



Primary Care & Population Health **GRAND ROUNDS**

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Today's Presenter



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Disclosures

The presenter has no actual or potential conflict of interest in relation to this presentation.

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Occupational Medicine in Primary Care: Prevention in Action

NYC Health + Hospitals

Primary Care and Population Health Grand Rounds

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Learning Objectives

After participating in this session, you should be able to:

1. List and briefly describe a selected group of **Sentinel Occupational Health Conditions** frequently seen in primary care practice.
2. Explain and apply clinically relevant concepts of **Occupational Toxicology** as related to recognition, diagnosis and treatment of illustrative clinical cases.
3. Take and interpret a brief **Screening Occupational History**.
4. Contact the Bellevue/NYU Occupational & Environmental Medicine Clinic to discuss a case.

Occupational Medicine in Primary Care: Prevention in Action

- Bellevue/NYU Occupational & Environmental Medicine Clinic (BNOEMC) mission
- Two central challenges of Preventive Medicine
- Aims of clinical collaboration between primary care and the BNOEMC
- Beyond productivity and cost effectiveness

47 year old man with daily bifrontal headaches

- Seen in medical clinic with multiple nonspecific symptoms increasing over past 5 weeks
 - » Headaches similar to those he has had occasionally in past
 - » Joint pains: diffuse
 - » Fatigue: moderate to severe
 - » Memory difficulty: short term, recent onset
 - » Loss of libido
- Physical exam BP 142/88 otherwise normal, including other VS, HEENT, neuro, abdomen, joints and skin

Screening Occupational History and Hazardous Workplace Exposures

- Presenting symptoms and signs not specific for any single unifying diagnosis
- Current Job Title: Highway worker
- Job tasks included:
 - » Cuts steel highway beams on bridges with oxyacetylene torch.
 - » Cuts rivets on steel beams using mechanical cutter.
 - » Working for new company for past 6 weeks, now works inside canvas tent on bridge structure.
- Pt reported some past exposures to lead paint at work

Laboratory Test Results

- PCP sent venous blood lead level (BLL) and other blood and urine tests
 - » CBC, diff, smear, BUN/Cre, U/A, lytes, uric acid, LFTs, Lyme disease titer, RF, ANA all normal.
 - » BLL 75 mcg/dl (elevated = >5 mcg/dl)
- PCP told pt to stop work immediately and referred him to BNOEMC

Further Occupational History

- Similar jobs for many years, but always in open air.
- Steel beams and bridge structures painted with lead based paint.
- Torch painting produces a “blue haze” with unpleasant odor, especially strong inside the canvas tent.
- Patient does not use respirator in current job, but in previous jobs used battery powered respirator outdoors.
- BLLs drawn at previous job ranged from 25 - 47 mcg/dl but never removed from work for lead toxicity.
- Denied long list of other potential sources of lead.

Environmental Sources of Lead

- Potential occupational sources of exposure include
 - » Bridge maintenance and painting
 - » Building demolition & renovation
 - » Lead-acid battery manufacturing
 - » Lead smelters
 - » Scrap metal recovery
 - » Automobile radiator repair
 - » Firing ranges, bullet reloading
 - » Many others

Environmental Sources of Lead

- Potential non-occupational sources of lead exposure
 - » Home remodeling (banned from paint 1977)
 - » Complementary and alternative medicines
 - Herbal remedies
 - Ayurvedic medicines,
 - » Tap water contaminated by pipe solder
 - » Food storage / cooking in inadequately fired pottery
 - » Retained bullets after GSW if located in stomach or in a joint capsule, otherwise lead not absorbed.
 - » Ingestion of lead paint dust (children)

Lead Paint on Bridge



Diagnosis

- Acute lead toxicity, probably causing symptoms of headache, arthralgias, fatigue, loss of libido, memory difficulty.
- Possible chronic lead toxicity with HTN.

Toxicology of Lead in Adults

- Typical symptoms of adult lead toxicity
 - » Abdominal pain (most common), nausea, constipation.
 - » Fatigue, irritability, headache, insomnia, memory difficulty, arthralgias, myalgias, loss of libido, other nonspecific sx.
- Wide variety of clinical effects
 - » Anemia, hypertension, distal motor neuropathies, gout with arthritis, chronic nephropathy, encephalopathy, altered spermatogenesis, menstrual disturbances, fetal toxicity.

Toxicology of Lead in Adults

- Absorption by inhalation of fume or dust, or ingestion.
- Storage and kinetics: Multiple compartment model.
 - » Blood (erythrocytes), soft tissues (brain, kidney, liver, muscle), half-life 1-2 months.
 - » Bone (most of body burden), half-life years to decades.
- Excretion 70% renal, remainder in bile/fecal, skin, sweat, hair, nails, breast milk
- Bone lead mobilized by increased bone turnover
 - » Hyperthyroidism, fracture, immobilization osteoporosis, pregnancy, lactation
- US mean BLL is 1 mcg/dl, and > 5 mcg/dl is elevated

Diagnostic Testing for Suspected Lead Toxicity

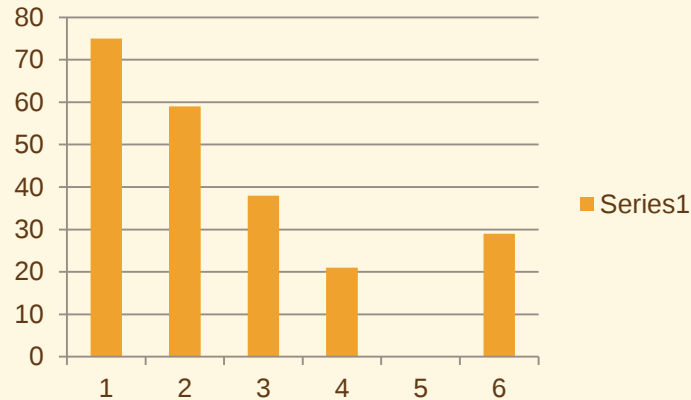
- BLL venous, not capillary
- BUN, Cre, CBC with smear, U/A
- If BLL > 25, consider free erythrocyte protoporphyrin (FEP) or zinc protoporphyrin (ZPP)
 - » 4 month half life can inform about recent past lead exposure after BLL has declined
- Recommendation against urine or hair lead, strong recommendation against provocative chelation testing
- If ascertaining distant past exposure is important, K X-ray fluorescence can measure lead in bone

Medical and Preventive Treatment

- Immediate removal from exposure to lead is the most important part of treatment.
- Chelation not critical in this case, recommended for symptomatic patients with BLL >50 and all patients with BLL >80 if no contraindications.
- I treated him with the usual oral dose of dimercaptosuccinic acid (DMSA) 10mg/kg 3x daily for 5 d, then twice daily for 14 d.
- Some recommend max 500 mg twice daily for 14 d.
- Chelation for BLL <50 is generally not recommended.
- Identification and elimination of source can be challenging.
- Recommend discuss with occupational medicine all adult patients with BLL >20, or >10 if no clear source identified.

Clinical Course

- BLL of 75 mcg/dl dropped to 59 mcg/dl in 1 week after removal from exposure, before chelation started.
- Chelation started, time since exposure ended and BLLs were, respectively
 - » 2 wks 38 mcg/dl (on chelation)
 - » 3 wks 21 mcg/dl (still on chelation)
 - » 5 wks 29 mcg/dl (post-chelation)



- No other source of lead exposure was identified on careful questioning.
- Headaches, arthralgias, loss of libido, memory difficulty and fatigue all resolved within 1 month of removal from exposure, and did not return at 4 months.
- HTN mild and labile at 4 months.

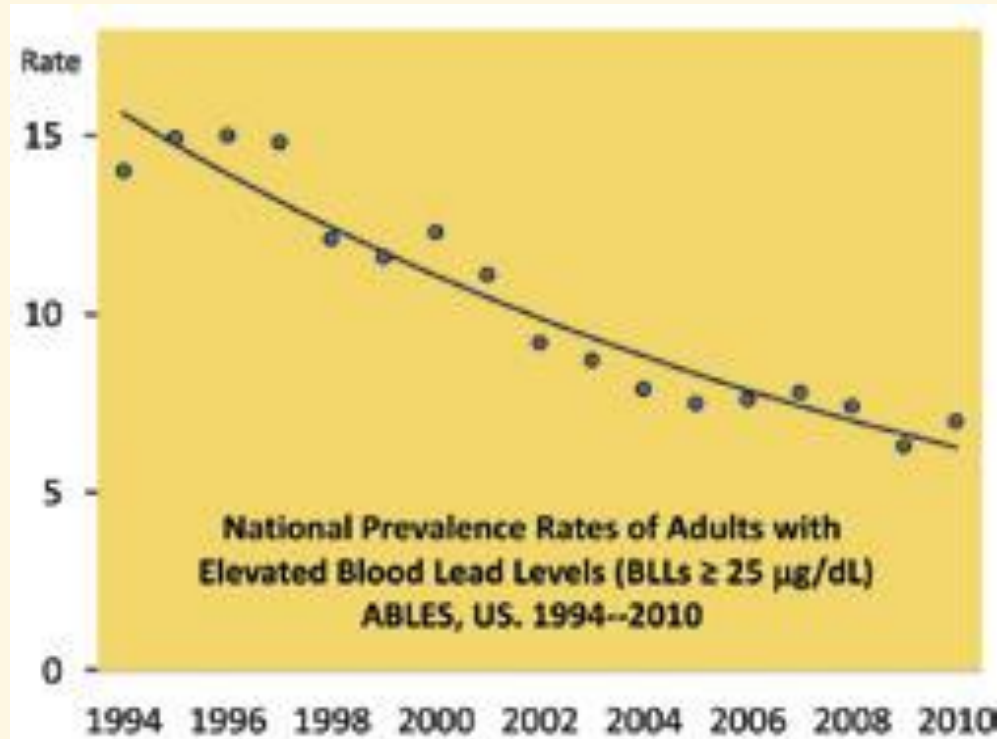
Hierarchy of Preventive Interventions

- **Substitution**: Epoxy paint now used on bridges, but many coats of old lead paint remain on old bridges.
- **Engineering Controls**: Ventilation of workspaces, filtering contaminated air before release into environment.
- **Personal Protective Equipment**: Respirator, gloves, protective clothing.
- **Safer work practices**: Shower & change clothes before leaving, wash hands or put on gloves before eating or smoking.

Public Health & Prevention

- Mandated removal with pay of all workers with levels of 50 mcg/dl or higher, until blood lead drops below 40 mcg/dl on 2 occasions, at least 2 weeks apart.
- Physician can remove worker with pay at 40 mcg/dl if there is evidence of adverse health effect.
- Recent scientific data suggest these standards should be lower to be fully protective.
- Industrial hygiene monitoring of air levels of lead in the workplace is mandated by OSHA for some workplaces.
 - » Current OSHA standard requires every 6 month medical monitoring of all lead-exposed workers if air lead $> 30 \text{ mcg/m}^3$ for over 30 d per year.
 - » Monitoring includes PE, BLL, CBC, smear, BUN, Cre, U/A, ZPP
- If BLL $> 10 \text{ mcg/dl}$, should be repeated and detailed history should be taken to identify possible sources of exposure.

Prevalence (per 100,000 employed) of Blood Lead Level ≥ 25 mcg/dl, US Adults, 1994-2010



Occupational Medicine: Prevention in Action

- Recognition
- Diagnosis
- Treatment
- Prevention
- Public Health Management of Work-Related Diseases

Work-Related Disease or Injury

- OSHA 1904.5 defines work-relatedness, “You must consider an injury or illness to be work-related if an event or exposure in the work environment either caused or contributed to the resulting condition or significantly aggravated a pre-existing injury or illness.”
- Institute of Medicine: "At a minimum, all primary care physicians should be able to identify possible occupationally or environmentally induced conditions and make the appropriate referrals for follow-up”

Role of Occupational Medicine Clinic

- Make/confirm diagnosis of the medical condition if possible and medical treatment.
- Determine whether condition is work-related or not, may require multiple visits and include diagnostic trial of removal from exposure.
- Identify preventable work-related etiologic factors, may include Industrial Hygiene workplace evaluation.
- Literature searches, specialized diagnostic tests as needed.
- Counseling/education about work-related disease & disability.
- Engineer a safe return to work if possible, may include helping negotiate preventive interventions in the workplace.
- If appropriate, file medical report and testify to establish Workers' Compensation for related medical costs, lost wages.
- Report case (eg to NYS Department of Health).

Why is determining work-relatedness in individual patients important?

- Prevention
 - » Identify and eliminate the workplace environmental agent(s) that cause
 - Worsening of work-related disease or injury or related disability at work
 - Occurrence of work-related disease in similarly exposed co-workers
 - » Develop and advocate for evidence-based plan for safe return to work
 - » Contribute to improving quality of life of working patients
- Workers' Compensation, if the disease or injury is judged to be work-related
 - » Medical coverage for the occupational disease or injury
 - » Wage replacement for time lost from work as a result of that occupational disease or injury may have a profound effect:
 - Enable prevention of further exposure and progression of injury, disease or disability by avoiding forced re-exposure to hazards
 - Reduce the likelihood of poverty for the patient and his or her family, prevent need for public assistance, prevent homelessness.
 - If the patient dies from a work-related disease or injury, his or her family is likely entitled to death benefits from workers' compensation.

Three Clinical Tools for Recognizing Work-related Diseases

- Sentinel Occupational Health Conditions
- Occupational Toxicology
- Screening Occupational History

Sentinel Occupational Health Condition

- Disease or pathophysiologic condition with substantial possibility of work-related etiology.
 - » In a given patient, may be work-related etiology or not.
 - » Can be caused by other factors as well.
 - » Warrants exploration of possible work-related factors.

Examples of Common Sentinel Occupational Health Conditions

- Pulmonary Fibrosis
- Asthma
- Lung Cancer
- Mesothelioma
- Myelogenous Leukemias
- Sensorineural hearing loss
- Carpal Tunnel Syndrome
- Contact Dermatitis

Sentinel Occupational Health

Condition: Lung Cancer

- Most common occupational cancer.
- Estimated 5% - 20% of all lung cancers are occupational in origin.
- 19 listed known occupational lung carcinogens including:
 - » Respirable size silica, asbestos, Environmental Tobacco Smoke, arsenic, nickel, cadmium, beryllium, chromium VI, diesel exhaust, soot, coal smoke, radon-222 and decay products, x- and gamma-radiation
- Long latency period (15 - 40 years)
- Best references to detailed reviews of carcinogenicity studies:
 - » International Agency for Research on Cancer (IARC)
 - » NIH National Toxicology Program Report on Carcinogens (NTP)

Occupational Toxicology

- Forms of toxins
- Routes of entry & target organs
- Characterizing exposure
- Latency period
- Dose Response
- Industrial Hygiene & Biological Monitoring
- Multifactorial etiology

Forms of Toxins

- Toxins are substances harmful to biologic systems.
- Different physical forms
 - » Gas or vapor (molecules).
 - » Particulate (dust, mist, fibers or fume).
 - » Liquid.

How do we know if a particular substance is toxic?

- Toxicology: Animal & *in vitro* studies
 - » Dose response, pathology, kinetics, mechanisms
 - » Hard to extrapolate to humans & lower dose ranges
 - » Cell culture and other mechanistic studies not requiring sacrifice of laboratory animals are being developed
- Epidemiology: Human studies
 - » Exposure / Disease associations, magnitude of risk, sometimes sufficient for prevention.
 - » Must infer causality or no effect carefully; emerging epidemiologic methods for causal inference will require better and more complete datasets.
 - » Slow as it requires humans to get sick before being counted and analyzed, sometimes with long latency periods.
 - » Clinical & Intervention studies may provide better understanding of causality, mechanism, prevention.

Routes of Entry & Common Target Organs

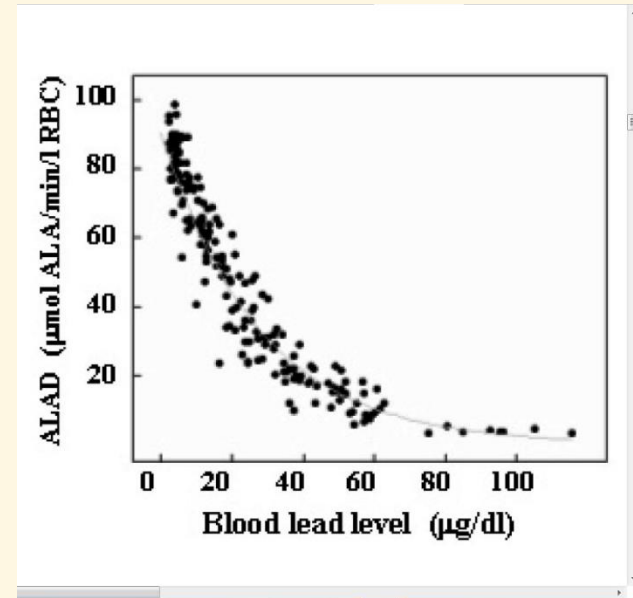
- Routes of entry
 - » Inhalation: Most common, usually most efficient.
 - » Skin absorption: Solvents which dissolve lipids most efficient, often overlooked.
 - » Ingestion: Absorption, leading to systemic toxicity, can cause direct damage to GI tract.
- Common target organs
 - » Exposed surfaces: Lung, Skin, Mucous membranes
 - » Organs of excretion and metabolism: Liver, kidney
 - » Organs of cell replication: Reproductive & Hematopoietic systems
 - » Other vital systems: Nervous system, Cardiovascular system

Characterizing Exposure

- Qualitative Measures
 - » Chemical Identity & physical form of toxicant
 - Labels, Call mfr, SDS, Call (212)POISONS
 - » Associated symptoms (eg, burning eyes for respiratory irritants)
 - » Visual inspection of workplace
- Quantitative Measures
 - » Intensity (eg, air concentration)
 - » Duration
 - » Frequency
 - » Timing of exposure

Aminolevulinic Acid Dehydratase (ALAD) activity in RBCs, adult workers

- Lead inhibits multiple enzymes in the heme synthesis process.
- Example of dose response



Latency Period

- **Definition:**

- » Period between onset of exposure and appearance of disease.
- » Ranges from minutes to years: different for different diseases.

- **Clinical importance:**

- » Determines how long ago the relevant exposure would have to have occurred.
- » Helps clinician to focus exposure questioning in correct time period.

Industrial Hygiene & Biological Monitoring

- Exposure assessment using Safety Data Sheets and/or direct inspection or measurement
- Exposure control using substitution, engineering controls, personal protective equipment or administrative controls.
- Performed by Industrial Hygienist (IH or CIH)
- Exposure assessment techniques available for wide variety of chemicals, dusts, physical agents.
- Gaining access to the workplace to measure exposures is often the most difficult part.
- Biological Monitoring can document exposure to and quantify internal dose & biologic effect of certain toxicants even without workplace access.
- Biological monitoring techniques only available for very limited number of toxicants, eg, Blood lead level.

Multifactorial Etiology

- Same disease may be caused by workplace exposures, other environmental exposures, genetic & other susceptibility factors, or combinations.
 - » eg, asthma, lung cancer, hepatitis.
 - » Causes can combine (contribute or interact), or be mutually exclusive
- Sometimes, occupational etiology clinically distinguishable only by History.
 - » Lung cancer from asbestos, smoking, or both.
- Prevention often possible by controlling occupational exposure even if other contributing causes exist.
- Multifactorial etiology does not disprove occupational cause unless the causes are mutually exclusive (do not combine)
 - » Eg, smokers can still get occupational lung cancer from asbestos or from smoking and asbestos combined.

Why do some people get a disease and others don't?

- Genetic and/or acquired differences in susceptibility
- Environmental factors
 - » Infectious pathogens: bacteria, viruses, parasites
 - » Tobacco smoke, air pollution
 - » Dietary factors
 - » Toxic chemicals
 - » Allergens
 - » Sedentary lifestyle
 - » Ionizing radiation
 - » Other hazards
- Aging
- “Chance”

Why do some people get a disease and others don't?

- If 80% of cases of a disease are believed to be caused by genetic factors, then the other 20% must be environmental, aging, etc, right?

Gene-Environment Interaction

- Some people are more susceptible to a disease than others
 - » Susceptibility to a disease often involves genetic factors
- Most diseases also require environmental agent(s)
- The environmental factors interact with the genetic and other susceptibility factors, both necessary to cause the disease
- When G-E interaction, the “genetic” fraction and the “environmental” fraction can add up to well over 100%.
- Example Phenylketonuria
 - » Genetic fraction: near 100% phenylalanine hydroxylase (PAH) deficiency
 - » Environmental fraction: 100% with dietary phenylalanine exposure
 - » Sum near 200% because both genetic and environmental factors are needed to produce the disease, ie, G-E interaction
 - » These are multiple interacting causes, not mutually exclusive
- Environmental factors can interact with each other as well as with genetic factors

Screening Occupational History

- 1) Sentinel Condition?
- 2) Occupation?
- 3) Hazardous Exposure?
 - » Chemical
 - » Biomechanical
 - » Physical
 - » Biological

Screening Occupational History

When to take:

- You recognize a Sentinel Occupational Health Condition OR
- If etiology of medical problem is not clear OR
- If patient is concerned about possibly hazardous exposure or work-relatedness

Screening Occupational History: Sentinel Condition?

Is the patient's medical diagnosis one of the Sentinel Occupational Health Conditions?

- » Pulmonary Fibrosis
- » Asthma
- » Lung Cancer
- » Mesothelioma
- » Myelogenous Leukemias
- » Sensorineural hearing loss
- » Carpal Tunnel Syndrome
- » Contact dermatitis

Screening Occupational History: Occupation?

What kind of work does (did) the patient do?

- Job title during relevant time period? (consider appropriate latency period)
- Specific job tasks?
- How long?
- If long latency, ask about jobs during relevant period.

Screening Occupational **H**istory: **H**azardous Exposure?

Does the patient work with toxic chemicals or in other hazardous conditions?

- **Chemical:** Toxic gases, particulates, liquids.
 - » Dusts, solvents, metals, odors.
- **Biomechanical:** Vibration, forceful repetitive motions, loud noise.
- **Physical:** Heat, ionizing radiation.
- **Biological:** Infectious agents, airborne allergens.

33 year old woman with recurrent episodes of cough

- Cough began age 30, worsened over next 6 months.
- Episodes of chest tightness, SOB, nasal congestion.
- Asthma diagnosed by PCP at age 31; contact dermatitis age 32; allergic rhinitis since age 21.
- Normal Pulmonary Function Tests and Chest Xray but symptoms improved with ICS/LABA and albuterol.
- Asthma Severity: Moderate Persistent
 - » Asthmatic attacks nearly every day, often nocturnal.
 - » Requires ICS/LABA.
 - » Bronchodilator for symptom relief several times a day.

Screening Occupational History

Sentinel Occupational Health Condition?

Adult onset of asthma

Occupation?

Dental Assistant age 17-19, and age 25-present.

Hazardous Exposures?

» Chemical

- Methyl Methacrylate
- Glutaraldehyde disinfectant

» Biological/Allergenic

- Powdered latex gloves

Work-related Time Pattern of Asthma Symptoms

- Onset of asthmatic symptoms after starting current job.
- Temporal pattern of asthmatic symptoms:
 - » Begin afternoons at work, or evenings after work, on most workdays.
 - » Continue at night, occasionally awaken patient.
 - » Better Saturdays, gone Sundays, return Mondays or Tuesdays.
 - » Symptoms resolved second day of 1 week vacation, recurred first day back at work.
 - » Asthmatic symptoms generally preceded by sneezing and rhinitis on mornings of workdays.

Work-Related Asthma

- Occupational Asthma
 - » New onset asthma usually caused by allergic sensitization to specific agents (Sensitizer Induced Occupational Asthma).
 - » Can be caused by single high level exposure to strong respiratory irritant (Reactive Airways Dysfunction Syndrome)
 - » 5% -15% of adult asthma
- Work-Exacerbated Asthma
 - » Pre-existing asthma made worse by environmental exposures in the workplace.
 - » Respiratory irritants.
 - » 15% -50% of adult asthma

Asthma Triggers

- Sometimes no clear asthma symptom trigger.
- Possible symptom triggers at work identified by patient:
 - » Glutaraldehyde used for disinfection, 1 - 2 days / week
 - » Molding crowns with Methyl Methacrylate, occasionally.
- Symptom triggers at home:
 - » Household cleaning chemicals including bleach, scouring powder (she avoids these now).
 - » Swimming in chlorinated water.

Physical Examination

- In no respiratory distress.
- Cardiac normal, lungs clear.
- No nasal polyps, conjunctivitis.
- PEF 480, 460, 480, good effort.
- Contact dermatitis of both hands.

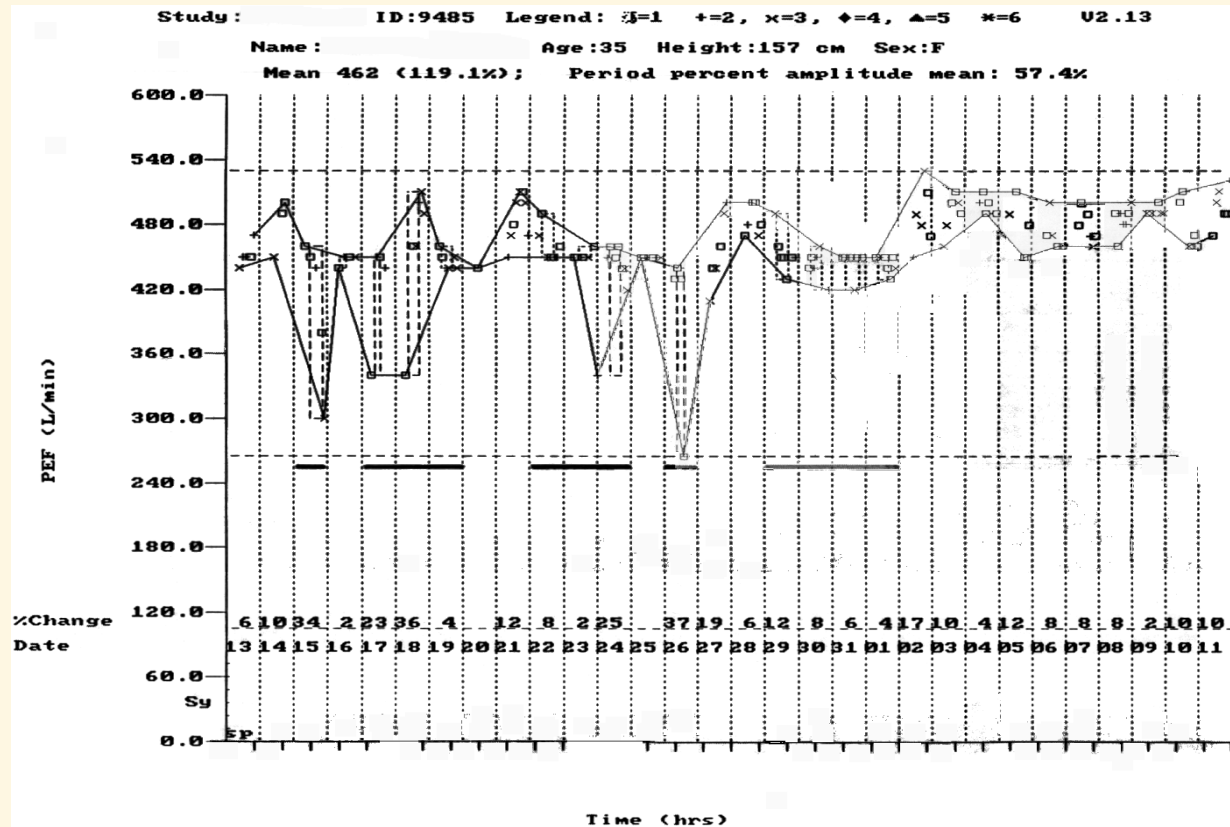
Allergic Contact Dermatitis of Hand



Diagnostic Evaluation

- Prior spirometries, office spirometry, CXR WNL.
- Friday post-work PFT while symptomatic showed obstruction reversible with bronchodilator.
 - » Wheezing on chest examination.
 - » 43% increase in FEV_1 after inhaled albuterol.
- 2 hourly PEFr diary completed for 2 weeks at work, followed by 2 weeks vacation.
- Patient recorded 3 PEFr measurements at each time, workday or not, sx, albuterol use, exposures.

Serial Peak Flow Asthma Diary



Immunologic Testing

- Hypotheses:

- » Asthma related to glutaraldehyde, methyl methacrylate or latex.

- Immunoassay results:

- » Markedly positive Class VI for latex

- » Scratch testing negative for methyl methacrylate.

- » No immunologic test available for glutaraldehyde.

Diagnosis

- Sensitizer-induced Occupational Asthma.
- Due to inhalation at work of aerosolized particles containing latex allergen.
- Sensitization to Methyl Methacrylate much less likely.
- Possible aggravation as well, due to respiratory irritant effects of glutaraldehyde.
- Occupational allergic rhinitis, also due to latex.
- Occupational contact dermatitis to latex.

Treatment

- Medical removal from work.
- Inhaled corticosteroids tapered and d/c'ed once symptoms resolved.
- Began Vocational Rehabilitation (job retraining) for clerical work.
- Avoidance of skin or inhalation exposure to latex at work and outside work.
- Avoidance of certain fruits which cross react with latex (pear, peach, banana, avocado, kiwi, papaya).

Course of Disease

- Atopic hand dermatitis resolved within 1 month.
- Asthmatic symptoms completely resolved within 1 day of termination of exposure to latex.
 - » No recurrence of asthma symptoms in 6 months away from work.
 - » Negotiated with employer a low latex allergen environment:
 - Switch to non-powdered latex gloves for all coworkers
 - Careful wet mopping of facility to remove latex-contaminated dust
 - Non-latex gloves for patient
- Patient returned to work after 6 months off and continued to have no asthma symptoms, off all meds, for 3 years.

Sensitizer Induced Occupational Asthma

- Early diagnosis and treatment can be critically important.
- Treatment must include cessation or drastic reduction of exposure to sensitizer.
- Immunologic testing only available for very few sensitizers.
- Examples of categories of the several hundred known sensitizing agents reported to cause occupational asthma (see, eg, Rom Textbook of Environmental & Occupational Medicine):
 - » Many organic dusts and proteins
 - Animal dander, sawdusts, aerosolized proteins from shellfish, birds, insects, latex, baking flour.
 - » Chemicals
 - Isocyanates, metallic salts, acid anhydrides, cyanoacrylate glues, pharmaceuticals, resin core solder.

Possible Work-related Disease: What to tell the patient

- Tell the patient she or he may have a work-related disease, and this needs to be evaluated in more detail.
- Tell the patient not to quit his or her job even if removal from work is necessary.
- Do not tell the patient or write in the chart that he or she has an occupational disease unless you have confirmed the diagnosis and have discussed possible Workers' Compensation.
- Understand the 2 year Statute of Limitations for Workers' Compensation in New York State.

Occupational Diseases: Conclusions

- Preventable.
- More common than generally recognized.
- Often chronic and disabling.
- Sometimes have devastating financial, social or psychological consequences.
- Likely cases can often be recognized by asking a few questions.
- Prognosis often better when diagnosed early.

Occupational Medicine in Primary Care

- Remember the short list of Sentinel Occupational Health Conditions
- Use the basic principles of Occupational and Environmental Toxicology
- Take a Screening Occupational History when clinically indicated
- We are working on getting eConsult going for our clinic but until that happens, please email or call me.
- George Friedman-Jimenez, MD, DrPH at gfi7@nyulangone.org or call me at 212-562-4572 if you have any questions or want to discuss a patient with possible work-related disease.

Next steps to improve Occupational Health of patients seen in H+H

- Development of programs to:
- Identify and preventively treat primary care patients with work-related asthma
- Identify, ergonomically evaluate and preventively treat primary care patients with work-related musculoskeletal disorders
- Identify patients with work-related injuries and facilitate filing of Workers' Compensation
- Telehealth and eConsult to improve accessibility of occupational medicine services to primary care providers and their patients
- Occupational medicine needs assessment of Asian-American working populations in NYC

Useful References for Occupational Medicine

- Rom and Markowitz Environmental & Occupational Medicine, 4th Ed 2008.
- LaDou and Harrison Lange Current Diagnosis and Treatment. Occupational & Environmental Medicine, 5th Ed, 2014
- UpToDate articles on Occupational Medicine, Lead Toxicity, Occupational Asthma

Before We End ...

Thank you for your participation!

To ensure you receive CME/CNE credits for your participation:

- Complete the online evaluation form, a link to the form will be sent to you via email from the OneCity Health Learning Management System
- Create a new profile or update an existing profile with the NYC Health + Hospitals Continuing Professional Education Department at: <https://cme.nychhc.org>

Questions or Suggestions?:

- **Email:** OCHWorkforceTeam@nychhc.org

November 26, 2018 Grand Rounds Topic: “Plant-based Diets”



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