


**CDC Coffee Break:  
Evaluating Training Impact**




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Good afternoon and welcome to today's Coffee Break presented by the Evaluation and Program Effectiveness Team in the Division for Heart Disease and Stroke Prevention at the CDC. We are very fortunate today to have Dr. Diane Dunet as today's presenter. Diane is from CDC's Division for Heart Disease and Stroke Prevention and is a senior evaluator on the Evaluation and Program Effectiveness Team.

\*Note: Screen magnification settings may affect document appearance.

**Disclaimer: The information presented here is for training purposes and reflects the views of the presenter. It does not necessarily represent the official position of the Centers for Disease Control and Prevention.**

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So let's get started and I'll turn it over to Diane.

## Today's Presentation

- ❑ **Training Models**
- ❑ **Evaluation Models**
- ❑ **Evaluation Methods**
- ❑ **Using "Return on Expectations"**
- ❑ **Resources**

We are broadcasting live from the Holiday Inn in the Atlanta area and taking a break from our meeting with our grantees. Today's presentation focuses on evaluating training impact. I have organized the presentation so that first I'll talk briefly about a typical training model, then talk about an evaluation model, and talk about some evaluation methods that can be used. I'm going to highlight using "return on expectation" as a framework to guide evaluation our training and to evaluate it. I'll wrap up with some of my favorite resources.

### **Typical Training Theory of Change**

- ❑ **Participants will come to the training and like it.**
- ❑ **Training will increase their skills and knowledge.**
- ❑ **Skills and knowledge will be enough to change job performance.**
- ❑ **Performance changes will have positive outcomes.**
- ❑ **Positive outcomes will result in desired impacts.**

On the next slide you'll see a theory-of-change that is typical for a training designed to change on-the-job performance of a healthcare provider as a way to improve a health outcomes in patients. You can think of it as links in a chain where first, participants attend the training, the training increases their skills and knowledge, those skills and knowledge will be enough to change their job performance. That, in turn, has a positive short-term outcome and the accumulation of positive outcomes will result in achieving desired impacts.

## **Blood Pressure Training Example**

- ❑ **Trainees will attend blood pressure class.**
- ❑ **They will learn correct technique and protocols.**
- ❑ **BP will then be measured correctly in the clinic.**
- ❑ **Proper measurement will result in improved titration of hypertension medications and better control of HBP.**
- ❑ **Good control of hypertension will prevent worsening of patients' health conditions.**

Translating this to an example for a training on blood pressure measurement: although this is not the only possible theory-of-change, it can provide an illustration. A first step would be for trainees to attend class. By the time they leave the classroom, you would expect successful trainees will be able to follow protocols and measure blood pressure correctly. The expectation is that trainees will take those new skills and knowledge back to the job and that clinical practice will be different.

In this example, the expected outcome is that patients' blood pressure medications will be titrated differently because blood pressure was measured more accurately. Thus, patients will achieve better control of their high blood pressure. In the long term, the expectation is that better control of hypertension will prevent worsening of patients' other health conditions.

<b>Kirkpatrick's Training Evaluation Model</b>			
	<b>Original Levels</b>	<b>New World Evaluation</b>	<b>Evaluation Dimensions</b>
1.	Satisfaction	Reaction	Satisfaction with training event, plus participant engagement, receptivity to learning

The blood pressure training example follows a typical training model. Now, turning to evaluation models, you may already be familiar with Kirkpatrick's four levels of training evaluation. This evaluation model has been around since the 1980s and is still widely used. In 2011, he updated the model. I will walk you through his four levels of training evaluation and point out the key changes in what is called the "New World Evaluation Model."

The original Level 1 was "satisfaction." In the New World Model, it is now termed "reaction." Evaluation questions at this level have always included:

- How many trainees enrolled?
- How many completed the course?
- Were they satisfied with the instructor?
- Were the location and facilities satisfactory?
- Would trainees recommend the course to a colleague?

The updated, New World version recognizes that there could be additional "ingredients" of a successful training. In particular, in order for training to be a success, trainees would need to be engaged and receptive to learning. Receptivity might be enhanced by some pre-training activities such as advance reading, or a motivational presentation by an influential stakeholder who promotes the training. In determining which aspects of the Reaction Level of training should be evaluated, you may want to explicitly assess receptivity to determine how successful the pre-training activities were.

### Kirkpatrick's Training Evaluation Model

	Original Levels	New World Evaluation	Evaluation Dimensions
1.	Satisfaction	Reaction	Satisfaction with training event, plus participant engagement, receptivity to learning
2.	Knowledge & Skills	Learning	New knowledge and skills gained, plus confidence and commitment

Level 2 includes skills and knowledge and is now termed “learning.” Typically, training evaluation would measure gains in knowledge and skills using techniques like a pre-test and a post-test. Later in this presentation I’ll discuss some additional evaluation methods to consider. The New World Model recognizes that training may have important value even if people do not learn new information; they may learn to integrate their existing knowledge or learn to apply their knowledge in a new way. In addition, trainees sometimes increase confidence in their abilities and strengthen their commitment to change.

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1.	Satisfaction	Reaction	Satisfaction with training event, plus participant engagement, receptivity to learning
2.	Knowledge & Skills	Learning	New knowledge and skills gained, plus confidence and commitment
3.	On the Job Performance	Behavior	Changed behavior on the job, plus "drivers of change" in place

Level 3 is “behavior” and in the training world, the focus is on on-the-job performance. In the best case, trainees return to work with the skills and knowledge needed to perform the desired action—whether it be taking blood pressures correctly, filling out an electronic medical record, or engaging in a quality improvement process. A person may have all the knowledge and skills needed, but conditions on the job may not support a new practice. The term “drivers of change” recognizes that there are facilitators and barriers to change, but even stronger are incentives, or drivers that promote change. A driver could be enthusiastic support of management and recognition for employees who change their practice, financial incentives like reimbursement, or dashboard indicators that are shared among practice groups that spur competition.



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4.	Outcome/ Impact	Results	"Return on Expectation"

The original Level 4, "outcomes/impact" is now called "results." I like the concept of "return on expectation" and I will talk about this in the next several slides. The general idea is that "results" can mean different things to different people. As the evaluator, it is important to be clear about what the training sponsors hope the training will achieve. To one person, the key evaluation questions might be "did patients' health improve?" Another stakeholder might expect the training to achieve some cost savings. Having clarity about expectations helps the evaluator determine what to measure.

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4.	Outcome/ Impact	Results	"Return on Expectation"
		<b>New:</b> Monitor and Adjust	Monitor if expectations are being met. If not, understand <i>why</i> and adjust approach.

Notice the new level added in the Kirkpatrick model, "monitor and adjust." This level parallels quality improvement cycles. If the problem still exists after a successful training is conducted and people are performing differently on the job, it's time to ask what else might be needed. The monitor and adjust concept demonstrates how evaluation and QI can be linked.

## “Return on Expectations” Guides Evaluation

Evaluation Type	What We Expect Training To Accomplish	Potential Evaluation Indicators
Reaction	Staff engage with the training curriculum and are receptive to learning.	Participants’ engagement during class
Learning	Trainees can demonstrate skills for accurate measurement and recite protocols from memory.	Skill test, knowledge test of protocols
Behavior	Clinic staff take accurate blood pressure readings and follow measurement protocols.	Observation of technique, protocols followed
Results	Medications are being titrated appropriately and patients adhere to prescribed medications.	Titration of meds, patient re-fill rates
Monitor and Adjust	Patients in our practice who are being treated for hypertension have it under good control.	Control rates for patients with hypertension

Let’s return to the blood pressure training example and take a closer look at how the levels of evaluation and “return on expectation” can guide evaluation planning. The levels of training evaluation are shown in the left hand column. Example expectations are shown in the middle column, and the expectations are graduated to match each level of evaluation. On the right-hand side are potential evaluation indicators, not a complete set, but some that could be used to assess whether the training met the sponsor’s expectations.

For Level 1, our expectation is that trainees will be receptive to the training and engage with the instructor and the curriculum. In this case, we might choose to focus our evaluation on the concepts of receptivity and engagement. This feedback might help improve the course or lead us to include other types of pre-course activity, or to alter the curriculum to make it more engaging.

For Level 2, learning, the training sponsor expects that the trainees will leave the classroom with the knowledge and skills to take accurate blood pressure measurements and to follow protocols. From the mindset of “return on expectations,” it would be important to measure and confirm that trainees did indeed leave with these skills and knowledge. The evaluation indicator should match the expectation. So, for example, a post-test of knowledge about the circulatory system would not be as direct as having trainees take a blood pressure measurement.

### **“Return on Expectations” Guides Evaluation (cont.)**

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For Level 3, the expectation is that trainees will apply their skills and knowledge on the job and that blood pressure measures will be more accurate and protocols will be followed when they are back at work in the clinic. I will share several evaluation methods for Level 3 evaluation in a few minutes. Among the evaluation methods that could be used to assess Level 3 expectations would be for a trained observer to see whether protocols are being followed in the clinic.

For Level 4, the expectation in this example is that titration will be different and that patients will then adhere to their medications. If that is an important expectation, strong consideration should be given to evaluate that directly. Electronic medical records may provide a data source to understand titration, and pharmacy records could show whether patients refilled their meds in a way that suggests improved adherence.

In this example, training was a strategy expected to improve hypertension control rates among the patient population. Part of the evaluation plan, then, would be to monitor control rates. If they were not as expected, an adjustment to the strategy is likely to be needed. This might mean adding something else to the strategy in addition to training.

## Evaluation Methods

- ❑ **Level 1: Reaction**
  - End-of-session questionnaires
  - Comments from participants
  - Trainees' recommendations to others: "Take this great class!"
  
- ❑ **Level 2: Learning**
  - Written or oral tests
  - Observation, videotape of participants performing skills
  - Group discussion, case studies, adversary-advocacy debate
  - 3-test approach: pre-test, post-test, retrospective pre-test

Now I'd like to focus on evaluation methods that could be used at each of the levels of training evaluation. Before asking trainees to complete an end-of-session questionnaire, carefully consider what information you need in order to determine if the expectations for the class have been met. Asking trainees to complete a survey about whether the course objectives were met may not be as meaningful and useful as understanding how confident they are when they leave the classroom. Evaluation at this level may also be most useful if it is incorporated during the training session as feedback so the instructor can make adjustments and trainees know how well they are doing.

To assess learning, Level 2 evaluation, consider having trainees demonstrate their skill. A videotape can provide feedback both to the student and the instructor. For conceptual learning, group discussion, case studies, and adversary-advocacy debates serve both as a learning activity as well as an opportunity for assessment. A three-test approach involves taking a pre-test and a post-test, and then adding a retrospective pre-test, also called a "then test," and asks participants to look back and assess their skills and knowledge before they completed the training. Sometimes this captures more accurately the gains made from the training.

## Evaluation Methods (cont.)

### □ Level 3: Behavior Change

- Self-reports, done by survey or interview
- Feedback from supervisor, colleagues
- Secret shoppers, patient surrogates
- Quantitative measures—chart reviews, EMRs
- Quality measures—expert observation, chart reviews, EMRS

Turning to Level 3 evaluation, let me highlight a couple of evaluation approaches that could measure on-the-job behavior change. Self-reports have their limits, and can be supplemented by observation, feedback from trainees' supervisors, and others. Patient surrogates are sometimes used to assess whether learned skills are transferred to the clinic. Surrogates are trained to act in the role of a patient and assess the skills and interactions of the care provider. Feedback can be shared with the provider to help reinforce skills that are appropriate and correct any deficiency. Chart reviews may be relevant and with the spread of electronic health records, chart reviews are becoming easier and less expensive to conduct.

## Evaluation Methods (cont.)

### □ Level 4: Impact

#### **Before:**

- Clarify what impacts are desired and expected even before planning and designing the training.
- Desired impact should guide the training content.
- Ensure supports for success are in place.
- Check: Is this a reasonable expectation?

For Level 4 training evaluation—impact—activities are needed before, during, and after training. Here are some review points already mentioned regarding what needs to happen prior to training. Be clear on expectations. Plan the training content to address the knowledge and skills needed. Pay attention to what “drivers of change” need to be in place on the job. And finally, take time for a reality check about whether a training event is enough to achieve all that is expected.

## Evaluation Methods, Continued

### □ Level 4: Impact

#### **During:**

- Train participants to perform what is needed to achieve the desired impacts.
- Be sure they PRACTICE, PRACTICE, PRACTICE.
- Provide feedback to trainees on how they are doing.
- Ensure that trainees understand what impact is desired and how their performance contributes to that impact.

To assess impact, evaluation action is also needed during training. Again, assess the curriculum to be sure it aligns with the expectations for impact. Remember for adult learners, skills are best learned through practice, not lecture. So provide plenty of opportunities for practice. This also serves as an opportunity to evaluate progress and provides feedback for the students. Also check that the curriculum develops trainee understanding of how their performance is expected to contribute to impact.



## Evaluation Methods (cont.)

### □ Level 4: Impact

#### After:

- Assess likelihood that impact will be achieved. Are trainees motivated? Confident? Competent?
- Measure the impacts and indicators identified during your planning stages.
- Monitor the success factors needed to support desired performance and adjust as needed.
- Be on the lookout for unintended consequences—both good and detrimental.

As the training ends, consider assessing whether trainees are motivated, committed to action, and confident in their ability. For impact measures, the framework of “return on expectations” will inform your evaluation questions. As shown in previous slides, your evaluation indicators should reflect what is expected. Remember to monitor the “success factors” and supports needed to keep up desired performance back on the job. And be on the lookout for unintended consequences—both good and detrimental.

## Use Evaluation Concepts “Turned Upside Down” to Inform Training Planning

Evaluation type	What to ask when planning training
Monitor and Adjust	What’s going on? What is the problem? Can it be solved with something other than training?
Results	What results are expected (e.g., costs reduced, patient health improved)? Is this realistic?
Behavior	What must be in place to support on-the-job success? Are there disincentives to remove?
Learning	What learning activities are needed? What type of activities will build trainee confidence?
Reaction	What approaches will engage these trainees? What can be done in advance of training to boost receptivity?

I want to share how the levels of training evaluation can also serve as a helpful frame for planning training. I’ve turned the table upside down to emphasize the importance of asking questions and gaining clarity before developing a training event. Training can be thought of as a “solution” to a problem. Using a monitor-and-adjust mindset raises questions such as what is happening, or what is the context? What is the problem? Is it improving on its own? Can something else be done, something faster and cheaper that will solve the problem?

Think about what results are expected. Stakeholders may have different expectations about what training is supposed to achieve. This is a great time for a reality check.

Consider what barriers may be present that would prevent your trainees from performing as you expect. It will be frustrating to trainees who are motivated to change if there are barriers such as a lack of proper equipment or a lack of support from management. Other supports called “job aids” help remind trainees of correct procedures. Some of this is done electronically now, through EMRs. Checklists that are increasingly used in surgical suites are another example of supports that help trained staff perform correctly on the job.

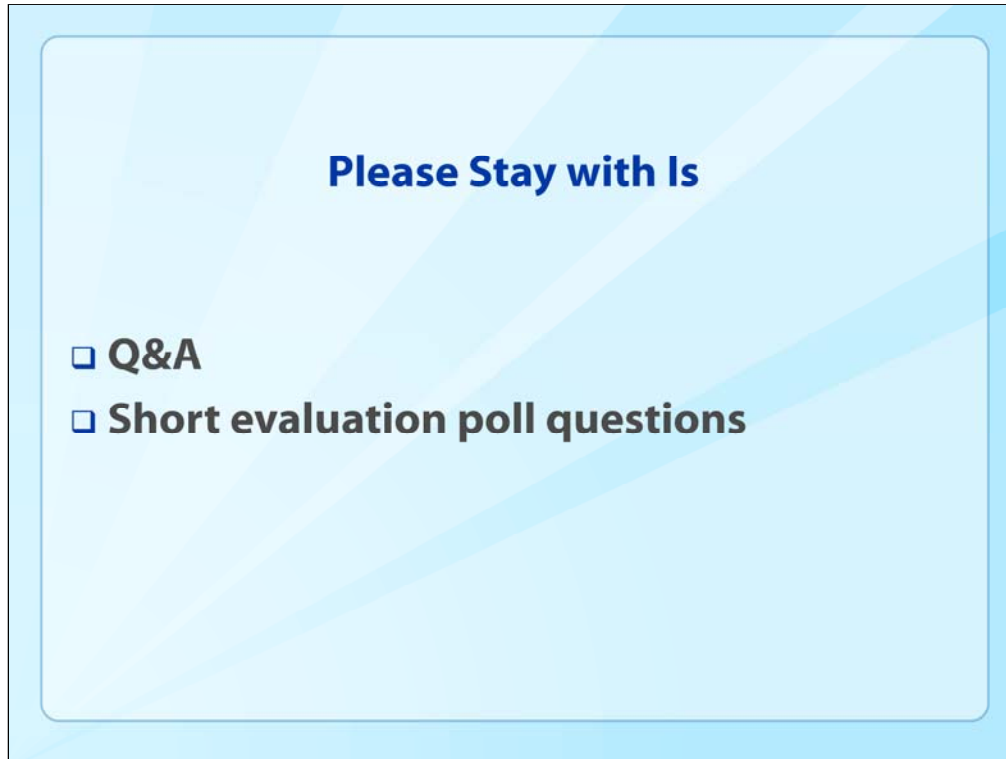
When planning training, you may be deciding among curricula that have already been developed or developing your own. Think carefully about matching the knowledge and skills taught—and those needed by the trainees.

Finally, consider the potential trainees themselves. What sort of training activities will be engaging? Is the training building a whole new skill set or adding something on top of existing expertise? Also consider what can be done to set the stage to make trainees receptive to learning.

## Resources on Evaluating Training

- ❑ **New in 2011, and includes Kirkpatrick's New World Training Evaluation Model and more on Return on Expectation**
  - [www.opm.gov/hrd/lead/pubs/FieldGuidetoTrainingEvaluation.pdf](http://www.opm.gov/hrd/lead/pubs/FieldGuidetoTrainingEvaluation.pdf)
- ❑ **From American College of Healthcare Executives, tips on adult learners**
  - [www.ache.org/pgfd/lifelong.cfm](http://www.ache.org/pgfd/lifelong.cfm)
- ❑ **Tip Sheet on Evaluating Training on CDC website**
  - [www.cdc.gov/dhdsp/programs/nhdsp\\_program/resources.htm](http://www.cdc.gov/dhdsp/programs/nhdsp_program/resources.htm)
- ❑ **Parry SB. Evaluating the impact of training: A collection of tools and techniques. Available from American Society for Training and Development.**

In this final slide, I present my favorite resources on evaluation training. The first link is to the Office of Personnel Management's new Field Guide to Training Evaluation and the appendix includes Kirkpatrick's New World Training Model. The next source is for some tips on adult learning. A tip sheet on evaluating training has just been added to the CDC website. Finally, from the American Society for Training and Development is a reference for Parry's Book on Evaluating the Impact Training and is an accessible resource that does not require a high level of expertise.



**I am curious about delivering online training and how they might go about assessing it.**

That's a great question. Thank you for asking. Online training would follow very similar principles as what I just presented for classroom training, in that you need to be clear on your expectations. Match the online training activities to the activities you want people to be able to perform. Do the reality check. Make sure you understand what might be needed to supplement what you cover online. For example, if you offer an online training on blood pressure measurement, you may be able to cover the knowledge portion but might need to supplement it with a practicum of actually measuring blood pressure.

One thing that is important for online training is usability testing. That means how people interact with the computer interface. How are they able to locate things? Can they navigate through the course? Is it visually appealing to them? Can they learn from what is presented and answer knowledge questions?

One of the ways we did usability testing at CDC was for a course on hereditary hemochromatosis. We used a "think aloud" assessment where we developed a draft website and had volunteer pilot testers go through the course with a task list. Example tasks were: answer these three knowledge questions, sign up for free CMEs, and download a patient brochure. As they navigated through the course, evaluators sat behind them. Pilot testers were encouraged to verbalize what came to mind. We also observed where they clicked and how they navigated as they accomplished the tasks assigned. That helped us understand when something on the page was not in the right place.

We did not need 100 pilot testers; we generally used 3 for each new version of the course. If 2 out of 3 people could not find something on a page, we changed it. It was an easy technique—inexpensive and informative for online training.

# Thank You

**If you have questions, please contact:**  
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