

## Public Health, the Environment and the Primary Care Physician

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## Overview and Goals

- Describe the physician role in issues of environmental concern
- Identify “toolbox” resources for the primary care physician
- Discuss practical use of the Hill Criteria and risk communication skills
- Use common environmental issues to demonstrate the process

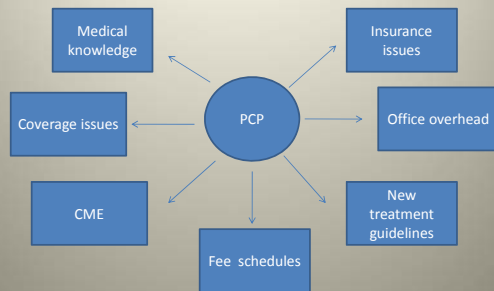
## Medical Education: the challenge

- How do you build public health and the environment into medical training?

## Training

- Lessons in history
- “as a minimum, all primary care physicians should be able to *identify possible occupationally and environmentally induced conditions and make the appropriate referrals for followup*” (Institute of Medicine, 1988).
- How much progress have we made?

## The primary care centered world



## Let's review a practical example:

A 9 yr. old girl is brought to the office by her parents. They are concerned that she has had two sinus infections in the last year and recently has had several episodes of epistaxis. The medical records indicate that she has been healthy and has never had any serious illnesses. She has no known medication or other allergies.

## Case 1: continued

- The patient's parents speculate that a pile of gravel dust that is being stored behind their home by a new industry that has moved into the community may be contributing to her problems. The pile of dust is thought to be limestone and is located about 180 feet behind their property. It is not covered and does blow around. Their daughter plays in the back yard.



### How about a more controversial case?

- A group of workers in a government building begin to notice symptoms of eye irritation, sore throat, cough and hoarseness.
- After several months of complaints they convince the building superintendent to do a thorough review of the building integrity.
- The inspection discloses an area of water damage from a chronic leak in the roof drainage system. Wall board is deteriorated and overgrown with mold.

### Case 2:

- One of the workers visits you as a primary care physician and explains the situation.
- The patient is 31 years old, married, and healthy. She complains of nose and throat issues which clear up periodically but seem to recur.
- The patient requests your opinion on the safety of working in that environment.
- The government is currently renovating the building to correct the problem.



**WHAT TOOLS AND RESOURCES?**

## Important Resources

Cochrane Database

Website: <http://www.cochrane.org/>

National Guideline Clearinghouse

Website: <http://www.guideline.gov/>

ATSDR

Website: <http://www.atsdr.cdc.gov/>

## Important Resources

NIEHS

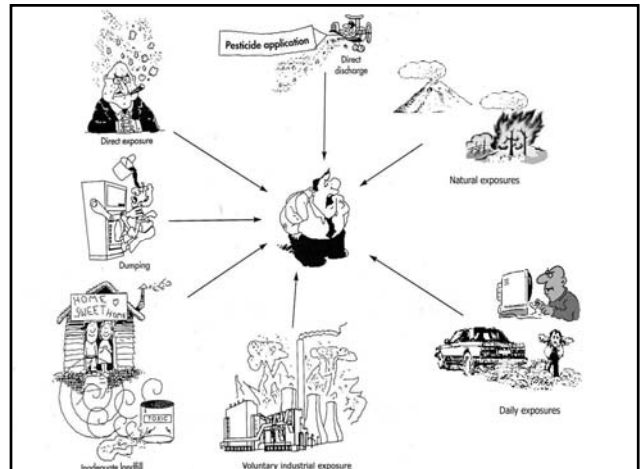
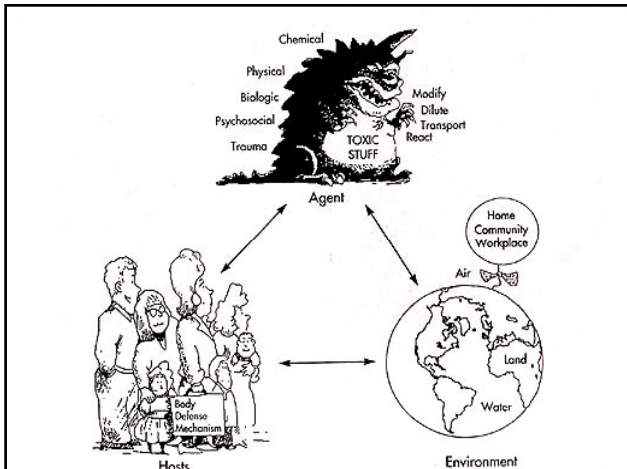
Website: <http://www.niehs.nih.gov/>

ACOEM

Website: <http://www.acoem.org/>

OEM

Website: <http://oem.bmj.com/>



## The Real Concern

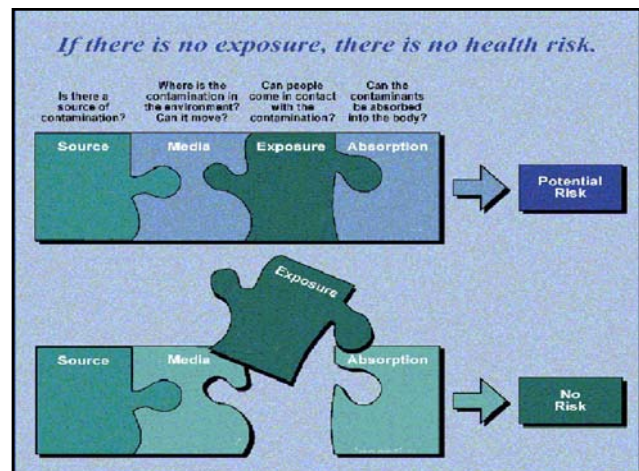
- “Is there something in my environment that is endangering my life or the life of my family?”
- “Is there something in my environment that can cause cancer?”

## Exposure situations: some practical tips for the physician

- Get complete detail and documentation of the facts, timeframes, medical evaluation. (this takes time!)
- Do your own thorough interview and exam.
- Avoid the urge to jump to conclusions!
- Confirm findings on tests, x-rays, and other types of testing.
- Make sure that the patient understands your concern and plan of action.

## I look for:

- The best right diagnosis, as close as I can get but not more so (to paraphrase Albert Einstein).
- Detailed exposure information with timeframes.
- Material ID (MSDS) in detail.
- Sampling or confirmatory testing.
- Now I’m ready to research the topic.



## Causation Requires:

- The alleged factor *could have caused* or contributed to worsening of the impairment.
- The alleged factor *did cause* or contribute to worsening of the impairment.

» 4<sup>th</sup> Edition AMA Guides

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## Hill Criteria of Causation

- Epidemiological tool of modern medicine
- Defines the minimal conditions needed to establish a causal relationship between two medical or scientific items

## Hill Criteria

- Temporal Relationship
- Strength
- Dose-Response Relationship
- Consistency
- Plausibility
- Consideration of Alternate Explanations
- Experiment
- Coherence
- Specificity

Let's look at our cases with an awareness of Hill Criteria:



## Risk and Risk Communication

- Risk communication is not formally part of medical curricula (med school or residency).
- Yet, we regularly talk about vaccine safety, surgical risk for certain procedures, survival rates for cancer, cardiac risk profiles and may other subjects.
- A good resource is: *Communicating Risk in a Changing World*, OEM Press, Beverly Farms, MA.

## Environment and Health

- NEJM, July 2000
- 44,788 pairs of twins
- "Inherited genetic factors make minor contribution"
- "Environment has the principle role in causing cancer"

Lichtinsein et. al. NEJM July 13, 2000

## Lead and Mortality

- “Individuals with blood lead levels of 20-29 ug/dl in 1976-1980 (15% of the U.S. population) experienced significantly increased all-cause, circulatory, and cardiovascular mortality from 1976 to 1992.”

Lustberg and Silbergeld, Arch Int Med. Nov. 25, 2002



### References: Becker Presentation

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#### Risk:

Communicating Risk in a Changing World. Tim L. Tinker, Maria Pavlova, Audrey Gotsch, Elaine Bratic Arkin. OEM Press, 1998.

Numeracy and Medicine: Key Family Physician Attitudes about Communicating Probability with Patients. Robert Gramling et. al., JABFM, 2004.

Communication about risk: diversity among primary care professionals, Edwards, et. al., Family Practice, 1998.