

Putting it into Practice: Pediatric Environmental Health Training Resource

Environmental History Taking

User Guide



Children's
Environmental
Health
Network

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Environmental History Taking

User Guide

Notes on Slides

Slide 1

There is increasing evidence that environmental toxicants affect children's health. The first step in evaluating a child's environment is taking an environmental history. Pediatricians and other pediatric health care providers need to know the most important questions to ask in order to prevent some environmental exposures, detect others and provide advice about abatement, and to promote the healthiest environments for children and families. In this module, we will cover areas to review when taking an environmental history during pediatric visits.

Slides 3, 4, 5

These slides show case examples of situations pediatric health care providers may commonly encounter.

Slide 8

Although we recognize that there is a broader definition of "environment", we will focus on chemical and physical aspects.

Slide 9

We will be concentrating on the US in this module but these next slides put the environment into a global context.

Slide 11

Point 1 – According to the World Health Organization, unsafe water, poor sanitation and hygiene kill an estimated 1.7 million people annually, particularly from diarrheal disease.

2 – Indoor smoke from solid fuels kills an estimated 1.6 million people annually due to respiratory diseases.

3 – Malaria kills over 1.2 million people annually, mostly African children under age 5. Poorly designed irrigation and water systems, inadequate housing, poor waste disposal and water storage, deforestation and loss of biodiversity, all may contribute to the most common vector-borne diseases including malaria, dengue and leishmaniasis.

4 – Urban air pollution generated by vehicles, industries and energy production kills approximately 800,000 people annually.



5 – Unintentional acute poisonings kill 355,000 people each year. In developing countries, where two-thirds of these deaths occur, such poisonings are associated strongly with excessive exposure to, and inappropriate use of, toxic chemicals and pesticides present in occupational and/or domestic environments.

6 – Climate change effects including more extreme weather events, changed patterns of disease and effects on agricultural production are estimated to cause more than 150 000 deaths annually.

Slide 13

Finding out about children's environments is part of the job of pediatricians and other health professionals (from now on referred to as "pediatric health care providers") who treat children.

Slide 15

Parents will ask us whether their child's health condition has something to do with environmental exposures. We have answers for some areas such as asthma, but there are many unanswered questions for other areas, including developmental disabilities such as autism, and for pediatric cancer.

Slide 16

Point 2 – In addition to uncovering adverse exposures, we aim to take a positive approach to environmental health, discussing healthy environments with parents and children.

Slide 18

Pediatricians see mothers, fathers and their newborns in the nursery setting. There are many areas to cover. Parents have just been through a major life change and it may be difficult for them to process information on many topics. Nevertheless, it is important to discuss areas relevant to their newborn's environment before they leave for home. We will discuss details of each in the next slides.

Slide 19

Last point: Eliciting a positive history is the first step in detecting an environmental hazard. Abatement advice may help. For many areas, we are not sure what our abatement advice does – in other words, how many parents or patients will follow our advice? Will meaningful change follow? There is scientific evidence to show that for a couple of areas (smoking and sun protection), clinician advice changes behavior. For other areas, we don't have scientific evidence one way or the other.

In addition, for certain problems, giving advice does not help in the face of other factors such as a landlord unwilling to fix a lead paint or mold problem. It may be necessary to enlist social workers, lawyers and other advocates to solve environmental problems resulting from poor housing.



Slide 20

This list is taken from the AAP Pediatric Environmental Health handbook. We will review several areas briefly. Additional information about some of these areas is available in other modules, and from the resources listed at the end of this module.

Slide 23

Most clinicians will not have time to visit schools in their area. The Healthy Schools Network, an advocacy group, suggests that parents visit the school before the child enters it. HSN says that unions sometimes do this for members but no one does it for kids. Parents can look for certain things, but there are limitations. They will not be able to detect hidden toxic substances such as lead (unless there is chipped paint), polychlorinated biphenyls, CO, mercury spills, asbestos, fiber glass, etc.

Slide 24

Point 1 – Exposure to industrial sites, hazardous waste sites, landfills, and agricultural areas sprayed with pesticides may adversely affect health. Poor communities and communities of color are more likely to face toxic hazards. This is termed “environmental disparity” or “environmental injustice”.

2 – There are other aspects of “community” that may impact health – for example, does the community infrastructure allow for walking to school or work?

3 – Are there parks and other natural areas that people can visit and play in?

Slide 25

Point 1 – Clinicians need to ask about all places where the child spends time – daycare, relatives’ homes and schools.

2 – Lead exposure correlates with the age of the home, particularly if it was constructed before WW II. Lead paint was used until the late 1970’s and 3 million tons remain on walls. Lead may chalk or dust from walls and may also be released during room renovation (often done in preparation for the birth of a baby, or soon thereafter). Water damage may result in mold growth, a particular danger to young infants.

3 – Unintentional CO poisoning is the cause of hundreds of deaths in the US each year.

4 – Children should not be exposed to toxic chemicals to prevent acute poisoning and death, as well as possible sub-acute and chronic poisoning. Chemicals should be stored out of children’s reach

5 – Byproducts of heating systems can result in respiratory symptoms. In addition, certain home heating sources may release CO.



6 – Radon remains a leading cause of lung cancer in this country with 10% of lung cancers attributable to radon.

7 – In urban areas, these include sources of outdoor air pollution such as bus depots; in rural areas, pesticide spraying may take place.

Slide 26

We already are inquiring about exercise as part of our health maintenance visits. We can expand this by asking parents about visits to natural play areas.

Slide 27

Point 1 – Test a child for lead if he/she is under 5 years of age and hasn't been previously tested, or if there is a risk factor for lead poisoning. Federal law states that all children eligible for Medicaid must have a blood lead test at ages 1 and 2. State laws are often similar.

3 – Many states require that all homes have CO detectors.

5 – Radon exposure is the 2nd leading cause of lung cancer (after smoking) and is preventable. Radon exposure is the leading cause among non-smokers. EPA urges testing all homes below the 3rd floor for radon.

Slide 28

Point 3 - see CEHN's "Children and Nature Initiative: Rx for Outdoor Activity" module and user guide

Slide 29

Point 1 - Smoking is still the number one cause of preventable morbidity and mortality in the US.

3 - Prenatal smoking contributes to a higher risk of adverse outcomes, including low birth weight, prematurity, placental abruption and sudden infant death syndrome (SIDS). Asking about smoking in pregnancy is important when you see an infant whose birth weight is lower than expected (as in Case 1). Rates of breastfeeding initiation and continuation also are lower among smoking mothers

6 - Most smokers start by age 18, underscoring that this is a pediatric issue.

Slide 30

"Third-hand smoke" is a relatively new term for a phenomenon we all know about.

Slide 31

Even if parents smoke in another room, the smoke travels. SHS permeates any environment in which tobacco is smoked.

**Slide 32**

Point 4 – In addition to “Back to Sleep”, avoiding SHS exposure is one way to decrease a baby’s risk of dying of SIDS

Slide 33

Point 2 – Smoking-related materials are the leading cause of fire-related deaths, accounting for approximately 250 child deaths each year.

3 – This may be the result of genetic predisposition, role modeling, and easier access to cigarettes and other tobacco products available in the home.

Slide 34

Point 2: Asking about past smoking is especially important in the newborn nursery. Most pregnant women who are smokers stop when they become pregnant, yet most of those new mothers relapse once the baby is born. The nursery is an excellent place to start encouraging mothers not to resume smoking.

Slide 35

Scientific evidence shows that consistent advice to stop smoking, delivered by clinicians, will lead some smokers to quit. The US Public Health Service advises clinicians to assess smoking status during every clinical encounter and to offer brief (1 – 3 minute) advice about stopping. This has proven effective for adults coming to their own providers for health care. Giving brief advice also is recommended for pediatricians seeing parents who smoke. In addition, smokers can call the national Quit Smoking 1-800 number to obtain additional evidence-based counseling and nicotine replacement medication. Several states have their own Quit Smoking services.

Slide 36

If parents are unable or unwilling to stop soon, clinicians may suggest the strategy of “harm reduction”. These parents are urged to smoke outside the home. Parents must assure that their young child is not left alone while they go outside. Parents should not smoke in hallways, as smoke is likely to drift back into their own home or the homes of other if they live in multi-unit housing.

Slide 40

This slide shows some of the uses for BPA, a high-production volume chemical. It may be found in hard plastic food storage containers, certain water bottles, in canned food linings, dental sealants and in some thermal paper products such as the receipts from ATM’s and at gas stations. Until recently, it was found in baby bottles.

**Slide 41**

Last point: For example, Suffolk County in Long Island, NY, was one of the first to ban BPA from baby bottles. In 2012, Suffolk banned BPA from thermal paper receipts.

Slide 46

“1,4,5 and 2 – all the rest are bad for you” – is a good way to remember which plastics to avoid

Slide 47

The number 7 means that the product *may* (but does not necessarily) contain BPA

Slide 48

We mainly are concerned about mercury and PCB exposures from eating fish.

Slide 52

Tuna is not on the “completely avoid” list, but intake should be limited

Slide 54

The American Cancer Society has given these estimates for 2013. Incidence and mortality rates increase every year.

Slide 57

Tanning facilities are inexpensive to use. The National Council on Skin Cancer Prevention estimates that at least 8 million teenage girls use tanning salons on a regular basis.

Slide 58

According to the 2009 Youth Risk Behavior Survey, a nationally representative sample of high school students in grades 9 through 12, 15.6% of all students used an indoor tanning device 1 or more times during the 12 months before the survey.

Point 3: Use increases with age – in a survey of white girls asking about use of tanning beds in the past year, use doubles then doubles again with many tanners using tanning booths repeatedly.

Slide 59

1 – Exposed body skin area in tanning units is assumed to be 2 – 10 times larger than in sunlight. In outdoor activities, about 15 – 50% of the body is uncovered but in indoor activities up to 95 – 100% is uncovered.

2 - Acute effects - Erythema or burning effects were reported by 18% to 55% of users of indoor tanning equipment in Europe and North America according to the IARC. Other acute effects include skin dryness, pruritus, nausea, photodrug reactions, disease exacerbation (e.g, systemic lupus erythematosus).



3 - Long-term health effects include skin aging, effects on the eye (e.g. cataract formation), and carcinogenesis. In 2006, the International Agency for Research on Cancer (a part of the WHO) analyzed 19 studies that examined the association of tanning bed use with skin cancer development. They concluded that tanning bed use was associated with an increased risk of developing melanoma. Tanning at an early age increased risk. We now have 3 more large studies to support these associations.

Slide 61

Several measures are advised for sun protection including (but not limited to) sunscreen use. We encourage children and families to be outdoors but to do so safely. We also discourage deliberate tanning and burning. The United States Preventive Services Task Force stated that evidence supports the effectiveness of sun protection counseling of fair-skinned individuals ages 10 – 24.

Slide 62

Point 1: These are also called “para-occupational” exposures

Slide 66

It is not feasible to discuss all environmental issues on most visits. This guide offers suggestions about when to introduce environmental health issues. For example, this guide is useful when discussing environmental issues in the nursery, as in Case 1

Slide 68

Case 2 in the beginning of this presentation asked what environmental etiologies to consider with headache.

Slide 69

Asthma is commonly triggered by environmental exposures so it is important to review these factors when managing patients with asthma. See also CEHN’s “Environmental Management of Pediatric Asthma: Guidelines for Health Care Providers” module and user guide.

Slide 70

Here are some concerns that have recently been in the news and on parents’ minds – as illustrated in Case 3. Generally pediatricians will need assistance to answer questions.

Slide 71

This “message map” from Galvez et al provides a road map for answering questions. The message provides a way for pediatric health care providers to organize information so it can be effectively conveyed. There are 3 key messages: Define the Exposure – What are Potential Health Effects – Action Items to Prevent Exposure. Each key message has 3 supporting facts.

Slide 72

This message map uses plasticizers as an example. For those who would like to discuss plasticizers in a little more detail, slides 51-56 in the “Endocrine Disrupting Chemicals and



Children's Health: Phthalates & Bisphenol A" module provide a more user-friendly example of how to build a message map around this topic.

Slide 75

A useful tool for obtaining a history is available from the National Environmental Education Foundation. It is available in English and Spanish. The NEEF website contains additional tools including the Pediatric Environmental Primer.

Slide 80

There are 10 PEHSUs in the US and also in Mexico, Canada, Argentina, Chile, Spain

KEY RESOURCE FOR FURTHER READING

American Academy of Pediatrics. *Pediatric Environmental Health*, 3rd Edition. Etzel RA, ed. Elk Grove Village, IL, 2012.

Select Additional Resources

Environmental Health

World Health Organization. Life Stages. M <http://www.euro.who.int/en/what-we-do/health-topics/Life-stages>. Accessed January 3, 2013.

World Health Organization. Health Topics. Environmental Health. http://www.who.int/topics/environmental_health/en/. Accessed January 4, 2013.

World Health Organization. The Health and Environment Linkages Initiative. Priority environment and health risks. <http://www.who.int/heli/risks/en/> Accessed January 4, 2013.

Indoor Environments

United States Environmental Protection Agency. Why is radon the public health risk that it is? <http://www.epa.gov/radon/aboutus.html>. Accessed January 4, 2013.

Tobacco and Secondhand Smoke

American Academy of Pediatrics Committee on Environmental Health Committee on Native American Child Health, and Committee on Adolescence. Policy Statement. Tobacco use – a pediatric disease. *Pediatrics* 2009;124:1474–1487.

Best D, American Academy of Pediatrics Committee on Environmental Health Committee on Native American Child Health, and Committee on Adolescence. Technical Report – Prenatal and secondhand tobacco smoke exposure. *Pediatrics* 2009;124: e1017–e104.



Centers for Disease Control and Prevention. Adult Cigarette Smoking in the United States: Current Estimate.
http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking. Accessed January 5, 2013.

Fiore MC, Jaen CR, Baker TB et al. Treating tobacco use and dependence: 2008 update. Rockville, MD: US Dept of Health and Human Services; May 2008.

Ultraviolet Radiation

American Cancer Society. What are the Key Statistics about Melanoma Skin Cancer?
<http://www.cancer.org/cancer/skincancer-melanoma/detailedguide/melanoma-skin-cancer-key-statistics>. Accessed June 3, 2013.

Balk SJ and the AAP Committee on Environmental Health and Section on Dermatology. Technical Report: Ultraviolet Radiation: A Hazard to Children and Adolescents. *Pediatrics* 2011; 127:e791 – 817.

Balk SJ (Lead Author) and the AAP Committee on Environmental Health and Section on Dermatology. Policy Statement: Ultraviolet Radiation: A Hazard to Children and Adolescents. *Pediatrics* 2011; 127: 588 – 597.

Geller AC, Colditz G, Oliveria S, et al. Use of sunscreen, sunburning rates, and tanning bed use among more than 10 000 US children and adolescents. *Pediatrics* 2002;109(6): 1009–1014.

Guy GP, Tai E, Richardson LC. Use of indoor tanning devices by high school students in the United States, 2009. *Prev Chronic Dis* 2011;8(5):A116.
http://www.cdc.gov/pcd/issues/2011/sep/10_0261.htm. Accessed January 5, 2013.

Hoerster KD, Garrow RL, Mayer JA, Clapp EJ, Weeks JR, Woodruff SI, Sallis JF, Slymen DJ, Patel MR, Sybert SA. [Density of indoor tanning facilities in 116 large U.S. cities](#). *Am J Prev Med* 2009; 36:243-246.

Moyer VA on behalf of the U.S. Preventive Services Task Force. Behavioral Counseling to Prevent Skin Cancer: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med* 2012;157:59-65.

Food contaminants

United States Food and Drug Administration. What You Need to Know About Mercury in Fish and Shellfish.
<http://www.fda.gov/Food/FoodbornellnessContaminants/Metals/ucm351781.htm> Accessed June 3, 2013.



Environmental History/Message Map

Galvez MP, Forman JA, Graber NM, Sheffield PE, Balk SJ. Hot Topics in Pediatric Environmental Health. *Contemporary Pediatrics* 2009; 26: 34 – 47.

Note: This User Guide is intended to accompany the PowerPoint module of the same name. It elaborates on some studies which may require more in-depth information than what is provided on the slides. However, the contents of all slides in the module are equally important to present.

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