses team functioning, leadership, situation monitoring, mutual support, and communication. TEAMSTEPPS® is a teamwork system designed for health care professionals to address patient safety and develop an evidenced based teamwork system. Authors: Department of Defense Patient Safety Program in collaboration with the Agency for Healthcare Research and Quality
Interprofessional Socialization and Valuing Scale (ISVS-21)	The Agency for Healthcare Research and Quality	The ISVS-21 is a self-report instrument designed to measure interprofessional socialization among students and health practitioners and their readiness to function in interprofessional teams. Items were developed to capture respondent beliefs, attitudes, and behaviors at baseline and at post-intervention time periods. Authors: King G, Orchard C, Khalili H, Avery L.
Readiness for Interprofessional Learning Scale (RIPIS)	National Center for Interprofessional Practice and Education	This is a 19-item tool with a five point scale to assess interprofessional students attitudes towards interprofessional learning. It is designed to capture changes in perceptions and attitudes in the domains of teamwork and collaboration, negative and positive professional identity, and roles and responsibilities. Authors: Parsell G, Bligh J.

Behavioral Health Integration

TITLE	SOURCE	DESCRIPTION
TRAINING TOOLS		
SAMHSA –HRSA Center for Integrated Health Solutions	SAMHSA-HRSA Center for Integrated Health Solutions	This center provides a range of resources for the development of integrated primary care and behavioral health (substance use and mental health). This includes information on workflow, Health IT, billing, and screening tools.
EVALUATION TOOLS		
MeHAF Site Self- Assessment	The Maine Health Access Foundation	This tool was developed to assess levels of integration achieved at the clinic or practice level. It is based on the MacColl Institute ACIC. The tool focuses on two domains: 1) integrated services and patient and family services; and 2) practice/ organization. Each domain has nine characteristics that you rate on a scale of 1 to 10 depending on the level of integration or patient-centered care achieved. Author: Maine Health Access Foundation
The Integrated Practice Assessment Tool (IPAT)	SAMHSA-HRSA Center for Integrated Health Solutions	This tool is a practice level assessment of integration based on the SAMHSA/HRSA Integrated Solutions framework “A Standard Framework for Levels of Integrated Healthcare”. The assessment uses a decision tree rather than scored assessment metric. Author: Wasmonskey J, Auzier A, Romero PW, and Heath B

Population Health

TITLE	SOURCE	DESCRIPTION
TRAINING TOOLS		
Population Health Management: Concepts for Health Centers	The HITEQ Center	This is a 4-module PowerPoint presentation intended as background to introduce the field of population health management. It provides an overview of population health concepts, and discusses the role of the social determinants and population health management within the general population. Authors: The HITEQ Center
Building a Data-Driven Culture	The Center for Care Innovations (CCI)	The Center for Care Innovations (CCI) offers a series of videos to share how to guide the development of a data driven organization, where staff at all levels embrace the use of the data to support providing population health. Authors: The Center for Care Innovations
EVALUATION TOOLS		
Safety Net Medical Home –Patient Centered Medical Home assessment	The Commonwealth Fund	This publicly available self-assessment tool of PCMH assesses progress at the clinic or practice site level. It includes topics of importance for safety-net providers such as interpretation and covers six domains: Access and Communication, Patient Tracking and Registry, Care Management, Test and Referral Tracking, Quality Improvement, and External Coordination. Authors: University of Chicago and The Commonwealth Fund
Analytics Capacity Assessment	The Center for Care Innovations (CCI)	This organizational level assessment helps a practice/clinic understand its current capacity to use data and analytics, a foundation for population health. The tool scores organizations into four domains: reactive, responsive, proactive, and predictive. Authors: Center for Care Innovation (CCI)
ACES: Ambulatory Care Experience Survey	The Agency for Healthcare Research and Quality	The ACES survey is distributed to patients and families to assess their experience in care, including experience with primary care provider interactions and organizational features of care. It includes questions on interpersonal communication, creating proactive plan of care, and information transfer across care settings. Authors: Safran D, Karp M, Coltin K, Chang H, Li A, Ogren J, Rogers W.

TOOL 7.1

Evaluation Capacity and Readiness checklist

The following checklist will support you in planning and preparing to begin your evaluation work. Please see the related modules for tools, resources, and guidance to support you in each area of evaluation.

CHECKLIST		RELATED MODULES AND RESOURCES
1. Do you have an evaluator on staff?		—
2. Do you have dedicated time for evaluation activities?		—
3. Is a logic model in place and has it been developed and vetted with the evaluation team and other stakeholders?		Module 1: Engaging Stakeholders for Your Primary Care Training and Enhancement Evaluation Module 2: Describe the Program
4. Have you defined your evaluation questions?		Module 3: Focus Evaluation Design
5. Have you defined the methods and data sources for each evaluation question?		Module 4: Gather Credible Evidence
6. Have you confirmed the tools for the assessment of competency at trainee level? Have you identified tools to assess capacity at the organizational level?		Module 7: Special Topics
7. Have you developed a timeline and assigned team roles and responsibilities for data collection?		Module 4: Gather Credible Evidence

Modules 5 and 6 will support you in analysis of your evaluation findings and sharing your results with stakeholders.

Supplemental Bibliography

The health workforce training Program has assembled a list of peer reviewed journal articles focusing on health professional education and measurement of access, quality and cost.

PROGRAM AND SOURCE (article author, year)	TRIPLE AIM ELEMENTS EVALUATED			TARGET GROUPS & SETTING	FOCUS OF INNOVATION/ INTERVENTION	RESULTS Evaluation/Program Impact Discussed
	Access/ Pt Experience	Quality of Care	Cost/ Utilization			
NY Hospital Medical Home Program Angelotti, 2015 ¹	✓	✓		Residents (IM,FM, Peds); 156 Outpatient sites statewide; 118 residency programs	PCMH transformation of residency clinics (Plan-Do-Study-Act, coaching, resources, website) via state Medicaid waiver	All sites achieved PCMH recognition; Improved colorectal and breast cancer screening rates; 8/17 clinical measure composite scores significantly improved.
I3 POP Collaborative (NC, SC, VA) Donahue, 2015 ²	✓	✓	✓	Residents in 27 PC residency programs	Pragmatic learning collaborative for practice transformation focused on Triple Aim improvements	Baseline data; ability to report core measures was associated with having a patient registry and having faculty involved in data management; variance between health care systems' use of identical software products; reporting very difficult during EMR transitions; little commonality in data acquisition
Northwestern U Medical School Henschen, 2015 ³	✓	✓		Medical students during clerkship (n=69)	Education-centered Medical Home curriculum	ECMH students had more continuity of care experiences, higher satisfaction, more confidence in QI skills, higher patient-centeredness.
Pennsylvania Acad. of Family Physicians Residency Collaborative Losby, 2015 ⁴	✓	✓		Residents of 24 programs over 3 years	PCMH/Chronic Care Model learning collaborative; RCQI , peer-to-peer guidance and TA via faculty mentors	Significant increases in PCMH components, related to number of live learning sessions done; positively attributed collaborative participation to transformation efforts; process measure increases (retinal & foot exams; smoking cessation, self-management)
Oregon Health & Science University White, 2014 ⁵			✓	Residents and staff in FM clinic	Practice transformation with enhanced care coordination, care managers, readmission reports	Reduced readmission rates in transformed practice (27% to 7%) compared to variable, nonsignificant trend in control practices; interaction between groups showed significant difference.
Los Angeles County/U Southern California Hochman, 2013 ⁶	✓		✓	Residents in IM safety net clinic	PCMH intervention designed with patient/ staff input	PCMH clinic had increased patient & resident satisfaction, increased hospital admissions, no difference in ED visits.

PROGRAM AND SOURCE (article author, year)	TRIPLE AIM ELEMENTS EVALUATED			TARGET GROUPS & SETTING	FOCUS OF INNOVATION/ INTERVENTION	RESULTS Evaluation/Program Impact Discussed
	Access/ Pt Experience	Quality of Care	Cost/ Utilization			
Northwestern U Medical School O'Neill, 2013 ⁷		✓		Medical students (n=202) in 13 clinics	QI curriculum and teams of students in clinics adopting PCMH principles; panels of "high risk" patients	Students improved self-ratings of multiple QI skills; Teams used performance data for QI; Students provided range of PCMH services/roles (phone outreach, care coordination, health behavior coaching, identification of quality measure deficit); Quality performance high for many items; improved for chlamydia screening, diabetic eye exams, asthma care
Rockford Rural Medical Education (RMED) Program MacDowell, 2013 ⁸	✓			Medical students (13-20/yr) in RMED curriculum	Selected students (from rural areas) trained with rural primary care preceptors and rural-focused curriculum	RMED graduates more likely to provide primary care, choose FM and be practicing in rural location
Free Clinics of Henderson County, NC (P4 site) Crane, 2012 ⁹			✓	Rural-track FM residents and interprofessional team	Drop in group medical appointments with residents and team for low income, uninsured patients (high ED utilizers)	ED use decreased significantly; hospital charges reduced from \$116 to \$23 per patient/month.
Assessing Care of the Vulnerable Elderly (ACOVE) Holmboe, 2012 ¹⁰		✓		IM & FM residency programs (41); 20 intervention 21 control	Multicomponent, web-based QI tool to improve care of older adults; practice improvement module (PIM) of Am Board of IM	Poor baseline levels of elderly care measures; Significant improvement in documenting surrogate decision maker, end of life preferences and fall risk assessment w/ intervention.
Preparing the Personal Physician for Practice (P4) Carney, 2011 ¹¹	✓	✓		14 FM residency programs nationwide (334 residents, 24 clinics)	Various residency transformation innovations over 6 years (2007-2012)	Descriptive paper with high level outline of overall P4 Project. (no specific results) Appendix with innovations, hypotheses and study measures listed by site.
I3 Collaborative (NC, SC) Newton, 2011 ¹²		✓	✓	Residents (N=252) and faculty (n=92) from 10 FM residency programs	Regional QI collaborative focused on improving diabetes and CHF care	Significant improvement in diabetic foot exams & HbA1c testing; for CHF, significant improvement in beta blocker and ACE use, self-management rates; 38% reduction in hospitalizations resulting in estimated cost reduction of \$3.6 million quarterly (156 fewer admissions @ \$23K/admission average cost)

PROGRAM AND SOURCE (article author, year)	TRIPLE AIM ELEMENTS EVALUATED			TARGET GROUPS & SETTING	FOCUS OF INNOVATION/ INTERVENTION	RESULTS Evaluation/Program Impact Discussed
	Access/ Pt Experience	Quality of Care	Cost/ Utilization			
I3 PCMH Collaborative (NC, SC, VA) Reid, 2011 ¹³	✓			Residents & faculty in 25 primary care teaching practices in 3 states	20-month learning collaborative focused on practice transformation and PCMH recognition	48% achieved PCMH recognition or submitted applications; overall positive responses concerning role of collaborative in transformation
Am. Osteopathic Assoc. Clinical Assessment Program (AOA-CAP) Shubrook, 2011 ¹⁴		✓		Osteopath. FM residents from 52 programs	Standardized database for measurement and performance improvement across residency programs	Composite process of care scores improved with repeated participation but no significant change in intermediate clinical measures
National Academic Chronic Care Collaborative (ACCC) and California ACCC (CACCC) Stevens, 2010 ¹⁵		✓		Residents (57 teams) in safety net clinics, 41 were focused on diabetes	Chronic Care Model (CCM) Learning Collaborative and curriculum changes, practice redesign, RCQI involving diabetes, COPD, asthma, HCV	Substantial CCM-related learning; inconsistent improvement in clinical and process measures
U of California San Francisco Janson, 2009 ¹⁶		✓	✓	Residents (120 IM), students (39 NP, 35 pharmacy)	Interprofessional teams, Improving Chronic Illness Care (ICIC) Model for patients with type 2 diabetes, group visits	Intervention patients had more frequent process measures (HbA1c, LDL, BP, microalbumin, smoking, foot exams), more planned GM visits, learners rated themselves higher on ICIC accomplishment, preparation and success.
Maine Medical Center Chronic Care Collaborative Greene, 2007 ¹⁷		✓	✓	Pedi, IM, FM residents (41)	Chronic Care Model (CCM) training for asthma care, supported by RWJ grant	Residents reported access to CCM elements (ED use reduced 43% in CCM pts); 47% reduction in pediatric asthma charges; 36% reduction in adult asthma charges
Healthy Steps for Young Children Niederman, 2007 ¹⁸	✓	✓		Pediatric residents	Healthy Steps (HS) practice model; home visits, “specialist” co-practitioner, continuity of care (COC) emphasis	HS had greater COC indices, more health maintenance visits; no difference in duration of care; No difference in quality of preventive services or diagnoses of interest. Trend toward better documentation of diagnoses in HS group.

PROGRAM AND SOURCE (article author, year)	TRIPLE AIM ELEMENTS EVALUATED			TARGET GROUPS & SETTING	FOCUS OF INNOVATION/ INTERVENTION	RESULTS Evaluation/Program Impact Discussed
	Access/ Pt Experience	Quality of Care	Cost/ Utilization			
U of Alabama School of Medicine, Birmingham Houston, 2006 ¹⁹		✓		Resident s (130 IM, 78 Peds) in continuity clinics, urban safety net	Public Health Achievable Benchmarks Curriculum (ABC) with multifaceted feedback	IM group: 4/6 measures increased significantly more than controls (pneumovax, screening for CRC, lipids, smoking cessation referral) Peds group: 2/6 measures increased significantly more than controls (parental smoking cessation referral, car restraints)
New York Upstate Medical U Rural Medical Education (RMED) Program Smucny, 2005 ²⁰	✓			Medical students (n=132) who graduated from NY RMED curriculum 1990-2003	Rural-focused curriculum with 36 week clinical experience in rural communities; community programs & projects involved; local hospitals provide housing; stipends given pre-2001	RMED graduates were more likely to be in rural location (26% vs. 7% non-RMED) and had significantly higher USMLE step 2 scores. 50% characterized their practice setting as "rural" and 67% were very satisfied there (no plans to move). Hospital administrators identified many benefits of RMED to their facility, staff and community, including recruitment, retention, quality of care advantages.

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