

Defining “Needs Assessment”, “Learning Gaps” and the “Outcomes Measurement” Process.

Needs Assessment.

A needs assessment is a systematic exploration of the need for education or training. The process involves first establishing who the learners are (i.e. what is their level of training and expertise) and then determining what skills they have, what skills they need and how best to deliver training to correct any deficiencies.

Learners can be at various stages of professional development, including trainees (residents), junior practicing physicians, mid-career physicians or very experienced physicians. Knowing the learner’s professional stage can help shape both content and scope of the educational experience. Usually at AAP sponsored educational activities, there is a mixture of these stages which can make designing the learning experience more challenging.

When planning educational activities, the needs assessment is often based on requests for topics listed on evaluation forms completed by participants in previous activities. It is important to understand this is often an expression of topics in which learners indicate they have an interest and “perceived” need of what they think they should know. Yet, physicians’ self-assessment of their learning needs may be unreliable. [Davis DA, Mazmanian PE, Fordis M, et al. Accuracy of physician self-assessments in health profession training. JAMA 2006;296:1094-1102] More important are the “unperceived” needs that learners do not realize they need to know, and identifying these requires analysis of “learning gaps”.

Learning Gaps.

A “learning or professional practice gap” is the term used to describe a learner’s deficiency or shortcoming, which if eliminated results in improvements in knowledge, competence and/or performance that can potentially improve health outcomes. Gaps may be defined as the difference between “the way things are” and “the way they should be”.

The easiest gaps to identify are those relating to knowledge. Knowledge gaps can be identified by means of questionnaires or review of test scores from in training or board examinations. Correcting gaps in knowledge is important, but usually has the least impact on improving competence or performance and outcomes for patients.

Identifying gaps in competence or performance is more challenging, and there are various ways in which this can be achieved. Some examples are:-

1. Clinical practice guidelines developed by professional organizations constitute standards for what a learner should know or be able to do. Evidence that guidelines are not being followed, or that learners are unfamiliar with new guidelines, constitutes a gap that can be addressed.

2. Consultation with experts or subspecialists provides a means of identifying potential gaps in competence or performance. Based on patterns of referrals, the expert or subspecialist may observe common deficiencies in practice that can be corrected through education.
3. Review of evidence-based literature in scientific journals, practice-based audits and peer review processes can be used for identifying gaps in competence, performance and health outcomes. As an example, published reports of excessive use of PPI's to treat infants with gastroesophageal reflux despite lack of evidence that such medications have any beneficial effects on symptoms constitutes a performance practice gap that requires correction.
4. Analysis of federal government or state public health data may identify disparities in health care and thus serve as a "gap" requiring corrective education.

Identifying learners' practice gaps is a key component to providing meaningful CME as part of the continued professional development process. Knowing what the gaps are will drive both the development of learning objectives and the instructional design of the CME activity. In addition, if the gaps to be addressed are carefully chosen, they can also be used as part of the outcomes evaluation process to determine how effective the educational activity was.

Evaluation and Outcomes Measurement.

The post activity evaluation process should be used to critically analyze how effective the educational experience was in closing the identified learning gaps and whether this resulted in improvements in competence, performance and possibly health outcomes. This is the final step in completing the cycle of learning as depicted in the diagram below. This process will also enable planners to identify any shortcomings in the educational activity or barriers to implementing change that learners experienced and take steps to address these in future CME activities.

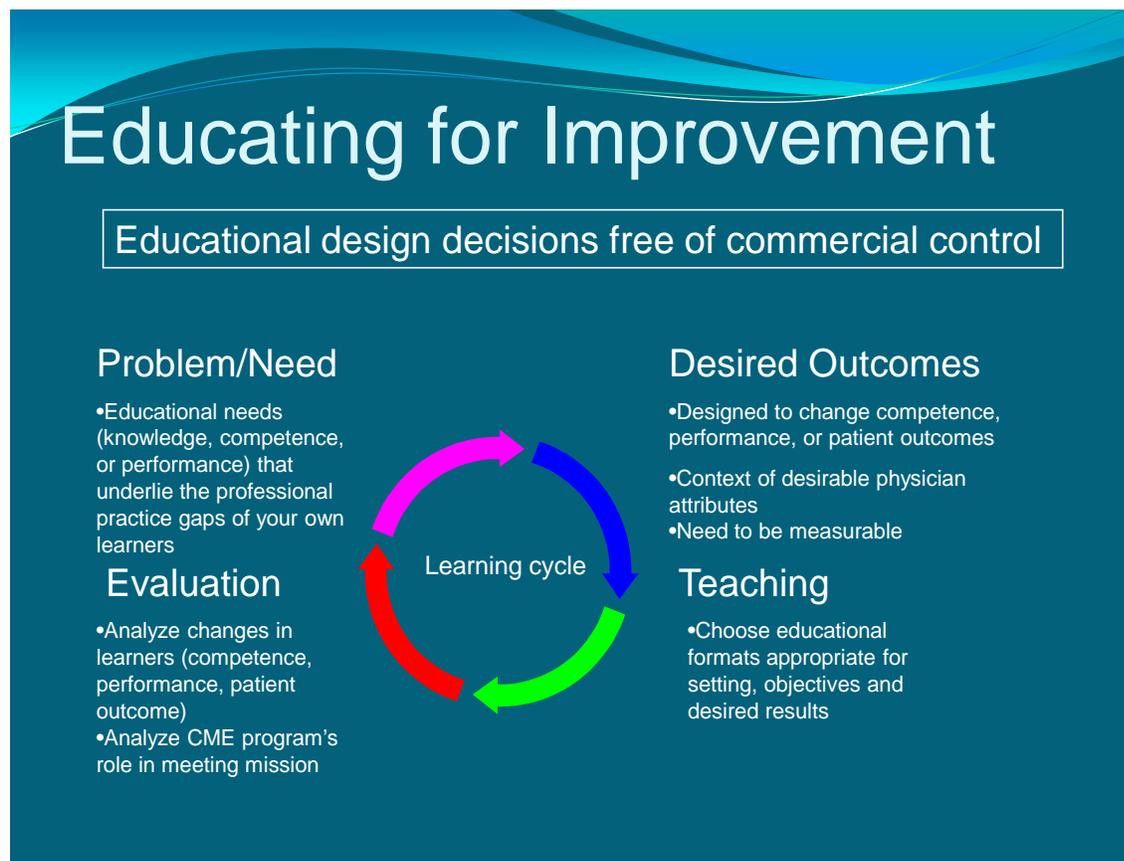
In addition to the usual information that asks participants to rate how the educational activity met their needs, an essential requirement of the evaluation process is a component aimed at determining how the activity might change the competence and/or performance of the participant or patient health outcomes if possible. There are 3 outcomes assessment models that have been identified by the COCME used for this process, including the following:

1. **Outcomes-Based Questions and Follow-up With Learners** – Specific outcomes-based questions are selected and asked of learners (or a sample of learners) related to (1) the AAP CME activity overall, (2) select sessions or articles within a CME activity, and/or (3) other educational endeavors associated with CME activities. The questions are asked separate from an evaluation, so learners may be identified with their responses for individual follow-up to occur at a later date post-activity.
2. **Case-based Pre/Posttest Questions** –Case-based questions related to the content are sent to learners before the activity, so learners' answers may be shared in advance of an activity with the faculty/authors and planners, enabling them to consider and refine their planned

content to address learners' extent of knowledge and their particular deficits. This process makes the content more directed at changing learners' competence. The same case-based questions are asked via a posttest of learners *immediately following* the CME activity to assess immediate change in learners' competence. At a point in time between 6 weeks and 6 months after the activity (e.g., "post posttest"), the same case-based questions are used to assess durability of change in learners' competence.

3. **Global Evaluation of Learning Activities** – For some CME activities, it may be logistically difficult to contact individual learners following their participation in AAP CME activities to assess learning outcomes. In these situations, specific questions may be asked as part of CME activity evaluations. Because the responses are not associated with individual learners, follow-up with learners to assess application to practice at a future date does not occur. In general, because there is no opportunity to conduct a post-activity follow-up of learners, this model should be used only when necessary.

Beyond the aforementioned outcomes measurement strategies, the COCME acknowledges there are many other ways through which planners may choose to assess learner change in competence, performance, or patient outcomes resulting from CME activities, and these should be explored based on the educational design of the CME activity.



Samples of Problems/Gaps & Needs for Review

What is the Problem(s) that this activity addresses? (This is the Professional Practice Gap)	What do you need to provide to your learners in order to help them make a difference/solve this problem? Do they need factual information, an ability to incorporate, or an ability to perform in order for a positive change in the problem to occur? (This is the educational need in terms of Knowledge, Competence and/or Performance)	How did you determine the Problem and identify what your learners need to solve it? (This is your Needs Assessment Data)	What change should your learners make as a result of them attending this activity? (These are your Desired Results in terms of your activities ability to make a change in competence, performance or patients outcomes*) Please Note: You will need to measure whether or not you achieved these results with your evaluations
1) The Centers for Disease Control and Prevention (CDC) reports approximately 9 per 1,000 children in the United States are diagnosed with ASD. A contributing factor to this problem/gap: Physicians (our learners) do not know the neuro-anatomical locations and functions that correlate with common developmental disorders in children	Knowledge - Our learners need to know what the common developmental disorders in children are and the neuro-anatomical locations and functions that correspond with them.	1) Expert experience (query of course faculty, program committee members) 2) IOM Reports: Reports on Mental Health, Early Brain Development 3) CDC Reports: Learn the Signs Act Early Campaign, FASD	As a result of this activity, learners should be better able to identify the neuro-anatomical locations and functions of common developmental disorders in children.
2) Percentage increase from 1985 - 1999 in stimulant psychotropic drugs prescribed to children: 327% A contributing factor to this problem/gap: Physicians (our learners) do not consistently limit use of psychotropic medications to the appropriate conditions	Competence - Our learners need strategies to assist them in recognizing the appropriate conditions for which to prescribe psychotropic medications to pediatric patients Performance - Our learners need to limit their prescriptions of psychotropic medications to the appropriate pediatric patient population	1) AAP, Committee on Psychosocial Aspects of Child & Family Health and the Task Force on Mental Health. The future of pediatrics: mental health competencies for pediatric primary care. Pediatrics. 2009;124(1):410-421. 2) AHRQ Reports: Depression Screening 3) Prior DB:PREP participants commitment to change contracts	As a result of the implementation of strategic tools provided in this activity, learners should be better able to recognize the appropriate conditions for which to prescribe psychotropic medications to pediatric patients As a result of being better able to identify the appropriate pediatric patient population, learners should reduce the number of prescriptions for psychotropic medications

<p>What is the Problem(s) that this activity addresses? (This is the Professional Practice Gap)</p>	<p>What do you need to provide to your learners in order to help them make a difference/solve this problem? Do they need factual information, an ability to incorporate, or an ability to perform in order for a positive change in the problem to occur? (This is the educational need in terms of Knowledge, Competence and/or Performance)</p>	<p>How did you determine the Problem and identify what your learners need to solve it? (This is your Needs Assessment Data)</p>	<p>What change should your learners make as a result of them attending this activity? (These are your Desired Results in terms of your activities ability to make a change in competence, performance or patients outcomes*) Please Note: You will need to measure whether or not you achieved these results with your evaluations</p>
<p>3) The Centers for Disease Control and Prevention (CDC) reports approximately 9 per 1,000 children in the United States are diagnosed with ASD. A contributing factor to this problem/gap: Physicians (our learners) do not always identify children with autism or other developmental disorders when they are encountered in clinical settings</p>	<p>Knowledge - Our learners need to know the appropriate signs/symptoms of autism in pediatric patients</p>	<p>1) Plauche Johnson C, Myers SM, Council on Children with Disabilities. Identification and evaluation of children with autism spectrum disorders. Pediatrics. 2007;120(5):1183-1215.</p> <p>2) AAP Policy Stmts/Clinical Guidelines: Developmental Screening and Surveillance, Task Force on Mental Health Report, Learning Disabilities, Autism Guidelines, ADHD Guidelines</p> <p>3) Prior DB:PREP participants commitment to change contracts</p>	<p>As a result of this activity, learners should be better able to identify the signs/symptoms of autism in pediatric patients</p>
	<p>Competence - Our learners need strategies to incorporate autism screenings in their pediatric patient exams</p>		<p>As a result of the implementation of strategic tools provided in this activity, learners should be able to increase their ability to incorporate autism screening tools in their pediatric patient exams</p>
	<p>Performance - Our learners need to more accurately diagnosis pediatric patients who present with signs of autism</p>		<p>As a result of being better able to screen and identify autism, learners should increase the number of diagnosis for pediatric patients who present with these signs/symptoms</p>
<p>4) Among youth aged 12 to 17 in 2000, 9.7 percent had used an illicit drug within the 30 days</p>	<p>Knowledge - Our learners need to know the appropriate signs/symptoms of substance abuse in pediatric patients</p>		<p>As a result of this activity, learners should be better able to identify the signs/symptoms of substance abuse in pediatric patients</p>

<p>What is the Problem(s) that this activity addresses? (This is the Professional Practice Gap)</p>	<p>What do you need to provide to your learners in order to help them make a difference/solve this problem? Do they need factual information, an ability to incorporate, or an ability to perform in order for a positive change in the problem to occur? (This is the educational need in terms of Knowledge, Competence and/or Performance)</p>	<p>How did you determine the Problem and identify what your learners need to solve it? (This is your Needs Assessment Data)</p>	<p>What change should your learners make as a result of them attending this activity? (These are your Desired Results in terms of your activities ability to make a change in competence, performance or patients outcomes*) Please Note: You will need to measure whether or not you achieved these results with your evaluations</p>
<p>prior to interview, approximately 2.1 million youths aged 12 to 17 had used inhalants at some time in their lives as of 2000, and about 9.7 million persons aged 12 to 20 reported drinking alcohol in the month prior to the survey interview in 2000 (27.5 percent of this age group) with an estimated 6.6 million (18.7 percent) being binge drinkers and 2.1 million (6.0 percent) being heavy drinkers.</p> <p>A contributing factor to this problem/gap: Physicians (our learners) do not always adequately screen adolescent patients for or recognize clinical evidence for possible substance abuse</p>	<p>Competence - Our learners need strategies to incorporate substance abuse screenings in their pediatric patient exams</p>	<p>1) AAP Task Force on Mental Health. Enhancing Pediatric Mental Healthcare: Report from the AAP Task Force on mental Health. Pediatrics. 2010;125(supplement s):S69-S160.</p>	<p>As a result of the implementation of strategic tools provided in this activity, learners should be able to increase their ability to incorporate substance abuse screening tools in their pediatric patient exam</p>
	<p>Performance - Our learners need to more accurately diagnosis pediatric patients who present with signs of substance abuse</p>	<p>2) DB:PREP Self-Assessments</p> <p>3) Prior DB:PREP participants commitment to change contracts</p>	<p>As a result of being better able to screen and identify substance abuse, learners should increase the number of diagnosis for pediatric patients who present with these signs/symptoms</p>
	<p>Knowledge - Our learners need to know the appropriate signs/symptoms of developmental and behavioral disorders in pediatric patients</p>	<p>1) Council on Children w/Disabilities, Section on Developmental Behavioral Pediatrics, Bright Future Steering Committee, Medical Home Initiatives for Children</p>	<p>As a result of this activity, learners should be better able to identify the signs/symptoms of developmental and behavioral disorders in pediatric patients</p>

<p>What is the Problem(s) that this activity addresses? (This is the Professional Practice Gap)</p>	<p>What do you need to provide to your learners in order to help them make a difference/solve this problem? Do they need factual information, an ability to incorporate, or an ability to perform in order for a positive change in the problem to occur? (This is the educational need in terms of Knowledge, Competence and/or Performance)</p>	<p>How did you determine the Problem and identify what your learners need to solve it? (This is your Needs Assessment Data)</p>	<p>What change should your learners make as a result of them attending this activity? (These are your Desired Results in terms of your activities ability to make a change in competence, performance or patients outcomes*) Please Note: You will need to measure whether or not you achieved these results with your evaluations</p>
<p>5) Approximately 13% of children have a developmental disability, ranging from mild disabilities such as speech and language impairments to serious developmental disabilities, such as intellectual disabilities, cerebral palsy, and autism. A contributing factor to this problem/gap: Physicians (our learners) do not routinely screen for or recognize developmental and behavioral issues in their pediatric patients</p>	<p>Competence - Our learners need strategies to incorporate developmental and behavioral screenings in their pediatric patient exams</p>	<p>with Special Needs. Identifying infants and young children w/developmental disorders in the medical home: an algorithm for developmental surveillance and screening. Pediatrics. 2006;118(1):405-420.</p>	<p>As a result of the implementation of strategic tools provided in this activity, learners should be able to increase their ability to incorporate developmental and behavioral screening tools in their pediatric patient exam</p>
	<p>Performance - Our learners need to more accurately diagnosis pediatric patients who present with signs of developmental and behavioral disorders</p>	<p>2) AAP Task Force on Mental Health. Enhancing Pediatric Mental Healthcare: Report from the AAP Task Force on Mental Health. Pediatrics. 2010;125(supplement s):S69-S160.</p> <p>3) Practice needs QI efforts in DSS, Bright Futures</p> <p>4) ABP MOC Expectations: Content specifications for DB Pediatrics</p> <p>5) Performance Measures: ADHD</p> <p>6) Prior DB:PREP participants commitment to change contracts</p>	

<p>What is the Problem(s) that this activity addresses? (This is the Professional Practice Gap)</p>	<p>What do you need to provide to your learners in order to help them make a difference/solve this problem? Do they need factual information, an ability to incorporate, or an ability to perform in order for a positive change in the problem to occur? (This is the educational need in terms of Knowledge, Competence and/or Performance)</p>	<p>How did you determine the Problem and identify what your learners need to solve it? (This is your Needs Assessment Data)</p>	<p>What change should your learners make as a result of them attending this activity? (These are your Desired Results in terms of your activities ability to make a change in competence, performance or patients outcomes*) Please Note: You will need to measure whether or not you achieved these results with your evaluations</p>
<p>6) Children’s emotional or behavioral difficulties affect many aspects of their lives--achievement in school, relationships with family and friends, and the risk of alcohol or substance abuse. Early intervention and treatment may prevent a child’s emotional or behavioral difficulties from worsening and lessen some of the negative outcomes associated with mental health problems. However, finding appropriate, affordable, and family-oriented treatment for children with emotional or behavioral difficulties is often a challenge.</p> <p>A contributing factor to this problem/gap: Physicians (our learners) do not always understand ways to effectively code and receive reimbursement for developmental and behavioral services, resulting in lack of incorporation of needed screening and counseling services in their practices</p>	<p>Knowledge - Our learners need to know the appropriate codes for reimbursement of developmental and behavioral services</p>	<p>1) Previous activity evaluations: DB:PREP</p>	<p>As a result of this activity, learners should be better identify the appropriate codes for reimbursement of developmental and behavioral services</p>
	<p>Competence - Our learners need strategies to incorporate correct coding procedures for developmental and behavioral services into their practices</p>	<p>2) Critical Topics in Subspecialties: Coding for Developmental & Behavioral Pediatrics (coming out in 2010), Early Brain Development/Literacy Promotion</p>	<p>As a result of the implementation of strategic tools provided in this activity, learners should be able to correctly code developmental and behavioral services allowing for an increase in reimbursement amounts for these services</p>
	<p>Performance - Our learners need to increase the amount of patient screening/counseling referrals for pediatric patients who present/are diagnosed with developmental and behavioral disorders</p>		<p>As a result of being better able to code and submit for developmental and behavioral services, learners should increase the amount of screening/counseling referrals for pediatric patients who present/are diagnosed with these disorders</p>

**Please note that if you expect to make a change in patient outcomes, please be specific in identifying what you expect that change in patients to be and note how you expect to measure the change (most commonly changes in patient outcomes are measured by a review of actual patient data in order to evaluate the change)*

***Sample Patient Outcomes: As a result of this activity, increased screening and diagnosing of pediatrics patients with developmental and behavioral disorders should lead to a decrease in long-term medication dependence in these patients. Attendees will conduct chart reviews prior and 6mos after the activity to document any increase in screenings and diagnosis.*

What is the Problem(s) that this activity addresses? (This is the Professional Practice Gap)	What do you need to provide to your learners in order to help them make a difference/solve this problem? Do they need factual information, an ability to incorporate, or an ability to perform in order for a positive change in the problem to occur? (This is the educational need in terms of Knowledge, Competence and/or Performance)	How did you determine the Problem and identify what your learners need to solve it? (This is your Needs Assessment Data)	What change should your learners make as a result of them attending this activity? (These are your Desired Results in terms of your activities ability to make a change in competence, performance or patients outcomes*) Please Note: You will need to measure whether or not you achieved these results with your evaluations

Needs Assessment Guidelines / Sources

A needs assessment is a strategic planning tool for any learning activity. By knowing the learners' needs, you can incorporate knowledge, skills, and behavior content to improve performance and address gaps that may exist between actual performance and desired performance. The learning objectives should be based upon recognized needs.

The initial application should provide the following material on needs:

1. Document the process used to identify learning needs
2. State the needs that were identified and indicate how the assessment results will be applied to planning the educational activity
3. Include any data sources used for the needs assessment

Sources

Below is a sample list of sources/tools that can be used to determine the problems/gaps identified for your activity and what your learners need in order to address the problems/gaps.

Please note: Evaluations and surveys can be used in addition to, but not as the only source, to document the problem or what learners need to address the problem in your CME activity.

Specialty and Organizational Priorities

- AAP Agenda for Children (AAP strategic plan)/Child Health Priorities
- Critical Topics in Subspecialties (as posted on PediaLink/CME Finder – www.pedialink.org/cmefinder under “About AAP CME” / “Needs Assessment Sources”)
- Specialty and subspecialty clinical practice guidelines and policy statements
- Evidence-based literature (e.g., *Pediatrics*)
- PREP® Self-assessment or Subspecialty Self-assessment data (e.g., poor performing PREP® Self-assessment questions, as posted on PediaLink/CME Finder – www.pedialink.org/cmefinder under “About AAP CME” / “AAP Continuing Medical Education” / “AAP Committee on Continuing Medical Education”)
- AAP Annual Leadership Forum Resolutions
- Established expectations of the American Board of Pediatrics and Maintenance of Certification™ (www.abp.org)
- Initiatives identified by CME planning groups and editorial and advisory boards
- Preactivity surveys of learners or members (e.g., AAP sections/councils, target audience, Periodic Survey of Fellows)
- Updated or new information or research
- Outcomes measurement data - Analysis of outcomes measurement data from CME activities, such as:
 - Commitment to change contracts/data
 - Pre/post-CME activity test data
 - Responses from outcomes-based questions asked in CME activity evaluations
 - Barriers to change information cited by or identified about learners
 - Previous activity evaluations of the same or similar learner groups as your target audience

External Factors and New Developments

- Evidence from research-based literature or reports, such as
 - Agency for Healthcare Research and Quality [AHRQ] - www.ahrq.gov and www.ahrq.gov/child
 - Reports from the Centers for Disease Control and Prevention [CDC] - www.cdc.gov
 - Reports from the Institute of Medicine - www.iom.edu
 - Physician Consortium for Performance Improvement - www.physicianconsortium.org
 - Healthy People – www.Healthypeople.gov
- Evidence-based literature
- Updated or new information or research
- Expert experience
- Performance measures
- National databases or registries
- Public health initiatives
- Federal, state, and institutional mandates
- Other organizations' policy statements or clinical guidelines

Personal Assessments

- Self-assessments and personal reflection
- Peer reporting or review
- Regional and community issues or those issues related to the specific nature of the learner's practice
- Needs in one's practice
- Learner questions generated from live activities

Identification of Professional Practice Problems/Gaps, Needs & Desired Results

Each AAP activity should incorporate content that addresses at least 1 professional practice problems (gaps) of the learners you expect to attend your activity. *Consider:* In looking at the overall goal/purpose of your activity, what content/topic area has a problem/gap in professional practice that needs to be fixed? What problems are patients experiencing because physicians are or are not doing in practice? What problem or issue do children face that keeps occurring or has gotten worse? Is there something that children continue to suffer from or what problem will decrease because more pediatricians implement what you plan to teach?

Once this problem has been identified, you should determine what your learners “need” to address this issue (a knowledge need, a competence need or a performance need). *Consider:* What do physicians need to know, know how to do, or perform differently in their day to day practice that if you taught at this activity, and they implemented, could help address this issue?

Finally, now that you have identified a problem area that you want to address in this activity and you determined what your learners need to make a difference in this area, what do you hope to achieve by the end of your activity? *Consider:* What do you want your learners *to do differently* after participating in your activity that may make a difference to the problem that you identified? What do you want your learners to improve on or implement as a result of participating in your activity that will help them to achieve one of the needs you identified for your activity? Remember: you will need to identify a way to measure if these improvements occurred in your evaluation of the activity

Example: *The professional practice gap addressed in this activity is that more than 40% of children have tooth decay by the time they reach kindergarten making it the most chronic childhood disease in the United States and its treatment is one of the most prevalent unmet health needs in children.*

There are several underlying needs for pediatricians to be able to address this problem:

- *Pediatricians need to know current recommendations for screening, diagnosis and referral for oral and dental health diseases (this is a knowledge need)*
- *Pediatricians need to know how to develop strategies to provide anticipatory guidance and identify preventive approaches to maintain oral and dental health (this is a competence need)*
- *Pediatricians needs to perform an “oral health risk assessment” as part of a health maintenance visit and improve referrals (this is a performance need)*

The desired results of this CME activity is that after participating, our learners will become more aware of current recommendations for screening, diagnosis and referral for oral and dental health diseases which will enable them to be able to better provide anticipatory guidance and preventive approaches (demonstrating an increase in competence) to maintain the oral and dental health of pediatric patients. In addition, our learners should more routinely perform an oral health risk assessment (demonstrating an increase in performance) during pediatric health

Identification of Major Professional Practice Problems (Gaps) and Desired Results

The below table includes questions to consider in your planning process to help you identify the professional practice problems (gaps) of your learners, as well as the desired results of your activity.

	Professional Practice Problems (Gaps) Difference between actual and ideal performance and/or patient outcomes	Desired Results Desired results are “best practices;” what learners will apply and do differently in their practice as a result of the CME activity
Knowledge (factual information)	What necessary factual information do your learners not know? Do they need to identify or recognize something better?	
Competence (knowing how to do something)	What combination of knowledge, skills, and behavior is currently inconsistent among your learners? Are their strategies inconsistent, or do they need to better distinguish, differentiate, or predict something?	What new or additional strategies or abilities do you want your learners to be able to put into action? Do they need to recognize or integrate a diagnostic strategy or management modality or enhance their counseling techniques and communication?
Performance (what a physician actually does in practice)	What do your learners fail to do or do inconsistently in practice? Are they unable to perform something or some aspect of diagnosis or treatment, etc.?	How do you want your learners to modify their practice? Do you want them to use a particular diagnostic or management modality or stop using an outdated treatment?
Improved patient Outcomes		What improvements in patient outcomes do you expect to result from this CME activity?

Identifying professional practice problems (gaps) of your learners does not have to be complicated. Below are some practical strategies that may be employed in your CME activities.

- Ask faculty or authors to specifically identify one learner gap or discrepancy in practice for the topics they propose or articles they write.
- Ask CME registrants or subscribers to self-identify through an online survey a few months or weeks before an activity one clinical/practice-related question they would like the faculty or authors to address in their content. (Sampling and self-reported professional practice gaps are acceptable.)
- Ask your faculty to begin their presentations with a list of gaps or discrepancies related to their planned content and to end their presentations with a list of expected learner outcomes or suggested changes that can be made in practice.

On the following pages, you will find several articles that have been published in *AAP Chapter Connections* about many topics referenced in this planning document. *Please review these resources during your actual planning and/or share them with your faculty/authors as additional guidance about the topics.*

1. **“CME and the Cycle of Learning” - October 2010**
2. **“Twelve Universal Principles of Adults as Learners” – January 2010**
3. **“Understanding Systematic Design of Instruction” – October 2009**
4. **“Understanding Learner Gaps and Needs” – July 2009**
5. **“Continuing Medical Education: Is ‘Change’ Necessary?” – April 2009**
6. **“Reflection in the Teaching of Medicine” – July 2011**

CME CORNER

CME and the Cycle of Learning

By Beverly Wood, MD, PhD, FAAP

Education and Innovations Consultant, Committee on Continuing Medical Education

As part of the educational mission to assist physician learners in identifying their practice performance gaps and related educational needs, CME under the criteria of the Accreditation Council for CME (ACCME) is focused on a well established cycle of learning.

Self-aware learners are often able to identify areas in which they are deficient, often because they are still using familiar practices, they have been unable to learn new skills, or they are unaware of new practices of medicine and how to apply them in their own setting. It is not surprising, given the enormous amount of information in various locations, that keeping up is hard to do. Sometimes deficiencies in the practice of medicine are brought to the attention of physicians, who are unaware of the fact that they are not practicing the ideal evidence-informed medicine they should be. Based upon such identified gaps, the learning needs of physician groups are established, and education is designed around chosen concepts with the aim of improving medical practice.

The design of instruction is based on fulfilling the needs of learners and motivating a change to incorporate what is new. For this reason, educational objectives are crafted to reflect needs that will be met and how they will be met. Objectives indicate what the learners will be able to do as a result of attending the learning experience.

The design of the educational experience, reflecting the intent of the objectives, is meant to optimize learning by seeing, hearing, and doing so that participants know the what, how, and why of new knowledge and skills and can apply them in their practice.

After the learning experience is completed, the designer and sponsor will wish to know what have been the outcomes for those who participated. This information is useful to find if the learning was beneficial and to establish what could have been done better or differently. Based upon the initially identified needs and their learning objectives, responsible educators will identify ways in which they can remain in communication with their learners, help the learners communicate with each other, and discover how the learning content was put to use and what the healthcare results have been.

The collection of outcomes data completes the cycle from the initial identification of a deficit that occurred in practice performance; education planned to overcome the practice deficit and improve it; and what the resultant effect was on the practice of medicine and ultimately on health care of patients.

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CME Corner

Twelve Universal Principles of Adults as Learners

When children learn, they are establishing a basic knowledge matrix upon which they will build as they mature. Children may need more help than adults in developing and populating their Knowledge Matrix. Adults learn by building upon the knowledge structure they have already established, by enhancing this structure, expanding it, and modifying their knowledge to the suit the circumstances in which they will apply it.

The following are 12 basic principles you should use in supporting adult learning. It is based on Laws of Learning by Thiagi.

1. Principle of relevance

Effective learning is relevant to the life and work of the learner. Activities that create links between the learning situation and the real world are useful for the learner in transforming knowledge to a form that they can use. After any learning activity, learners should be invited to examine their learning and discuss strategies for applying what they learned in their real world context.

2. Principle of previous experience

New learning should always be linked to and build upon existing experiences of the learner. Participants in any learning experience bring a variety of knowledge and experience to the learning session. The learning session should be adjusted to ensure that it reaches different levels and different relevant experiences of the learners.

3. Principle of self direction

Adults, as learners, are self-directed. This is the reason that they have chosen the learning experience that they are currently experiencing. Everyone should not be forced to participate in every activity. Involving the participants in setting their goals and selecting appropriate types of learning activities is an ideal design.

4. Principle of expectations

New learners' reactions to a learning session are shaped by their expectations as related to the content area, depth of the content, learning format, fellow participants, and the teacher. Encouraging learners with challenging activities and shortcut techniques are always helpful. Recognizing the efforts of participants is important to and helpful to the learners.

5. Principle of self-image

Learners have ideas and perceptions of what type of learners they are. These perceptions can either enhance or interfere with their learning. Reassure your participants about their ability to learn new concepts and skills; provide motivating and challenging tasks for them, ensure frequent and early success by introducing tasks in a pattern to become progressively more complex. Do not patronize your learners with simple or trivial tasks. However, incorporate learning tasks at different levels of difficulty and complexity to suit all present. If the learners are working in groups, you may wish to have more advanced learners serve as teachers, leaders or facilitators.

6. Principle of multiple criteria

Adult learners rely on a variety of standards to judge their learning experiences and accomplishments. Encourage your participants to choose personal standards and scoring systems. Provide different methods and criteria for achieving success. Learners may wish to develop alternate criteria for measuring performance.

7. Principle of alignment

Adult learners appreciate recognizing that the learning objectives, content, activities, and assessment methods are aligned. The learning situation should resemble a practice situation.

Teach and test for the same content and always be sure that you are checking for mastery of the indicated learning objectives.

8. Principle of active learning

Active responding produces more effective learning than does passive listening or reading. If you are using lecturers or reading assignments to teach, active learning episodes, such as quizzes, problems or puzzles, should always be interspersed.

Provide your learners with ample opportunities to respond by asking questions, encouraging them to ask questions or participate in discussions, and questioning their answers to questions.

9. Principle of practice and feedback

Learners cannot master skills without repeated practice accompanied by relevant feedback. Don't confuse understanding a procedure with the ability to perform it. Plan ample time in activities to provide extensive practice and feedback. Make sure that the learning activities incorporate immediate, useful, and constructive feedback from peers and experts. Create rating scales, checklists, or similar devices to ensure that the feedback is objective and useful.

10. Principle of individual differences

Different people learn in different ways. All teaching and training activities should accommodate a variety of learning styles. Plan that participants can participate by writing, speaking, drawing, or role playing. Encourage and permit learners to learn as individuals, in pairs, or in teams.

11. Principle of learning domains

Different types of learning require different types of teaching and training strategies. Recognize that there are different types of training, content and objectives. Avoid using the same kind of activity to teach different types of training or content. Use the appropriate design to help participants achieve different objectives, which may be related to knowledge and concepts, procedures, attitudes, or general principles.

12. Principle of response level

Learners master their skills and knowledge at the level at which they are required to respond during the learning and evaluation processes. If learning requires participants to discuss a procedure or observe it, don't assume that they will be able to apply or perform it. If you want participants to solve problems, the learning activity should require them to solve similar problems. Always avoid trivial, closed questions with recognition or rote memory answers. Challenge learners with authentic problems that require innovative solutions.

13. Principle of reinforcement

Participants learn to perform behaviors that are successful and rewarded. Make sure that learning activities provide opportunities for rewards. Require participants to make frequent decisions and responses. Provide feedback and reward partial achievement.

14. Principle of emotional learning

Any event accompanied by intense emotions will result in long-lasting learning. Many types of learning and training, simulation, role-play, or case solutions can add emotional elements to learning. However, when emotion is too intense, it will interfere with learning. It is helpful to debrief participants after emotional activities to reflect on their feelings and learn from their personal reflections.

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CME Corner

Understanding Systematic Design of Instruction

Goal

The instructional goal is identified by stating all the skills and knowledge that should be included in the instruction. It indicates what someone would be doing if he or she were demonstrating an ability to already perform the goal. A goal analysis consists of identifying what it is the students will be able to do, not what they have been taught, told, or read.

Analysis of the learners:

This is an analysis of what the learners should learn: the skills, knowledge, application that is key. Analysis may look at generalities (what is missing in medical care) and also at the achievement needed to reach the goal. What is the entry level of learners in terms of their existing knowledge and skills, and what instruction is needed to bring the learners to mastery at the level desired? Both learner analysis and context analysis is necessary to prepare the instruction.

Develop Needs

What learning should be developed in order to bring the learners to the desired level? What should the learners already know? What is their ability level? What are their learning type preferences? What is the setting in which the skills and knowledge will be used?

The instruction must contribute to meeting an identified need by providing the skills and knowledge expected. Know the learners, the need, and the environment in which the learning will be used. Remember that motivation is an important factor in identifying needs. The ARCS model (*Attention, Relevance, Confidence, Satisfaction*) has been quoted as a good introduction to needs development as it represents a factor in learner analysis.

Create objectives:

Learning objectives are based on the learner needs that you have established. They serve as a guide to planning instruction and a guide for the learners to know what to expect. Learning objectives are stated in terms of active verbs and they indicate what the learner will be able to do as a result of the learning experience.

Design the learning:

The learning experience reflects the type of learning suggested by the objectives. It is a learning experience that is meaningful, set in the appropriate context to reflect the type of learning, and that reflects both the needs and objectives as well as prepares for the expected outcome. Remember that if you plan an expository or informational part of the learning process, you should also always provide your learners with an opportunity to practice or try out what they have learned. By doing so, they will remember the information, gain the skills, and be able to transfer the learning into their own context of practice.

Participate in feedback:

How did the learners do---what was done correctly and what could benefit by being done differently? What did the learners think of the learning experience---what was good, what could be changed?

Evaluate the learning experience:

How well did it go? Did the learners accomplish the learning? What was their and your reaction?

Assess the learners:

Test, observe, ask for feedback, find what they learned or intend to change. What questions arose?

Redesign:

All learning experiences deserve redesigning as there are always parts that could be changed, added, removed. The best time to consider redesign is immediately following the learning experience.

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CME Corner

Understanding Learner Gaps and Needs

The ACCME emphasizes that CME providers understand their physician learners and use their analysis in planning learning activities. Learning should be aimed at improving practice by identifying problems in practice and addressing them. CME providers are asked to identify gaps in physicians' performance in practice and match these professional gaps with learning designed to overcome the gaps and change and improve practice. A gap represents a discrepancy between what is occurring in practice and the way it ought to be.

There are many reasons that gaps occur; physicians may be unaware of alternative or newer developments in ways to practice, they may not know about recommended changes, or they may simply lack skills or knowledge because of lack of training. Practices change, and practices that were once state of the art can become outdated. Physicians' responsibilities change and they may be called upon to perform procedures, make decisions or employ methods with which they are unfamiliar.

By aligning educational planning with desired professional improvement, beneficial change and practice improvement can benefit the healthcare community and improve patient health. Recommended methods to determine what to teach include identifying gaps and the linking them to learner needs, making the learning activity useful in initiating improvement. For this reason, providers must understand the practice gaps and needs of their physician learners and devise ways to support learning, skills, practice performance, and resultant improvement of patient health. Therefore, CME educational interventions must be designed to address existing gaps in the practice of medicine. Continuing education is meant to see and fill those gaps in physician competence, performance, and patient outcomes that are known to exist.

Gaps are best understood as the disparity between what occurs during practice and what should be practice. Gaps, the disparities between what is and what should be, may be observed in individual practices or in the practices of groups of physicians. They represent ways medicine could be practiced better. Examples of gaps would be physicians continuing to practice in an outmoded way while it has been shown that outcomes are better using a different approach. Although collecting information on gaps can be difficult, evidence informed medicine is a help to link research and clinical practice. A disparity in practice may be identified by individual self-assessment, assessment from peers or patients, or by identifying from medical records practices that should be improved.

Based upon the identified practice gaps of individuals or groups, learning activities can be planned to address and change practice and improve patient outcomes. Needs are developed from initial analysis of learner gaps. Needs are more global, often obtained from the literature, guidelines, clinical policy and for teaching purposes, they represent learning concepts. Learning objectives are based on gaps and needs, and educational methods reflect how the gap and need are addressed. Based on objectives, outcomes of the learning experience can be measured. Needs can be reflected and stated in guidelines, policy statements, evidence-based literature, evidence-informed changes from the literature and specialty group statements. Needs may be related to knowledge or skills. Effective outcomes of the learning can be measured by revisiting the objectives of the learning and finding if the learners have made a change related to their learning. Additionally, we can indicate what effect the change has made in the practice of pediatrics and in patient health. Because there are often difficulties in making a change and having it accepted, some information on blocks, barriers and difficulties is helpful.

Data from which practice gaps are identified may come from many sources, such as patients and hospital records of practices; clinical conferences such as morbidity and mortality conference or problem rounds; peer-reviewed literature; databases such as Vermont-Oxford, CDC, Institute of Medicine, news flashes and media mailings; registries; professional society and college data such as the AMA, AAP, CDC; government publications; specialty publications such as AAP policy statements, clinical reports or technical reports, and physician target audience self-assessments.

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CME Corner

Continuing Medical Education: Is “Change” Necessary?

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It is quite evident to the up-to-date pediatrician that much of what was learned in medical school and residency is of “historical interest” today. To remain current in our rapidly changing specialty requires a process of continuing education supporting lifelong learning. New requirements for board recertification and major changes in the way we plan and deliver continuing education has become confusing and stressful for CME planning groups. We know that listening to a speaker is of limited effectiveness, and we can no longer collect CME credits while munching on a bagel and drinking coffee supplied by a host pharmaceutical company. Times have changed, and so has the business of providing CME.

The whole new process of CME delivery is moving into a learning *partnership* between the CME provider and the learner. New terminology, educational delivery methods, learning formats and technology can further confuse planning groups to make the process seemingly a daunting task. This article will attempt to provide a review of changes in CME expectations, and explain the *method to the madness* behind the changes. The CME activity should be designed to meet the learners’ needs, with the aim to make a change in the learners’ competence (knowing what to do and how to do it), practice performance (doing it), and/or patient outcomes and the results of learning and application should be measurable.

The new jargon of *identifying gaps in the learners’ knowledge* is simply a way of showing that the activity is planned to meet a need of the learner. A “gap” represents the difference between what is occurring and what should occur. Demonstrated learning gaps are translated into “needs”. The content of a planned CME activity should always be directed toward eliminating the gap in knowledge, competence, practice performance or patient outcomes in the learner that was identified by some prior source of evidence. The learner should be a partner in identifying important gaps whenever possible. Learner gap identification can be based on literature, surveys of the learners, AAP strategic priorities, new critical topics, guidelines or any variety of sources. The identified gaps guide design of the objectives of a learning experience by articulating the desirable change that the CME activity is designed to accomplish.

The next step is to turn those gaps into measurable or observable objectives. What changes does the activity plan to make in its learners’ knowledge, competence, performance, or practice outcomes? *At the completion of this activity the provider should be able to----*. Measurable objectives are the basis for the content of the learning activity and designed to demonstrate a change in the learner that results in a narrowing of the recognized gap.

Likely the most difficult component of CME planning is the *evaluation process*. This will require the learner to step up to the plate, and describe or demonstrate that their learning resulted in a measurable change in the way the practitioner does business. Although the planning group and faculty can provide suggestions for measuring change, the learner must be a partner in identifying specific needs that were met through participation in the activity. A *commitment-to-change-contract* is a mechanism for accomplishing this. The learner is asked to reflect on what is learned and what he is willing to change in practice that will narrow gaps in the learners’ competence, practice performance, or patient outcomes. This contract does require some follow-up process to give feedback to the planning group, and to reinforce the memory of the contract for the learner. This can be a simple email reminder in weeks to month with a request for response, or can be done by a follow-up survey, with minimal expense, and minimal staff time. The learners will also be able to identify barriers or difficulties they encountered in trying to make changes.

A discussion of CME changes is not complete without mentioning the need for disclosure of conflicts of interest and independence from commercial influence in all parts of the educational process. The activity must separate any product promotion from the education. Proprietary interests and commercial support must be managed to assure that all activities are planned, and delivered absolutely independent of any commercial support.

Our accrediting organization, the ACCME, offers further suggestions for CME *accreditation with commendation*. This occurs when the following activities are incorporated into the CME activity:

- 1) Integrate a process for improving practice quality into the CME activity
- 2) Include non-educational strategies (reminders, patient feedback) to improve outcomes
- 3) Attempt to identify barriers outside the control of the provider that may impact outcomes
- 4) Use educational strategies to overcome/address barriers to physician change
- 5) Build bridges with other stakeholders with similar educational needs that may result in collaboration and cooperation that improves needed change
- 6) The CME is linked to a system of quality improvement

An adult learner has an average attention span of about 10-15 minutes, yet we still plan CME around the traditional 45-60 minute lecture format. A high quality CME activity could have a variety of learning activities such as Q/A, discussions, opportunity to practice, case scenarios, audience response activities, and changes in delivery format.

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Reflection in the Teaching of Medicine

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Recent discussions of teaching and the practice of medicine emphasize the central role of “reflection.” Though a powerful tool in teaching, learning, and practice, the definition and boundaries of this term remain elusive. The elusiveness of the term also contributes to making it a difficult practice to teach. A helpful definition of the concept comes from John Dewey, in 1933, *How We Think* (Dewey, J. *How We Think*. 1933; Boston, Heath and Company), in which he defined reflection as the “active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends.” The meaning of these words implies that we look back on events, make judgments, and may alter our behavior in response to our reexamination. Jay and Johnson (Capturing Complexity. *Teaching and Teacher Education*, 2002; 18: 73-85) emphasize that reflection includes processes: description of the situation, questioning initial understandings and assumptions, and persisting, with an attitude of open-mindedness and responsibility. This interpretation is useful in supporting an introduction of open-mindedness and also implies reflection is undertaken in a purposeful and deliberate manner in order to “think a problem through.” This may not always happen, since reflection is more concerned with unusual circumstances or complex situations.

Schon (Schon. *The reflective practitioner*. 1983; NY, Basic Books) studied and reported on professionals’ reflection as a cycle of “appreciation, action, and reappreciation,” a process that supported the *art* of practice. He interpreted the intellectual actions of reflection, although he did not define the *concept* of reflection. Reflection may not always consist of a series of steps, but may be a way of responding to unresolved problems. In addition to problem solving, reflection includes intuition, emotion, and sometimes a resolution to change.

As teachers, it is worth considering what we reflect on. We spend time reflecting on students’ learning, instructional processes, and subject matter, among others. But, where do we focus our attention? Teachers tend to reflect on more traditional aspects of teaching, such as academic traditions. However, it is equally useful to question one’s goals, values, and assumptions. Without doing so, one is not engaging in reflective teaching. Zeichner and Liston (*Reflective Teaching, An Introduction*, 1996, Mahwah, NJ: Lawrence Erlbaum) suggest that reflective teachers move beyond simple questions of whether their practices are effective and toward how they are working, why, and for whom. The basis of our instruction and reflection on it necessitates additional perspectives, including examination of one’s values and beliefs and examination of the greater context in which questions occur. Through reflection, we reach clarity of understanding and change our actions and perspective accordingly. It is the insight and opportunity for open-mindedness and change that are supported by reflection.

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