The nation’s 37 public health training centers (PHTCs) provide competency-based trainings and practice-based opportunities to advance the current and future public health workforces. The Emory PHTC, based in Atlanta, Georgia, has developed a comprehensive evaluation plan to address the many evaluation-related questions that must be answered to inform decisions that improve practice. This plan, based on the center’s logic model, includes formative assessment, outcome evaluation, process evaluation, and programmatic evaluation. Rigorous evaluation has been used to (a) assess what is working, what is not working, and why; (b) guide decision making about program improvement; and (c) ensure efficient use of resources, such as time and money. This article describes how the Emory PHTC uses its logic model to guide development of a comprehensive evaluation plan and to create specific data collection tools. It also explains the process used to analyze data and make decisions to maximize effectiveness and ensure the best use of resources. Simply conducting trainings and providing opportunities for real-world application are not enough; it is critical to assess whether or not these educational opportunities are, in fact, educating.

Keywords: training; program planning and evaluation; logic models; evaluation design; evaluation methods; workforce development

INTRODUCTION

The Emory Public Health Training Center (PHTC) was established to advance the public health workforce in Georgia by providing trainings and practice-based opportunities for current and future public health professionals. It carries out this mission through two primary mechanisms: competency-based training programs

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for public health professionals (including health officials) and student field placements. Like the other 36 PHTCs across the country, the Emory PHTC focuses on professionals—from entry-level practitioners to senior leaders—working in medically underserved areas (Health Resources and Services Administration, 2012). Given the significant challenges facing the public health system, it is critical that educational offerings (a) focus on relevant topics, (b) be competency based, (c) target appropriate skill levels, (d) be of high quality, and (e) be geographically accessible. Evaluating the full scope of PHTC offerings and processes is essential to ensure each training activity meets these standards, thus maximizing limited resources and strengthening the public health workforce.

**BACKGROUND**

The Emory PHTC grounds its work in theories of adult learning and the enduring principles of professional development incorporated in the Dreyfus model of skill acquisition and the MACH (Miner, Alperin, Cioffi, and Hunt) model, which integrates instructional and workforce goals. Together, these two models undergird the Emory PHTC’s approach to competency-based education and ensure consistency in the design and implementation of all training opportunities.

**Meeting the needs of adult learners in the workforce to increase capacity:** The central tenet of adult learning theory is to meet the learner’s educational needs at the moment of instruction (Merriam & Caffarella, 1999). This strategy produces a lasting instructional experience (Wlodkowski, 2008). In practice, it means ensuring that trainings are timely, relevant, and application focused and incorporate the knowledge and experiences of participants (Knowles, 1980; Speck, 1996). The Emory PHTC uses the MACH model, developed at the Rollins School of Public Health, to meet the needs of (a) field placement students by developing skills in applying classroom knowledge in the “real world” and (b) host organizations, by using a competency-based approach to ensure appropriate focus and scope of student work. The MACH model is translated into a comprehensive workforce training approach through the use of protocols to facilitate communication between students and workplace mentors.

**Developing students and trainees as future leaders through mentored experiences:** The Emory PHTC recognizes that people learn by engaging in activities and receiving feedback. To promote the development of future public health leaders, the Emory PHTC uses the Dreyfus model, a staged approach to skill acquisition intended to move student trainees along a continuum of proficiency from novice to expert. In addition, the center uses mentorship to develop individual expertise and increase organizational capacity to carry out core functions. This approach includes developing opportunities and organizational capacity for mentorship and teaching students skills needed to become mentors in the future (Daley, 1999; Dreyfus & Dreyfus, 1986), thus assuring a lasting impact. The Emory PHTC applies the Dreyfus model by assigning each student a mentor for each field placement and by providing students with mentorship training. The MACH model provides the workforce context for skill acquisition and mentorship, thus guiding workforce preparation and practice (Miner, Childers, Alperin, Cioffi, & Hunt, 2005).

**Evaluation based on educational theories:** The same theories of education and workforce development inform the Emory PHTC’s approach to evaluation, which is an integral part of the center’s training program. The PHTC uses a comprehensive mixed-methods approach to gather and analyze data related to trainings, field placements, and overall operations. Rigorous outcome and process evaluation are used by Emory PHTC to assess what is working, what is not working, and why; to guide decision making for continuous quality improvement; and to ensure efficient use of resources to strengthen the public health workforce.

**Using a logic model in program evaluation:** Although many programs use some aspect of evaluation, it is common to develop evaluation components without attention to how they sync with overarching program goals or underlying program theories. As a result, data are often collected haphazardly and may not be useful for guiding decision making about the program and its components. One strategy to maximize the benefit of evaluation data is to create a logic model to explain the program’s goals and then to derive the evaluation strategies from its components. From a program development perspective, a logic model—a depiction of the relationships among a program’s resources, activities, and desired outcomes (W.K. Kellogg Foundation, 2004)—is useful for ensuring that each of the program’s activities contribute to high-level goals (Aschbacher, 1999). From an evaluation perspective, a logic model helps prioritize and focus questions of interest, ensure collection of appropriate evaluation data, and make informed recommendations for program improvements (Newton, Poon, Nunes, & Stone, 2013). Emory PHTC logic models are integral to the center’s overall operation and help the center maintain its focus on quality and relevance of educational offerings for future workforce development.
Too often, a program’s underlying theory is disconnected from its logic model or evaluation plan. Additionally, many programs do not have a predetermined evaluation plan with clearly articulated outcomes, specified data collection tools, or a time line of evaluation activities. As a result, it is difficult for program stakeholders to determine whether or not the program is actually working. This article describes how the Emory PHTC uses educational theory to develop its logic model and how it uses the logic model to guide development of a comprehensive evaluation plan and to create specific data collection tools. It also explains the process used to analyze evaluation data and to make decisions about changes to maximize the center’s effectiveness and ensure the best use of its resources.

**APPROACHES TO EMORY PHTC’S COMPREHENSIVE EVALUATION PLAN**

The Emory PHTC has developed a comprehensive evaluation plan to provide data to inform decision making and to improve practice. The plan, based on the center’s logic models, includes formative assessment, outcome evaluation, process evaluation, and overall programmatic evaluation.

*Formative assessment:* Initially, the center conducted a formative needs assessment survey with over 400 public health professionals across Georgia to document training needs and to drive decision making about the content and targeted competencies for center trainings. For example, the needs assessment revealed a strong need for training in program evaluation, health communications, informatics, and epidemiology and surveillance. These areas became the focus of the first set of trainings offered by the Emory PHTC. Doctoral and MPH-level center staff worked with training instructors to select competencies, based on the Tier 2 level of **Core Competencies for Public Health Professionals** developed by the Council on Linkages Between Academia and Public Health Practice (2010). The center solicits information about additional training needs in questionnaires students are asked to complete after each Emory PHTC training program. This information is shared with the training coordinator and used to develop new center offerings.

*Outcome evaluation:* Outcome evaluation is performed immediately after each training program to determine the extent to which competencies are achieved. A similar process occurs with field placement students: A student, agency mentor, and the field placement coordinator select focus competencies for the field placement, and the student completes pre- and postplacement surveys to assess changes in confidence performing each competency. The agency mentor also completes a final evaluation of the student at the end of the field placement.

*Process evaluation:* The center uses process evaluation to monitor program implementation and to identify potential barriers to achieving anticipated outcomes (Saunders, Evans, & Joshi, 2005). For example, if an outcome evaluation reveals that a significant number of participants did not master a particular competency covered on Day 2 of training, process evaluation data (e.g., answers to the question “What suggestions do you have to improve this training?”) may reveal that participants felt the second day of training was rushed, and they had insufficient time to learn the material. The results from each training are summarized, discussed at a weekly PHTC meeting, and shared with the course instructor, along with any recommendations for improving the training. For field placement students, the process evaluation includes questions about appropriateness of length of time at the agency, availability of needed assistance and resources, and experiences with their agency mentor.

*Programmatic evaluation:* The center analyzes and discusses evaluation data on a regular basis and uses key findings to guide decisions about programmatic changes. The question underlying these discussions is always, “Are we meeting the training needs of the current and future workforce?”

Taken together, the formative, process and outcome evaluation components enable the center not only to assess its work but also to improve programming and increase overall effectiveness. Evaluation data, for example, have informed decisions about which agencies to use for field placements, which strategies to employ to recruit and select students, and where to hold training programs. Table 1 lists the types of questions used to define effectiveness and guide decision making for program improvement.

**Using Theories of Education and Workforce Development and Logic Models to Develop the Evaluation Plan**

The Emory PHTC’s two programmatic logic models (see Figures 1 and 2) are the starting point for creating the comprehensive evaluation plan and evaluation tools. Each of the center’s primary activities—student field placements and continuing education trainings—is linked to a set of short-term (1 year), intermediate-term (2-4 years), and long-term (5 years and beyond) outcomes, including meeting the immediate needs of adult learners and, ultimately, strengthening...
**Guiding Questions** | **Example Considerations**
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**Step 1. Specifying program outcomes** | • In a 2-day training, it can be challenging to balance depth and breadth. Learning theories indicate a need for sufficient time to practice new skills, which helps direct the balance in favor of depth over breadth.

What should participants know or be able to do as a result of the program?

**Step 2. Selecting data collection methods** | • Interviews and focus groups can yield superior in-depth data about both process and impact; however they can be time-consuming and costly to arrange, conduct, and analyze.

Which method(s) will . . .

A. Ensure the best response rate (e.g., the most number of respondents)?

B. Ensure the highest quality of data, given what the team wants to know (e.g., the most complete or useful data)?

C. Minimize staff burden (e.g., data entry, sending reminders, collecting data personally, etc.)?

D. Allow for rapid data collection (e.g., minimize time getting data collected)?

**Step 3. Constructing data collection instruments** | • Online surveys can be completed at an individual’s convenience and do not require significant time for data collection. Conversely, they may also be forgotten or ignored.

A. Does this tool truly assess intended outcomes?

B. Is there anything missing?

C. What could be removed to minimize respondent burden?

D. Does each question make sense?

E. How well does the tool flow?

F. Are the questions in the right order?

**Step 4. Data collection** | • In-person surveys are nearly always completed because participants are asked to finish them before leaving. Unfortunately these surveys also require staff time to enter and compile evaluation data.

A. For online surveys, who should send the survey link (i.e., the program coordinator or the evaluator)?

B. How many times should a reminder be sent for online surveys?

C. For in-person surveys, where should a staff person be placed to ensure the most number of participants return a completed survey?

**Step 5. Using evaluation data to improve practice (cycle of reflection)** | • If the desired outcomes from a training or field placement were not clear from the beginning, it would be difficult to know what to assess.

For field placements . . .

A. Are students achieving the anticipated competencies? If not, how can the PHTC better facilitate competency development?

B. How many times should a reminder be sent for online surveys?

C. For in-person surveys, where should a staff person be placed to ensure the most number of participants return a completed survey?

• Process evaluation data are extremely valuable in determining the most and least successful aspects of a program. With field placements, the student–mentor match is key, yet the PHTC plays a primary role in initiating communication between the student and the mentor. In considering whether or not to continue working with an agency or mentor, the Emory PHTC also considers its role in establishing expectations and facilitating communication.

• Although the evaluator is the individual responsible for designing the instruments and collecting data, this person is often not known to program participants. As a result, an e-mail from the evaluator may be ignored, whereas an e-mail from the program coordinator may be read.

• It is important not annoy to participants, yet to maximize the number of responses. The Emory PHTC uses no more than 2 to 3 reminders for online surveys.

• For larger trainings, it may be helpful to station a staff person at each door whose job it is to ensure that each participant returns a completed survey.

(continued)
the capacity of the public health workforce to serve underserved populations. Below, we describe the process of creating the logic models and using them to guide development of the comprehensive program evaluation plan.

Developing the logic model: As described in the Centers for Disease Control and Prevention’s (1999) six-step evaluation framework and Patton’s (2002) Qualitative Research and Evaluation Methods, the purpose and focus of each program component must be clearly articulated before specific evaluation metrics and assessment tools can be developed. Thus, the first step in creating the Emory PHTC evaluation plan was to describe each component of the center’s overall training program. The second step was to identify annual outputs, such as the number of field placement positions offered, the number of student applications received, and the number of positions filled. The third step was to identify short-, intermediate-, and long-term outcomes, which capture changes attributable to the program, such as increased confidence working with underserved populations or increased intent to work in underserved communities. Development of the logic model was led by the center’s evaluator, who worked closely with center staff throughout the process.

Selecting data collection methods: The center assesses how best to measure each outcome listed in the logic model, considering the type of data needed, the number of people from whom to collect data, and the best method to reach targeted individuals (taking into account participant preference, participant and center time requirements, and speed of collection). These considerations guide decisions about the use of quantitative, qualitative, or mixed methods to collect data. Data collection is so integral to center operations that it is an ongoing topic of conversation at Emory PHTC meetings and at meetings of the center’s advisory board, especially as it relates to evaluating long-term outcomes. Ultimately, the center seeks to balance quantity and depth of data, focusing always on how data will be used to improve educational offerings and strengthen the public health workforce.

Constructing data collection instruments: Typical data collection tools include survey instruments, interview scripts, and focus group guides. After these are constructed, PHTC staff review and pilot each tool to determine whether it truly measures intended outcomes and is easy to administer. For example, do
Collecting data: Despite a thorough and thoughtful process for developing data collection tools, an evaluator’s greatest challenge is to ensure a high response rate and high-quality data. When trainees are in a common location, such as a classroom, data collection is less challenging, because individuals can be asked to complete survey instruments before leaving. However, pen-and-paper methods generate a large amount of data that must then be entered into computer files before being analyzed. Online surveys—particularly those for 6- to 12-month follow-up periods—pose a different challenge: ensuring that the survey link actually reaches the intended participant. Sending mass e-mails to state and local health department employees is particularly challenging because of the common use of e-mail filters in health agencies. Moreover, online surveys are easy to ignore or postpone, because the data collector is not physically present. To maximize response rate for electronic surveys, the Emory PHTC typically sends an e-mail to inform participants about the survey, an e-mail with the survey link, and two follow-up e-mails, spaced a week apart, to remind participants to complete it. Participants are usually given 2 to 3 weeks to respond, and response rates typically exceed 60% for long-term follow up surveys.

Using evaluation data to improve practice: Outcome and process data for each center activity are compiled and reviewed as quickly as possible to facilitate timely decision making about program activities.
and thereby ensure program offerings remain relevant to trainee needs (as described by adult learning theory). The Emory PHTC has three primary venues for reviewing data and data collection tools: (a) weekly program meetings, (b) biannual evaluation retreats, and (c) biannual advisory board meetings.

1. **Weekly program meetings**: During weekly meetings, staff review survey data from continuing education trainings, most of which are offered several times each year. There are two key questions of interest: (a) Did participants meet training objectives? (b) What factors contributing to meeting or not meeting objectives? If course modifications are required, the team makes specific recommendations for changes—such as adjusting the balance of instruction time versus time allotted for practice and skills development—and the training coordinator works with each trainer to integrate the changes into the next training sessions. Evaluation data for subsequent trainings and the training coordinator’s own observations are used to assess whether modifications were made successfully and, if so, whether they achieved the desired results. Because feedback is compiled and reviewed quickly, changes can be made immediately for maximum impact.

2. **Evaluation retreats**: Emory PHTC staff meet twice yearly to discuss larger evaluation questions, such as expanding geographic reach, reducing travel barriers, or increasing effectiveness of data collection tools. During these meetings, the center uses evaluation data, such as output data from the logic model, to refine its overall approach to each activity. For example, due to low enrollment of participants from the state office of public health (because of travel restrictions), the center decided to hold several trainings on-site at the state health agency. This solution was obvious and easy, but the initial problem may
never have been identified without the systematic collection and review of enrollment data. Since making this change, the number of state department of health enrollees has increased fourfold, and these enrollees have, in turn, served as high-level advocates and advertisers for the PHTC’s continuing education and field placement programs (thus further increasing the number of program participants throughout Georgia). Evaluation data also inform changes to data collection tools. For example, when very few people answer a survey question, or the answers do not supply the information needed, the question is reexamined for clarity, placement within the survey, and the type of response requested. A question may ultimately be modified or removed, but these changes are made only annually to maintain consistent reporting during a funding cycle.

3. **Advisory board meetings**: The Emory PHTC meets with its advisory board (which is shared with the Georgia PHTC) twice each year. At these meetings, PHTC staff raise important issues identified during evaluation retreats—such as the need for optimal training locations, housing for field placement students in rural areas, and better advertising channels for PHTC trainings. The high-level perspective and broad connections of advisory board members have helped the center identify and engage critical gatekeepers to disseminate information to local health departments and to intervene with local universities to expand affordable summer housing options for students in rural areas. Because advisory board members have a good understanding of the broader needs of Georgia’s current and future public health workforces, their input also has been valuable in identifying training priorities.

### IMPORTANCE OF REFLECTION ON PROGRAM OPERATIONS

It is not uncommon for program managers, in many fields, to postpone discussions of program evaluation, especially when faced with issues affecting day-to-day operations. Although this approach may achieve immediate goals, it deprives programs of the valuable information these discussions invariably produce; reflective conversations can elucidate strategies for streamlining program operations and, ultimately, improving outcomes. At Emory PHTC, a significant portion of staff time is devoted to evaluation, especially designing evaluation tools, collecting data, and using data for continuous quality improvement. This investment of time has yielded substantial payback, increasing program effectiveness, enhancing efficient use of program resources, and fostering the professional development of center staff. Table 1, drawn from the Centers for Disease Control and Prevention’s (1999) six-step evaluation framework and the work of Michael Quinn Patton (2002), lists key questions to ask at each stage of evaluation. It provides a framework for reflecting on data, beyond its collection and analysis. By tying the process of program evaluation back to the program’s underlying conceptual framework—theories of adult learning and workforce development—the Emory PHTC seeks to have a strong and positive impact on Georgia’s public health workforce.

### CONCLUSION

Simply conducting training and providing opportunities for real-world application of classroom learning are insufficient to ensure a competent public health workforce; it is critical to assess whether or not educational opportunities are teaching needed skills. If academia is to be recognized as a community resource, educational opportunities must truly meet the needs of the public health workforce. Yet, without ongoing and comprehensive process and outcome evaluations, based on sound theories of education and workforce development, a PHTC is unlikely to gauge the effectiveness of its programs.

Logic models, supported by educational theories, have guided program evaluation at the Emory PHTC, ensuring that program offerings are relevant and meaningful for target audiences. Evaluation data have informed improvements in instructional design, choices of faculty instructors, course curricula, and training locations—all of which have supported the center’s overarching goal of strengthening the current and future public health workforces.

### REFERENCES


Health Resources and Services Administration. (2012). *About public health training centers: Preparing public health professionals in...*


