Training Manual on Pediatric Environmental Health: Putting It Into Practice

Children's Environmental Health Network
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Strategies and Tactics for Teaching

Bonnie Clarke, MPH and Jean Westcott, EdD

As medical residency and graduate nursing faculty, you face a host of challenges to incorporating children's environmental health (CEH) education into the curriculum. These include minimal classroom time and continuity with students, scores of competing issues, and perhaps a lack of institutional support for pediatric environmental health education. In addition, your students may perceive the subject to be of minor importance. In this setting, it is imperative that CEH be taught well. Good teaching skills are helpful in any discipline, but they are particularly needed to meet the challenges of teaching CEH.

Children's environmental health involves much more than diagnosis and treatment of acute and chronic illness. CEH calls upon practitioners to serve as advocates for children and for sound public policy, investigators of health hazards, and educators of parents and other health professionals. Student practitioners must therefore acquire the skills of advocacy, education, and investigation in addition to clinical skills of diagnosis and treatment. These abilities rely on the same foundation: good listening and research skills and the ability to question.

Advocacy, investigative, and education skills are not typically acquired from a textbook or in a lecture. Rather, they are taught, through discussion, demonstration, and practice.

The pages that follow are designed to make the teaching experience more effective and enjoyable for both you and your students. It is important to consider creative alternatives and options for finding those "teachable moments" that make adult learning possible and permanent. With an understanding of how adults learn best and some suggestions for how to capture and create learning opportunities, you will be well equipped to teach CEH effectively.

Learning Objectives

At the conclusion of this module, you will better understand:

- Key concepts of adult learning theory, and their implications for effectively teaching pediatric environmental health
- How to use effectively five teaching methods when you find a "teachable moment": case studies, instructor/student demonstrations, structured practice (role play), discussion group, and lectures

- How to plan effective learning sessions, including: establishing objectives, managing beginnings and endings, and managing time effectively
- How to manage creative and effective question-and-answer sessions

Adult Learning Theory – Key Concepts

Adult learners have well established self-concepts and belief systems. Confidence levels, self-perceptions, and preconceived attitudes weigh heavily in adult learners' readiness to learn about any new subject. Throughout the health care training process, these self-perceptions and attitudes will have been either challenged or reinforced.

A constellation of knowledge, beliefs and attitudes — many of which are not conscious or explicit — forms the opinion the student already holds about CEH. For many residents and nursing students (indeed, for some instructors) the topic of CEH is particularly challenging because this relatively new field has controversial sociocultural and political aspects. Just as a patient's unknown pre-existing conditions or comorbidity will influence the accuracy of a practitioner's diagnostic assessment, students' belief systems can be invisible screens that preclude (or enhance) receptivity to learning about CEH.

Beliefs that may affect learning about CEH include:

- Environmental hazards are the focus of occupational medicine and adult health, not pediatric health.
- I am confident I already know how to identify most high risk environmental factors.
- Lead poisoning was a problem before they got rid of leaded gasoline; it is no longer a health issue we need to be overly concerned about.
- Most environmental health hazards are associated with low-income children. This is not a population I am likely to be working with.
- I can't learn all there is to know about the toxicology of environmental hazards.
- There are so many more pressing and prevalent pediatric health concerns, like child abuse. I can't be an expert on, or passionate about, everything.
- I am an environmental activist, so this subject is of considerable interest to me.

How to work with these beliefs when teaching CEH:

- Encourage students to express their existing beliefs and knowledge about CEH issues. Encourage them to share their beliefs about the health practitioner's role in these complex issues.
- Challenge assumptions. Nonjudgementally correct misinformation about what students already know or do not know (or think) about this subject.
- Utilize this opportunity to influence students' self-concept as pediatric caregivers. Are they responsible to treat problems they did not previously expect to encounter in their patient populations? Are they responsible to help investigate and prevent exposure to environmental hazards?

A suggested activity in a small or large group setting (rounds, morning report, noon conference, classroom) is to lead an informal survey, or "needs assessment," to reveal the spectrum and diversity of understanding, exposure, and opinions on the general subject of CEH.

This should not be confused with giving a pretest, which tends to underscore competitive knowledge-based learning by testing subject expertise. Rather, an informal survey (even just a show of hands, voice vote, or anonymous tally) is intended to reveal and legitimize the range of viewpoints among your students. Unlike a test, the informal survey approach does not focus on right and wrong answers; as students' self-perceptions about the subject are revealed, discussion should center around what informs the thinking and beliefs that led to their answers, not that the answers were "wrong." These questions also become a springboard for discussion about the barriers to, and rationale for, inclusion of environmental health issues in pediatric caregiver education.

Examples of informal survey questions

Q. What is your estimate of the increase in prevalence of asthma from 1980 to 1987 in people younger than 20?

A. 12%
B. 26%
C. 42%
D. 66%

Q. To what variable do you think most people attribute this increase? (Follow up: what do **you** attribute the increase to?)

A. hereditary factors
B. improved diagnosis and screening
C. outdoor air pollution
D. indoor air pollution and tobacco smoke
E. pesticide residues in food

Q. What do you think is the pediatric health practitioner's **primary** responsibility in treating chronic and acute respiratory problems in children? (Follow up with discussion about why all aspects are important.)

A. Treatment and relapse prevention
B. parent/patient education
C. environmental history-taking/assessment
D. investigation and advocacy
E. all of the above.

As an instructor, encourage expression of a wide variety of socio-political viewpoints regarding the health practitioner's role in these complex issues, while simultaneously seizing the opportunity to correct misinformation. This is also your chance to influence students' self-concept as pediatric caregivers: not only are they responsible for the treatment of problems they may not have previously expected to encounter in their patient populations, they also have a vital role in helping to investigate and prevent asthma and other acute conditions that may be caused or exacerbated by environmental hazards.

In this kind of exploratory learning climate, students will feel more like co-investigators in an emerging and imperfect science than empty vessels into which more data must be poured. They will feel respected and capable—the foundation for all successful adult learning experiences and the essence of a positive self-concept. A positive self-concept is essential for subsequent commitment to environmental health action and advocacy, a goal for all pediatric caregivers.

Adults Learn Best By Doing

Adults not only learn *from* experience, they learn *in* experience, while actually performing the procedure, the exam, the interview, etc. A useful model for understanding how adults learn best is the experiential learning cycle. The learning cycle (see below, adapted from D.A. Kolb) begins with a concrete experience; this is followed by reflection and interpretation of the experience from a variety of different perspectives; then the learner conceptualizes and integrates his/her observations as a basis for taking action; and, finally, he/she experiments, or tests what he/she has learned in another situation. This experiential learning model is a continuous and usually unconscious cycle of interwoven events, occurring over time.

Examples of Experiential Learning

Assume you decide to teach a session on environmental history-taking during the noon conference. Instead of a giving 40-minute lecture, you want to make this session experiential. You could run the session in the following way:

- In 5-10 minutes, give a very short, not-too-complex case history, and then present a synopsis of "guidelines for conducting an environmental interview" (or review a protocol you have prepared and distributed).
- For the next 10 minutes, divide the class into pairs and instruct students to practice conducting an environmental interview. Partners will take 5-minute turns playing both the role of parent of the case-study patient and the investigating physician/nurse.
- Conduct a 15-minute group discussion to consider the following:
  – what worked?
  – what didn't?
  – what aspects of the interview were easy? difficult?
  – what strategies did you use to elicit information from the patient and family?
  – what kind of treatment and education is necessary to follow up on the findings?

Adults are Problem-Centered Learners

Adults are most receptive to new knowledge when the learning can be applied to real-life problems as opposed to learning the subject matter per se. Health care providers are trained in problem-centered learning environments, which are ideal settings for incorporating CEH case studies. When instructing students, think about how to engage their interest and compassion—not just their intellect—in solving a human problem.

Students' receptivity to learning is increased when faculty show the relevance of the teaching to their own work or lives. Whenever possible, introduce cognitive information as an intellectually challenging (and emotionally engaging) problem to be solved. Make the learning as stimulating as possible by using every opportunity to apply the information as soon as possible. Ask questions, present "what if?" scenarios, liberally use large and small discussion formats, challenge assumptions, and dare to give creative learning assignments.

Examples

- Which noon conference is likely to be more engaging (although the content may be virtually the same)?

  "Fast-Acting Pediatric ER Team Restores Lung Function in an Environmentally Poisoned Toddler"

  OR

  "The Toxicological Properties Of Common Household Products Causing Lung Disease In Children"

- Which learning assignment is more likely to be remembered?

  "Skim AAP's *Handbook of Common Poisonings in Children*, and give a two-minute synopsis at Wednesday's resident report."

  OR

  "Conduct an environmental inventory of the potential poisoning agents in your own home: include kitchen, bathroom, garage. Then, using the AAP's *Handbook of Common Poisonings in Children*, identify which products in your home could seriously harm or kill your inquisitive 2-year-old nephew, who will be visiting this weekend."

Adults Learn Through All of Their Senses

Adults learn best when they have opportunities to listen, see, and do. However, they vary considerably in learning styles. Some adults are primarily auditory learners; others prefer to read and discuss; still others would rather watch, then experiment. As an instructor, you do not need to find the most advantageous approach for each of your students, but it is helpful to use a variety of methods (demonstrations, discussions, individual and group case reports) that engage all of the sensory conduits to learning. In general, the more interactive the learning experience is, the greater and faster the likelihood of cognitive retention.

Examples

- During bedside rounds, ask a resident what she would do first if she had to evaluate a child suspected of ingesting rat poison.
- Use visuals such as a photograph of a fictional patient, or the container of rat poison that is the suspected culprit.
- Draw a simple chart showing the dramatic difference between infants and adults in the rate of absorption of a given toxicant. (Pictures not only "tell a thousand words," they also stick around in our consciousness for a long time.)

Adults Remember Best Information that is Presented First and Last

Given limited teaching time and students' equally crowded schedules, it is essential that you make your moments count. Place the most important material in your lesson first and last. Follow the familiar and trustworthy teaching axiom: "Tell them what you're going to tell them; tell them; tell them what you told them."

Example

You want to stress the importance of the environmental assessment as an essential pediatric diagnostic screening tool during chart review.

- Set the stage for learning by stating emphatically that a documented environmental history is a required screening tool for a child presenting with the following symptoms. (*Tell them what you are going to tell them.*)
- Ask the students to examine the chart for evidence of a thorough environmental assessment, outlining six key variables to include and how they should be noted in the chart. (*Tell them.*)
- Lead a two minute discussion in which you ask questions about what was or was not investigated and possible ramifications. Close this teachable moment by restating the "take-away" information or having the student restate it: "It is imperative to include and document an environmental assessment of at least six variables to rule out..." (*Tell them what you told them.*)

Adults Learn Through Association and Repetition

This may seem like a blinding flash of the obvious, but it is an axiom of special importance when teaching a subject that is perceived by many to be of minor importance. CEH will compete with many compelling topics for students' attention. Making the subject relevant requires instructors to be especially vigilant, creative, and repetitious.

Example

Invent a mnemonic device to remind students of the importance of environmental screening. An example could be: FEVER: Four Environmental Vulnerabilities Every (pediatric or family medicine) Resident must remember: (1.) Children are DEVELOPING ORGANISMS; (2.) They have increased BIOLOGICAL SENSITIVITY; (3.) They use hand-to-mouth BEHAVIOR which can increase exposure to toxicants; (4.) Their DIET exposes them to high levels of pesticide residues and additives. Ask your students at frequent and unexpected intervals to tell you what "FEVER" is and why they should look for it.

Teaching Methods for Teachable Moments

Case Studies

Case studies are probably the most easily designed and effective teaching tool health practitioner faculty can use. Oral case studies can be presented spontaneously and are a powerful means of inviting active learning. To use a case study most effectively, follow a few simple guidelines:

- Keep it short. Provide the essential descriptive data, with enough detail about the patient and event to engage students' interest.
- Keep the case as close to an actual or likely occurrence as possible. Don't strive for the bizarre.
- Case studies can be presented in oral or written form, for immediate or later use, for study group discussion or in a written report. They are often most effective when used in small discussion groups.
- Develop a few specific questions about the case study and engage students in active discussion. Remind students that the objective is to promote thinking and problem-solving skills, not necessarily to find the "right" answer.
- Case studies can be presented in sections. Ask students to respond to initial case information, before you give further information about how the case was handled or should be handled.
- Invite students to prepare and present case studies and discussion questions based on their own experiences.

Sample Case

Sophie, a three-year-old girl suffering from a persistent upper respiratory infection, was routinely tested for lead poisoning during a sick child visit. Laboratory analysis showed a blood lead level of 27.8 ug/dL and hemoglobin of 9.8 g/dL. The child had a medical history of recurrent upper respiratory infections and otitis media.

Discussion Questions:

- What else will you want to learn from in your history-taking?
- Who else might be at risk?
- What public health follow-up might be conducted?

Group Discussions

Small group discussions (3 to 5 people) are natural forums in which to explore CEH issues. As the instructor, you are not responsible for having answers about how to change the laws so that the neighborhood recreation facility built in the '50s can be rid of lead, but you do have a leadership role in encouraging your students to discuss the issue and their professional obligations in relationship to it. Give discussion groups a case study with a clearly stated initial question that will raise issues pertaining to advocacy and investigation. Then allow the group members to exchange thoughts, explore the problem, and report their opinions/findings to a larger group, if appropriate. Welcome multiple approaches to the problem and remember the teaching objective: to promote the development of skills as educators, investigators, and advocates.

Example: Investigation of a Suspected Health Hazard: The Pediatric Provider's Role

Review the legal protections and obligations regarding selected hazardous materials in a brief 5-10 minute lecture. Then describe a case (see below) that invokes questions about the roles and responsibilities of the pediatric caregiver. Ask each group to address a set of discussion questions in a 15-minute time period. Each group should designate a member to record the main points. Each group should also have a spokesperson who summarizes their findings in a 2-minute report to the larger group, focusing on the last of the discussion questions.

Case:

In the past two months,you and your colleagues (the small group) have seen two children under the age of three suffering from severe and sudden onset of respiratory distress. One of the children has asthma. Through environmental interviews, you learn they are both attending a new daycare program. You suspect, from comparing interviews you've had with the parents and discussion among yourselves, that there may be a respiratory irritant in the daycare building that is the source of the problem.

Discussion Questions:

- What is the role and responsibility of the pediatric provider in pursuing these suspicions?
- What actions could he/she take?
- What actions is he/she required to take?
- How could he/she communicate the perceived risks to parents and others?
- Who else might he/she involve in the problem?
- What should be documented in the patients' charts?
- What are the possible health outcomes for this case?
- What plan of action is the most appropriate for the pediatric caregiver(s)?

Instructor/Student Demonstrations

A brief demonstration of key skills engages learners by asking them to observe and reflect. A demonstration that includes incorrect technique or deliberate omissions and then requests student feedback can give students an opportunity to practice what they know, and allow the instructor to assess student knowledge and skill. The demonstration can be followed by large or small group discussion of alternative approaches or strategies.

Examples

Use the bedside setting to model how to conduct an environmental history (assuming parental/adult presence) or ask a student to demonstrate same. Offer any helpful corrective feedback away from the bedside, after the student's demonstration.

Structured Practice/Role Play

The term "role-play" has a negative connotation for some people: either it is not taken seriously or it induces stage fright. In fact, role-playing is little more than an opportunity to practice a communication skill (interviewing, counseling, teaching, advocacy)

with the help of a partner. Role-playing need not necessarily occur in front of an audience, although an instructor and a volunteer student can effectively use role-play to model a skill in front of a larger group.

Role-playing is usually done in pairs, but is also very successful in triads, with the third person serving as an observer. Calling role-playing a "structured practice" tends to lower the anxiety some people have about this form of learning. Whatever you call it, the learning benefits that come from practice sessions are considerable.

Guidelines for a Structured Practice or Role-Play:

- Ask students to select a partner.
- Set the stage and ask one partner (Partner A) to spend 5 minutes being the pediatrician or nurse in the following situation:

  "You are concerned that 18-month-old Joey's recurring severe asthma attacks may be triggered by his parents' cigarette smoking. (You can smell tobacco on the child's clothing.) You are meeting with the child's mother. What will you say?"

- The other partner (Partner B) plays the role of Joey's Mom. There is no script. B partners can be as cooperative or challenging as they wish to be.
- Swap roles after five minutes.
- Debrief in partner-pairs:

  Questions for evaluating the parent experience: What was it like to have the doctor/nurse tell you Joey's condition might be due to your smoking? How could he/she have told you better/differently?

  Questions for evaluating the practitioner experience: What was the easiest/most challenging part of this conversation? How would you do it differently next time? What do you think will happen at Joey's house now?

- Debrief in a larger group. Discuss what was learned from the small groups. Have some prepared questions in mind, but allow the discussion to take its own shape.
- Pull in opinions and experiences from all the participants. Avoid letting one or two people dominate the discussion.
- Summarize the key points.

The Lecture

The lecture may be the most appropriate teaching method for establishing a baseline of knowledge, and it is a necessary tool for delivery of some factual and theoretical information (e.g., toxicology). The disadvantages of the lecture include: it is generally one-way communication; it requires students to be more passive than active; it does not directly support the acquisition of problem-solving skills; it is generally conducted in a classroom setting.

The disadvantages of lecturing can be minimized with a modest amount of forethought and improvisation.

Ways To Enhance the Effectiveness of the Lecture

- Include personal examples, perspectives, and stories. Your personal experience with children's environmental health issues and "reality-based perspective" are a key part of what students value. Telling students about your experience or the experience of another practitioner can arouse interest and reinforce the importance and clarity of the points you are presenting. Your willingness to talk about these experiences in a personal and engaging way will be appreciated.
- Follow this basic model: (1) introduce the purpose and subject; (2) present the information; (3) provide examples; (4) ask questions or introduce a short activity; (5) summarize.
- Limit a single lecture period to no more than 10-15 minutes (the average attention span of an adult is 7 minutes).
- Avoid reading from prepared notes.
- Use audio and visual aids.
- Distribute handouts that summarize key points. Such handouts will allow students to listen and participate without taking notes. (Tip: distribute at end of teaching session, not before, to engage full attention of students.)
- After the lecture, guide a large group discussion on some aspect of its content.

Planning an Effective Learning Session

State Your Learning Objectives

A learning objective describes the knowledge and behavior or skills that a student should be able to demonstrate at the end of the lesson. The most important reason for explicitly communicating learning objectives is to help you, the instructor, focus on the critical content in a limited period of time. It is also useful for students to know what and why they are learning or discussing a given topic before you begin the teaching session.

Examples of Learning Objectives

- After completing this session, residents/students will be able to summarize six major environmental hazards specific to each of the five stages of childhood development (knowledge objective).
- After completing this module, participants will be able to develop questions and conduct a home audit (skills objective).

Have a Strong Opening

The purpose of allocating explicit time and attention to the initial portion of a learning session is to prepare students and to maximize their receptivity and motivation to learn.

A strong opening has the following elements:

- An introduction to the specific subject area and statement of objectives;
- A question, statement, or quote that motivates and arouses interest ("Why would you want to know this?" or "How will you be able to use this?"); and

- Information that relates the new knowledge or skill to real life experience or previous knowledge or skill. (Many of your students are parents and can offer personal experience in dealing with the issues of pediatric environmental health that you are exploring.)

Make a Clear Closing

Too often, a learning session ends simply because time is up. When planning, make sure to set aside time—even as little as 15 seconds—to wrap up. Closure, like opening, is an essential part of the teaching/learning process.

For a strong closing:

- Refer back to the opening (objectives and purpose/value of the material);
- Summarize key points (This may include questions that test learning); and
- Include students in closing activities by asking them to summarize the main points of the lesson.

Creating Dialogue: Strategies and Tips for Question-and-Answer Sessions

Asking Questions

Questions are a key part of the teaching process. Clearly formulated and well-directed questions actively involve students in learning. They can be used to encourage students to apply information and to think creatively about the subject matter under consideration. Poorly managed questions can, and often do, intimidate and frustrate students.

In general there are two types of instructional questions:

- Convergent questions have a single correct answer. They are useful in verifying students' retention of the material. Such questions ask the student to agree/disagree, identify, define, and explain.
- Divergent questions ask that students infer, predict, and defend. Divergent questions allow a variety of responses and stimulate higher level application and problem-solving thinking.

Instructors often use questions as a part of the instructional process, but too often the questions tend to be exclusively convergent in nature. Such questions ask the student to recall or summarize information that has been presented — the most common educational experience, no doubt, in medical and nursing school programs.

Students need to be able to synthesize, evaluate, and apply the knowledge they've acquired. This is especially true with a topic such as CEH. Plan to develop questions ahead of time and to include convergent and divergent questions to stimulate thinking and a two-way exchange of information.

Another way to think about questions is to ask their purpose. Is the question designed to test for facts, or for the ability to demonstrate skills or solve problems?

Examples of Questions That Assess Factual Knowledge

1. In her article, "Bringing up Baby: Start 'em Off Right in a Healthful Environment," Stephanie Hamilton identifies seven ways to ensure that a baby's room is environmentally safe. What are those seven ways?
2. What are the six known toxic effects of environmental tobacco smoke on the fetus?
3. What is the leading cause of death in children under 10 years of age?

Examples of Questions That Test/Evaluate Skills and/or Problem-Solving Abilities

1. Imagine you have taken a patient's environmental history and determined that the child's playground is adjacent to agricultural fields where pesticides are often sprayed.. What steps will you take next?
2. Assume you and a colleague will be teaching a New Parent Education Series at the local hospital. How will you encourage parents to protect their toddlers from primary environmental health hazards? What teaching strategies could you use?
3. Suppose you encounter a highly suspicious cluster of a childhood illness that is associated with a known environmental toxicant. You suspect the community's water source may be polluted with this toxicant, however, previous contact with local public health officials has not resulted in what you feel is sufficient investigation. What will you do?

Ways to Elicit Responses to Questions

- Phrasing: Use questions that focus on a single idea. State questions clearly and allow time for response. If a chalkboard or whiteboard is available, write the question(s) down.
- Delivery: Be sure to ask only one question at a time. Address questions to the group as a whole and ask for volunteers. Involve as many students as possible.
- Responding: Let students know if you will respond to questions during your presentation or at the conclusion of the presentation. (Answering questions in the present, however, stimulates a more participatory environment.)
- Probing: When a question receives no response or an incomplete or incorrect response, a "probing" question can elicit further response. Types of probing questions include:

  Justification (ask a student to give reasons for his/her response)
  Extension (say more or elaborate on the initial response)
  Redirection (ask the same question of other students)

- Allowing think time: When you ask a question, make sure to allow "think time" before expecting a response. Let students know that they will have a minute to think.
- Redirecting: Periodically redirect participant questions back to the group at large, instead of feeling that you need to answer them all yourself. Redirecting questions in this way is an effective means of acknowledging participants' knowledge and experience.

Evaluation Methods

Much of what you will be teaching can be subjectively evaluated —by you and students — through observation and feedback. In your assessments, it is important to distinguish the content (the "what") from the style of communication used to demonstrate that knowledge (the "how"). Both are important and often confused. The following are examples of easy-to-use evaluation strategies that rely on a mixture of methods to assess both content and style.

Instructor Observation and Feedback

At the bedside, during rounds, or during a chart review, you can comment on both the quality (content, accuracy, relevance, etc.) of the message and the style of communication used by the student. General rules of thumb in providing constructive feedback:

1. Make a point of finding a behavior to reinforce.
2. Comment first on the positive aspects you observed (e.g., "You demonstrated how to conduct a very thorough environmental history").
3. Follow this with a suggestion or a question (e.g., "Did you enter that information in the patient's record?").
4. Do not embarrass a student with criticism in front of others.
5. Distribute your evaluative comments evenly among students.

Student Observation and Feedback

Group discussion and structured practice sessions are ideal opportunities to incorporate a "peer review" process. To ensure that these sessions help students improve their skills as educators, clinicians, and investigators, ask students to debrief after their practice sessions. Examples of peer review questions include:

1. What about your partner's interview techniques was especially helpful?
2. What suggestions do you have for how the interview could have been improved?
3. What could your partner do differently if he/she was trying to communicate with a non-English speaking parent?

Encourage students to comment on both content (what was said) and style (how questions were asked).

Self-Evaluation

Self-evaluation is a highly effective strategy for retention and behavior change, especially if there is some accountability involved, such as sharing the answers with a partner, small group, or the instructor. Ask students to respond to the same questions as above, this time with a focus on self-assessment. Again, encourage students to distinguish between content and style; sometimes it is only one area that needs improvement.

Knowledge Review

Reserve the standard test or quiz only for the assessment of fact-based knowledge (content). Posing an oral problem or question to a group in the clinical setting is also

an appropriate way to assess knowledge retention. To foster a spirit of educational advocacy around the topic of CEH, the authors advise using quizzes and tests sparingly and to avoid competitive grading.

Visual Aids And Handouts

Teaching Strategies and Tactics—At-A-Glance

- Adults learn best by doing. Involve residents/students as actively and as frequently as possible.
- Use a variety of formats and venues to interject awareness of CEH. Use case studies and group discussions liberally. Use the resident report, nursing report, chart review, bedside rounds, didactic rounds, clinic rounds. Use the cafeteria!
- Don't be intimidated by lack of time. A one-minute description of the properties in lead and their potential effects on children is legitimate and appropriate teaching.
- You don't have to be an expert to be an excellent teacher of pediatric environmental health. A large part of your responsibility is to ask questions, to raise awareness, and to inspire students to pursue answers to questions that arise.
- Foster a spirit of co-investigation among your students. CEH is, after all, an evolving field of inquiry that requires our collective problem-solving skills.
- Be willing to experiment with role-plays, guided group discussions, student-designed case studies, etc. Use imaginative props, pictures, charts, etc.
- Focus on what is most important. Less is more: if you have one critical teaching point to make, don't submerge it in surrounding material. Be very clear about your objective.
- Use real life experiences, stories, and students' case studies to help capture students' attention and make the learning stick.
- Plan your teaching sessions. Attend to the opening and closing with special care: these are your most critical "teachable moments."
- It's okay to use humor, if it is carefully and sensitively woven into a lesson.
- Be passionate about the topic and allow this to show.
- Remember you are modeling a combination of pediatric practitioner roles in your teaching role: clinician, advocate, investigator, and educator.

Resources

The above strategies and tactics come from a variety of resources. A primary resource is the TIPS - Teaching Improvement Project Systems for Health Care Educators, developed by the Center for Learning Resources, College of Allied Health Professions, University of Kentucky.

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