Acute Viral Respiratory Infection: Prevention and Therapeutics

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Paul Bergner is director of the North American Institute of Medical Herbalism and editor of the *Medical Herbalism* journal. He has practiced nutrition and medical herbalism since 1973. He has trained more than 400 student residents through an academic year in teaching clinics for clinical nutrition and medical herbalism since 1996. He has taught both medical herbalism and clinical nutrition at both the undergraduate and graduate levels of the university, and has developed and delivered more than 500 hours of Continuing Education for herbalists, nutritionists, acupuncturists, nurses, and naturopathic physicians. He is author of the *Healing Power of Garlic*, the *Healing Power of Echinacea, Goldenseal and the Immune Herbs*, *The Healing Power of Minerals and Trace Elements*, and four other books on herbalism, nutrition, ethnobotany, Chinese medicine, and naturopathic medicine.

You can find supplemental materials and resources relating to the COVID-19 epidemic at the North American Institute of Medical Herbalism http://naimh.com/coronavirus

Types of respiratory infections

- Common cold (mortality uncommon)
  - Rhinovirus. Spring, Summer, Early Fall
  - Coronavirus. Winter and early spring (3-4 species)
  - RSV and parainfluenza. Fall to Spring, or any.
  - Unidentified virus. 10-20%
- Seasonal influenza (mortality 0.1 to 0.2 %)
  - Various mutations of Influenza A or B virus. December to March
- COVID-19 (mortality 2% ?). December to ?
- SARS coronavirus (mortality 9.7%). November to July.

Infection

- A novel virus can infect a perfectly healthy individual.
- A perfectly healthy individual may have strong vital symptoms to infection.
- Infection in a healthy individual is less likely to lead to complications such as pneumonia.
- The most mortality in influenza and/or COVID-19 occurs in the elderly and those with pre-existing conditions or poor health.
- In COVID-19 apparently healthy younger adults can develop severe illness and die. This may be due to host issues such as malnutrition or vitamin D deficiency.
- Deficiencies may result in a sub optimal immune response, and at the same time excessive inflammation in complicated disease.

Possible host responses

- Acquire immunity with no visible symptoms
- Experience normal symptoms of fever and cough, myalgia, fatigue but with mild expression and normal duration.
- Experience normal symptoms with high fever and severe cough, severe myalgia, normal duration.
- Experience normal or severe symptoms, prolonged duration, with progression to complications, such a pneumonia, multi-organ, cytokine storm
- Death

Damage-Response in respiratory viral infection

Immune weakness

- Inefficient antibody response
- Inefficient cell-mediated response
- Complications of pneumonia or multi-organ involvement

Excessive response

- Excess inflammatory cytokines
- Massive systemic inflammation
- ***Occurs in end-stage disease complications*** such as pneumonia

Both responses may be mediated by vitamin D or nutrient deficiencies

Pathophysiology: Cytokines

- A beneficial anti-viral immune response common to all viral respiratory infections
- The following was observed in *mild influenza A infection* with seasonal virus
  - IL-6 and IFN-a had biphasic peaks on day 2 (17 x normal) and 5 (14 x normal)
  - TNF-A peaks on day 4 then rapidly drops off
  - IL peaks on day 4 (59x normal) lingering into day 6
  - Others may have unique periods

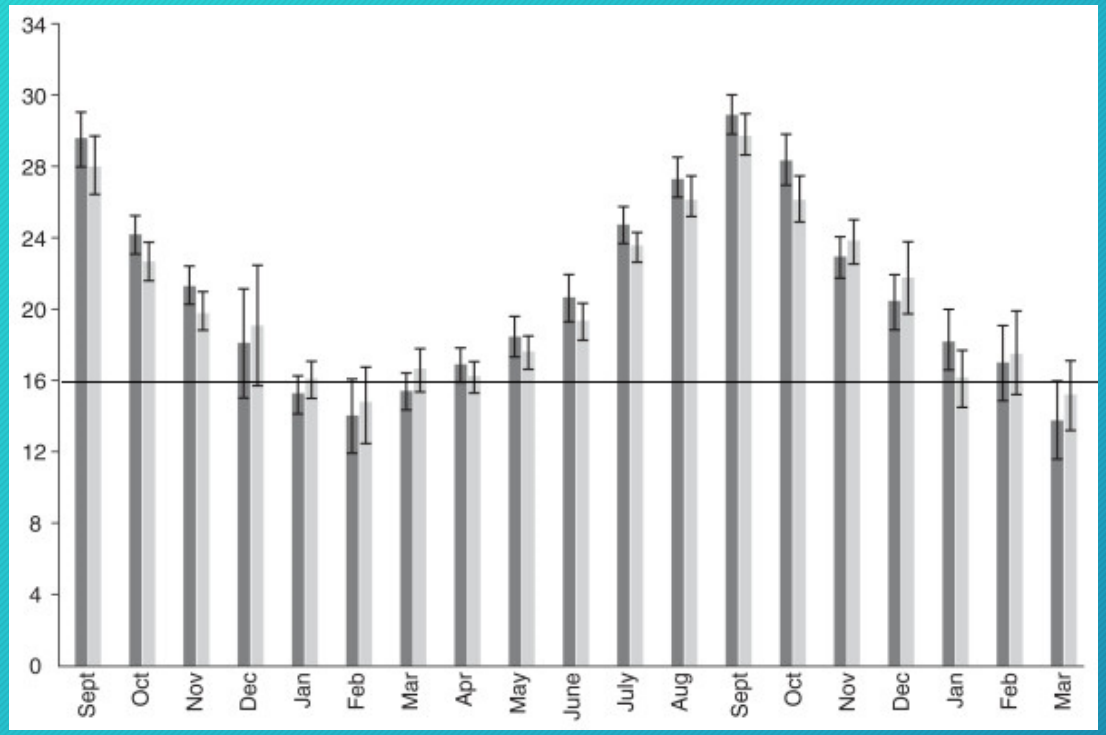
Cytokine storm

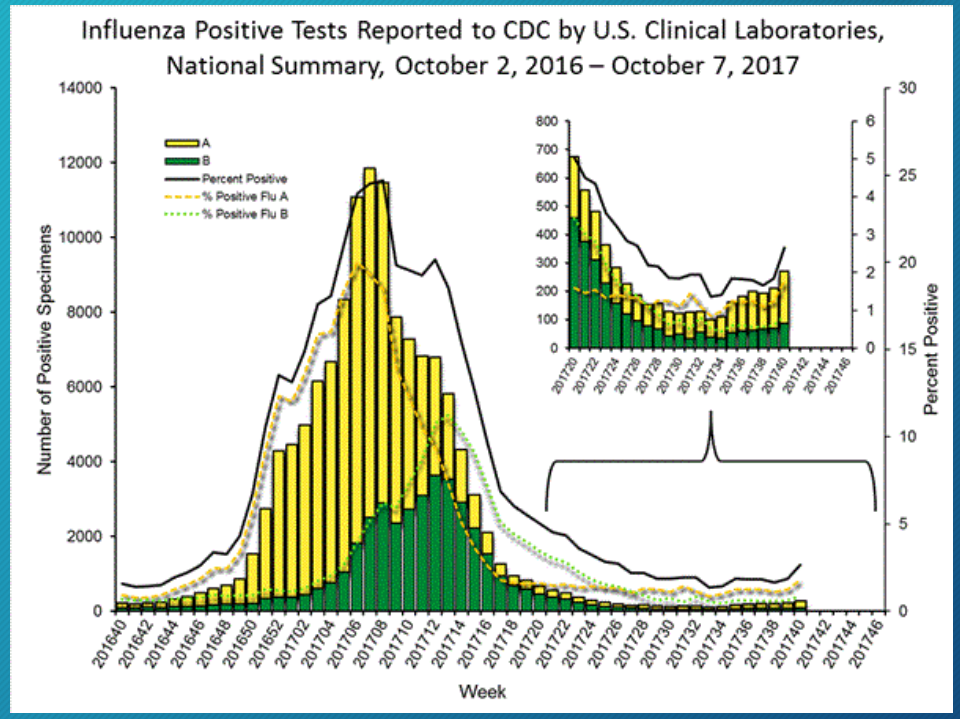
- Excessive cytokine response may occur in vitamin D deficiency, pneumonia, multi-organ infection, sepsis. It is a phenomenon of late-stage disease for patients in or on their way to intensive care.
- The effects of herbal medicines on individual cytokines in isolated studies cannot be extrapolated to clinical effects.
- Research on Echinacea and Sambucus show a mix of effects on cytokines, stimulating some immune enhancing (inflammatory) ones and some regulatory (inflammation modulating)
- Astragalus has a traditional contraindication in acute febrile illness unless it is specifically indicated by symptoms of chi deficiency according to the Chinese system.
- See paper with full discussion and complete references: http://naimh.com/coronavirus

Pathophysiology: Vitamin D

- Vitamin D essential for production of immuno-competence proteins in the immune cells of the respiratory tract *(discovery in 2004)*
- Vitamin D stimulates immuno-modulatory cytokines, putting a brake on cytokine “storm”
- Respiratory viral or bacterial infections are proposed as part of the profile of vitamin D deficiency syndrome.

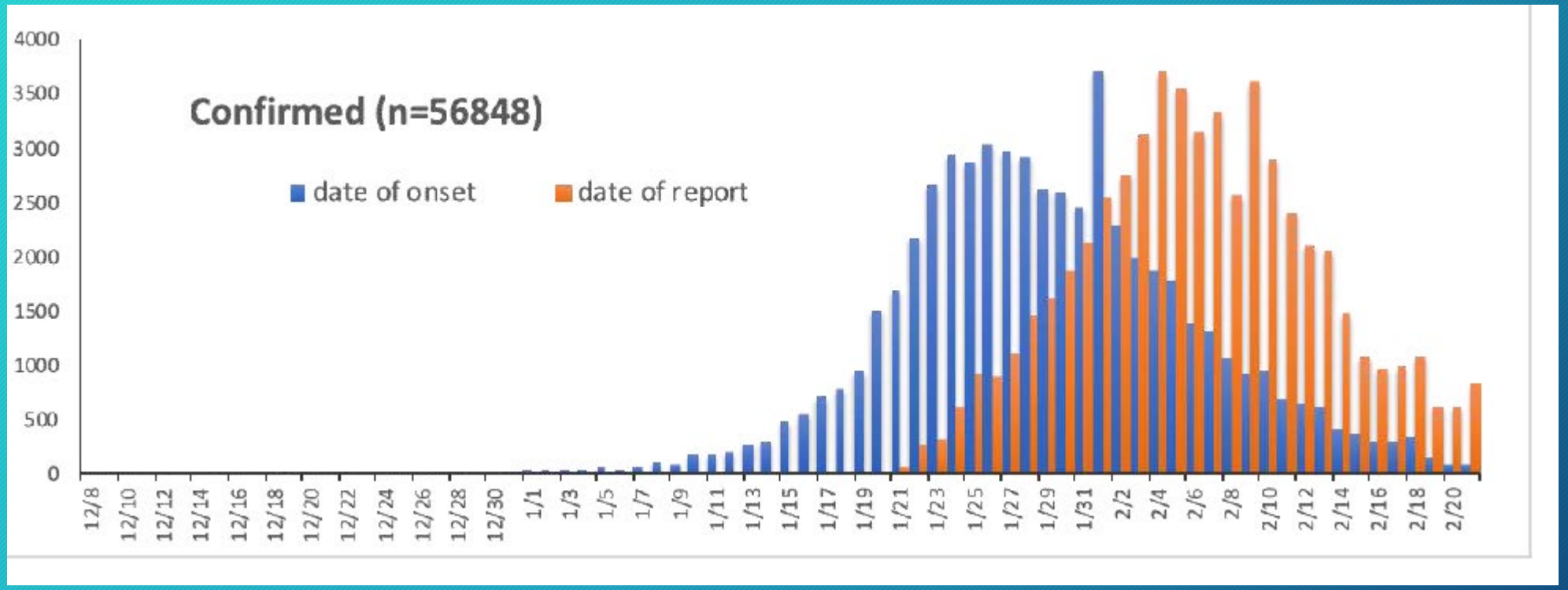
The vitamin D winter





Vitamin D levels in ng/mL in seasons in USA (left) and positive influenza tests. The black line is the level at which 1% of children develop Rickets, and at which ***respiratory infections double***.

COVID-19 and vitamin D winter



The COVID-19 virus is apparently following the same pattern

Sun Avoidance/Vitamin D

- Average US wintertime Vitamin D levels (25(OH)D3) are below 16 ng/mL.
- At this level respiratory infections double compared to the summertime average of 30 ng/mL
- In temperate North American, people make no vitamin D from mid-October to mid-March because of a low sun angle.
- If one is not supplementing vitamin D in winter, assume a pathologically low level for respiratory immunity

Looker AC et al. Vitamin D Status: United States, 2001–2006 NCHS Data Brief ■ No. 59 ■ March 2011

Prevention: Micronutrients

- **Z**inc — 9-50% deficient
- **A** vitamin — up to 30% of children
- **C** vitamin — 18% severely deficient
- **E** vitamin — 90% deficient
- **S**elenium — 50% sub-optimal

- Essential fatty acids deficiency common

- Not heroic, just sufficient to correct deficiencies

Daily Supplement protocol

• Vitamin D	4,000 to 7,000 IU
• Zinc	25 mg (lozenges with exposure)
• Vitamin C	500-1000 mg
• Vitamin E	100-200 IU
• Selenium	200 mcg
• Omega-3 oil	1-3 grams combined EPA + DHA

Vitamin D3 dosing if exposed

- “If the ability of vitamin D to stimulate the production of virucidal antimicrobial peptides and to suppress cytokine and chemokine production is clinically significant, then pharmacological doses (1000–2000 IU/kg per day for several days) may be useful in the treatment of those viral respiratory infections that peak in wintertime.”
- This translates to 75,000 to 150,000 IU/day for several days in 75 Kg individual with exposure or symptomatic influenza or COVID-19 infection.
- Alternately, 50,000 IU/day for 6 days.
- These doses are non-toxic. For more than 100 years, infants and toddlers with Rickets have been administered a single dose of 300,000 IU of vitamin D, and this may also be given seasonally to adults in Scandinavia

Cannell JJ, Vieth R, Umhau JC, Holick MF, Grant WB, Madronich S, Garland CF, Giovannucci E. Epidemic influenza and vitamin D. *Epidemiol Infect*. 2006;**134**:1129–1140.

Lifestyle factors during prevalence

- Avoid sugar and high glycemic foods.
- Avoid known food allergens
- Garlic in the diet, 1-3 cloves cooked, or raw in appropriate medium
- Exercise to spike body temperature and metabolism
- Sauna, sweat, hot tub
- Smudge, Smudge shower.

Optimal vitamin D and critical disease

- In a review of typical solar radiation in twelve locations during the 1918 influenza epidemic, lower radiation (and lower implied vitamin D production) was strongly associated with progression to pneumonia and with mortality (Grant and Giovannucci, 2004).
- In a review article of 14 previous studies looking at consequences of vitamin D deficiency in critically ill hospitalized patients, levels of 25(OH)D3 of less than 20 ng/mL were associated with a 57% increased rate of infection, 46% increase in sepsis, in-hospital mortality was increased by 79% and 30-day mortality was increased by 76%, compared to those with level above that (de Haan et al, 2014)

Sleep Debt

- 14 young adult male subjects had sleep restricted to 4 hours per night for 6 nights.
- Subjects and a similar control group having 7.5 to 8.5 hours a night sleep, received an influenza immunization after day four of the trial.
- The trial group then rested in bed for 12 hours a night for 7 more days.
- Anti-influenza IgG antibodies at day 14 were only 50% in the sleep deprivation group vs the normal sleep, despite 7 days of deep recovery.

Spiegel, K. (2002). *Effect of Sleep Deprivation on Response to Immunizaton. JAMA, 288(12), 1471*

Prevention: Herbal medicines

During prevalence, when exposure is suspected

• Echinacea	frequent dosing
• Boneset	effective in 1918 epidemic
• Sambucus	anti-influenza specific
• Garlic	enhances TK cell activity
• Astragalus, Codonopsis	Take in soups or as tea
• Shiitake mushrooms	Cooked in foods, or mushroom extract supplements

Possible formula when exposed

When exposed

Equal parts of:

- Echinacea *Echinacea angustifolia*
- Boneset *Eupatorium perfoliatum*
- Myrrh *Commiphora myrrha*
- ½ part of Licorice *Glycyrrhiza spp.*
- ½ part of Ginger *Zingiber off.*

Dose: 10-20 drops, 2-3 times a day for prevention.

Deliver is teaspoon of Sambucus berry syrup

Therapeutics

Support immunity
Treat fever in stages
Treat dry cough.

Assess for risk of serious disease

- Elders, those with chronic medical conditions, and those on immunosuppressive drugs.
- For COVID-19, 14% of patients develop conditions requiring hospitalization; 6% more require intensive care in hospital
- Although overall mortality in healthy individuals is about 1.4% it is higher in others: patient over 80 y.o. 21.9%; with CVD 13.2%, with Diabetes, 9%, with Hypertension, 8.4%, with Chronic Respiratory Disease 8%, with Cancer, 7.6%
- Establish close monitoring for severe disease, with contingencies for hospital care.

Fever

- A **beneficial** rise in the body metabolism and temperature.
- The thermogenic set point is raised.
- Increased manufacture of antibodies and white blood cells -- Antibody production is increased about 20-fold.
- Retards growth and reproduction of bacteria and virus
- Aids body's acute phase reaction
- Increased circulation to surface defenses
- Increased elimination.

Recent review of pediatric fever

- “Fever . . .is not the primary illness but is a physiologic mechanism that has beneficial effects in fighting infection.”
- “The primary goal of treating the febrile child should be to ***improve the child's overall comfort*** rather than focus on the normalization of body temperature.”
- “. . . monitoring activity, observing for signs of serious illness, encouraging appropriate fluid intake . . .” are appropriate measures.
- Studies of health care workers, including physicians, have revealed that most believe that the risk of heat-related adverse outcomes is increased with temperatures above 40°C (104°F), ***although this belief is not justified.”***

Sullivan JE, Farrar HC. Fever and antipyretic use in children. Section on Clinical Pharmacology and Therapeutics; Committee on Drugs *Pediatrics*. 2011 Mar;127(3):580-7.

Fever is not hyperthermia

- ***Hyperthermia*** (heat stroke) has no elevation of set point, but is a failure of compensatory mechanisms, at temperatures from 105.8 to 107.6 damage from hyperthermia occurs
- ***Fever*** has elevated set point with compensatory cooling mechanisms.
- "For practical purposes except in rare instances, the human oral temperature cannot rise above 106 degrees" *Harrison's Internal Medicine*
- **Hyperpyrexia** fever above 106 degrees F. ".08% of pediatric emergency center admissions) do not require any more special evaluation by the physician than any febrile child with a temperature below 106." No more likely to indicate bacterial than viral infection.

Risks of fever

- While fever itself is not pathological, it may be the sign of infectious or non-infectious pathologies that may be serious.
- The chief concern for higher fevers is **dehydration** or **metabolic exhaustion** in elderly or debilitated patients.
- High fever in cardiac patients may destabilize arterial plaques or cause stroke in patients with cerebral arterial disease.

COVID-19

- Indications as of this week (4-5-2020) are that, while a mild fever does not discount the possibility of pneumonia and other complications, a higher fever *is more likely* to indicate severe disease.

Normal temperature

- The supposed average of 98.6 was based on inaccurate data. *
- Meta-analysis of measurements in healthy subject from 1935 to 1999, showed a median normal oral temperature of 97.7**
- Typical fluctuation during the day of 0.9 degrees F, from 6AM to 4PM peak.
- Average among elders is 96.8 with a reduced diurnal rise of .5 degrees**

*Mackowiak PA, Wasserman SS, Levine MM. A critical appraisal of 98.6 degrees F, the upper limit of the normal body temperature, and other legacies of Carl Reinhold August Wunderlich. *JAMA* 1992;268:1578-1580.

Fever ranges

- Range 98.9 at 6AM to 99.9 At 6PM are the upper range of normal in healthy adults under age 40.
- Lower limits should be considered in elders, for example higher than 98.0 AM to 98.5 PM may indicate a febrile response in an elder.

**Sund-Levander M, Forsberg C, Wahren LK. Normal oral, rectal, tympanic and axillary body temperature in adult men and women: a systematic literature review. *Scand J Caring Sci*. 2002 Jun;16(2):122-8. Review.

Temperature and infectious agents

- 98 - 99 degrees. Influenza virus dies.
- 99.5 The digestive system shuts down.
- 104 degrees. Gonococcus is killed. Polio virus replication is reduced by a factor of 250. Normal temperature may reach 104 degrees under vigorous exercise.
- 106 degrees. Pneumococcus dies. Some spirochetes die. (Malaria traditionally induced to fight syphilis)
- 106-110 malignant cells are selectively killed
- 108 brain damage may occur due to denaturation of proteins.
- 110 Human cells begin to die.

Coronavirus and body temperature

- A clinical report from Hong Kong suggested in 2003 that SARS coronavirus is sensitive to human body temperature.
- “If the body temperature is below 96.8F is grows very rapidly.”
- “If the body temperature is above 98.6F the virus is attenuated or killed. Milder inflammatory response and recovery.”
- “Patients with high fever can kill the virus”
- The author suggests increasing body temperature through environment or exercise may be of benefit.

Ping CK *BMJ* 2003;326:850

Antipyretic therapy

Aspirin and NSAID may promote infection

- Animal trials: Rabbits infected with Pasteurella had a 29% mortality rate. One group had their fever lowered by 1.5 degrees with salicylates, and had 100% mortality. Salicylates alone in uninfected rabbits caused no mortality. Treated rabbits had a lower white blood cell count than their infected but untreated counterparts, and their lung and liver bacterial counts were higher.

Vaughn LK, Veale WL, Cooper KE. Effects of antipyresis on bacterial numbers in infected rabbits. *Brain Res Bull*. 1981 Aug;7(2):175-80.

Vaughn LK, Veale WL, Cooper KE. Antipyresis: its effect on mortality rate of bacterially infected rabbits. *Brain Res Bull*. 1980 Jan-Feb;5(1):69-73.

Influenza mortality increased

- Animal trials: on meta-analysis of 8 trials, the use of aspirin, acetaminophen, or diclofenac increased mortality from experimental influenza infection by 34%.

Eyers S, Weatherall M, Shirtcliffe P, Perrin K, Beasley R. The effect on mortality of antipyretics in the treatment of influenza infection: systematic review and meta-analysis. *J R Soc Med*. 2010 Oct;103(10):403-11.

Pneumonia mortality

- Animal trials: In a meta-analysis of 3 studies, antipyretic therapy in pneumonia doubled mortality rate in animals. The *Pneumococcus* bacterium is temperature sensitive.

Jefferies S, Weatherall M, Young P, Eyers S, Beasley R. Systematic review and meta-analysis of the effects of antipyretic medications on mortality in *Streptococcus pneumoniae* infections. *Postgrad Med J*. 2012 Jan;88(1035):21-7.

NSAID and interferon response

- NSAID inhibit cyclo-oxygenase, which is essential for the production of the interferon response to viral infection, the primary defense against infection.

Pottathil R, Chandrabose KA, Cuatrecasas P, Lang DJ. Establishment of the interferon-mediated antiviral state: role of fatty acid cyclooxygenase. Proc Natl Acad Sci U S A. 1980 Sep;77(9):5437-40.

Antibody response in humans

- Human trials of experimental rhinovirus infection treated with salicylates and NSAID. Lowering the fever with aspirin and acetaminophen suppressed antibody response and increased the severity of subjective symptoms. Ibuprofen had a strong similar trend (worse than placebo on every measure) but which did not reach statistical significance.

Graham NM1, Burrell CJ, Douglas RM, Debelle P, Davies L. Adverse effects of aspirin, acetaminophen, and ibuprofen on immune function, viral shedding, and clinical status in rhinovirus-infected volunteers. *J Infect Dis*. 1990 Dec;162(6):1277-82.

Duration of illness

- Patients with experimental infection with *Influenza* or *Shigella* were given aspirin or acetaminophen.
- "There was a striking correlation between antipyretic therapy and duration of illness in subjects infected with influenza A and Shigella sonnei"
- Influenza: 8.8 ± 2.3 days for drug group vs 5.3 ± 3.0 days without drug; P<.001
- Shigella: 4.6 ± 2.1 days with antipyretics vs 1.9 ± 1.6 days without

Plaisance KI, Kudaravalli S, Wasserman SS, Levine MM, Mackowiak PA. Effect of antipyretic therapy on the duration of illness in experimental *influenza A*, *Shigella sonnei*, and *Rickettsia rickettsii* infections. *Pharmacotherapy.* 2000 Dec;20(12):1417-22.

Coronavirus reports

- An email from a colleague. Critical care doc at Vancouver Hospital reports that patients taking ibuprofen or ACE inhibitors more likely to progress to severe disease and mortality. Whether stating this from experience or medical news reports is not clear.
- The French authorities on 3/16/20 also issued a warning against using ibuprofen or other anti-inflammatory drugs for fever (they recommended paracetamol)
- The WHO, CDC and other organizations state that “there is no data” to support that ibuprofen or other NSAID promote a worse outcome specifically in COVID infection.
- “No data” means no one has formally measured this, which is not surprising in a three month old epidemic. See previous slides showing NSAID increasing viral shedding or severity or duration of disease.

Ill effects of chronic suppression

- “Post viral syndrome”
- Collapse of vital structures
- Chronic fatigue
- “Lake Tahoe syndrome” and chronic fatigue.

Stages of Fever

1. Set point elevated, cold and chills predominate
2. Set point peak, elevated pulse and temperature
3. Fluctuating set-point, cycling fever, sweating, and chills
4. Crisis and set point drop, sweating
5. Recuperation

First stage: Set point rising

- Because the body temperature is now below the set point, the subjective feeling is cold. Skin cold. Symptoms resemble hypothermia.
- Normal range actual body temperature, rising
- Feeling of cold, aversion to cold and wind.
- Shivering raises the metabolism and generates heat.
- Paleness. Closing of the pores to prevent sweating and heat loss.

Therapeutics

- Complete rest.
- ***Immediate fast***.
- Hot shower or bath.
- Rest in bed with covers.
- Hydrate. Hot drinks and teas.
- Stimulating (hot) diaphoretics.
- Capsicum 500 mg. Cinnamon 5-10g. Fresh Ginger 3-10g. Osha 3-10g Garlic, onion, scallions 3-10g.

Modified Composition Powder

- Myrica Bayberry 32 parts
- Zingiber Ginger 32 parts
- Asclepias Pleurisy root 32 parts
- Hydrastis Goldenseal 8 parts
- Capsicum Cayenne 1 part

Take as tea. 1 oz to a pint of boiling water. 2-4 ounce dose.

Support when chills are present. The original formula of Thomson contained the astringent Abies, and the very hot Eugenia. It was found to be too hot and dry for many patients, Thomson and his successors modified it. This is the formula of Wm Cook around 1869 and used frequently in Physiomedicalism after that.

British modification of Composition formula

- Myrica 4 oz.
- Cardamom 4 oz.
- Pinus can. 2 oz.
- Zingiber 2 oz.
- Dioscorea 1 oz.
- Capsicum 2 drams

Tinctures. Deliver in warm medium. Dose: 1-4 drams.

This is the formula of W. Burns Lingard of Great Britain, who had a 50 years career that spanned the 1918-1919 influenza pandemic.

Fasting and Ghrelin

- Secreted by the gut wall of the stomach, small intestine, and large intestine when empty
- Has systemic anti-inflammatory effects
- May act as selective Cox-2 inhibitor
- Has febrifuge effects
- Promotes autophagy in the system and locally in the gut
- **One basis for traditional aphorisms to fast during fever, and for traditions or herbal emesis and catharsis in febrile illness.**

Second Stage: Peak fever

- Normally 102-104. “A good working fever.” May be 2 degrees lower in elder.
- Optimizes antibody production.
- The skin hot and dry.
- Patient may not feel hot.
- Pulse fast.
- Patient is drowsy.
- Muscles ache due to elevated cytokines. Tissue of long muscles is broken down to make amino acids available for immune component manufacture and tissue repair.
- Gut motility decreases and the natural appetite disappears.
- Blood concentrations of iron and zinc are reduced (denying food to pathogens).

Therapeutics

- Rest, well ventilated room, but no draft. Continue fast until fever falls below 99 degrees.
- Emphasize physical and mental comfort of patient.
- Avoid sour flavors and astringents.
- Melissa water.
- Tepid or cool water and drinks.
- Cooling and relaxant diaphoretics
- *Mentha; Mentha/Achillea*
- *Eupatorium, Sambucus, Verbena.*
- Sedative relaxants; *Scutellaria* tea, *Pedicularis*, *Actaea*

Classic flu formula from Great Britain

- *Achllea* Yarrow 4 parts
- *Mentha pip.* Peppermint 3 parts
- *Angelica arch* Angelica 2 parts
- *Sambucus flower* Elder 2 parts
- *Eupatorium perf.* Boneset 1 part

1 oz to pint of boiling water. Take ½ cup each 3-4 hours.

This is the formula of W. Burns Lingard, medical herbalist in England, who used this during the 1918-1919 flu epidemic. Along with other treatments, he says he dispensed more than 15,000 bottles of medicine during that pandemic, and never lost a patient to flu or pneumonia.

British formula for Pneumonia

- Populus bud (Balm of Gilead) 60 drops
- Composition tincture (see previous) 30 drops
- Asclepias 15-30 drops
- Senega (substitute Osha) 10-drops
- Deliver in Flu formula (see previous) 1-2 drams.

Another formula of W. Burns Lingard. He states 50 years of clinical practice without losing a patient to influenza or pneumonia, including during a robust practice during the 1918-1919 Influenza pandemic.

Third stage: Intermittent fluctuations

- Diurnal fluctuations 6AM to 6PM.
- Diurnal fluctuations with cytokine waves.
- Day to day fluctuations over time with cytokine storms.
- Alternating cycles of fever, sweating, and chills.
- May develop food cravings, often for harmful foods.

Therapeutics

- Continue strategies already in place.
- Use moderate relaxant diaphoretics in formulas with mixed stimulant and relaxant effects.
- Keep patient warm when chilled.
- Intermittent short hot showers followed by warm blankets.
- Do not get out of bed too soon.
- See Lingard flu formula, or historical formulas with mixed herbal actions in following section.

Caution on diaphoretics

- Overdose, prolonged use, or inappropriate use may deplete the vitality and promote dehydration
- Caution in depleted or already dehydrated patients.
- Avoid driving excessive perspiration
- The purpose is to encourage ***ventilation*** not perspiration.
- “Only until normal moisture of the skin is attained”
    - William Cook - Physiomedicalist
- “Intake of these herbs should be discontinued immediately when the desire therapeutic results are attained”
    - Chen and Chen. Classical Chinese.

Fourth stage: Crisis and fall

- The set point falls.
- Drop may be abrupt, gradual, or in stages
- Feelings of heat
- Sweating may “soak the sheets.”

Therapeutics

- “If it ain’t broke don’t fix it.”
- Rest
- Hydrate
- Avoid chill
- Support elevated body temperature
- ***Do not get out of bed too soon***

Its not over till its over

- Influenza specifically has a seven day cycle.
- The fever may pass and the condition appear to be resolved after 2-3 day.
- See previous, cytokine surges recur again on day 4-6.
- 1918 retrospective study at Johns Hopkins: “Those who went to bed the earliest, stayed the longest, and had the best nursing care were most likely to survive.”
- The normal cycle is not well defined in COVID-19, but symptoms often return after appearing to be gone, and in serious cases a crisis point requiring hospitalization is often seen around day 10. Rest should continue at least 10 days from onset of symptoms.

Fifth stage: Recuperation

- Weakness, weak pulse
- Fast thready pulse
- Light headedness, dizziness
- Thirst.
- Possible alternating feelings of hot and cold.
-

Therapeutics

- Wait for natural hunger to return.
- Rest. Do not go back to work too soon.
- Demulcent foods and drinks. Fruit. Soups. Easily digestible stews. Seaweeds.
- Replenish omega-3 fatty acids.
- Althea water. *Althea* 3 with *Ulmus* 1 and *Glycyrrhiza* 1
- *Asparagus* (shatavari) and *Lycium* tea.
- Mild bitter tonics sparingly. *Populus* or *Salix*.
- This stage at least the length or double the length of the actual fever, possibly longer

Relaxant diaphoretics

- *Eupatorium*, warm tea
- *Sambucus*
- *Verbena spp.*
- *Asclepias tuberosa*
- *Lobelia*
- *Dioscorea villosa*
- *Corallorhiza spp*

Classical combinations

- Many traditional formulas from the Western tradition contain combinations of *Mentha*, *Achillea*, and *Sambucus flower*
  - Two mixed diaphoretics and one relaxant

- *Eupatorium* 2, *Asclepias* 4 , *Scutellaria* 2, Zingiber 1
  - Zingiber adds diffusive effect, and Scutellaria adds comfort.

General considerations

- Administer diaphoretics as hot teas.
- If using the tincture, deliver in hot water.
- Many diaphoretics have a hot/cold polarity – diaphoretic when given hot in mild concentration, but alterative/diuretic when given cold in strong concentration.
- Many warming diaphoretics are also emmenagogue.
- Many warming diaphoretics are also carminative and benefit the digestion.

Eupatorium perfoliatum

- The most famous and extensively used diaphoretic/febrifuge in North American history.
- Learned from Native Americans by European Colonists
- Became the panacea herbs for febrile illness in the colonies and through the mid-19th century.
- Used for malaria, dengue fever, yellow fever, influenza, and garden-variety fevers. Improved survival in influenza epidemics.
- Clinical effects imply that it enhances immunity and reduces inflammatory cytokines.
- Consider the tea may be much more effective than tincture. (See research on polysaccharides).
- Potentially emetic.
- Very bitter flavor, combines well with Zingiber for flavor and effect.
- Contains pyrrolizidine alkaloids, in both tincture and tea. Contraindicated in pregnancy, lactation, and young children.

Combinations with Boneset

- With Scutellaria, as decoction, and something warming.
- With Asclepias. This is very relaxant, very pain relieving.
- With Zingiber
- With other relaxant diaphoretics
- For comfort with Actaea and Caulophyllum
- Lavandula
- Mentha
- Due to potential hepatotoxicity, this herb should not be taken in pregnancy, lactation, or in young children, or for more than 2 weeks in an adult.

Asclepias tuberosa

- “pure relaxant”
- Relaxes pores, allows you to “sweat for free”
- Affects mucous, serous, and synovial membranes, cooling inflammation, and facilitating normal secretions.
- Combines well with a little *Zingiber*

Lobelia inflata

- A non-toxic plant. See series of articles at http://medherb.com
- A powerful relaxant to both smooth and skeletal muscle
- A relaxant diaphoretic
- A strong relaxant expectorant
- Relaxes the cough reflex
- Emetic and/or cathartic in higher doses.
- Combines well with a small amount of Capsicum or a somewhat larger amount of Zingiber.

Dry Cough

- Cough may have copious mucous, stuck mucous, or dry. Distinguish between stuck and dry coughs.
- Common presenting symptom of influenza is the dry irritable cough disturbing sleep.
- The natural host cell of the influenza virus is the epithelial cell in the bronchial tract and trachea. The infected cells are inflamed by the body's attempt to remove them, and mucous secretions may be deficient.
- Many herbal *stimulant expectorants* that are useful in moist coughs with accumulated or stuck mucous work by irritating the tissues slightly to produce new mucous.
- These usually are aggravating in a true dry inflamed cough
- The two categories most useful for the acute dry irritable cough are *relaxant expectorants* and *demulcents*.

Relaxant expectorants

- Tussilago farfara. Mixed relaxant and expectorant properties
- Lobelia inflata. Non-toxic, use lower doses.
- Asclepias tuberosa. Benefits mucous and serous membranes
- Usnea species. Water extract
- Sticta pulmonaria. Lungwort
- Thymus vulgaris. Mixed relaxation and stimulation, antispasmodic

Demulcents for cough

- *Althaea off, rosea*. Pure relaxant and demulcent. As effective as hydrocodone in one trial.
- *Tussilago farfara*. As above.
- *Ulmus fulva*, and other Ulmus species.
- *Glycyrrhiza*. Effective demulcent and moistener can counteract irritating effects of the milder stimulant expectorants in formulas. Taken in excess as tea or powder, may increase force of a cough through tonifying effects.

Media: Honey and sugar

- William Cook, M.D: Demulcent, and at the same time moderately stimulant to the respiratory mucous membranes.
- These are common components of cough syrups, and because of their gentle expectorant action, many cough preparations can be given in syrup form
- A hydromel is a simple combination of honey and water, such as would be used to ferment mead.

Vinegar, Lemon, Lime

- William Cook, M.D. Promotes the secretions of the throat and respiratory tract membranes
- Cook states that the action of vinegar tinctures are mostly restricted to the respiratory passages and stomach.
- An oxymel is a combination of vinegar and honey.

Recipe: Basic onion syrup

- Chop 5 or 6 white onions and place them in a double boiler.
- Add ½ cup of honey and the juice of 1 lemon and cook on lowest heat possible for several hours.
- Strain the mixture and take by the tablespoon from every ½ hour to every few hours as needed.
- May be used as delivery medium for tinctures.

Stimulating expectorants

- Avoid as simples in cough of influenza. May be used as smaller part of a net demulcent, relaxant formula
- Garlic
- Aralia racemosa
- Inula helenium
- Marrubium vulgare
- Grindelia spp
- Ligusticum spp.

Verbascum

- Leaf has complex effects
- Can be stimulating and irritating especially to dry cough
- Also has relaxant effects
- Frequently listed as demulcent in books, but this probably refers to flowers.
- Flowers are demulcent and relaxant, cooling, anti-inflammatory

Simple Dry cough formula

- Althaea hydromel, add strong honey to Althaea tea.
- Add 10 drops of lobelia tincture per 6 ounce cup of tea.
- Dose per 2 hours. Sip as needed.

Dry cough syrup

- Simmer 4 oz fresh Zingiber (ginger) root and 2 oz Glycyrrhiza (licorice) in 4 pints of water over low heat until the mixture has been reduced to 3 pints.
- Strain and add 3 cups of honey and the juice of one lemon.
- Add 1 cup each of Lobelia vinegar and Asclepias tincture
- Skim any froth that forms
- Add 1 dram each of essential oils of thyme and anise.
- Adults one Tbls, children 1 tsp, 5-6 times per day

Jillian Stansbury ND

Tea based oxymel

- Place one ounce of an herb in one quart of water.
- Reduce to a pint and a half.
- Strain.
- Add 4 ounces of vinegar and 4 ounces of honey.

Tincture based oxymel

- 1 pint of apple cider vinegar
- 2 ¼ lbs of honey
- Combine in a pot and simmer to the consistency of syrup.

Keep as pre-mixed medium for cough tinctures.

Tinctures can be delivered in a ratio of one part of tincture to 3 parts of oxymel.

North American Institute of Medical Herbalism
Portland, OR

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You can find supplemental materials and resources relating to the COVID-19 epidemic at the North American Institute of Medical Herbalism
http://naimh.com/coronavirus