Lifestyle and Asthma

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Just like you in practice: AASC-Madison
Milwaukee and Tele-ASAP
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Lifestyle Change advocate

Getting Better!

Behavior Change Including Diet and Exercise:
Transforming Challenges into Opportunities

Proportional Contribution to Premature Death

Objectives

- To better understand how integrative medicine (IM)/Lifestyle Change (LC) is different from complementary and alternative medicine (CAM) in the treatment of asthma.
- To better understand the different non-conventional/Lifestyle Change therapies used in the treatment in pulmonary conditions such as asthma in children/adults and evidence supporting their use.
- To discuss strategies for integrating non-conventional/Lifestyle Change therapies in the routine management of pulmonary conditions in children and adults especially related to ED.

3 four 50

3 risk factors

*smoking, diet, physical inactivity*

contribute to

4 common chronic diseases

diabetes, CVD, some Ca, Lung Disease

which are responsible for

50% of the world’s mortality

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Lifestyle and asthma/COPD

- Diet
  - Obesity
  - Antioxidants
  - Fibre
- Smoking
- Breathing techniques
- Psychosocial variables

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THE WESTERN DIET - Fuel for inflammation?

- Low antioxidant intake:
  - Increased use of processed foods
  - Low fruit, vegetable, whole grain intake
- Altered fatty acid profile:
  - Low n-3:n-6 fatty acid ratio
  - Low monounsaturated fat intake
  - Higher %saturated fat
  - Trans fats
- Chronic ‘metabolic surplus’ (→ Obesity)
- Less Fibre?
- Skip Breakfast?
**Eosinophilic Sputum**  
**Non-Eosinophilic Sputum**

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**Asthma and obesity: physiology**

Farah C, Salome CM. Respirology 2011;17: 412-421
Metabolic & Immune changes

XS substrate: caloric intake
Adipose tissue: function, cellular infiltration

Effects of a Hi fat food challenge in Asthma  Wood LG, JACI 2011;127:1133

Stable asthma, fast 12 hrs, then randomised to:

**High Fat food challenge:**
48gm total fat

**Low Fat food challenge:**
2.2 gm fat

Assessed at 0, 2, 4 hrs
Blood, sputum, FEV1

Wood LG, JACI 2011, 127:1133
Copyright © 2011 American Academy of Allergy, Asthma & Immunology
Impaired Bronchodilator Recovery after High Fat Meal

Wood LG, JACI 2011, 127:1035

Adipose tissue, fat, drives inflammation

Biochim Biophys Acta 2011, 1810, 1120-6
Lugogo N, Bappanad D, Kraft M

Serum Leptin increased in asthma

Berthon B, Respirology, 2012
Weight loss in obese asthma?

- Randomised trial:
  - asthma and obesity BMI>27
- 3 interventions:
  - 1. diet: meal replacements
  - 2. exercise: gym membership
  - 3. diet+ exercise

Hayley Scott, Lisa Wood, Clin Exp Allergy 2013

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Weight loss in obese asthma: is possible, and effective

Hayley Scott, Lisa Wood

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How much weight do you need to lose to benefit asthma?

5 to 10%

Hayley Scott, Lisa Wood
What about children?
Weight loss in obese children with asthma: a randomized controlled trial

Obesity and Asthma in Pregnancy

Obesity, Weight gain in pregnancy
- N=244, Age 28yrs
- Maintenance ICS 30%
- Smoker 17%
- Wt gain/week
  - 0.5kg
- Gain>recommended
  - 71%
**Obesity increases asthma exacerbation risk in pregnancy**

- Overweight
- Obese
- Column 3
- ICS
- FeNO

**Obesity and Asthma Management**

*We should manage obesity like we manage smoking*

**Antioxidants: fresh fruit and vegetables**
Carotenoids

Carotenoids are:
- antioxidants that act by scavenging free radicals
- red/orange pigments found in fruit and vegetables
  e.g. Lycopene (tomatoes, watermelon)
  β-carotene (carrots, mangoes)

Epidemiological data has shown relationships between:
- Dietary intake of Carotenoid-rich foods
  (Fruit, Vegetables and Tomatoes) and Asthma
- Blood levels of Carotenoids
  (lycopene, β-carotene, lutein and α-carotene) and FEV₁

Hypothesis

Carotenoid (lycopene) supplementation may protect against asthma

Kaplan-Meier survival curve for time to exacerbation in subjects consuming different study diets.

Lifestyle and asthma

- **Diet**
  - Obesity: risk factor for asthma, can be modified
  - Antioxidants: low in asthma, can be replaced
  - Fibre: watch this space!
- **Smoking and smoke free legislation**
- **Breathing techniques**
- **Psychosocial variables**

Smoking
Smoke-free legislation and asthma admissions

- In New Zealand, a 16% decline
  - Edwards E, NZ MoH 2006
- Meta-analysis, average 24% reduction in asthma admissions
  - Tan CE Circulation 2012
- Immediate reduction in asthma admissions
  - adult 4.9%, children 9%
  - UK, 4100 admissions prevented each year
Smoking, asthma, pregnancy

Effect of smoking on asthma exacerbations in pregnancy

- Asthma n=80
  - Smokers 34%
- Nonasthma n=46
  - Smokers 15%
- Smokers
  - Lo dose, 4 PY
  - 5-6 cigs/day

Murphy et al, Thorax, 2010

![Graph showing eCO, ppm levels for never, ex, and smoker categories]

![Graph showing exacerbation rates and cumulative exacerbations by smoking status]

Murphy Thorax 2010
Breathing techniques

Percentage of “severe asthma” patients with alternative or co-existent diagnoses causing symptoms

![Bar chart showing the percentage of patients with different diagnoses.]

**Conclusion:** Over half the patients treated in the community for asthma who have symptoms suggesting dysfunctional breathing, show a clinically important improvement in QoL following a brief physiotherapy intervention of breathing retraining. The effect persists for 6 months.
Breathing techniques: elements of successful programmes

- **Pattern**
  - Increased abdominal
  - Reduced clavicular
  - Apnea [breathhold]
- **Rate**
  - Reduced
- **Route**
  - Nasal vs oral

- ‘Felt sense of breath’
- Hypoventilation,
- Ancillary
  - Posture
  - Relaxation
  - Counselling/CBT

Psychosocial variables

Asthma with anxiety /depression = increased Exacerbation risk. Szechuan, China.

Abbreviation: NAD: neither anxiety nor depression symptoms; A/D: either anxiety or depression symptoms, AD: anxiety and depression symptoms. HADS: Hospital anxiety and depression scale.

Psychosocial issues and Asthma in Pregnancy

Illness beliefs and anxiety are associated with:

- Quality of life
- Asthma control
- Exacerbations
- Preterm birth
- Elective C section

Powell H, J Asthma 2011; 48:1032

Perceived control over asthma

- Perceived Control of Asthma Questionnaire
  - The perceived ability to deal with asthma symptoms and exacerbations
- Greater perceived control of asthma
- Reduced the risk of asthma exacerbation in pregnancy, OR 0.9
- For each 5 unit increase in PCAQ score, women were 40% less likely to exacerbate during the remainder of pregnancy

Powell H, J Asthma 2013; 50:383

Perceived control over asthma

- Perceived Control of Asthma Questionnaire
- Reduced preterm birth OR 0.84,
- Reduced C-section OR 0.8
- For each 5 unit increase in PCAQ score women were 80% less likely to have a preterm delivery

Powell H, J Asthma 2013; 50:383
Lifestyle and asthma

- Diet
  - Obesity: risk factor for asthma, can be modified
  - Antioxidants: low in asthma, can be replaced
  - Fibre: watch this space!
- Smoking and smoke free legislation
  - effective
- Breathing techniques, Psychosocial variables
  - Needs more research, but intervention looks promising

Lifestyle

- Ancient Rome
  - Otium: leisure time in which a person can enjoy eating, playing, resting, contemplation, academic endeavours

'It is better to lie on the naked ground and be at ease, than to have a golden coach and a rich table and be worried’ — Epicurean proverb

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**Study Design**

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<th>Group B</th>
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</table>

- PEF

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* ICS
Asthmatics Admitted to the ER:
Percent discharged at 6 hours by BMI

Asthmatics Admitted to the ER:
Medication Use as a function of BMI

Rodrigo R. et al, Chest 2007 Sept 21
Differential Response to Asthma Therapy as a function of BMI

- Montelukast
- Beclomethasone
- Placebo

Differential Therapeutic Response as a function of BMI

- Beclomethasone
- Placebo
- Montelukast

Differential Response to Therapy as a function of BMI

- Montelukast
- BDP

Objectives

- To better understand how integrative medicine (IM) is different from complementary and alternative medicine (CAM) in the treatment of asthma
- To better understand the different non-conventional/Lifestyle Change therapies used in the treatment in pulmonary conditions such as asthma in children and evidence supporting their use
- To discuss strategies for integrating non-conventional/Lifestyle Change therapies in the routine management of pulmonary conditions in children and adults

CAM Prevalence and Costs

- In 2007, adults in the US spent $33.9 billion out of pocket on visits to CAM practitioners and purchases of CAM products.
- Nearly two-thirds of the total out-of-pocket costs that adults spent on CAM were for self-care purchases of CAM products.
- Despite this emphasis on self-care therapies, 38.1 million adults made an >350 million visits to practitioners of CAM.
- If we include diet and lifestyle therapies the number is 5-10 times the above
CAM in Children

- 8 million individuals younger than 18 years of age used CAM in the United States in 2007.
- Adolescents, children living in the West, and those with parents with 12 years of education and prescription medication use were independently associated with higher overall CAM use.
- Common medical conditions and symptoms including gastrointestinal problems, anxiety/stress, dermatologic conditions, insomnia, musculoskeletal conditions, and sinusitis was associated with increase CAM use.
- Parental CAM use is a strong correlate of child CAM use.
- Many studies have found higher CAM use among children with chronic conditions (asthma, ADHD, autism, cancer, food allergies, juvenile idiopathic arthritis, type 1 diabetes and sickle cell anemia).

PED Vol 125, Number 2, February 2010
**Complementary and Alternative Medicine & Integrative Medicine**

Complementary and alternative medicine (CAM)
- A group of diverse medical and health care systems, practices, and products
- Not considered part of conventional medicine
- Some scientific evidence exists regarding CAM therapies
- For most, questions of safety and efficacy persist
- Integrative-Lifestyle medicine combines mainstream medical therapies and CAM therapies for which there is some high-quality scientific evidence of safety and effectiveness.

**Integrative Medicine**

Integrative medicine is an approach to the delivery of health care that draws on the best of the scientific approach to medicine, but refocuses on:

- The responsibility of the physician to involve the patient in their health
- The importance of compassion and caring
- The willingness to entertain non-conventional modalities with informed skepticism and scientific evaluation
- The recognition of the importance of the mind-body relationship in well being
- Prospective health planning
Enhance the mind’s capacity to affect bodily function and symptoms

**Chiropractic**
**Osteopathy**
**Massage**

Major Classes of CAM

- **Manipulative & body-based methods**
- **Energy therapies**
  - Homeopathic
  - Naturopathic
  - Traditional Chinese and Ayurvedic treatments
  - Dietary supplements
  - Herbs
  - Foods
  - Vitamins
  - Natural substances
  - Biofield therapy
  - Bioelectromagnetic therapy

Alternative Medical Systems

- **Homeopathic medicine** is a belief that “like cures like”: If substances (animal, plant, mineral) are given at higher or more concentrated doses they would actually cause those symptoms, more dilute the stronger.
  - The notation 6X means that the active substance is diluted 1:10 in a water-alcohol mixture and succussed. This procedure (diluting and succussing) is repeated sequentially six times.

- **Naturopathic medicine**, or naturopathy, believe in a healing power in the body that establishes, maintains, and restores health. Use nutrition, lifestyle counseling, supplements, homeopathy and Chinese medicine

- **Traditional Chinese Medicine (TCM)** uses the belief in an unseen vital energy that affects patients’ health and how this energy, or qi (chi), flows through the appropriate channels is monitored

Flu Plus

- Aconitum napellus 4X Monkshood
- Bryonia 4X Black-berried White Bryony
- Eupatorium perfoliatum 4X Boneset
- Ipecacuanha 6X Ipecacuanha root is emetic
- Pulsatilla 6X Wind Flower, antispasmodic, alterative and diaphoretic
- Mercurius corrosivus 8X Violent coryza, with heat and dryness in the nose, rather scanty mucus discharge
- Phosphorus 8X
- Sulphur 8X
- Influenzinum 12X from the influenza vaccination
- Lachesis mutus 12X Bushmaster snake venom
**Energy Therapies**

- **Energy therapies** involve the use of energy fields. They are of two types:
  - **Biofield therapies** are intended to affect energy fields that purportedly surround and penetrate the human body, the therapy manipulate biofields by applying pressure and/or manipulating the body by placing the hands in, or through, these fields
    - Qi Gong, Reiki, Therapeutic Touch
  - **Bioelectromagnetic-based therapies** involve the unconventional use of electromagnetic fields, such as pulsed fields, magnetic fields, or alternating-current or direct-current fields.

**Manipulative and Body-Based Therapies**

- Manipulative and body-based methods are based on manipulation and/or movement of one or more parts of the body.
  - **Chiropractic** focuses on the relationship between bodily structure (primarily that of the spine) and function
  - **Osteopathic medicine** emphasizes diseases arising in the musculoskeletal system; body’s systems work together, and disturbances in one system may affect function elsewhere. There are 6 major categories of osteopathic manipulation with over 100 different techniques.
  - **Massage** therapists manipulate muscle and connective tissue to enhance function of those tissues and promote relaxation and well-being.

**Mind-Body Therapies**

- Mind-body therapies or cognitive behavioral therapies encompass several approaches.
  - These include relaxation therapy, breathing exercises, biofeedback, and hypnosis and guided imagery.
  - The theory is based on decreasing the inflammatory process that can be triggered by the autonomic nervous system through strong emotions.
  - Stress has been associated with higher morbidity and cytokine levels attributed to airway inflammation.
  - In addition to anxiety, stress is shown to influence the immune response and may promote increased sympathetic activity, and promote airway inflammation without overt symptoms

*Ann Allergy Asthma Immunol. 2004;93:S11-S17*
Biologically Based Therapies-

1. Biologically based therapies in CAM use substances found in nature
   - herbs
   - foods
   - vitamins
   - Includes all the dietary supplements, herbal products, and the use of other so-called natural therapies.

Dietary supplement use is prevalent among children with a chronic illness J Am Diet Assoc. 2005 Jun;105:78-84

Dietary Supplement Health and Education Act (DSHEA)

- Acknowledges the potential health benefits of dietary supplements
  - Must contain vitamins, minerals, herbs or botanicals, amino acids, or any combination of these
  - May affect the structure or function of the body
  - Cannot claim to cure or treat disease
  - New Drug Application process avoided
  - No quality control requirements, no good manufacturing standards enforced, and no oversight by the FDA (changed as of June 2007)

http://www.cfsan.fda.gov/~dms/dietsupp.html
http://www.fda.gov/opacom/laws/dshea.html

Depending on the use intended by the manufacturer, garlic products are classified for regulatory purposes in one of eight categories: conventional food; dietary supplement; food for special dietary uses; biologic; drug; medical device; cosmetic; or food additive.
Figuring out what lies in that areas is the hard part!

Case Presentation

- 5 year old boy (Caucasian) with a positive family history for atopic disorders including eczema and food allergies/intolerances (eczema worse with certain foods).
- Lives in an urban area, did attend daycare as infant
- Recently, started having respiratory symptoms such as nighttime cough and cough with exercise.
- Often will wake up in the morning with sneezing episodes.
- History of recurrent ear infections in the first 2 years.
- Overweight with BMI of 38%

Case Continues

- Further history: full term at birth, did have several episodes of "bronchiolitis" in the first 2-3 years of life, treated with albuterol and oral steroids- which helped
- Does have several pets including cat, two dogs and a hamster
- Has three older sibs (with some similar problems but not as severe) and the parents are together (non-smokers).
- He does well in school and is very active. The parents try to keep his room "clean".
- Is this asthma?
Case Continues

- Parents are uneasy about the continued use of inhaled steroids (although he does better on them)
- Parents are interested in more "natural" approaches or complementary and alternative (CAM) therapies
- When asked which ones, they are unsure- so asked you for suggestions. ....
- What do you say? What do you do?
- Although there are guidelines for conventional asthma therapies there are no such guidelines for CAM therapies to treat asthma

Google: CAM and Asthma -> 1 million hits

2007 NHLBI Guidelines

- Guidelines for the Diagnosis and Management of Asthma was developed by National Asthma Education and Prevention Program (NAEPP).
- This document was evidence based:
  - Focused on asthma severity and control concepts of impairment and risk
  - Stepwise approach in long term management
  - Emphasis on approaches to patient education, control of environment and co-morbid conditions

Asthma can be hard to control due to many triggers/causes

- Atopic triggers: pollen, mold, dust mite, pet dander, foods
- Viral infections: RSV, rhinovirus, adenovirus
- Lower respiratory infections: chlamydia, mycoplasma
- Environmental: dust, pollution, diesel fuels
- Exercise
- Weather change
- Gastroesophageal reflux
- Stress/vocal cord dysfunction
- Family Stress (esp maternal)
- Chronic lung disease of prematurity
- Vitamin D deficiency
- Chronic nasal drainage/sinusitis
- Obesity
- Low intake of omega-3 fatty acids (including maternal diet)
- Antibiotic use in 1st yr of life
- Acetaminophen use in 1st yr of life
- Maternal magnetic field exposure-pregnancy
Remember-Asthma can look like anyone-so therapies vary.

Using CAM to Treat Asthma

- Before suggesting different CAM therapies...do any of them work?
- Research has been done on many but rarely in children and rarely the “gold standard” of a randomized control trial.
- However, there are some therapies were research is promising and others were therapies have been used for centuries (traditional use) suggesting safety and efficacy
- Resources are available but hard to interpret at times since there are so many CAM therapies advertised as effective.

CAM Use in Children with Asthma

- CAM in children with asthma ranges from 33% to 89%.
  - Common: breathing techniques, herbal products, homeopathy and acupuncture (17 studies, 2006)
  - Recent survey of over 2,000 children: supplemental vitamins, homeopathy and acupuncture top three (2010)
  - Varies by geographical location and ethnicity (30% reported in some Asian populations)
- Reasons for using CAM therapies:
  - Concern about the long-term effects of steroid use (even inhaled)
  - Frustration that asthma does not resolve with conventional therapies
  - Dissatisfaction with physician-patient interactions (exacerbations occur)
  - Belief that CAM is natural and, therefore, safe
  - Desire to have autonomy in making health choices.
Consider an Integrative Approach

- Integrative medicine combines mainstream medical therapies and CAM therapies for which there is some high-quality scientific evidence of safety and effectiveness.
- Start with a knowledge of each modality both by the practitioner and the family.
- Just like there is with conventional therapies, there needs to be adherence and follow-up.
- Often just having the discussion of CAM helps improve adherence to conventional therapies.
- Develop a plan, which can easily change.

Where to start?

- For the patient who has mild to moderate asthma, a step-wise approach in addition to conventional care might be considered.
- May include (my personal preference):
  - Lifestyle
  - Nutrition
  - Supplements
  - Mind-Body therapies,
  - Manipulative therapies and Alternative Health Care approaches (Traditional Chinese Medicine and Homeopathy)

Lifestyle

- Asthma is best treated early in an attempt to delay or decrease the progression of the disease.
- Avoidance of allergens, tobacco smoke, and air irritants
- Sleep — recent study of OSA and severity of asthma showed that treating OSA improved asthma symptoms.
- Exercise — especially normal BMI
- Family involvement is crucial for success.
Exercise is Good!

- Exercise used to be considered dangerous for asthma patients
- Exercise is now considered a valuable tool for patients
- Exercise also shown to decrease the need for rescue medications
- Exercise can help with self esteem


Exercise - How?

- Help and direction should come from the health care team.
- The regimen needs to take into account the patient’s interests and limitations- so called “prescription for exercise”
- The program should be organized if possible to allow slow increases and some monitoring of the progress
- Areas such as nutrition, fluid status and lung function should be watched closely and suggestions for maintaining good health should be available.

Exercise and Asthma

- Place to start is dietary counseling and exercise-both of which will help with underlying asthma
- Exercise, when asthma is controlled, can help decrease asthma symptoms and decrease amount and need for medication
- There is a link between obesity and asthma and both have an inflammatory component, however, the exact relationship is unclear.

Because diet is the major source of antioxidants, suboptimal intake during airway growth may lead to airway damage and reduced airway compliance. There are studies in chronic lung disease such as COPD and asthma showing the beneficial association between fruits, vegetables, and other antioxidant-rich foods including fish. Along with a high calorie, high protein diet, patients should increase their consumption of fruits and vegetables. An increase diet in these foods has been correlated with better lung function most likely due to their antioxidant properties.

Nutrition and Asthma: Summary
- There is evidence of an association between nutrition and asthma; however, the clinical and public health relevance of the associations remains unclear.
- There is growing evidence that should help us to advise individuals with asthma, pregnant women, parents and children to change or supplement their diet in order to treat or reduce the risk of developing asthma.
- There is some evidence (albeit weak) that antioxidant or PUFAs supplementation can be used as an adjunct to conventional therapy for asthma.
- The maternal intake of Vit E, Vit D and PUFA during pregnancy provides the most promising evidence.
Mind-Body Therapies

- Mind-body therapies or cognitive behavioral therapies encompass several approaches.
- These include relaxation therapy, breathing exercises, biofeedback, and hypnosis and guided imagery.
- The theory is based on decreasing the inflammatory process that can be triggered by the autonomic nervous system through strong emotions.
- Stress has been associated with higher morbidity and cytokine levels attributed to airway inflammation.
- In addition to anxiety, stress is shown to influence the immune response and may promote increased sympathetic activity, and promote airway inflammation without overt symptoms.

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Ann Allergy Asthma Immunol. 2004;93:S11-S17
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Mind-Body Therapies –Asthma

- Self hypnosis, Breathing exercises including yoga, Relaxation with or without guided imagery have all been studied in both asthma
- Guided imagery and/or self-hypnosis has been shown to decrease shortness of breath or dyspnoea.
- Shown to decrease chronic symptoms such as cough and decrease the use of certain medications such as albuterol
- Breathing exercises may also help with lung expansion especially breathing used in Yoga and martial arts
- Buteyko breathing and asthma
Dietary Supplements and Asthma

- Herbal medications are classified as dietary supplements and are derived from plants.
- Forms: pills, capsules, or powders; used as tinctures or syrups; brewed in teas or decoctions; or “applied” as salves, ointments, or poultices to the skin
- Natural products can vary by CAM provider/source:
  - TCM: Shinpi-to, Licorice root, Ma huang, Gingko biloba
  - Kanpo (Japan): Saiboku-to, Sho-wei-ryu-to, Sho-saiko-to
  - Ayurvedic medicine (India): Coleus forskohlii, Tylophora indica, Mullein
  - Puerto Rican: Siete jarabes, Aigua marvella, Jarabe maguery
  - European: coffee and tea, onions, Gingko biloba
  - Native America: Evening primrose, Jimsonweed, Licorice root, Mullen, Slippery elm bark, Wild cherry bark, bee pollen
  - Western: pycnogenol, ginger, onion, garlic

Example: Studied Supplement in Asthma

Pycnogenol (a proprietary mixture of water-soluble bioflavonoids extracted from French maritime pine) was studied in mild to moderate asthma

- Over 3 months, using peak flow monitoring, symptom diaries, medication use, changes in oral medications and urine samples for leukotrienes C4, D4, and E4, the Pycnogenol group had significant improvement in pulmonary function, asthma scores and reduction in urinary leukotrienes.

- The Pycnogenol group also was able to reduce or discontinue their use of rescue inhalers more often than the placebo group

Cochrane Database of Systematic Reviews 2012; Issue 2. Art. No.: CD008294. DOI: 10.1002/14651858.CD008294.pub3

J Asthma 2004;41:825–32.
Alternative Systems: Traditional Chinese Medicine (TCM)

- TCM uses the belief in an unseen vital energy that affects patients' health and how this energy, or qi (chi), flows through the appropriate channels is monitored.
- Practitioners can affect this flow or intensity by manipulating its balance using acupuncture, Asian herbs, diet, and physical therapy.
- Asthma has been recognized in Asian medicine for centuries and there are traditional herbal formulas used in the everyday practice of TCM.

TCM Continued

- There have been several double-blind, placebo-controlled, clinical studies investigating the safety and efficacy of Asian herbal supplements in the treatment and the mechanism of asthma.
- One study showed a three-herb asthma formulation, when compared with prednisone in 91 adults who had asthma showed significant reduction in clinical symptoms, airway reactivity, and biomarkers of airway inflammation.
- STA-1 is another Asian herbal mix was studied in 120 children, who had mild to moderate asthma. This randomized, double-blind, placebo-controlled study showed that pulmonary function (FEV1) and clinical symptoms improved in the STA-1 group over placebo.


Acupuncture?

- Another modality often used is acupuncture for both chronic and acute asthma.
- Asthma was listed in the 1997 NIH Consensus paper as a condition that responded to acupuncture.
- A review by the Cochrane collaboration of 11 studies for acupuncture and asthma concluded that there is not enough evidence to make recommendations.
- However, most studies had significant methodological problems and these are now being addressed (laser, sham methods etc).
- Recent study did show improved dyspnea on exertion in adult with COPD (n=111) in Japan.

Manipulative Therapies in Asthma

- Manipulative therapies include osteopathic manipulation, chiropractic manipulation and massage.
- Children with asthma along with their parents have reported a positive response to massage therapy with reduction in anxiety, improved mood and increase in peak flow measurements have been shown in small studies.
- Therapeutic massage can help drain mucus from the lungs.
- Osteopathic manipulation- 5 main categories with over 100 different individual maneuvers.

Integrative Asthma Action Plan

- Medications- what are the most important and how to improve adherence, discuss concerns about side effects and cost.
- Lifestyle changes including exercise.
- Nutrition and dietary changes.
- Supplements including herbal remedies.
- Possible use of TCM and Manipulative therapies.
- Most important: education in regard to all aspects of the health care plan.

Integrative Asthma Action Plan

- Medications: low dose ICS or leukotriene modifier plus prn reliever (albuterol).
- Environmental control: cat/dog/rabbit/dust mite- consider testing if still symptomatic.
- Education and direction using devices and asthma action plan.
- Dietary changes: decrease processed high fat foods and increase fruit/vegetable/fish.
- Exercise which could include martial arts/yoga.
Integrative Asthma Action Plan

- Consider teaching relaxation/imagery
- Assess stress in the home and decrease if present
- Consider adding dietary supplements, multi-vitamin and fish oil (omega three fatty acid preparation)
- Consider referral to TCM practitioner for evaluation
- Follow-up with goal of reducing ICS, repeating spirometry and re-enforcing self-management skills

Other Modalities to Consider

- Naturopathic evaluation—Licensed Naturopath may use herbal remedies, acupuncture, homeopathy and functional medicine
- Manual therapies including osteopathic therapy, chiropractic manipulation and massage
- Psycho-social intervention if significant emotional component
- More structured exercise program including swimming, soccer, and martial arts
- Other cognitive therapies such as bio-feedback, journaling and meditation and MOTIVATIONAL INTERVIEWING

That’s Enough!
### Randomized, controlled trials

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<th>Risk</th>
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<td>Increased risk of allergic reactions</td>
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<tr>
<td>Exercise</td>
<td>Strengthens muscles, improves cardiovascular health, enhances mental well-being</td>
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<tr>
<td>Environment</td>
<td>Reduces stress, improves concentration, boosts mood</td>
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<tr>
<td>Mind-body</td>
<td>Enhances mood, reduces anxiety, improves sleep quality</td>
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### Side effects and drug interactions

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<th>Therapy</th>
<th>Side effects</th>
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<td>Diarrhea, nausea, cramps</td>
<td>None</td>
</tr>
<tr>
<td>Exercise</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Environment</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Mind-body</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

### Randomized, controlled trials

**Therapy**

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Benefits demonstrated</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet</td>
<td>Boosts immune function, reduces inflammation, improves digestion, boosts energy</td>
<td>Increased risk of allergic reactions</td>
</tr>
<tr>
<td>Exercise</td>
<td>Strengthens muscles, improves cardiovascular health, enhances mental well-being</td>
<td>None</td>
</tr>
<tr>
<td>Environment</td>
<td>Reduces stress, improves concentration, boosts mood</td>
<td>None</td>
</tr>
<tr>
<td>Mind-body</td>
<td>Enhances mood, reduces anxiety, improves sleep quality</td>
<td>None</td>
</tr>
</tbody>
</table>

**Side effects and drug interactions**

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Side effects</th>
<th>Drug interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet</td>
<td>Diarrhea, nausea, cramps</td>
<td>None</td>
</tr>
<tr>
<td>Exercise</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Environment</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Mind-body</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
Energy and Biomechanical

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Benefits demonstrated</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomechanical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massage</td>
<td>Yes, more in children when provided by trained parents</td>
<td>None</td>
</tr>
<tr>
<td>Neck manipulation</td>
<td>Anecdotally evidence only</td>
<td>Cold, X-ray exposure</td>
</tr>
<tr>
<td>Acupuncture</td>
<td>Conflicting data</td>
<td>More studies needed</td>
</tr>
<tr>
<td>Healing touch</td>
<td>Positive results in one case series</td>
<td>None</td>
</tr>
<tr>
<td>Prayer</td>
<td>No controlled trials in children</td>
<td>None</td>
</tr>
<tr>
<td>Homeopathy</td>
<td>One study with minimal positive impact in adults</td>
<td>None</td>
</tr>
</tbody>
</table>

http://altmed.creighton.edu/asthma/complementary%20rx.htm

WHY WE TEACH

A CONSISTENT APPROACH TO ASTHMA EDUCATION REDUCES HOSPITAL and EMERGENCY ROOM RE-ADMISSION RATES

- Resp Care Nov 2008 53(11):1542
- E. Conway
- S. Brungs
- L. Deveto
- D. Herzog
PATIENT EDUCATION

- EPR-3 confirms the importance of teaching patients skills to self-monitor and manage asthma and to use a written asthma action/lifestyle plan, which should include instructions for daily living as well as treatment and ways to recognize and handle worsening asthma.

CHOOSE ONE??

DISPARITIES IN ASThma CARE
THE AAFA (Asthma and Allergy Foundation of America) RESEARCH REPORT

- Ethnic differences in asthma prevalence, morbidity and mortality are correlated with poverty, urban air quality, indoor allergens, inadequate medical care and lack of patient access and education

- In WI, lifetime asthma prevalence among adults increased from 10.6% in 2000 to 13.7% in 2009 to 14.8% in 2012.
RESEARCH DATA (cont)

- Among WI adults, lifetime prevalence of asthma was twice as high in non-Hispanic African Americans as in non-Hispanic whites.
- Children had the largest increase in prevalence and had greater health care use but adolescents had the highest mortality.
- The asthma burden was borne disproportionately by Black children.

UNDER-DIAGNOSED ASTHMA

Under-diagnosed asthma comprised about 1/3 of all identified asthma cases in Dean EDs.

1) Under-diagnosed means under-managed
2) Contributes to poor outcomes
3) Responsible for early a/w remodeling & increased risk of mortality and long term impairment
4) Associated with low physical activity
5) Also with increased BMI
6) Affects psychosocial development
7) Most don’t even have a current SABA
8) Few of those have been adequately evaluated

Severity Classification Per Patient

- Most asthma is self-assessed relying upon symptom recognition-frequency, intensity and duration
- Inverse relationship between the subjective assessment of asthma and the objective measurement
- ACT’s can be misleading
MOST UNDER DIAGNOSED POPULATIONS

- African Americans
- Hispanics
- Children
- Elderly
- Low income residents

THESE ARE THE LARGEST PRODUCERS OF ALL THE NEGATIVE OUTCOMES AND HIGHEST MEDICAL RESOURCE UTILIZERS

Journal of Respiratory Care Science OCT 2011

Impulse Oscillometry (IOS)

- Non-effort dependent (i.e., just tidal breathing)¹
- Measures airway resistance and reactivity¹
- Multiple oscillatory frequencies define the multiple levels within bronchial tree—“bronchial sonar”
  - R5: total airway resistance²
  - R20: large airway resistance³
  - R5-R20: small airway resistance⁵

Interpretation of IOS Results

- Except for central resistance, all IOS parameters showed increased abnormality with increased asthma severity and airflow obstruction

- Healthy volunteers (n = 24)
- Mild-moderate asthma (n = 15)
- Severe asthma (n = 21)
Definition of Fractional Exhaled Nitric Oxide (FeNO)

- A noninvasive biomarker of airway inflammation studied in more than 2000 peer-reviewed articles
- FeNO measurement
  - Is performed by having a patient exhale a single breath into a nitric oxide analyzer
  - Provides results similar to eosinophil count in induced sputum
  - Offers a significantly higher diagnostic yield than spirometry
  - Correlates well with eosinophilic inflammation and accurately reflects extent of inflammation
- FeNO use is of high clinical value in assessing underlying inflammatory disease activity of asthma patients and in monitoring and managing their disease

American Thoracic Society Clinical Practice Guideline on FeNO

Recommends use of FeNO to
- Diagnose eosinophilic airway inflammation
- Determine the likelihood of corticosteroid responsiveness in patients with chronic respiratory tract symptoms possibly arising from airway inflammation
- Support the diagnosis of asthma in cases for which objective evidence is needed
- Monitor airway inflammation in patients with asthma

In April 2012, the ACAAI and AAAAI issued a joint position statement in support of the ATS guidelines on FeNO

FeNO Is a Useful Measure in the Clinical Management of Asthma

- Fractional exhaled nitric oxide (FeNO) is a good surrogate marker of eosinophilic inflammation, which is associated with steroid responsiveness
- FeNO significantly correlates with bronchial hyperresponsiveness, bronchodilator reversibility, and atopy
- FeNO can help distinguish asthma from other respiratory conditions
- FeNO is reproducible and is associated with other markers of asthma severity
- FeNO is a useful measure for monitoring adherence to ICSs and for assisting in optimizing the dose of ICSs to obtain both symptom control and inflammation control
- Studies suggest that small-particle ICSs have a greater effect on alveolar FeNO than large-particle ICSs
American Thoracic Society Clinical Practice Guideline on FeNO

Recommends use of FeNO to:

- Diagnose eosinophilic airway inflammation
- Determine the likelihood of corticosteroid responsiveness in patients with chronic respiratory tract symptoms possibly arising from airway inflammation
- Support the diagnosis of asthma in cases for which objective evidence is needed
- Monitor airway inflammation in patients with asthma

In April 2012, the ACAAI and AAAAI issued a joint position statement in support of the ATS guidelines on FeNO.

ACAAI, American College of Allergy, Asthma, and Immunology; AAAAI, American Academy of Allergy, Asthma, and Immunology.


Toward Control of Asthma

Control—the degree to which the manifestations of asthma (symptoms, functional impairment, and risk for untoward events) are minimized and goals of therapy are met

- Reduce impairment:
  - Prevent chronic and troublesome symptoms
  - Require infrequent use (≤2 days/week) of short-acting β2-agonist for quick relief of symptoms
  - Maintain (near) “normal” pulmonary function
  - Maintain normal activity levels
  - Meet patients’/families’ expectations and satisfaction with care

- Reduce risk:
  - Prevent recurrent exacerbations and minimize need for ED visits/hospitalizations
  - Prevent progressive loss of lung function
  - Provide optimal pharmacotherapy with minimal/no adverse effects

Reference:

Addressing the Gaps in Asthma Management

A Patient-centric, Team-based. PBL Guided Approach

FORWARD THINKING NOT BACKWARD THINKING
Key Challenges Have Been Identified for Achieving Better Quality of Care

- Cost & time
- Adherence & health literacy of patients
- Monitoring, follow-up, & patient tracking
- Need for adequate standardized chronic disease guidelines
- Need for reliable outcome measures

*In chronic disease management, the gap is between what we know and what we do.*

References:

What Could an Ideal Approach to Meet These Challenges Look Like?

- Eliminate barriers to care
- Utilize advanced information systems
- Consider more functional offices
- Support a whole-person orientation
- Provide care in a community context
- Focus on quality and safety
- Communicate available services and resources (SGT)

PBL Pathways is a Collaborative, Team-based Program Developed to Help Meet the Needs of Health Systems

Integrated Care Program
Supporting Patient-centered Management

- Access Priorities and Develop Strategies
  - Disease state education
  - Practical integration
  - At-risk patient identification
  - Treatment
  - Patient treatment adherence and persistency tracking

Program Goal
- Collaborative care model
- Measures to assess program success
- Positively impact patient care
Learn practical approaches to consider incorporating the pathways into a chronic disease care model
- Improve your patients’ asthma literacy
- Learn how to empower patients to be motivated and informed
- Improve the quality of the patient-physician dialogue
- Develop a practice culture to support improvement in asthma care
- Enhance the patient care pathway to physician-supervised patient self-management

Making a Diagnosis of Asthma

- Determine:
  - Presence of episodic symptoms of airflow obstruction or airway hyperresponsiveness
  - Airflow obstruction is at least partially reversible
  - Alternative diagnoses are excluded
- Key considerations for making a diagnosis of asthma:
  - Wheezing
  - History of: cough (especially at night), recurrent wheeze, recurrent difficulty in breathing, recurrent chest tightness
  - Symptoms occur or worsen in the presence of: exercise, viral infection, animals with hair or fur, house dust mites, mold, smoke, pollen, changes in weather, strong emotional expression, airborne chemicals or dust, menstrual cycles
  - Symptoms that occur or worsen at night, awakening the patient

Assess Risk for Exacerbations to Determine Asthma Severity

-Exacerbation—acute or subacute episodes of progressively worsening shortness of breath, cough, wheezing, and chest tightness, or some combination of these symptoms

- Assess for increased risk for exacerbations
  - Severe airflow obstruction (detected by spirometry)
  - Persistent severe airflow obstruction
  - Two or more ED visits or hospitalizations due to asthma in the past year
  - History of intubation or intensive care unit (ICU) admission, especially if occurring in the past five years
  - Patient report of feeling in danger or frightened by their asthma
  - Demographic/other characteristics associated with higher risk: female, nonwhite, nonuse of inhaled corticosteroid therapy, current smoking
  - Psychosocial factors: depression, increased stress, socioeconomic factors
  - Attitudes and beliefs regarding medications

References:
Toward Asthma Control: the Collaborative Care Team
A Collaborative Care Model for Change

Community

Health Systems

Self-management Support

Decision Support

Clinical Services

Informed, Activated Patient

Prepared, Proactive Practice Team

Functional and Clinical Outcomes


Towards Asthma Control: Utilizing Electronic Medical Records (EMRs)

Toward Asthma Control: Utilizing Electronic Medical Records (EMRs)

Barriers to Achieving Asthma Control
Health Literacy is a Key Factor in Chronic Disease Management

Health literacy is the ability to read, understand, and act on health care information.1

- Health literacy affects people’s ability to:
  - Navigate the healthcare system, including filling out complex forms and locating providers and services
  - Share personal information, such as health history, with providers
  - Engage in self-care and chronic-disease management
  - Understand mathematical concepts such as probability and risk

- Low literacy is associated with several adverse health outcomes, including:
  - Low health knowledge
  - Increased incidence of chronic illness
  - Poorer intermediate disease markers
  - Less than optimal use of preventive health services


Indications of Limited Health Literacy

- Behaviors that may suggest literacy problems
  - Patient registration forms that are incomplete or inaccurately completed
  - Frustrated missed appointments
  - Difficulty with medication regimens
  - Patients say they are taking their medications, but laboratory tests or physiological parameters do not change in the expected fashion
  - Reluctance to take written materials along with reliance on oral explanations and demonstrations of tasks
  - Having intermediaries serve as surrogates

- Responses to receiving written instructions
  - “I forgot my glasses.”
  - “I’ll read this when I get home.”
  - “Can you read this to me?”
  - “Let me bring this home so I can discuss it with my children.”

- Responses to questions about medication regimens
  - Unable to name medications and explain what they’re for


Assessing Health Literacy Deficiencies

- How many of you feel your patients don’t always fully understand information they receive?

- Percent of patients with adequate literacy declines with age

- Nearly one of every two patients (46%) misunderstood one or more dosage instructions

Tips/Techniques: Helping to Increase Patients’ Health Literacy via Proactive Care Management

- Slow down, speak slowly, and spend extra time with each patient.
- Use plain, non-medical language.
- Use visual aids such as pictures or videos.
- Limit the amount of information and repeat it.
- Ensure medication dosing instructions are clear. Poor example for dosage instructions: Take 2 tablets by mouth. Possible interpretations: Take 2 tablets once-daily OR take 1 tablet twice-daily.
- Use a “teach back” or “show me” approach to confirm understanding. Have patient explain information back to you to ensure he or she understands.
- Create a shame-free environment: encourage questions.

Patient Care Pathway Map
More Tools for Assessing Asthma Control

**Asthma Control Test™ (ACT)™**
5-question survey to assess asthma control

**Asthma Control Questionnaire (ACQ)**
7-question questionnaire that measures asthma control and changes in asthma control

**Asthma Therapy Assessment Questionnaire® (ATAQ)**
4-question assessment tool that is easy and quick to perform

References:

NHLBI Guidelines

When Asthma Control Is Not Achieved—What’s Next?
- Conduct assessment to identify barriers
  - Is the patient’s health literacy adequate?
  - Is patient adhering to full management regimen?
  - Is patient taking medications as prescribed? Using correct inhaler technique?
  - Is the patient effectively practicing self-management (avoiding triggers, using medications appropriately)?
  - Other?
- Assess lung function with spirometry and compare to previous measurement
- Consider step-up therapy according to the NHLBI Guidelines
- Emphasize importance of communication between team and patient for accurate monitoring and optimal delivery of care

References:

When Asthma Is Not Achieved, CONSIDER:

NON-ADHERENCE as a Contributing Factor
Changing Attitudes: Adherence is Not Solely a Patient Problem

"Extent to which a patient's behavior (in terms of taking medication, following a diet, modifying habits, or attending clinics) coincides with medical or health advice"  
Termiology is "intended to be non-judgmental, a statement of fact rather than of blame of the prescriber, patient, or treatment"  
Synonyms: Compliance Concordance


Inadequate Interactions Among Patients, Providers, and Healthcare Systems May Impede Adherence to Therapy

Poor Provider-patient Communication
- Patient has a poor understanding of the disease, benefits/risks of treatment, proper use of medication

Patient’s Interaction with Healthcare System
- Poor access or interest in clinic appointment
- Poor treatment by clinic staff
- Poor access to medications
- Switching to a different formulary
- Inability of patient to access pharmacy
- High medication costs

Provider prescribes overly complex regimen

Provider’s Interaction with Healthcare System
- Inadequate communication across the system
- Inadequate internal support
- Poor knowledge of drug costs
- Poor knowledge of drug formulary coverage
- Low level of job satisfaction


Improving Adherence: Tips from the Guidelines

ASSESS AND ENCOURAGE ADHERENCE DURING ALL ASTHMA VISITS

Use effective techniques to promote open communication

Begin each visit by asking about the patient’s concerns and goals

Assess specifically about any concerns about medications/treatment

Assess patient’s perception of their asthma severity and how well it is controlled

Assess patient’s level of social support; encourage family involvement

Assess levels of stress, family disruption, anxiety, and depression associated with asthma and its management

Assess patient’s ability to adhere to the written action plan

Adherence

What the Provider Might Do to Address Adherence

- During each visit and patient contact, emphasize benefits of therapy and impact of non-adherence
- Simplify the treatment plan and instructions to patient
- Look for signs of non-adherence—for example:
  - Do the patient’s asthma symptoms fail to improve despite appropriate therapy?
  - Is the patient missing appointments?
  - Does pharmacy report patient is not refilling prescription?
- Suggest patient uses some type of medication-taking system or reminder
- Seek assistance from family members, friends, community services to support patient
- Look Forward Approach—don’t focus on the past; develop goals with the patient for future success

Adherence

Some Strategies the Group Practice Might Use to Improve Adherence

- Continually assess and strive for an atmosphere that fosters patient-centric care
- Track adherence rates to medication, ED visits
- Evaluate data to identify barriers to adherence
- Conduct patient and provider surveys to identify potential barriers to adherence/optimal patient care
- Institute programs that encourage adherence
- Promote patient education that provides pathways to adherence
- Implement guidelines for managing non-adherence
Motivational Interviewing

Client-centered directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence


Population Management

Physician presents patient’s asthma case at monthly group-practice meeting.

Several physicians report having patients who have not achieved control and for whom consideration of a change in treatment might be warranted; they believe they might benefit from details of the patient’s care. Group also discusses options, including referral to specialists in asthma management and transition of care.

What other information might be relevant for the group? What steps might the practice take to improve asthma management?

The information presented in this case is a hypothetical example and not based on an actual patient.

Patient Dashboard: A Management Tool for Both Patients and Physicians

Dashboard displays key data and trends (patient’s current status and activity over time. Example: Patient’s use of reliever over 6 mo).

Individual patient trends can be compared versus a comparative element (eg, the group practice, region, nation, others).

For physicians, dashboards can help in determining if they’re meeting targets. Comparatives can be internal among peers and/or external (eg, NHLBI Guidelines).

Population Management

Patient Dashboard

Test | Data
---|---
Height | 5’3”
Weight | 167 lb
BMI | 27.8 kg/m² (overweight)
Diagnosis | Severe, persistent asthma
Treatment | • Patient education
• Environmental control
• Step therapy according to NHLBI guidelines.
Reaching Out to Patients to Improve Control

**Patient Portal**
- Periodic updates on topics of relevance/Importance
- Patient reminders
- Record of spirometry and other measurements (ACT, ACQ, ATAQ, use of reliever medication, etc.)
- Comparative Data
- How are patients doing compared with regional/national average?
- Interactive Q & A
- Tips and Tools

**Group Visit**
- Include spouses/partners and caregivers for reinforcement of messages on adherence and lifestyle modifications
- Continue at defined intervals for engaged patients as an educational/information forum

Education
- Engaging
- Periodic updates on topics of relevance/importance
- Patient reminders
- Record of spirometry and other measurements (ACT, ACQ, ATAQ, use of reliever medication, etc.)
- Comparative Data
- How are patients doing compared with regional/national average?
- Interactive Q & A
- Tips and Tools

Comparative Data
- How are patients doing compared with regional/national average?

Interactive Q & A
- Tips and Tools

Collaborative Care
- Members identified and roles defined
- All actions covered?

EMRs
- Guidelines posted with relevant pop-ups/treatment algorithm?
- Measure provider adherence to guidelines/group practice protocol?
- Available tools?
  - Environmental control tips
  - Self-management/monitoring
  - Adherence
  - Other

How Does the Group Practice

Mining and Refining the Data

Patient Registry
- No. of patients with asthma
- No. of patients with positive test for allergens, esp. indoor inhalant allergens
- No. receiving various classes of medications
  - Delineated according to number of medications
- No. of nonadherent patients
- No. of patients with uncontrolled asthma; no. with severe asthma
- Other information

Metrics
- Spirometry? HEDIS? PQRI (documentation and verification of current meds in EMRs)? Other?

Where are the gaps in care?
Pathways for the Care Team

**Education for all staff members**
- on asthma and asthma control, guidelines/protocols, and treating/preventing serious sequelae: The Master Provider

**Pharmacist/pharmacies**
- Drug information
- Group practice protocols
- Patient education

**Community resources**
- Nonpharmacologic interventions
- Support
- Other

**Office protocols for:**
- Recognizing at-risk patients
- Assessing and evaluating patients—consistent screening across group practice
- Diagnosing and staging asthma
- Treat-forward philosophy: establish goal for next visit, 3-month visit, etc, and provide means and measures to achieve goals
- Controlling symptoms of asthma
- Monitoring treatment
- Modifying therapy for patients who fail to achieve and maintain control

Team-Based Care: Every Member Plays a Part

**Shared Responsibilities to Reach A Common Goal**

<table>
<thead>
<tr>
<th>Task</th>
<th>MD</th>
<th>Nurse</th>
<th>Office Staff</th>
<th>Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taught patient to monitor for and avoid triggers</td>
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<td>✔️ date</td>
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</tr>
<tr>
<td>Motivational interview</td>
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<td></td>
</tr>
<tr>
<td>Checked medications adherence</td>
<td>✔️ date</td>
<td>✔️ date</td>
<td>✔️ date</td>
<td></td>
</tr>
<tr>
<td>Updated patient portal</td>
<td>✔️ date</td>
<td>✔️ date</td>
<td>✔️ date</td>
<td></td>
</tr>
<tr>
<td>Distributed educational tools</td>
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<td>✔️ date</td>
<td>✔️ date</td>
<td></td>
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<tr>
<td>Lifestyle education (diet/exercise)</td>
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<td></td>
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<tr>
<td>Outreach to patient after appointment</td>
<td>✔️ date</td>
<td>✔️ date</td>
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<td></td>
</tr>
</tbody>
</table>

Important for MOC and PICME

Utilize face-to-face communication, e-mails, phones, and electronic health records to streamline, to educate, to succeed

Create Your Own Journey

- Every asthma patient’s journey (and yours!) will be different; however, common themes may exist
- Consider your patients’ perspectives and ways to break down barriers
  - Assess health literacy, worry, confusion, language/cultural issues, poor adherence, support system
- Explore options to motivate and improve self-management
- Is each patient taking medications properly and monitoring symptoms and use of reliever regularly and accurately?
- Consider your office environment: Is it user-friendly?
- The whole is greater than the sum of its parts: Consider group education and group appointments as options
“Assist the unmotivated patient! Engage and Activate”
- Dr. Don Bukstein, MD
George Bernard Shaw said: 
“The single biggest problem with communication is the illusion that it has occurred.”
The problem of literacy

2003 National Assessment of Adult Literacy (NAAL)

- Estimated 43% of adults in the United States (about 93 million) had basic or below basic prose literacy skills.
- Most adults with high school education or less and 13% of those with a college degree at lower literacy levels.
- Average grade reading level of US adults estimated between 7th and 9th grade levels.
- 20% of adults are estimated to read at the 5th grade level or below.
- Health information poses literacy requirements beyond general reading comprehension.

The issue of health literacy

- Capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.
  - Includes reading, comprehension, speaking and numeracy (ability to use and understand numbers in daily life).
- People with lowest literacy had difficulty with:
  - hypothetical scenarios of taking medicine at certain times during the day.
  - filling out patient information forms or correctly reading a health appointment slip.
  - understanding health information graphs.
  - calculating health insurance costs.
- Health literacy skills generally lower among people with lower education, lower income, who are members of a minority group, or are 65 years of age or older.

Current health information

- Readability significantly exceeded estimated reading skills of target audiences.
- More than 1,000 studies of health print materials, including medication labels and packaging, and web sites:
  - Health text readability at or above 10th grade reading level.
  - College and graduate school levels are not unusual for patient health communications that describe risk and that are written or reviewed by lawyers and/or scientists.
Common current practice

- Decide directions, risks and benefits to communicate
- Write Med Guide ostensibly to be understood by patients
- Write communications ostensibly to be used by HCPs

Common current practice

- Write KAB survey questionnaires
- Test at 18 months
- Try to figure out why the messages did not get across

How does that work for you?
Improving the communication in instructions/risk communication "helps!"
A Primer on Health INSTRUCTIONS/RISK Communication

“If we have not gotten our message across, we ought to assume that the fault is not with our receivers.”

Baruch Fischhoff
Department of Engineering and Public Policy
Carnegie-Mellon University (1985)
Department of Health and Human Services
Agency for Toxic Substances and Disease Registry


First and foremost - Instructions/Risk communication is communication!

Improving risk communication

- Focus on key Instructions/messages (dose, amounts, technique)
- Simplify text and format
- Use Plain Language
- Involve end-user in design
- Test comprehension and usability before deploying (patients and HCPs)
  - Validate content and format to ensure meeting communication goals
What is Plain Language?

- Concise, simple, well-organized writing
- Effective communication with specific audience to maximize messaging
- Provides essential information
  - No unnecessary words or expressions
  - Avoids jargon, redundancy, ambiguity, and obscurity, unnecessary complexity
- Grammatically correct
- Easy or NO math

What Plain Language is not:

- Unprofessional writing
- Method of “dumbing down” or “talking down” to reader
- Over-simplified to point of inaccuracy
- Only for patients with low-literacy
- Only for patients

Improving usability of health information

ESTABLISH ASTHMA LITERACY!

- Identify intended users
- Engage end-user in design
- Limit number of messages
- Use Plain Language
- Focus on behaviors
- Supplement text with graphics
- Check for understanding

http://www.cdc.gov/healthmarketing/healthliteracy/training/page1348.html
THE Best Reference:

- Read the Guide: *Communicating Risks and Benefits: An Evidence-Based User’s Guide* [PDF - 3,128KB] 2 Baruch Fischhoff, PhD, Noel T. Brewer, PhD, & Julie S. Downs, PhD, editors

US Department of Health and Human Services
Food and Drug Administration
Risk Communication Advisory Committee and consultants

Getting feedback

Getting Better!

Behavior Change Including Diet and Exercise:
Transforming Challenges into Opportunities
Interventions for Improving Adherence:
How Can We Better Organize Them?

- Reminders
- Feedback
- Education
- Financial incentives
- Regulatory intervention
- Organizational change
- Media campaign

Diagram:

- Patient
- Provider
- Organization
- Community