

Common Cold Lecture Notes

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- ❖ Thank audience for attending – and staying awake
- ❖ Objectives
 - How colds impact emergency medicine, school and workplace, and basically the entire human race
 - What causes a cold
 - Which treatments work, which don't, and which are dangerous
 - What advice to give patients (and to follow yourself)
- ❖ Historical Terms
 - **Coryza:** rhinitis
 - **Catarrh:** Catarrh: inflammation of a mucous membranes of the head and throat, with a flow of mucous. Bronchial catarrh was bronchitis; suffocative catarrh was croup; epidemic catarrh was the same as influenza.
- ❖ History
 - **Benjamin Franklin (~1750):**
People often catch cold from one another when shut up together in small close rooms, coaches, etc. and when sitting near and conversing so as to breathe in each other's transpiration.
- ❖ Causes
 - "Science is the art of substituting unimportant questions which can be

answered for important ones that cannot."

–Kenneth Bolding

❖ **Causes**

➤ Aristotle *Organum, Posterior*

Analytcs: causes of a house

- 1. **Material Cause** - bricks
- 2. **Efficient Cause** - bricklayer "first cause"
- 3. **Formal Cause** - blueprint
- 4. **Final Cause** - occupant

❖ **Causes**

➤ rhinoviruses (picornaviruses, >100 serotypes) or coronaviruses

➤ mild cases of rarer viruses such as influenza, also adenoviruses, coxsackieviruses, echoviruses, non-flu orthomyxoviruses, paramyxoviruses (parainfluenza), enteroviruses, recently: metapneumovirus

➤ RSV, which is mild in adults.

➤ But still, 1/4 - 1/2 of adult colds are of unknown etiology.

➤ Colds with bacterial overgrowth (~20% of colds) are more severe; the usual pathogens are *S. pneumoniae*, *H. influenzae*, or *M. catarrhalis*.

❖ **Causes**

➤ Does cold weather "cause" colds?

- It's thought that winter crowding makes colds seasonal.

- Some think chilling of the nasal mucosa also contributes.
- Though brief cold exposure doesn't cause colds, interestingly, a recent study by Eccles (Fam Pract 2005) showed that chilling of the feet causes cold symptoms in 10% of subjects (over controls) within 4 days.

❖ **Causes**

- Stress: yes, predisposes
- allergic rhinitis predisposes
- though exercise – except strenuous military PT – doesn't predispose, nor does diet or big tonsils
- ICAM-1, the receptor that rhinovirus binds to in order to infect cells, increases in number and receptiveness in response to irritants like dust and pollen.
- Only 75% of infected people get symptoms. A quarter of those infected with a cold virus don't notice it!

❖ **Epidemiology (US figures)**

- 1 billion colds/yr
- Kids: 6-10/yr (a cold q6wk), up to 1 q month if in school
- Adults: 2-4/yr, decreases with age
- 1.6 million (of 43.8 million) ED visits in 1998

❖ **Epidemiology (US figures)**

- 22 million school days/yr lost

- >\$20 billion per year work loss (>1/3 taking care of sick kids)
- We spend \$2.9 billion a year on OTC cold medications
- We spend \$400 million on prescription “cold” medications
- ❖ **Natural History/Symptoms**
 - Onset as fast as 10 hours, usually 2-3 days to peak
 - Course 2 to 14 days (N.B. smokers’ colds last 3 days longer than nonsmokers)
 - Symptoms depend on host factors, more than specific virus
 - Usually scratchy sore throat, not impressive on exam
 - Coryza: red edematous nasal mucosa (not pale and boggy like allergy); clear nasal discharge later, catarrh: purulent nasal discharge (purulence no correlation with bacteria)
 - Chills but no fever in adults (actually brief hypothermia); kids often get fever
 - Anorexia, malaise, headache (cytokines?)
 - Myalgias in 50%
 - Later, cough (major cause of visits)
- ❖ **Natural History/Symptoms**
 - “Sinusitis” usually seen on plain film or CT of someone with a cold: 87% of those with a cold and 40% of “normals,”

so CT only if suspect brain abscess, periorbital cellulitis

- History of purulent nasal discharge and sinus pain > 10 days better “test” for “real” sinusitis

❖ **Natural History/Symptoms**

- Alternating nasal congestion well-documented (looks scientific if include a graph)

❖ **Complications**

- Otitis Media: in 20% of kids with colds
- “Sinusitis” – but almost everyone with a cold has viral sinusitis
- Pneumonia: often mixed viral/bacterial, esp. in kids
- Asthma exacerbation: very, very common (80% of asthmatics get exacerbation with a cold)

❖ **Cold Meds**

❖ **Cold Meds**

- **Nothing shortens duration**
- **Goal is to decrease symptoms**
- **Goal is to prevent complications (mostly “real” sinusitis)**
- **“Possibly effective” meds need an outstanding safety profile**

❖ **Cold Cough Meds**

- (antitussives/expectorants)
- Cochrane Review, 2008: There is no good evidence for or against the

effectiveness of OTC medicines in acute cough [from a viral URI].

- ibuprofen and naproxen help the cough of a cold (multiple studies)
- excellent recent study showed that buckwheat honey is significantly better than dextromethorphan for kids' cough.
- ❖ **Antihistamines**
 - first generation (Benadryl, chlorpheniramine) have some beneficial effect;
 - non-sedating second-generation antihistamines are ineffective.
 - ? by thickening secretions and preventing drainage, makes "real" sinusitis more likely
- ❖ **Decongestants: Nasal**
 - oxymetazoline nasal spray is effective, and if <10 days, no risk of "addiction" (rhinitis medicamentosa)
 - Atrovent nasal spray: mildly effective, expensive
 - Steroid nasal spray: ineffective for colds, good for sinusitis
- ❖ **Decongestants: Oral**
 - pseudoephedrine and the like (mildly effective)
 - original "Sudafed"
 - now "Sudafed" name used for 19 different medications and combinations
 - 12- and 24-hour pills available

- kept behind pharmacy counters
- not for ischemic heart disease, glaucoma or prostatic hypertrophy, reacts with some meds
- significant systemic side effects (30% in one study)
- ❖ **Analgesics**
 - ASA may cause Reye's Syndrome and should be avoided
 - both ASA and acetaminophen increase nasal stuffiness, as well as prolonging viral shedding
 - Ibuprofen and naproxen seem to have less of this effect, and decrease malaise, myalgias and cough.
- ❖ "Alternative" Meds and Therapies
- ❖ **Saline nasal spray:**
 - isotonic (e.g., *Ocean*) effective in one study, great for "sinusitis" in multiple studies;
 - hypertonic saline not effective in one study;
- ❖ **Warm, humidified air**
 - ("steam") for 20 minutes:
 - helps in UK and Israel, not US
- ❖ **Chicken Soup:**
 - improves nasal mucus drainage
- ❖ **Hot baths:**
 - Preliminary work suggests works for AIDS by making latent infection more obvious to immune system.

- Some studies in other viral infections show efficacy, but not convincingly
- No research found on viral colds
- ❖ **Herbals etc.**
 - Others (echinacea, Vit. C, etc.): useless but mostly harmless, even Wikipedia says so
- ❖ **Zinc:**
 - Medical Hypotheses: it's zinc ions that really help
- ❖ **Zinc:**
 - ColdCure.com
- ❖ **Zinc:**
 - ZiCam (nasal spray) says in a letter:
 - *Zincum Gluconicum was approved by the Homoeopathic Pharmacopoeia Convention and became a monographed item included in the HPUS in May 1997. Zincum Gluconicum was proven to produce "cold-like" symptoms in healthy individuals.*
 - *Zicam has only one active ingredient—zinc gluconate (Zincum Gluconicum). It is true that some homeopathic dilutions are very dilute. The HPUS dictates the maximum strength a compound can be for OTC use. In the case of zinc gluconate, it is a 1X dilution. This means that 1 part of zinc gluconate is diluted with 9 parts water. In Zicam we use a 2X dilution. This takes the above dilution*

and further dilutes it by adding 1 part of it to 9 parts water. This produces a final 1:100 dilution.

- *Zicam is a homeopathic remedy manufactured, packaged and distributed in full accordance with the HPUS.*

- ❖ **Zinc:**

- Anosmia (reviewed literature, real cases, permanent, from intranasal)

- ❖ **Zinc:**

- Anosmia lawyers

- ❖ **Zinc:**

- Homeopathic Deaths

- ❖ **Zinc:**

- Homeopathic Dilutions:

- ❖ **Zinc:**

- June 16, 2009: FDA finally takes off market after 150 reports of anosmia

- ❖ **Zinc:**

- possibly mildly effective orally
- may result in total anosmia especially if used intranasally
- not well-controlled by FDA as is "homeopathic"; do NOT recommend

- ❖ **Antibiotics for Colds**

- In the 10-20% that are actually culture-positive for *S. pneumoniae*, *H. influenzae*, or *M. catarrhalis*, antibiotics seem to help.
- But cultures take 3 days, by which time it's too late.

- Financial incentive for rapid test for bacterial rhinitis?
- PCP antibiotic Rx for colds:
- UK and France: 30-40%
- US: 60%
- New Zealand: 78%
- 2005 Cochrane Review: maybe antibiotics if cold > 10 days ("real" sinusitis)?
- ❖ Kids' Combos: Effective? Dangerous?
 - Drug companies persuaded FDA that since Nyquil et al worked for adults (well, maybe) that they were OK for kids, too
- ❖ Peds Cold Meds Deaths CDC
 - But kids got sick and died from these medications
- ❖ Peds Cold Meds NEJM 2007
 - Docs and others from Hopkins in Baltimore spearheaded pressure on FDA, convened meetings
 - *Since 1985, all six randomized, placebo-controlled studies of the use of cough and cold preparations in children under 12 years of age have not shown any meaningful differences between the active drugs and placebo.*
 - *findings in children under six linking decongestants to cardiac arrhythmias and other cardiovascular events, antihistamines to hallucinations, and antitussives to depressed levels of*

consciousness and encephalopathy. A review by the Food and Drug Administration (FDA) identified 123 deaths

❖ **Peds Cold Meds FDA**

- FDA was getting ready to recall kids' cold meds when companies decided on a voluntary relabeling for no use under age 4 (6 in Canada)

❖ **NyQuil**

- Do cold medications work in adults? Maybe, a bit, but with lots of side effects

❖ **The Future?**

- February 13, 2009: **“Scientists announced today they have cracked the genetic code of all known species of the common cold virus, a major step in possibly developing a cure, perhaps even a vaccine, for the common cold.”**
- Pleconaril: anti-picornavirus antiviral withdrawn from testing by manufacturer.
- BTA798: completed Phase IIa trials completed in mid-2009.
- Rupintrivir: Yet Another Anticold Antiviral
- No recent news about any of them

❖ **KC's Recommendations 1**

- isotonic saline nasal spray
- oxymetazoline (? dilute) spray <10 d
- Atrovent nasal spray if have \$ for it

- albuterol inhaler if bronchitis/wheezy cough
- hot baths or electric blanket
- ± naproxen (or ibuprofen)
- ± chlorpheniramine (antihistamine)
- ❖ **KC's Recommendations 2**
- If > 10 days or lots of purulent drainage:
 - Steroid nasal spray (also if history of allergic rhinitis)
 - Warm soaks to sinuses
 - ± Antibiotics
- ❖ **KC's Recommendations 3**
- NO:
 - oral decongestants
 - zinc
 - acetaminophen
 - antibiotics to begin with
- ❖ **Objectives**
- ❖ **The End**