Asthma in Older Adults

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Assistant Professor, TUSM
Objectives

- Recognize the problem of asthma in older adults
- Review the challenges faced by older adults with asthma and their physicians
- Discuss management of older adults with asthma
The Problem

- **Underdiagnosed**
  - Prevalence and incidence is difficult to estimate
  - Symptoms attributed to “aging”
  - Misdiagnosed as “COPD”
    - May have COPD-asthma overlap syndrome

- **Undertreated**
  - Seniors excluded from most large studies

Age Still Matters

- Age 65 or over: 7.7% in US (2 million)


Mortality

- Risk of dying from asthma increases with age
  - Older asthmatics more likely to die from asthma
  - 50% of asthmatic deaths occur in >65

- Rates of death for asthma have recently decreased mainly due to less deaths in younger pts / children

- Underestimated – many comorbidities in >65, death certificate data

Mortality: Factors that increase risk of death

- Delay in seeking diagnosis and Rx
- Poor cardiopulmonary reserve
- Impaired perception of increasing airway obstruction
- Blunted hypoxic resp drive
- Cognitive problems
- Psychosocial problems

Jones et al. Asthma and Ageing: an end user’s perspective—the perception and problems with management of asthma in the elderly. Clin and Exp Allergy; 2011:41, 471
Morbidity

On Individual / family

- More severe asthma
- Poor QOL (inverse relation to severity and # Comorbidities)
- Higher anxiety, depression
- Sense of lack of control on health
- Higher rate of hospitalizations and LOS

On Community

- Economic
- Busy ERs
- Busy hospitals

Jones et al. Asthma and Ageing: an end user’s perspective—the perception and problems with management of asthma in the elderly. Clin and Exp Allergy; 2011:41, 471
Asthma in Older Adults

- Childhood asthma
  - Atopic
  - More educated about their asthma
  - Eosinophilic

- Adult onset asthma:
  - Intrinsic (After URTI) vs. Extrinsic (new allergen exposure)
  - Challenging to diagnose.
  - Neutrophilic or eosinophilic

Gwynn. J Asthma. 2004;41
Risk Factors

- **Atopy:**
  - ¼ of elders have 1 positive allergen test
  - ¾ elders have allergy to indoor allergens (cockroach, cat, mites)

- **Tobacco use:** worsened control

- **Exposures:** ETS, occupation

- **Comorbidities:** Obesity, cardiac, COPD

- **Meds:** beta blockers (topical, systemic), ASA, NSAIDS, hormones

Objectives

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• **Review the challenges faced by older adults with asthma and their physicians**

• Discuss management of older adults with asthma
Asthma Control in Older Adults: MA 2006-2008

2006-2008 BRFSS Adult asthma call back Survey.
Burden of asthma in Massachusetts. MA DPH asthma prevention and control program, 2009.
Adherence to Asthma Medications

**Intentional**
- Rationing due to cost
- Perceptions
  - Necessity
  - Efficacy
  - Development of dependency
- Concerns of side effects
- Complementary meds

**Unintentional**
- Delay in seeking med advice
- Caring for others leading to neglect for ones’ own health
- Transportation
- Quality of doctor-pt relationship
- Memory loss

*Jones et al. Asthma and Ageing: an end user’s perspective—the perception and problems with management of asthma in the elderly. Clin and Exp Allergy; 2011:41, 471*
Adherence to Asthma Medications

Co-Morbidities

<table>
<thead>
<tr>
<th># of Co-morbidities</th>
<th>% Adherence to asthma meds</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>1</td>
<td>54</td>
</tr>
<tr>
<td>2</td>
<td>58</td>
</tr>
<tr>
<td>3</td>
<td>53</td>
</tr>
<tr>
<td>≥4</td>
<td>47</td>
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P 0.001

Asthma Severity

<table>
<thead>
<tr>
<th>Asthma Severity</th>
<th>% Adherence to asthma meds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>57</td>
</tr>
<tr>
<td>Moderate</td>
<td>55</td>
</tr>
<tr>
<td>Severe</td>
<td>32</td>
</tr>
</tbody>
</table>

P 0.001

Barr et al. Patient factors and medication guideline adherence among older women with asthma. Arch Intern Med 2002;162
In Patients’ Own Words: Focus Groups

“Hard to tell if it’s my heart or not”

“Get tired real quick”

“Feeling like I have been punched in my stomach”

“I’ve never been offered asthma education. I would be very willing to talk”

“My doctor told me when your asthma come on, take your breathing thing and a nitro”

“I have so many medications I have to space it out 4 or 5 times a day. So in between those times, all I have time to do is eat.”

“It’s very expensive. I’m on Medicare but they don’t pay for it all”

“I don’t tell my wife about it because she gets panicked, so I manage it myself”

“I always wonder if there may be a connection between [the inhaled corticosteroid] and my eye problems.”

Community Perspectives

During home visits for asthmatic children, following issues identified with the adult:

- Exposed to same environment
- Food allergies, other diseases
- Depression (esp if raising grandchildren alone)
- Different specialties prescribing different meds (no communication)
- Sharing O2, nebs, meds.
- Taking ½ dose to save for spouse
- Inadequate insurance
- Languages, cultures

MA DPH Older Adults with asthma taskforce. July 9, 2013 Meeting
Under-treatment of Older Asthmatics

- Poor knowledge of disease
  - Underreport symptoms
  - Present to med attention later than younger
  - Attribute symptom to “getting old”
  - Poor perception of severity
  - Lower awareness of bronchospasm than younger

- Obstacles to therapy
  - Poor access to health care
  - Medication cost
  - Technique

Challenges with Self - Management

- Cognition, hand strength, eyesight
- Asthma action plans: 1/3 pts have these
- Peak flow monitoring:
  - 25% had correct technique
  - 30% did not know what to do with low PEFR
- Inappropriate spacer use
- Inappropriate inhaler use

*Jones et al. Asthma and Ageing: an end user’s perspective—the perception and problems with management of asthma in the elderly. Clin and Exp Allergy; 2011:41, 471*
From a Physicians’ Perspective

- Similar presentations of other diseases – COPD, CHF, PE
- Asthma can co-exist
- Diagnostic challenges:
  - Sedentary lifestyle can mask DOE
  - Cough may be the only symptom
  - Less atopic
  - Incomplete response to bronchodilators (“COPD-like”)
  - Inadequate use of PFT (dental pron, cognition)
- Excluded from clinical trials and treatment guidelines

Jones et al. Asthma and Ageing: an end user’s perspective—the perception and problems with management of asthma in the elderly. Clin and Exp Allergy; 2011:41, 471
Objectives

• Recognize the problem of asthma in older adults

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• Discuss management of older adults with asthma
Management of Older Asthmatics

- Self-management
- Assessment and monitoring
- Controlling triggers
- Pharmacotherapy
Improving Self-Management
What do patients want?

- Survey of 230 asthmatics (Age <52 and >52)
  - Among > age 52: ½ preferred a passive involvement in health related decisions. “Doctor should decide for me”
- More time with doctors.
  - Felt “rushed” during asthma visit
- QOL is more important than objective asthma measures
  - Live independently, remain active for leisurely activities
  - Primary motivation for adherence

King et al. Identifying and treating co-morbidities can be crucial – how best to diagnose and control asthma in the elderly. J Resp Dis 2006;27:238
Cortes et al. Using focus groups to identify asthma care and education issues for elderly urban dwelling minorities. Appl Nurs Res 2004*
Improving Self-Management: What has been done in the past?

- Pharmacists to deliver self-management program improved QOL
- Tel calls (2 / year) – more likely to use ICS, have action plan, less ER visits
- Conflicting data on education by doctors
- Tailored device education can improve technique

Jones et al. Asthma and Ageing: an end user’s perspective— the perception and problems with management of asthma in the elderly. Clin and Exp Allergy; 2011:41, 471

Crane et al. Inhaler device technique can be improved in older adults thru tailored education: findings from a RCT. Primary Care Resp J 2014
Improving Self-Management: What has been done in the past?

Inhaler technique after tailored education of adults age >55 Vs. control

Crane et al. Inhaler device technique can be improved in older adults thru tailored education: findings from a RCT. Primary Care Resp J 2014
# Improving Self-Management: What can be done?

<table>
<thead>
<tr>
<th>Barriers to Compliance</th>
<th>Therapeutic Strategies</th>
</tr>
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<tbody>
<tr>
<td>Arthritis of hands, fingers</td>
<td>Avoid MDI. Use DPI, nebs</td>
</tr>
<tr>
<td>Poor inhaler technique</td>
<td>Spacer use, Use DPI, nebs</td>
</tr>
<tr>
<td>Depression</td>
<td>Identify and treat</td>
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<tr>
<td>Poor memory</td>
<td>Simplify med regimen, written action plans, limit dosing (if possible)</td>
</tr>
<tr>
<td>Limited or fixed income</td>
<td>Bear cost of drug in mind when Rx</td>
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<tr>
<td>Poor perception of bronchospasm</td>
<td>Use objective measures of lung fn to monitor therapy</td>
</tr>
<tr>
<td>Impaired vision</td>
<td>Color coding, large font instructions</td>
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</tbody>
</table>

Management: Assessment and Monitoring

- PFT – can help differentiate from COPD
  - Normal DLCO
  - Bronchodilator response (200 ml and 12% increase in FEV1)
- Bronchoprovocation test
  - Higher chance of BHR in older adults than middle-aged (potentially use lower threshold of PC-20)
- PEFR
  - Only in highly motivated patients

Cuttita et al. Changes in FVC during methacholine-induced bronchoconstriction in elderly patients with asthma: Bronchial hyperresponsiveness and aging. Chest 2001;119
Management: Controlling Triggers

- Programs implementing environmental control measures
  - In older asthmatics with documented allergen sensitivity
- Recognize atopy
- Vaccinations
- Concomitant meds
  - Beta blockers, ASA, NSAIDs, ACEI (worsen cough)
- Treat GERD
- Smoking cessation

Morgan et al. Results of a home-based environmental intervention among urban children with asthma. N Engl J Med 2004;351
Management: Pharmacotherapy

- Principles of treatment similar to younger asthmatics
- ICS
  - Older adults are undertreated with ICS
  - Effect on bone mineral density is variable
  - Skin bruising, osteoporosis, cataracts more common in elderly
- Systemic steroids
  - Older women – hip, vertebral fractures, cataracts, poor glycemic control, zoster

Hubbard et al. Use of inhaled corticosteroids and risk of fracture. Chest 2006;130
GINA guidelines
Management: Pharmacotherapy

- **SABA**
  - Some data that beta receptor function diminishes with age
  - Study of over 12,000 pts aged $\geq 55$ – not asso with increased MI
  - Cardiotoxicity more common, tremors, hypokalemia (sudden cardiac death)
- **LABA + ICS**
  - Combination drug may improve compliance
- **Theophylline**
  - At comparable levels, age $>75$ has a 16x higher risk of death or life threatening events than age $<25$; reduced clearance

Suissa et al. Inhaled short acting beta agonist use in COPD and risk of acute MI. Thorax 2003;58:43
Management: Pharmacotherapy

- Anti-Leukotriene agents
  - Asthma symptoms improved 54-70% depending on severity of asthma among older adults
  - Symptoms improved rather than PFT (Zafirlukast)
- Anti-IgE therapy
  - Asthmatics >50 yrs had similar reduction in exacerb rates, slightly less improvement in asthma symptoms and noc awakenings, similar improvement in lung function
  - Higher discontinuation rates among older adults than younger

Korenblat et al. Effect of age on response to zafirlukast in pts with asthma in the ACCEPT. Ann Allergy Asthma Immunol 2000;84:217
Korn et al. Effectiveness of omalizumab in pts 50 years and older with severe persistent allergic asthma. Ann Allerg Asthma Immunol 2010;105:313
Future Needs

<table>
<thead>
<tr>
<th>Identified Future Research Needs</th>
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<tbody>
<tr>
<td><strong>The aging lung</strong></td>
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<td>Large, longitudinal and more complete studies to determine the effects of aging on the function of the respiratory system.</td>
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<td>Improved knowledge about lung structure-function relationships in older age using techniques of imaging and measures of lung function not requiring effort (i.e., high resolution CT scan, forced oscillation).</td>
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<td>Improved assessment of lung processes underlying airflow limitation attributable to aging versus chronic obstructive lung disease (COPD) or asthma, especially in asthmatic patients who smoke.</td>
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<td>Studies to examine the effects of aging in ethnic groups and the role of gender.</td>
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<tr>
<td><strong>Epidemiology, Impact, Diagnosis and Management</strong></td>
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<td>Determine the true prevalence and cost of asthma in the older population.</td>
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<td>Develop a uniform definition of asthma to be applied to healthcare records that will distinguish asthma from (COPD) and mixed asthma/COPD.</td>
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<td>Evaluate evidence-based treatment algorithms for older asthmatics such as those developed by the NHLBI and Global Initiative on Asthma (GINA) guidelines(7).</td>
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<td>Assess the impact of asthma treatment, including direct medical costs of care, indirect costs of care, and value of treatment in improving quality of life (8,9).</td>
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<td>Assess the impact of co-morbid conditions, especially COPD and congestive heart failure (CHF), on asthma(9).</td>
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<td>Characterize phenotypes of elderly asthma with regard to responses to therapy and long term outcomes based on age of onset, duration of disease, and environmental triggers.</td>
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<td>Develop algorithms for electronic medical record systems that are asthma-specific.</td>
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<td>Evaluate effects of current asthma medications in older patients compared to younger patients.</td>
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<td>Identify pharmacogenetic determinants of response to asthma medications in older adults.</td>
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<td>Identify simpler and safer drug delivery systems and schedules for older adults.</td>
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<td><strong>Epigenetics, Environmental and Microbiological Triggers</strong></td>
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<td>Understand how environmental or aging-related factors affect epigenetic changes in asthma in older adults.</td>
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<td>Identify differences between older and younger asthmatics, and between long-standing asthma and late-onset asthma, with regard to inflammation, remodeling, intracellular mechanisms, responses to environmental pollutants, and allergy sensitization, and their effects on metabolism and action of asthma drugs.</td>
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<td>Identify naturally occurring age-related changes in airway cellular patterns.</td>
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<td>Develop animal models of age-related airway inflammation.</td>
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<td>Understand the significance of allergy sensitization associated with asthma in older adults; e.g., through larger prospective studies.</td>
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<td>Identify utility of allergy tests, either skin tests or serum specific IgE, in reflecting allergy sensitization in older adults.</td>
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<td>Identify the role of the microbiome in late-onset asthma.</td>
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<td>Understand the role of non-IgE mechanisms in older adults' inflammatory responses to inhalant allergens or pollutants; e.g., Th17 lymphocytes producing IL17 or protease receptor responses to molds and dust mites.</td>
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<td>Determine the roles of adaptive vs. innate immune mechanisms on asthma development, progression, and response to treatment in older adults.</td>
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<td>Determine whether there are environmental pollutants peculiar to institutional settings.</td>
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<td>Develop simple methods to differentiate COPD from asthma exacerbations in older adults.</td>
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<tr>
<td>Identify viruses and other microbiological agents responsible for, and the mechanisms by which they cause asthma exacerbations in older adults, which may lead to development of vaccine- or antiviral drug-based interventions.</td>
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<tr>
<td>Determine effects of asthma medications, viral or bacterial load, or allergy status on susceptibility to exacerbations in older patients.</td>
</tr>
<tr>
<td>Define rates of infection and specific pathogens in older asthmatics.</td>
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<tr>
<td>Distinguish roles of innate immunity in eosinophilic vs. neutrophilic asthma.</td>
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Summary

• Asthma is frequently overlooked in the geriatrics population

• Many barriers exist both for patients and their physicians in managing asthma

• Management is similar to younger asthmatics with special focus on adverse events, adherence