

Recognizing and Addressing Disparities in Asthma



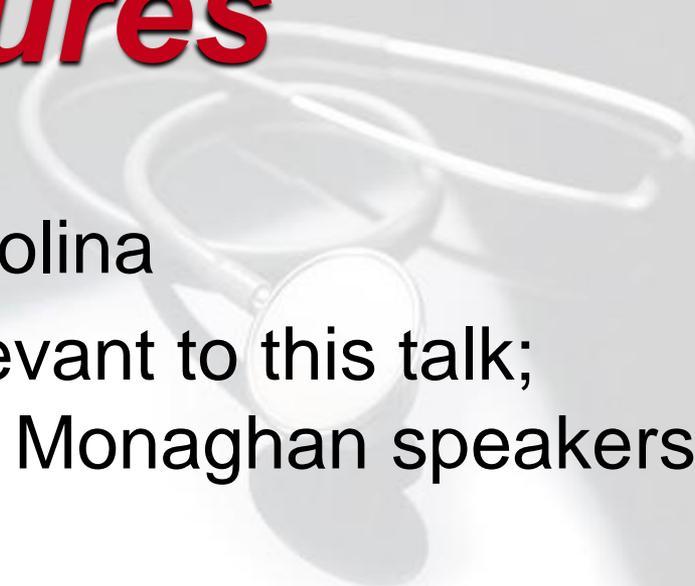
C. Michael Bowman, PhD, MD

*Pediatric Pulmonologist; Professor Emeritus
Medical University of South Carolina*

cmbowmansc@gmail.com

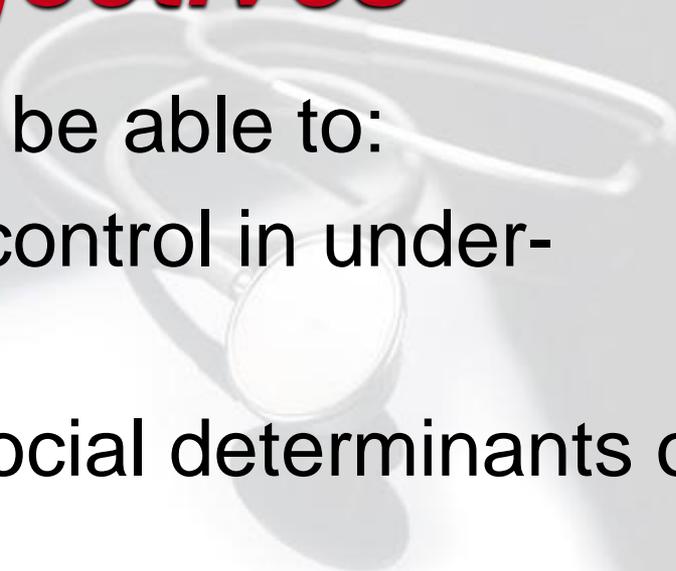


Disclosures



- Retired from Med Univ S Carolina
- No financial relationships relevant to this talk; consultant for ThermoFisher; Monaghan speakers bureau and consultant
- Will speak about medications as indicated and on-label
- Multiple commonly-used asthma medications are often used in children off-label
- Will identify when medications are off-label or carry FDA warnings

Learning Objectives



Members of the audience will be able to:

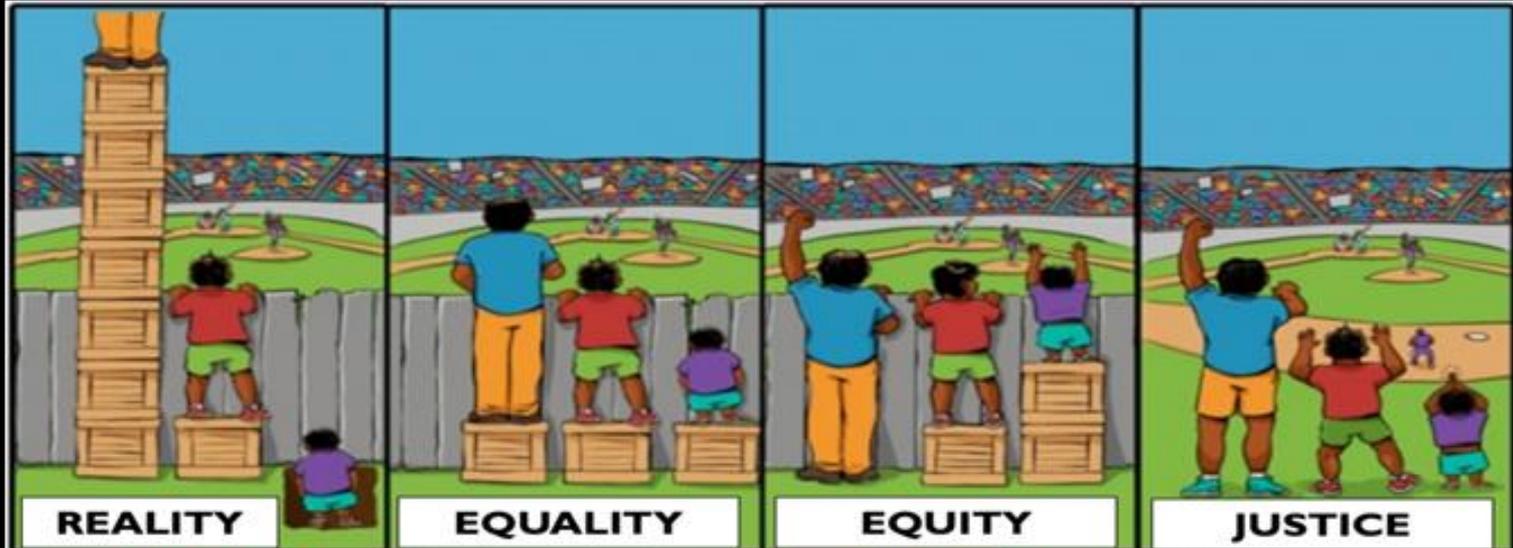
- Identify barriers to asthma control in underserved populations
- Understand the impact of social determinants of health on asthma care
- Identify ways to utilize effective communication patterns in all asthma teaching situations
- Identify support services needed to optimize asthma control for the underserved

Introduction

Asthma Burden

- Asthma incidence varies among ethnic groups
- Marked disparities in asthma outcomes exist among minorities – ER, admissions, death
- Multiple social factors make asthma more difficult to control – these **MUST** be recognized / addressed!
- Overall, asthma is estimated to cost over \$80 B/yr
- Underserved populations need extra assistance in a variety of settings
- Access to healthcare required to make the diagnosis

Health Equity



REALITY

One gets **more than** is needed, while the other gets **less than** is needed. Thus, a huge disparity is created.

EQUALITY

The assumption is that **everyone benefits from the same supports**. This is considered to be equal treatment.

EQUITY

Everyone gets the support they need, which produces equity.

JUSTICE

All 3 can see the game without supports or accommodations because **the cause(s) of the inequity was addressed**. The systemic barrier has been removed.

Current Asthma Incidence

Nat'l Center for Environ Health, 2016-18*

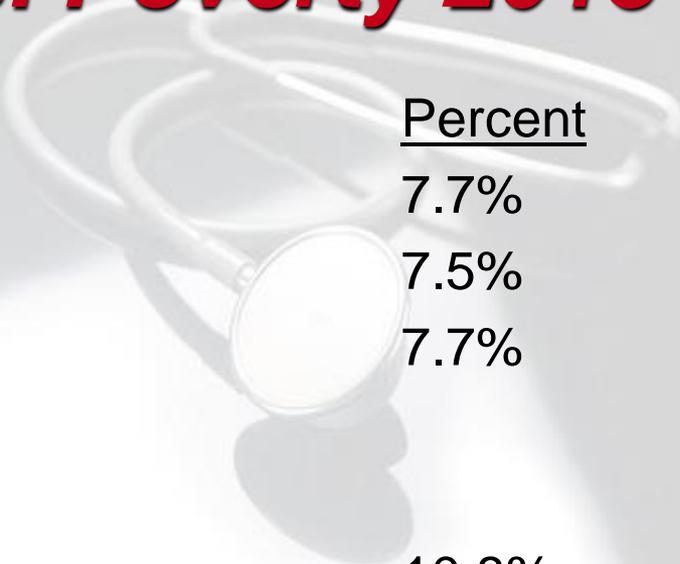
| | <u>All</u> | <u>Child</u> | <u>Adult⁺</u> |
|------------------------------|------------|---------------------|--------------------------|
| • White, non-Hispanic | 8.0% | 6.8% | 8.2% |
| • Black, non-Hispanic | 10.7% | <u>14.2%</u> | 9.6% |
| • Hispanic (all) | 6.5% | 7.5% | 6.0% |
| • Puerto Rican | 14.0% | 13.6% | 14.2% |
| • Mexican | 5.4% | 6.6% | 4.8% |
| • Native American/Alaskan | 10.4% | 10.2% | 10.5% |
| • Asian | 4.5% | 3.8% | 4.7% |
| • Multi-racial, non-Hispanic | 13.1% | 13.0% | 13.3% |

+ Frequency of tobacco use not reported

C

www.CDC.gov/asthma/most_recent_national_asthma_data.htm (2019)

Asthma Incidence vs. Poverty 2018



| | <u>Percent</u> |
|----------------------|----------------|
| • All | 7.7% |
| • Child < 18 yo | 7.5% |
| • Adult \geq 18 yo | 7.7% |

Poverty level

| | |
|---------------------------------|-------|
| • < 100% poverty threshold* | 10.8% |
| • 100-249% poverty threshold | 8.1% |
| • 250-449% poverty threshold | 7.3% |
| • \geq 450% poverty threshold | 6.5% |

C

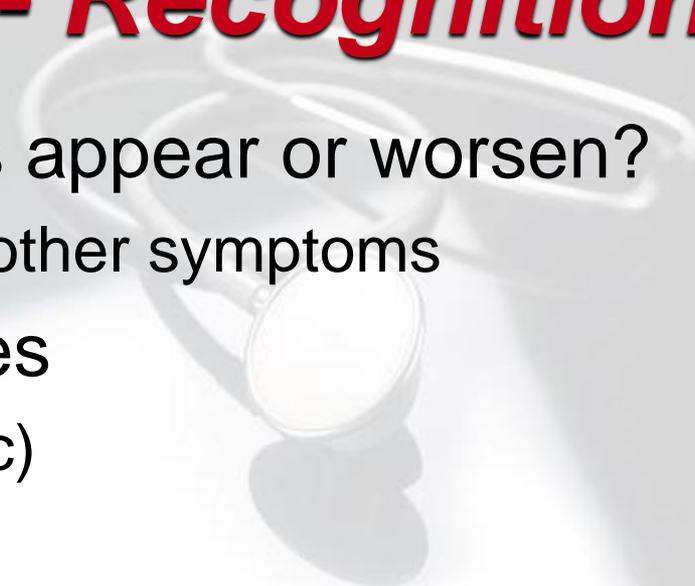
* Census bureau standards

www.CDC.gov/asthma/most_recent_national_asthma_data.htm (2019)

Asthma Triggers

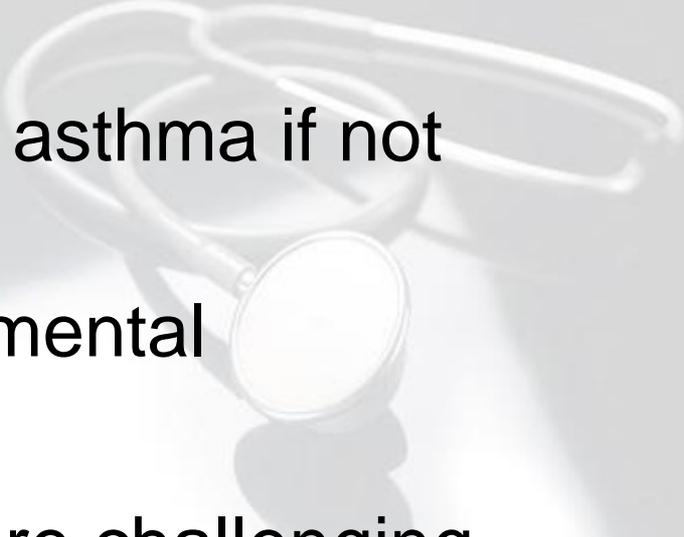
- Allergic – nose, skin, eyes, lungs
 - Assess the child and the home (and school)
 - Trees, pet dander, dust mites, mold, pollen, cockroaches
- Non-allergic / intrinsic – viral illnesses, aspiration, GE reflux, obesity
- Irritant – exhaust, smoke, scents
- Exercise – “exercise-induced bronchospasm” vs “asthma triggered by exercise”
- Kids should generally NOT get albuterol before recess or PE
- Full normal exercise / sports should be expected!

Asthma Triggers -- Recognition

A pair of white-rimmed glasses with round lenses is resting on a white surface. The glasses are slightly out of focus, and their shadow is cast to the right. The background is a light, neutral color.

- History – when do symptoms appear or worsen?
 - Seasons, activities, locations, other symptoms
- Testing for allergen responses
 - IgE blood testing (total, specific)
 - Skin testing
 - Eosinophil levels
- Irritant exposures – do they affect the child?
- Exercise – what happens when they play hard?
Has albuterol reduced or prevented the symptoms?
- Colds – symptoms, duration, treatments given
- Nocturnal symptoms – GER? Environment, *etc.*

Co-morbidities

- Conditions which can worsen asthma if not controlled
 - Allergies – seasonal, environmental
 - Sinus disease
 - Obesity – makes exercise more challenging
 - GE Reflux – especially noted with nocturnal symptoms
 - Aspiration (from above or below)
 - Need to identify and treat these problems to optimize asthma control
- 

Allergic Recognition and Treatment

- Assessment
 - Allergic symptoms more likely cough vs wheeze
 - Simultaneous symptom flares – cough and wheeze
- Avoidance – when offender is known specifically
 - Skin testing, immunocap IgE testing
- Immuno-therapy increasingly available
 - Significant symptoms
 - Major commitment by family, needlephobia
- Treatment of upper airway disease symptoms
- Role of consultant(s)

Asthma Risk

- How likely is an adverse outcome?
- Based on history
- Higher risk suggests need for stronger treatment (and aggressive trigger reduction)
- Hospitalizations
- Intubations
- Steroid courses
- Prevention is key!
- Some patients can't perceive dyspnea
- Remember -- asthma deaths come from all classes!

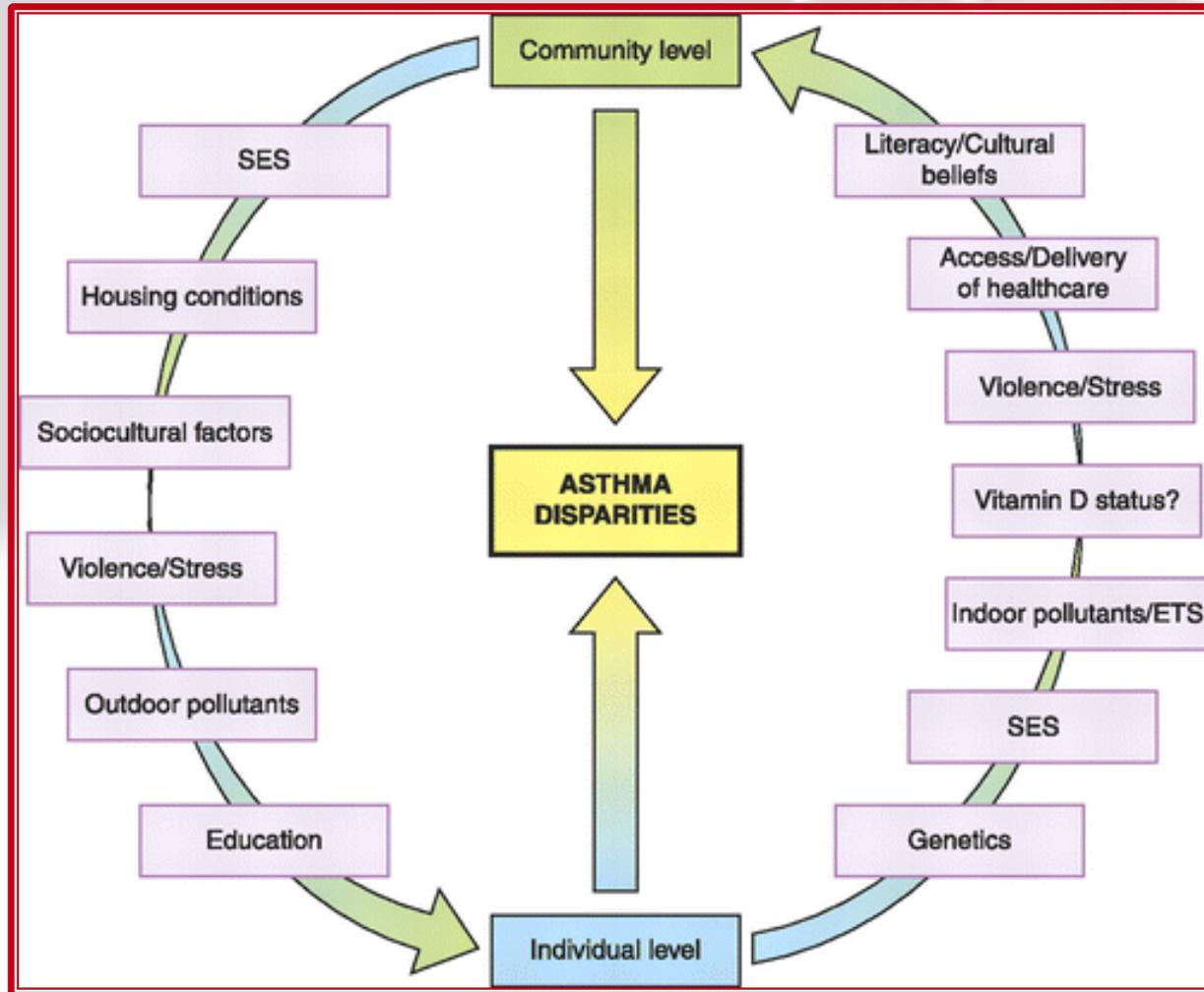


Racial / Ethnic Disparities



- Asthma incidence and outcomes vary greatly
- Difficult to separate biologic vs. social disparities (social determinants of health)
- Recognition, determination to give best care to all
- Individualized approaches
- Family must provide the care prescribed -- education and understanding are **CRUCIAL!**
- Can't "fix" everything, but addressing barriers helps
- Must **COACH** every patient and family for best outcome

Factors Contributing to Disparities



Forno E, J Celedon AJRCCM 2012 185:1033-5

Public Housing / Location

- Problematic but variable; now more decentralized
- Common problems
 - Poverty, rental properties, use more income for housing
 - Mold, dust and cockroaches; multi-unit buildings; ETS
- Blacks/Hispanics less likely to use mattress covers*
- Landlord attention – public vs. private
- Other concerns – safety, gangs, walking
- Transportation – private and public
- Availability of health care, 24-hour pharmacies
- Geography – grocery stores, school

Landrine & Corral Ethnic Disparities 2009; 19:179-84

**Roy & Wisnivesky Journ Asthma 2010; 47:507-12*

Available Healthcare

Medical Homes, Offices, Urgent Care, ERs

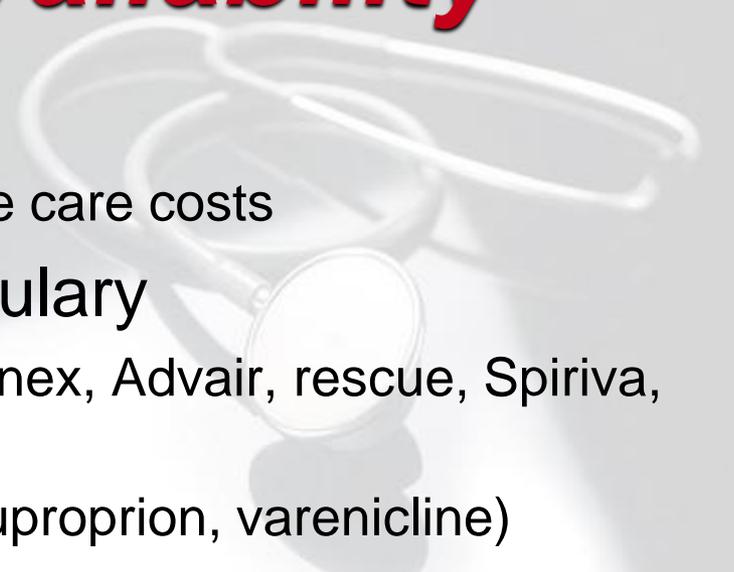
- What choices does the family have? (sibs?)
- Locations of offices (ER?); assigned vs. choice
- Hours—routine, acute issues/walk-ins/no-show
- Languages, resources, contact w/ school?
 - Spoken, written, asthma expertise
- After hours management (is there a charge?)
- Follow-up: routinely and after flares
- Pharmacies – location, hours, language, teaching (medications, asthma itself)

Continuity vs. Urgent Care

- Perception and availability of medical home
 - Referral to asthma specialists -- availability
- Fragmented care isn't optimal for chronic illnesses of any type; ER vs. medical home and EHR
- Acute flares as potential teaching points -- “48 hours of panic” – must utilize that
- Therapy / education about asthma – language?
- When acutely ill, the patient needs to recognize benefit of medical home, which also needs to be available and helpful
- Timely communication, coordination are crucial!

Teach et al. Arch Pediatr Adolesc Med 2006; 160:535-541

Treatment Availability

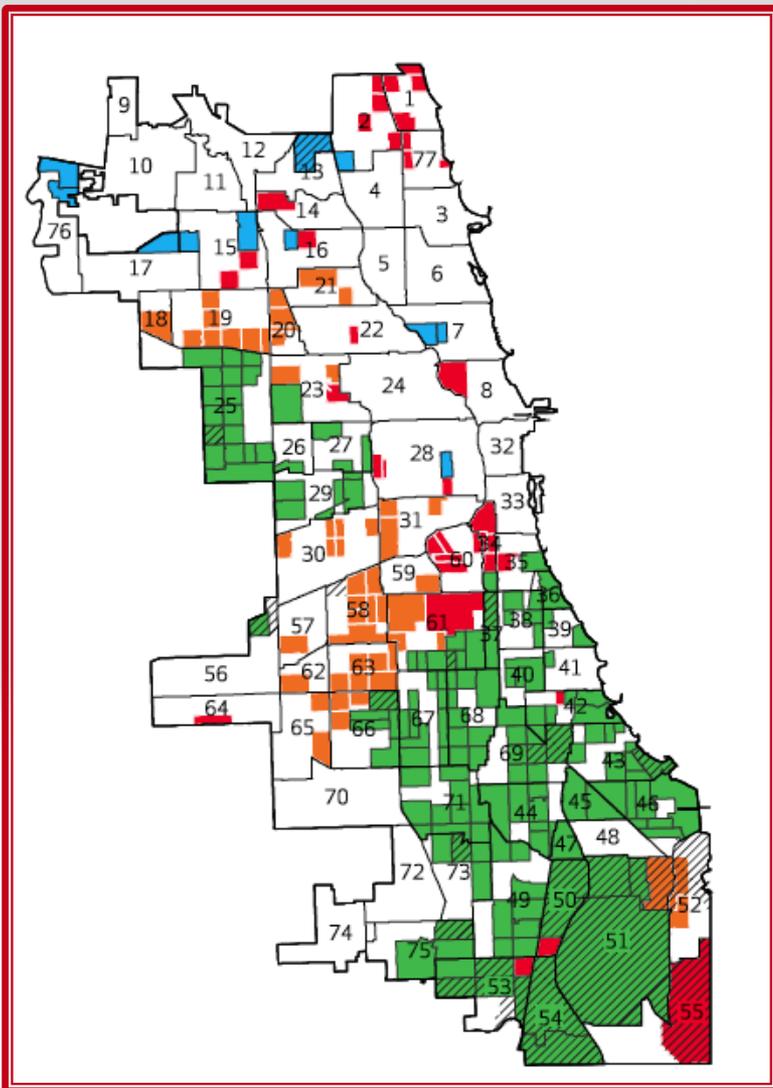


- Managed care formularies
 - Different pockets – pharmacy vs acute care costs
- Indian Health Service core formulary
 - Asthma medications (Singulair, Asmanex, Advair, rescue, Spiriva, prednisone)
 - Smoking cessation products (NRP, bupropion, varenicline)
- Coach how to use devices correctly; read dose counters; use videos and pictures in clinic and take-home
- “Controller” vs “Rescue” – ALWAYS!
- Steroid phobia – need to explain ICS vs oral doses
- The best drug in the world can’t help if it stays in the pharmacy!

Resource Deserts

- Caregiver offices (primary care, specialists)
- Pharmacies (are they open 24-hours?)
- Food stores (including fresh produce)
- Transportation services (where can you go?)
- Urgent care centers (closer than medical home?)
- Schools (bus rides)
- Medicaid and insurance offices
- Conversely, presence of exhaust and ozone

Resource Deserts -- Pharmacies



Chicago census tracts -- areas with no pharmacy within ½ mile (1 mile if shaded)

Green – Black communities

Orange – Hispanic communities

Red – integrated communities

Blue – white communities

White – pharmacies available

Qato D et al/ Health Affairs 2014; 33: 1958- 1965. (from UI-Chicago)

Remember that this applies to ALL meds!

Documenting Refill Histories

- Parents always SAY they take the medicines regularly and as prescribed
- Pharmacy refill histories disagree
- Non-refills more likely for new prescriptions*
- Average asthma controller refills / yr: Singulair > Advair > Flovent (4.3/3.98/2.29 refills; 78/85/29 d/yr)**
- NaviNet on-line system for Select Health patients

McQuaid et al Pediatrics 2012; 129:e1404

**Vanelli et al Clin Therapeutics 2009; 31:2628-2652*

***Stempel et al Resp Medicine 2005; 99:1263-1267*

Transportation Limitations

- Expense to own, run, insure a vehicle
- Requirement for driver's license – unwanted if undocumented
- Limited resources → unreliable vehicle
- Conflicting needs – child for doctor, parent for work
- Distractions, worries in the ER – limits learning
- Unreliable car may limit follow-up from ER
- Geography – pharmacy (hours open)
- Buses go to school, not to medical home/specialist or other necessary spots (Medicaid transportation)

Health Understanding

- Limitations cost an est \$106 - 238B annually!
 - mchb.hrsa.gov/research/project_info.asp?ID=81
 - KF Harrington--H Literacy and Peds Asthma Outcomes
- Health Literacy Universal Precautions Toolkit:
 - teach-back method – “What did I tell you to do?”
- Education level – what is “everyday language”?
- Literacy in a foreign language
 - Medication instructions on bottles / inhalers
- Comfort with written materials – education, instructions, prescription, notices sent by mail
- Discomfort saying they didn’t understand
- How can we best communicate... every patient, every time!

Health Understanding

“Asthma is as much a disorder of communication as it is of inflammation!”

R. Brown, MD

* * * *

We **MUST** communicate effectively not only with the patient / family but with all other caregivers.

Everyone uses different words to teach; that may confuse the patient / family.

Don't use ≥ 3 -syllable words!

Continuity is important for understanding!

Health Understanding

Action Plans

- Dr. Gupta's innovative program and AAPs
- Goal of addressing literacy level – new action plan promotes effective asthma counseling
- Effectiveness through slight modifications
- Availability / languages
- Remember to have AAPs in **all** potential care sites; use device pictures if possible, point out dose counters and need to monitor adherence
- SAMPRO program with form templates

Yin HS, Gupta R et al. Pediatrics (2016) 137(1):e20150468

Ability to Modify Disease Course

- Does the parent think they can modify the disease course?
- What experience do they have changing the course of anything significant?
- Unfortunate things do happen
- Must **CHANGE** the “powerless victim mentality”
- Must convince patients / parents that what they do (or don't do) now does matter next week
- Demonstrate your availability and support

Chaotic Lifestyles

- What is most important for you / us today?
 - Safety (avoid violence), food, fun, family, *etc.*
- Did you remember that appointment or refill?
- Have you had schedules in your existence?
 - If you haven't worked, you may not
- When health coverage has a link in any way to employment, it will skew comparative outcomes
- Concept of future risk or benefit may be totally lacking (utilize familiarity with acne medicine)
- In SC, 41 % of children live in a single-adult home (10% above the national average).

Supervision / Age of Self - Care

- Single parent ± grandparent (who did we teach to use the device?); parent with two jobs; visitation with other parent (? smoker)
- Must always coach proper device technique
- Remind parents of dose-counters--nag pt weekly
- Urge parents to withhold cell phone or web for every day a teen/pre-teen misses their controller!
- Varying ages of self-care among groups
- Who reads our instructions? Who knows a refill is needed? Who recognizes a flare?

Use of Schools for Care

- Frequent absences; must have current AAP
- Skilled observation – resting, activities
- Telehealth programs; enough meds, spacers
- Nurses, athletic trainers, coaches, asthma team
- Source of care / education; finding new patients
- SAMPRO – School-based Asthma Management Program – aaaai.org/SAMPRO/toolkit
- Crucial communication – school, family, provider, health plan (case managers)
- Self-carry rescue, provision of controllers?

Dr. Gupta's Innovative Program

SOAAR Program

- Science & Outcomes of Allergy & Asthma Research
- Concept to utilize students in their school – SMHRT (Student Media-based Health Research Team)
- Location – inner city schools in Chicago
- Key features – **research** utilizing education, advocacy, resources, interaction among students
- Successes – student enthusiasm, PSAs, posters, fact sheets, musical performances, etc.
- Future – spread to other schools, health centers
- For information go to: SOAAR@northwestern.edu

Asthma Coaching

Your Role in Asthma Care / Coordination

- Asthma education can be done in many settings
- It can be individual or in a group, pt ± family
- Asthma pathobiology, treatment, acute issues
- Device training must be repeated frequently
- “No one would coach football, cheerleading or soccer with just written instructions”
- Pictures help tremendously – use the device posters from the Allergy & Asthma Network (different devices, dose counters, breathing)
- Consider obtaining certification as an AE-C

Device Identification 2021

Pick the right device, show the dose counter



AllergyAsthmaNetwork.org
800.878.4403

Respiratory Treatments

2021

■ DOSE INDICATOR
● GENERIC AVAILABLE
■ DISEASE STATES: ● ASTHMA ● COPD




Allergy & Asthma Network is a national non-profit organization dedicated to ending needless death and suffering due to asthma, allergies and related conditions through outreach, education, advocacy and research.

SHORT-ACTING BETA₂-AGONIST BRONCHODILATORS

relieve tight, reactive airways and offer quick relief of symptoms such as coughing, wheezing and shortness of breath for 3-6 hours

| | | | | | |
|---|--|--|---|---|---|
| ProAir® Digihaler™ 117 mcg albuterol sulfate  | ProAir® HFA 108 mcg albuterol sulfate  | ProAir® RespiClick® 117 mcg albuterol sulfate inhalation powder  | Proventil® HFA 108 mcg albuterol sulfate  | Ventolin® HFA 90 mcg albuterol sulfate  | Xopenex® HFA 80 mcg levalbuterol sulfate  |
|---|--|--|---|---|---|

LONG-ACTING BETA₂-AGONIST BRONCHODILATORS

muscle relaxants in airways and offer long-acting relief of symptoms such as coughing, wheezing and shortness of breath for at least 12 hours

| | |
|--|--|
| Serenovent® Diskus® 50 mcg salmeterol/xenoterol inhalation powder  | Spirivent® Respimat® 2.5 mcg olodaterol hydrochloride  |
|--|--|

INHALED CORTICOSTEROIDS

reduce and prevent swelling of airway tissue; they don't relieve sudden symptoms of coughing, wheezing or shortness of breath

| | | | | | | | | | |
|---|---|--|---|---|---|---|---|---|--|
| Alvesco® HFA 60, 120 mcg ciclesonide  | ArmonAir® Digihaler™ 55, 110, 220 mcg fluticasone propionate inhalation powder  | ArmonAir® RespiClick® 55, 110, 220 mcg fluticasone propionate inhalation powder  | Amnulyt® Ellipta® 50, 100, 200 mcg fluticasone furoate inhalation powder  | Asmanex® HFA 180, 360 mcg mometasone furoate  | Asmanex® Twisthaler™ 180, 360 mcg mometasone furoate inhalation powder  | Flovent® Diskus® 50, 100, 200 mcg fluticasone propionate inhalation powder  | Flovent® HFA 44, 110, 220 mcg fluticasone propionate  | Pulmicort® Flexhaler™ 90, 180 mcg budesonide inhalation powder  | QVAR® Redihaler™ 40, 80 mcg beclomethasone dipropionate  |
|---|---|--|---|---|---|---|---|---|--|

COMBINATION MEDICATIONS

contain both inhaled corticosteroid and long-acting beta₂-agonist (LABA)

| | | | | | | | | | | | | |
|--|--|---|--|---|--|--|---|---|---|---|---|--|
| Advair Diskus® 100/50, 200/50, 300/50 mcg fluticasone propionate and salmeterol inhalation powder  | Advair® HFA 45/21, 110/21, 220/21 mcg fluticasone propionate and salmeterol sulfate  | AirDuo® Digihaler™ 50/14, 110/14, 220/14 mcg fluticasone propionate and salmeterol inhalation powder  | AirDuo® RespiClick® 50/14, 110/14, 220/14 mcg fluticasone propionate and salmeterol inhalation powder  | Breo® Ellipta® 100/25, 200/25 mcg fluticasone furoate and vilanterol inhalation powder  | Dulera® 100/5, 200/5 mcg mometasone furoate and formoterol fumarate dihydrate  | Symbicort® 80/4.5, 160/4.5 mcg budesonide and formoterol fumarate dihydrate  | Wixela™ Inhub™ 100/50, 200/50, 300/50 mcg fluticasone propionate and salmeterol sulfate inhalation powder (approved for use in children)  | Anoro® Ellipta® 62.5/2.5 mcg aclidinium and vilanterol inhalation powder  | Beyvo® Aerosphere™ 84/8 mcg glycopyrronium and formoterol fumarate  | Stiolto® Respimat® 2.5/2.5 mcg tiotropium bromide and roflumetolol  | Trelegy® Ellipta® 200/62.5/2.5 mcg, 100/62.5/2.5 mcg fluticasone furoate, umedeterol fumarate and vilanterol inhalation powder  | Breztri® Aerosphere™ 180/9/4.8 mcg budesonide, glycopyrronium and formoterol fumarate  |
|--|--|---|--|---|--|--|---|---|---|---|---|--|

contains both long-acting beta₂-agonist (LABA) and long-acting muscarinic antagonist (LAMA)

contains inhaled corticosteroid, long-acting beta₂-agonist (LABA) and long-acting muscarinic antagonist (LAMA)

MUSCARINIC ANTAGONIST (ANTICHOLINERGIC)

relieve cough, sputum production, wheeze and chest tightness associated with chronic lung disease

| | | | | |
|--|--|---|--|--|
| Short-acting Atrovent® HFA 10 mcg ipratropium bromide  | Long-acting Incruse® Ellipta® 8.5 mcg umedeterol fumarate inhalation powder  | Spiriva® HandiHaler® 18 mcg tiotropium bromide inhalation powder  | Spiriva® Respimat® 1.25, 2.5 mcg tiotropium bromide  | Tudorza® Pressair™ 400 mcg aclidinium bromide inhalation powder  |
|--|--|---|--|--|

COMBINATION MEDICATIONS

contains muscarinic antagonist and beta₂-agonist

| | |
|---|---|
| Short-acting Combivent® RespiMat® 32/160 mcg ipratropium bromide and albuterol  | Long-acting Duaklir® Pressair™ 400, 112 mcg aclidinium bromide and formoterol fumarate dihydrate  |
|---|---|

BIOLOGICS

target cells and pathways that cause airway inflammation, delivered by injection of IV

| | | | | |
|--|--|--|---|---|
| Cinqair® omalizumab  | Dupixent® dupilumab  | Fasenra® reslizumab  | Nucala® reslizumab  | Xolair® omalizumab  |
|--|--|--|---|---|

BRONCHIAL THERMOPLASTY

A minimally invasive procedure that uses radiofrequency energy to reduce airway smooth muscle, leading to fewer and less severe asthma flare-ups, and longer time between flare-ups.
www.bronchoplasty.com



PDE4 INHIBITORS

ease lung inflammation and reduce airway constriction

| |
|--|
| Delisresp® 50, 100 mcg roflumetolol  |
|--|

Reviewed by Dennis Williams, PharmD

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Approaches to Win Asthma Battles

- Support asthma education – general, specific
- Smoking cessation programs, Tobacco Quit Line
 - 1-800-QUIT-NOW – national program – important referral
- Include school personnel; link with schools
- Assure availability of medications and spacers
- Teach and re-teach how to use devices; monitoring
- Recognize impaired health understanding
- Use summer to prepare for back-to-school flares
- Avoid the “sick → ER” paradigm; include FCMH
- Utilize lay coaches*; promote environ modifications
- Utilize the “48 hrs of panic” after an acute flare

**Fisher EB et al. Arch Pediatr Adolesc Med 2009; 163:225-232*

Personalized Medicine

Hope / expectation for the future!

- Care for the individual, not just the “typical” patient
- What are the outcome goals?
- Balance of cost vs need – crucial policies / decisions for insurers
- Broad variation in understanding for prescribers
- Improving understanding for different mechanisms of disease and of therapy
- Adherence to prescribed therapy is critical, to know if a treatment works or not (what you don’t get can’t help you!); trigger recognition/control is also crucial
- Sophisticated lab testing likely to be required

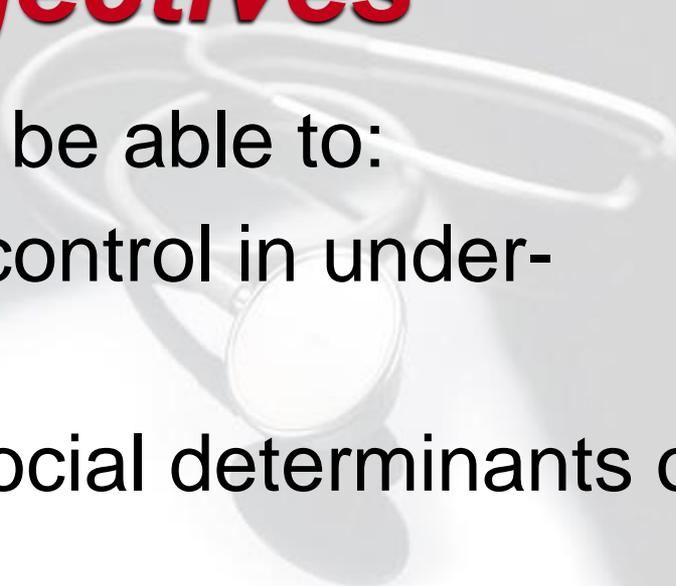


Key Strategies for improving asthma outcomes

- Give instructions in understandable language
- Saturate family w/ action plans they understand
- Demonstrate correct device usage repeatedly!
- Smoking cessation in household
 - Seeking smoke-free ROOMS and WOMBS!
- Work with schools (minimize absences, save \$\$)
 - Individual patients, find unrecognized patients
 - Programmatically, enhanced education, maintain full activity for patients

Chin et al Pediatrics 2009; 124:S224-36

Learning Objectives



Members of the audience will be able to:

- Identify barriers to asthma control in underserved populations
- Understand the impact of social determinants of health on asthma care
- Identify ways to utilize effective communication patterns in all asthma teaching situations
- Identify support services needed to optimize asthma control for the underserved

Did we meet them?

Take-home Messages

- Disparities DO exist in asthma
- There are many causes – no single “fix”
- Many disparity problems are societal; who does the family listen to?
- Many are misperceptions or environmental
- Coaching is crucial to get past “I can’t do it” mindset but must recognize individual issues
- Work with what your setting allows – don’t back away or give up!
- COMMUNICATE – Link to all members of the team
- Team up with other care – givers supporting family



QUESTIONS?



General References

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Relevant Websites

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- AAN: Allergy & Asthma Network: www.allergyasthmanetwork.org
- American Lung Association analysis of asthma coverage by Medicaid: www.lungs.org/asthma-care-coverage
- CDC asthma data: www.cdc.gov/asthma/most_recent_data.htm
- CDC Minority Health: www.cdc.gov/minorityhealth/index.html
- CDC School Management of Asthma: www.cdc.gov/asthma/schools.html
- Expert Panel Report (EPR-3) 2007: nhlbi.nih.gov/guidelines/asthma/index.htm;
Exec Summary: nhlbi.nih.gov/guidelines/asthma/asthsumm.htm.
- EPR-4 in draft form 2 -2020
- GINA '20 (**G**lobal **I**nitiative for **A**sthma) www.ginasthma.org
- Health literacy toolkit (2nd edit): <https://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/index.html>
- HHS Disparities Action Plan.
<https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=2&lvlid=10>
- President's Task Force on Environmental Health Risks and Safety Risks to Children – <https://ptfceh.niehs.nih.gov/>
- SAMPRO: www.aaaai.org/SAMPRO
- Science & Outcomes of Allergy & Asthma Research. SOAAR@northwestern.edu
- www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health

Recognizing and Addressing Disparities in Asthma



For more information on the Allergy & Asthma Network and the Community Asthma & COPD Experts program, visit:

allergyasthmanetwork.org

or email Sally Schoessler at

sschoessler@allergyasthmanetwork.org

