Asthma Disparity Leadership Beyond Biologics: ...Communication Still Trumps Inflammation...

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Grant Support: NIH, COPD Foundation, The JPB Foundation
Advisory/Speaker Panel: Allergy & Asthma Network, AsthmaTek, AstraZeneca,
Cincinnati, Integray CME, National Jewish Health, Novartis, Sanofi/Genzyme,
Sunovion, Teva, ThermoFisher Scientific
Board of Directors: Allergy and Asthma Network

Asthma & Allergies: Deviously Designed
America's Disease
Asthma 2018: The Good News

  - Reduction in mortality among US Men
  - Reduction in mortality among US Women
  - Positive change seen in every state and almost every county

TAKE ACTION: Information

Asthma Disparity: Ground Level Bad News 2017: Black Children II

<table>
<thead>
<tr>
<th></th>
<th>Non-Hispanic Black</th>
<th>Non-Hispanic White</th>
<th>Non-Hispanic Black/Non-Hispanic White Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death Rates</td>
<td>1.0</td>
<td>0.1</td>
<td>10.0</td>
</tr>
</tbody>
</table>
A Case

Dr. Jones, an established inner-city family doc in the area, comes to you for advice. “Given your expertise in the asthma field, how can my busy practice—a practice that cares for a community where 1-in-5 children have asthma—how can we get families to take the guideline-based medicines that we all prescribe?”

2018: National Asthma Survey of Clinicians


2018: National Asthma Survey of Clinicians

HL: The Most Vulnerable Among Us...

Asthma and Allergies: Who Shoulders the American Burden?

• If you are: a Woman OR a Child OR Poor OR Black OR of Puerto Rican descent OR of Native American descent OR of Dominican descent who has asthma...OR you live in inner-city or rural USA, you are without doubt far more likely to experience 1,2:
  - Asthma Death
  - Asthma Hospitalizations
  - Asthma Emergency/Urgent Care Visits
  - Asthma Attacks

• The key word is 'OR': risk increases substantially if you’re an 'AND'

• Environmental allergies are often coupled with asthma 3

Environmental allergies are often coupled with asthma 3


NIH-Funded Pulmonary Publications 1993-2013

95% of study populations are of European origin
Asthma Pathophysiology

Eosinophilic asthma

- Allergic eosinophilic inflammation
- Paucigranulocytic

Nonallergic eosinophilic inflammation

Normal

Th2 + Th17 neutrophilic inflammation

Mixed granulocytic asthma

Noneosinophilic asthma

Potential Phenotype-/Endotype-targeted Therapies

<table>
<thead>
<tr>
<th>Symptomatic asthma</th>
<th>Target phenotypic elements</th>
<th>Targeted treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe allergic asthma</td>
<td>Blood and sputum eosinophils</td>
<td>Anti-IgE (adults and children)</td>
</tr>
<tr>
<td></td>
<td>High serum IgE</td>
<td>Anti-IL-4/IL-13*</td>
</tr>
<tr>
<td></td>
<td>High FeNO</td>
<td>Anti-IL-4 receptor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anti-LTB4*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Macrolides (adults and children)</td>
</tr>
<tr>
<td>Eosinophilic asthma</td>
<td>Blood and sputum eosinophils</td>
<td>Anti-IL-5</td>
</tr>
<tr>
<td></td>
<td>Recurrent exacerbations</td>
<td>Anti-IL-4/IL-13*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anti-IL-4 receptor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anti-LTB4* (adults and children)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Macrolides (adults and children)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thymic stromal lymphopoietin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prostaglandin D2</td>
</tr>
</tbody>
</table>


Phenotype/Endotype Associations/Biomarkers

Specially Targeted Treatments

Severe allergic asthma

- Blood and sputum eosinophils
- High serum IgE
- High FeNO
- Anti-IgE (adults and children)
- Anti-IL-4/IL-13*
- Anti-IL-4 receptor

Eosinophilic asthma

- Blood and sputum eosinophils
- Recurrent exacerbations
- High FeNO
- Anti-IL-5
- Anti-IL-4/IL-13*
- Anti-IL-4 receptor

Neutrophilic asthma

†

- Corticosteroid insensitivity
- Bacterial infections
- Anti-IL-8*/IL-6
- CXCR2 antagonists*
- Anti-LTB4* (adults and children)
- Macrolides (adults and children)

Chronic airflow obstruction

- Airway wall remodeling as increased airway wall thickness
- Anti-IL-13*
- Bronchial thermoplasty

Recurrent exacerbations

- Sputum eosinophils in sputum
- Reduced response to ICS and/or OCS
- Anti-IL-5
- Anti-IgE (adults and children)

Corticosteroid insensitivity

- Increased neutrophils in sputum†
- p38 MAPK inhibitors*
- Theophylline (adults and children)
- Macrolides (adults and children)
CONTROL ASThma OBJECTIVES

To assess physicians:
- Understanding and application of current asthma treatment guidelines
  - NHLBI, EPR3, GINA, ERS-ATS
- Knowledge, awareness, familiarity, and preferences for new and emerging asthma treatments (including biologics) and technologies (including eHealth/mHealth)
- Approaches to diagnosis and treatment for adults with asthma
Many asthma patients struggle with correct inhaler technique

It is imperative that additional data is needed to better define predictors of asthma exacerbations, and to continuously assess inhaler techniques and adherence among patients with asthma in the real-world clinical practice setting.1–5

Understanding Disparity

<table>
<thead>
<tr>
<th>Individual and Family</th>
<th>Health Care</th>
<th>Community</th>
<th>Sociocultural and Political</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cultural beliefs</td>
<td>• Cultural competence</td>
<td>• Community stress</td>
<td>• Discrimination</td>
</tr>
<tr>
<td>• Depression</td>
<td>• Health care access</td>
<td>• Crowded living conditions</td>
<td>• Employment</td>
</tr>
<tr>
<td>• Family dysfunction</td>
<td>• Quality of care</td>
<td>• Inadequate housing</td>
<td>• Poverty</td>
</tr>
<tr>
<td>• Genetic polymorphisms</td>
<td>• Process of care</td>
<td>• Neighborhood disadvantage</td>
<td>• Race</td>
</tr>
<tr>
<td>• Health literacy</td>
<td>• Provider bias</td>
<td>• Outdoor air pollution</td>
<td>• Segregation</td>
</tr>
<tr>
<td>• Management of indoor environments</td>
<td>• Communication</td>
<td>• Social capital</td>
<td>• Socioeconomic position</td>
</tr>
<tr>
<td>• Medication adherence</td>
<td>• • Provider/client communication</td>
<td>• Social isolation</td>
<td>• Violence/trauma</td>
</tr>
<tr>
<td>• Nutrition and obesity</td>
<td>•</td>
<td>• Violence/crime</td>
<td>•</td>
</tr>
<tr>
<td>• Respiratory infections</td>
<td>•</td>
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</tr>
</tbody>
</table>
Asthma Disparity: Ground Level Bad News
2016: Doctors

- Clinicians demonstrate inadequate use of recommended asthma guidelines\(^1,2\) and poor inhaler technique\(^3\)
- AA 39% more likely to have asthma severity underestimated (US Managed Care database study)\(^4\)
- AA 36% more likely not to have ICS prescribed and 125% less likely to use prescribed ICS\(^4\)
- AA 68% more likely not to be told what to do during severe asthma attack\(^4\)
- (2016) morbidity/severity of African American children worse upon initial presentation to specialist: twice the hospitalizations, 50% more ICU stays\(^5\)

\(^3\) Yawn, BP. Mayo Clin Proc. 2011;86(9):894–902

ICS, inhaled corticosteroid; ICU, intensive care unit

America’s Disease: Our Care & Research Philosophy

Minimizing Disparity in the Clinical Setting

- Clearly communicate allergy and asthma and risk to your patients and family
- Prudently screen, diagnose, and institute for disease, especially among high-risk groups
- Seek to understand how patient experience, environment, family, and culture may influence allergy, and address diagnosis and management
- Plan a strategy with your patients that includes their opinions and concerns about disease, therapy, side-effects, activity, and cost
- Regularly review samples of your patients’ cases of allergy and asthma diagnosis, management, and control – especially from populations that face disparity
- Entertain multidisciplinary approaches to disparity reduction. Consider aggressive patient education and supplemental assessment and intervention (including at home, school, and work)

Smart Collaborative Efforts work for All: BCCAI 2016

- Reduced at risk asthma ER visits
- Reduced at risk asthma hospitalizations
- Improved asthma control
- More effective use of medications
- Better clinician engagement


Women Breathe Free: Translation and Implementation

TAKE ACTION: Awareness

- Age 7: 20% of Daily Medication Responsibility
- Age 11: 50% of Daily Medication Responsibility

Directed Education:

- What tools do you utilize for child education?
- Use child education as the means to teach the “inner child” for the whole family
- Most importantly, target at-risk groups in need

Clark, NM, Brown RW et al: Climbing Up the Family Tree, American Public Health Assn Conference 2015

TAKE ACTION:
Advocacy | Education | Outreach | Research | Communication

• Cultural Awareness
• Health Beliefs
• Health Literacy
• Health Numeracy
• Adherence Estimation
• Shared Goal/Decision
• Financial Questions
• Environmental Advocacy
• Community Engagement

PACE/Women Breathe Free/WCA/BWWP
rbrownmd@umich.edu

TAKE ACTION:
Detect-Understand-Communicate-Advocate-Share

ASTHMA: TAKE CONTROL. TAKE ACTION.

You can take an active role in your child's asthma care by talking openly and regularly with a healthcare provider. Here are some questions and tips that can help you prepare for your child's doctor appointments.

allergyasthmanetwork.org/asthma

THANK YOU
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