

Urban Asthma

Children's Health & the Environment
Elena R. Reece, M.D.
Howard University

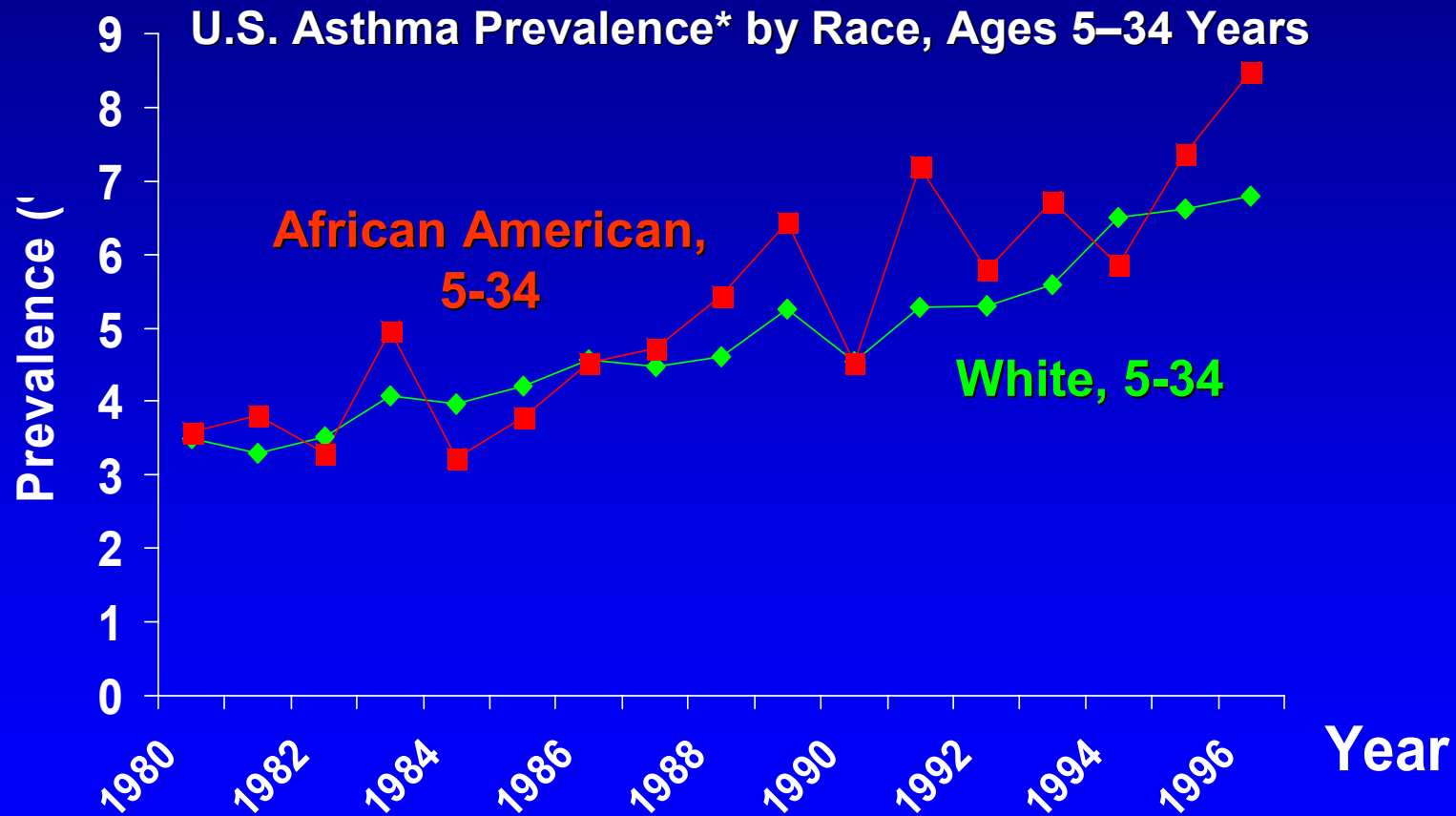
Key Points

1. Asthma is a major problem, but it is treatable.
2. Poor adherence with asthma therapy contributes to disparities in asthma outcomes in low-income minority communities.
3. Long-term asthma control requires a multi-pronged approach.
4. Improving practitioner–patient communication is a key strategy for optimizing asthma management.

Epidemiology of Asthma

- Asthma is:
 - A major public health problem.
 - An epidemic in DC.
 - Life-threatening even with “mild” severity.
 - Controllable with proper treatment.
- But adherence to national asthma treatment guidelines is low.

Rising Asthma Prevalence Differs Little Among Blacks & Whites

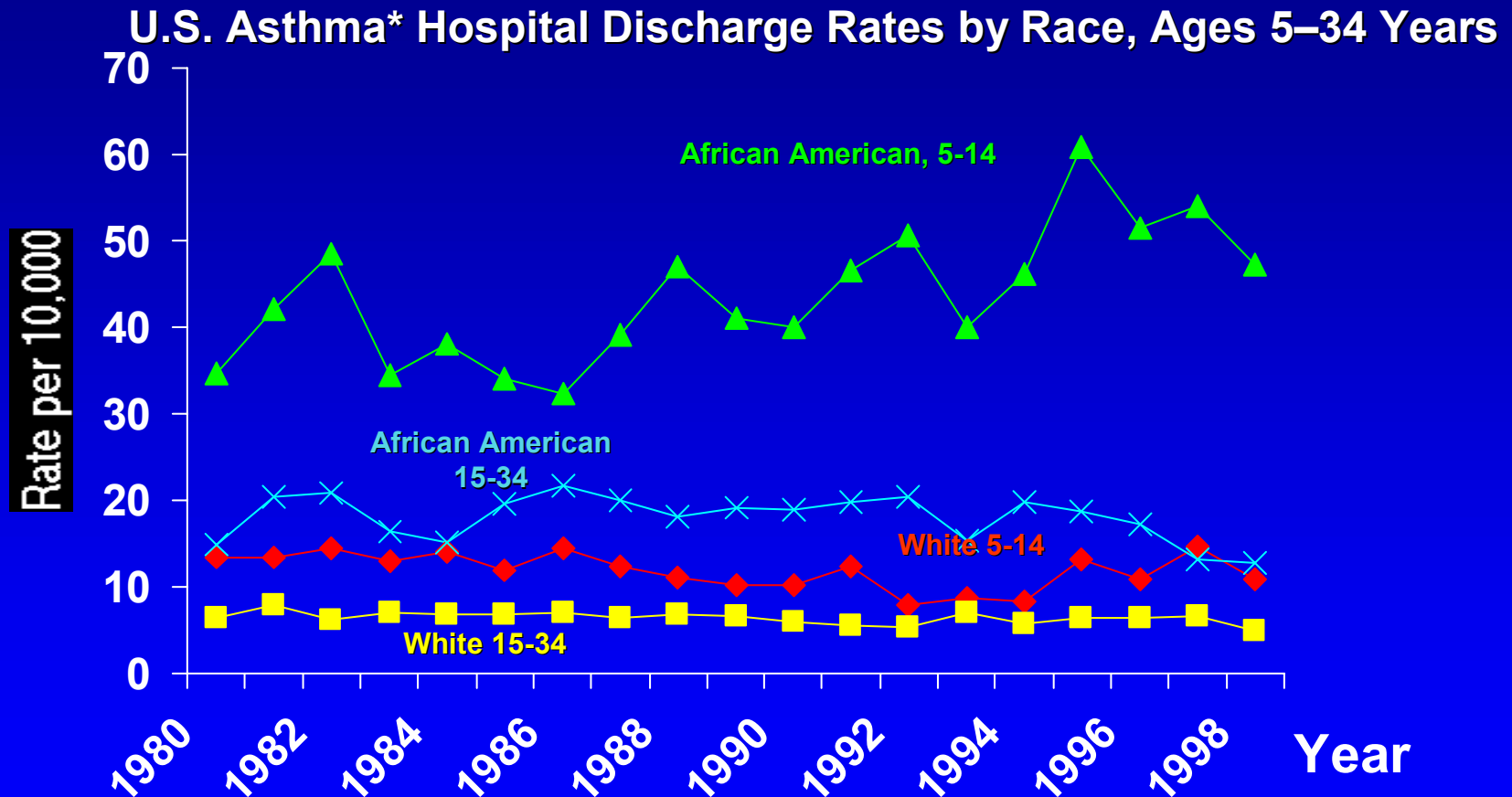


Asthma Prevalence* by Race, Ages 5-34, United States: 1980-1996

Source: National Health Interview Survey (<http://www.cdc.gov/asthma/speakit/default.htm>)

*12-month prevalence: "During the past 12 months, did anyone in the family have asthma? If yes, who?" **NCAC**

But Blacks Experience Higher Hospitalization Rates

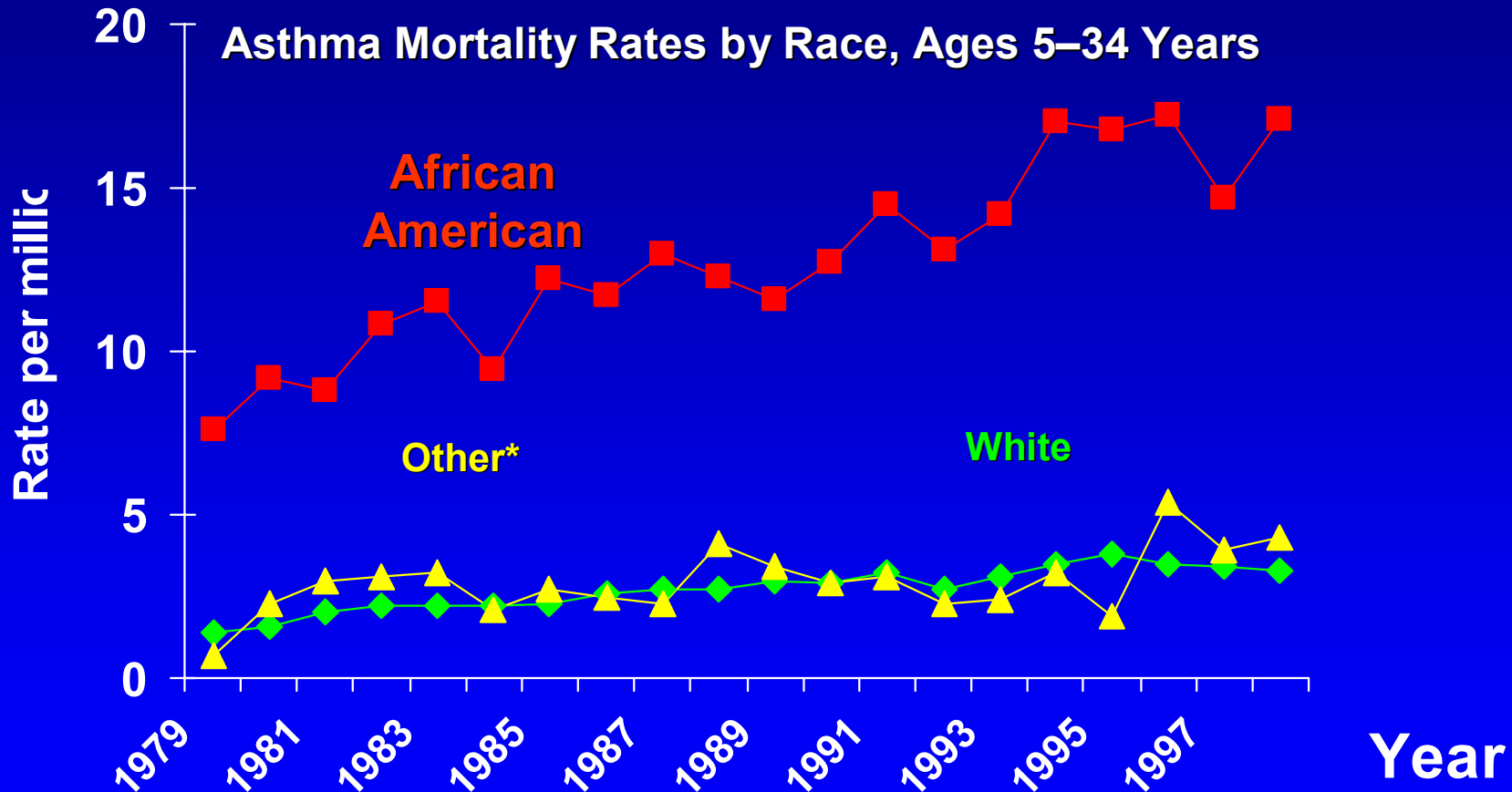


Asthma Hospital Discharge Rates by Race, Ages 5-34, United States: 1980-1998

Source: National Hospital Discharge Survey (<http://www.cdc.gov/asthma/speakit/default.htm>)

* First-listed diagnosis

And Blacks Are More Likely to Die from Asthma



Asthma Mortality Rates by Race -- Ages 5-34, United States: 1979-1998

Source: Underlying Cause of Death Dataset by the National Center for Health Statistics

* Unreliable (< 20 deaths) 1979-1995 (<http://www.cdc.gov/asthma/speakit/default.htm>)

Health Disparities in Asthma

- In 2000, African-American children were:
 - 3-4 times more likely than white children to be hospitalized for asthma.
 - 5 times more likely to go to emergency room for asthma care.
 - 3 times as likely to die from asthma.
- Prevalence of asthma in U.S. is highest among African Americans (7.7%), middling among Whites (5.3%), lower among Hispanics (4.2%)
- Asthma mortality rates among Latino sub-populations vary substantially (rates age adjusted):
 - 9.2 per million among Mexican-Americans
 - 40.9 per million among Mainland Puerto Ricans.

Some Key Factors Contributing to Health Disparities in Asthma

- Inadequate access to health care
- Poor asthma management
 - Inadequate patient education and feedback
 - Failure to control asthma with medication
 - Lack of attention to environmental factors
 - Failure to detect/manage patients' psychosocial distress
- Lower socioeconomic status
- Substandard housing
- Hazardous working conditions

Optimal Treatment for Asthma

- Environmental control
- Optimal pharmacologic intervention
 - Key is anti-inflammatory care
- Patient/caregiver education
- Health care provider training
- Model programs

DC Faces an Asthma Epidemic

- An estimated 32,000 DC residents have asthma, of whom 10,000 are children under age 18.¹
 - 11.8% asthma prevalence among DC children in 2003
 - versus 8.8%, US average²
 - 9.1% asthma prevalence among DC adults in 2003
 - versus 7.7% U.S. average³
- In 1995-2000, 92 DC residents died of asthma, including 12 children.⁴
- Asthma mortality rates are highest in Wards 6, 7, & 8, included among the lowest SES areas of DC.

¹ Allergy and Asthma Foundation of America. Cost of asthma. <http://www.aafa.org>. 1998 estimates.

² CDC/NCHS. SLAITS, National Survey of Children's Health, 2003.

³ CDC. Behavioral Risk Factor Surveillance System, 2003

⁴ DC Department of Health. Asthma in the District of Columbia. December 2003.

Children Frequently Rely on Emergency Asthma Care in DC

(Pediatric ED Visits to DC Hospitals – DC, MD, VA Zip Codes)

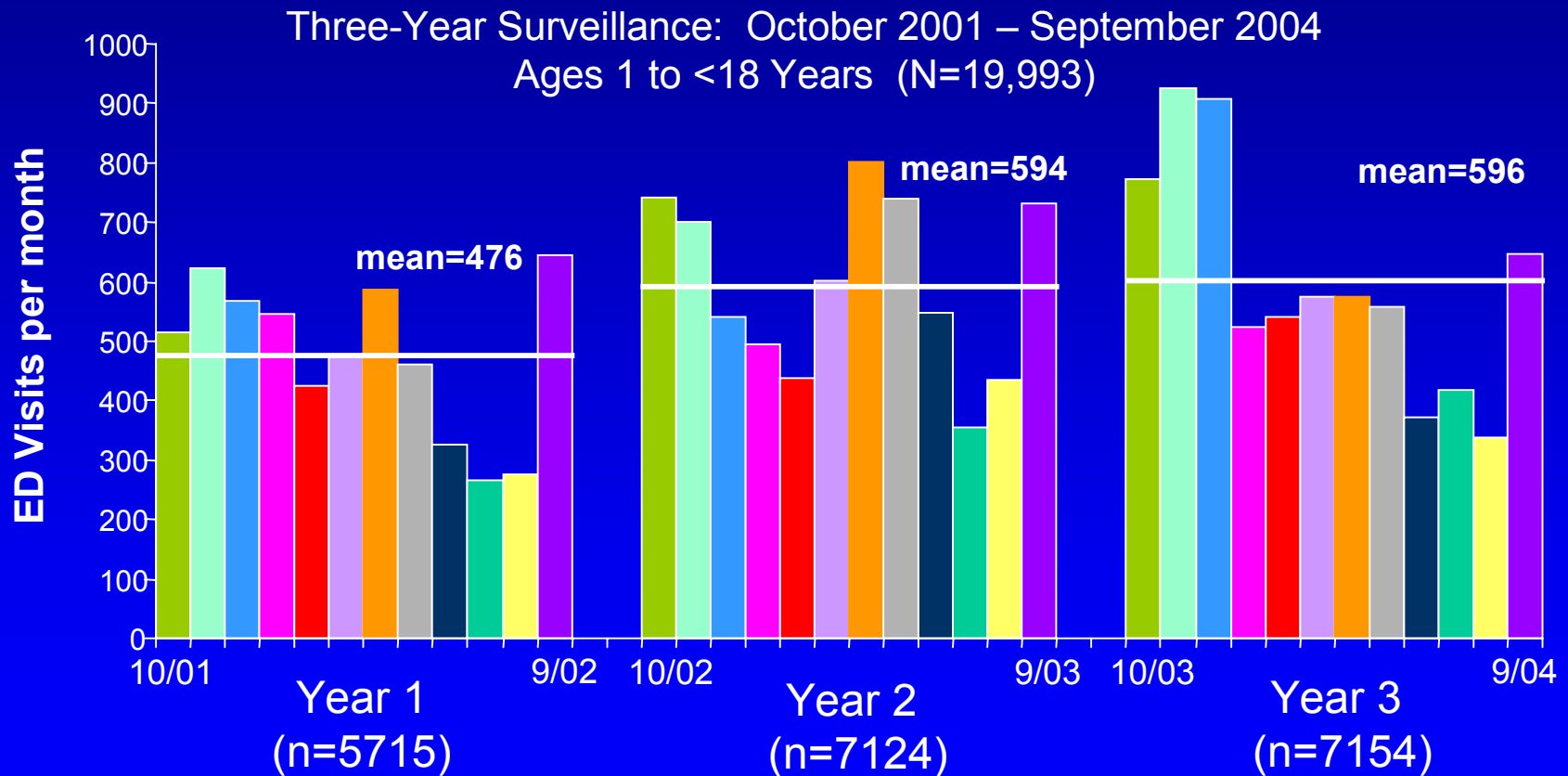


Chart used with permission of IMPACT DC (Improving Pediatric Asthma Care in the District of Columbia). Data are non-military ED visits at 8 DC hospitals, ages 1-<18th year birthday, Oct. 2001- Sept. 2004.

Despite several research projects focused on improving delivery of asthma care to children in DC, there has been no decrease in ER visits. In fact, the numbers have increased!!

DC Adults Also Suffer from Gaps in Routine Asthma Care

Among DC adults with asthma in 2001:

- 16.7% visited ER or urgent care center 1-2 times due to asthma and another 10% visited 3 or more times.
- 44.2% had no routine checkup for asthma with a doctor, nurse, or other health professional.
- 34.3% missed 8-30+ days of usual activities.
- 31.3% never used medication prescribed/given by M.D.

Impact of Asthma on Adults: Occupational Medicine Perspective

- Airways reactivity is a much more important factor in job selection, employment retention and work capacity than commonly realized
- Episodic nature of asthma forces adverse employment decisions among persons with asthma:
 - Impairment is periodic but must be anticipated
 - Some high-tech, well-paying jobs are high risk
 - Serious problems in certain high-value economic sectors (health care and latex, laboratory animal allergy)
 - Societal cost of “sick building” problems is asthma-related

“Rule of Two”

- Asthma is NOT well controlled if you:
 - Have asthma symptoms that interfere with daily activities more than twice a week.
 - Are awakened by wheezing or coughing more than two times a month.
 - Need more than two canisters of quick-reliever (rescue) inhalers a year.

Asthma is Medically Undertreated

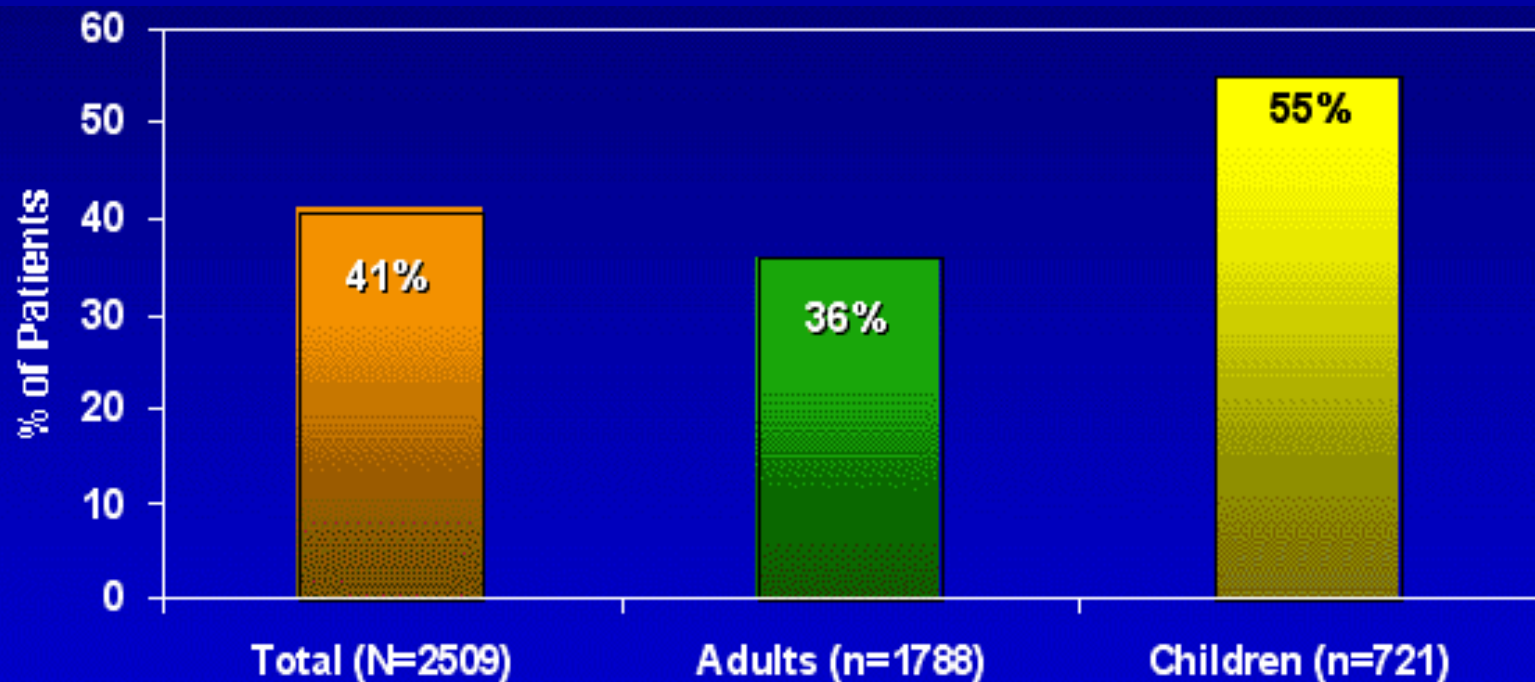
- Many patients treat the symptoms of asthma, not the disease itself:
 - More than six out of ten (61%) asthma patients who have used a quick-relief inhaler say they used it at least three times a week, which the NIH guidelines consider an indicator of poorly controlled asthma.
 - Only about 1 in 5 people (18%) with persistent asthma take inhaled corticosteroids, as recommended by NHLBI guidelines to treat asthma's underlying inflammation.

Base: All respondents (unweighted N=2509).

National survey conducted May 21-July 7, 1998 for GlaxoSmithKline.

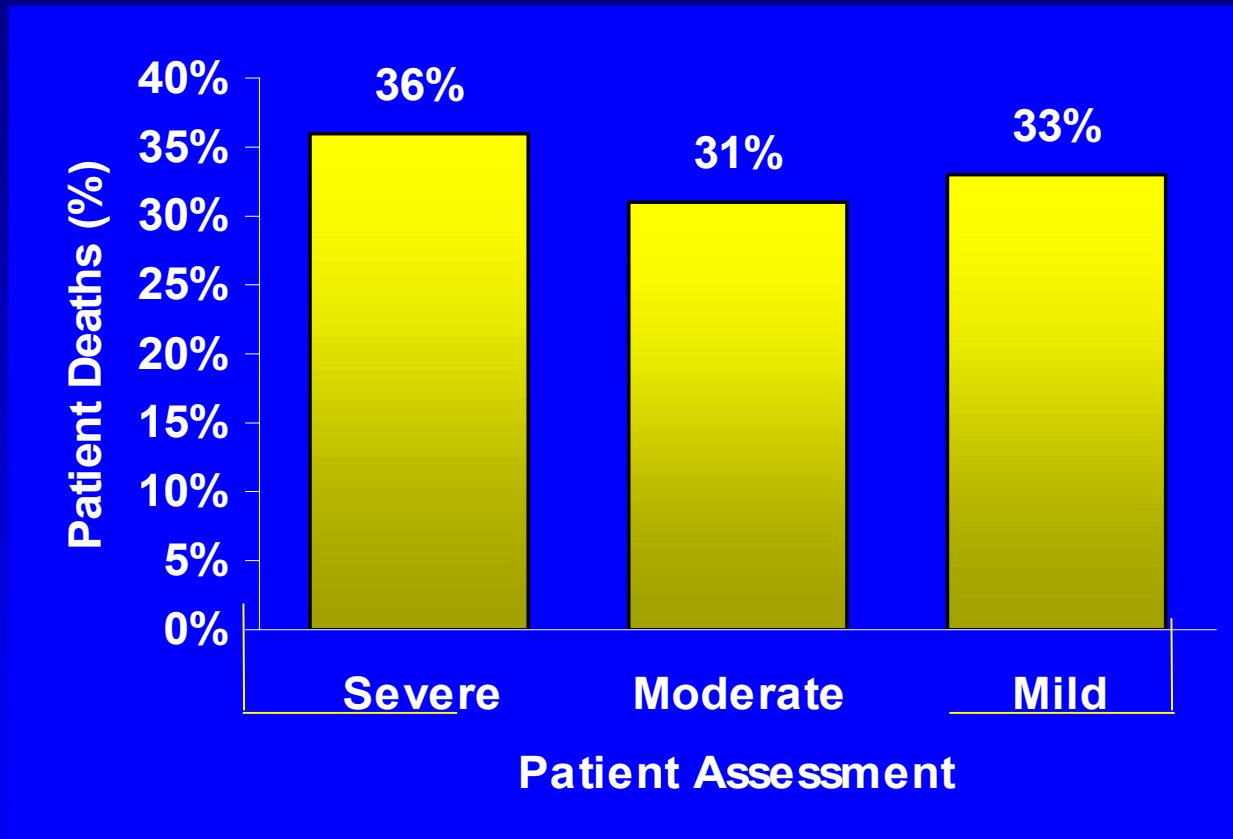
Uncontrolled Asthma is Costly

Frequency of Urgent Care Visits
(Persons who were hospitalized, treated in emergency rooms, or required other urgent care for their asthma in the past year)



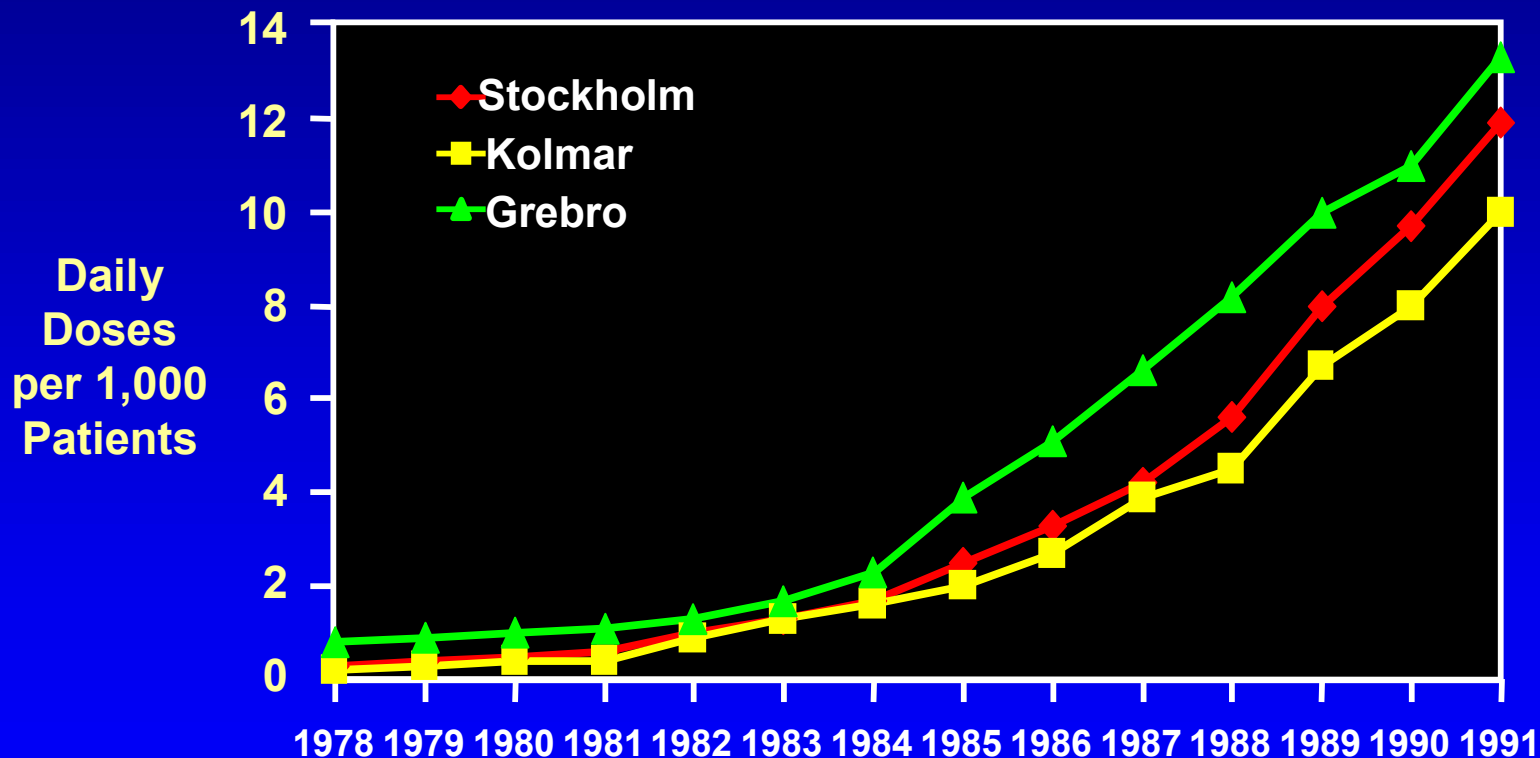
Base: All respondents (unweighted N=2509).
National survey conducted May 21-July 7, 1998 for GlaxoSmithKline.

Pediatric Asthma Deaths: “Mild” Severity Patients Also at Risk

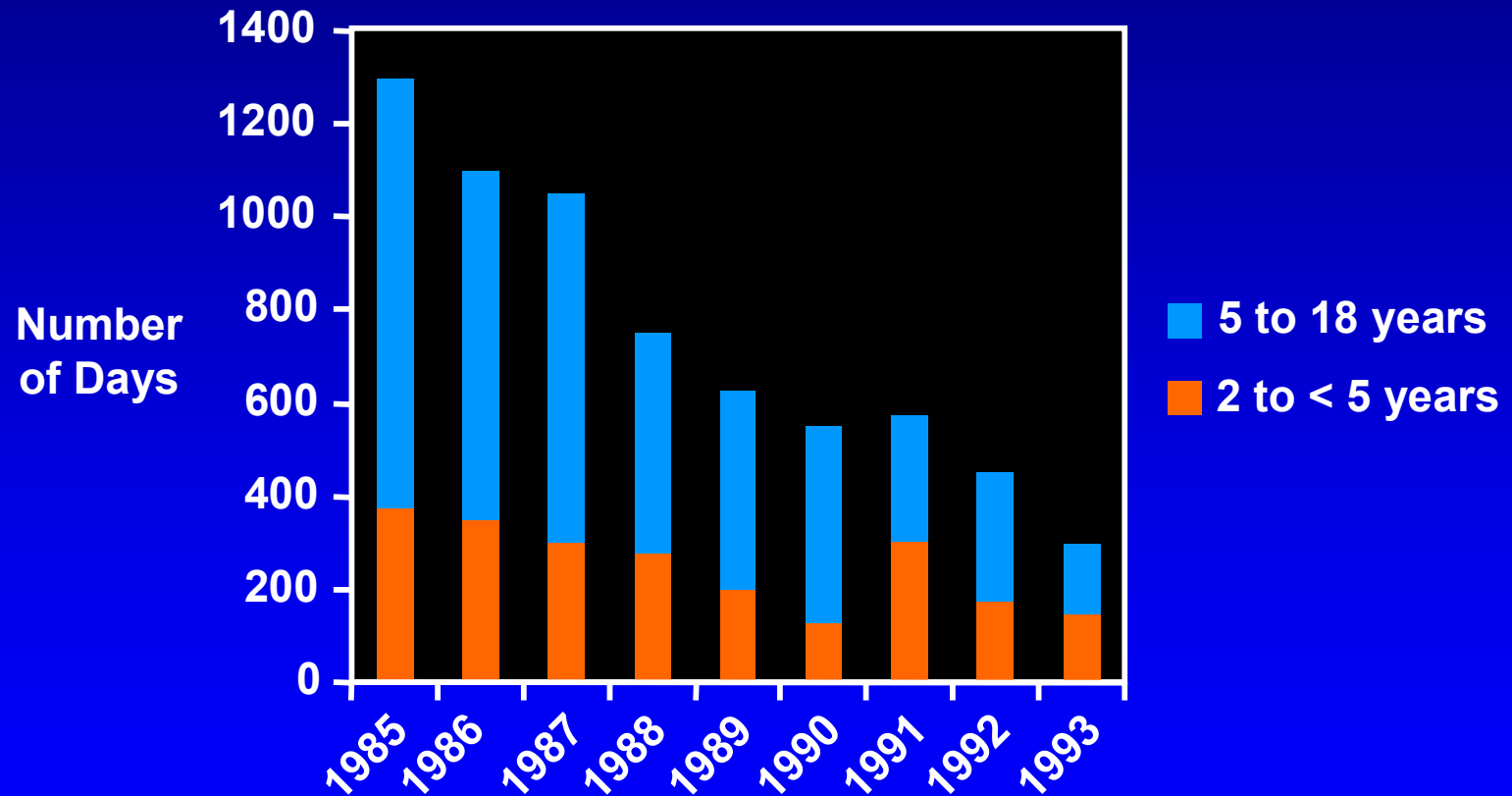


Findings from a cohort study reviewing all pediatric asthma-related deaths (n=51) in the Australian state of Victoria from 1986 to 1989.

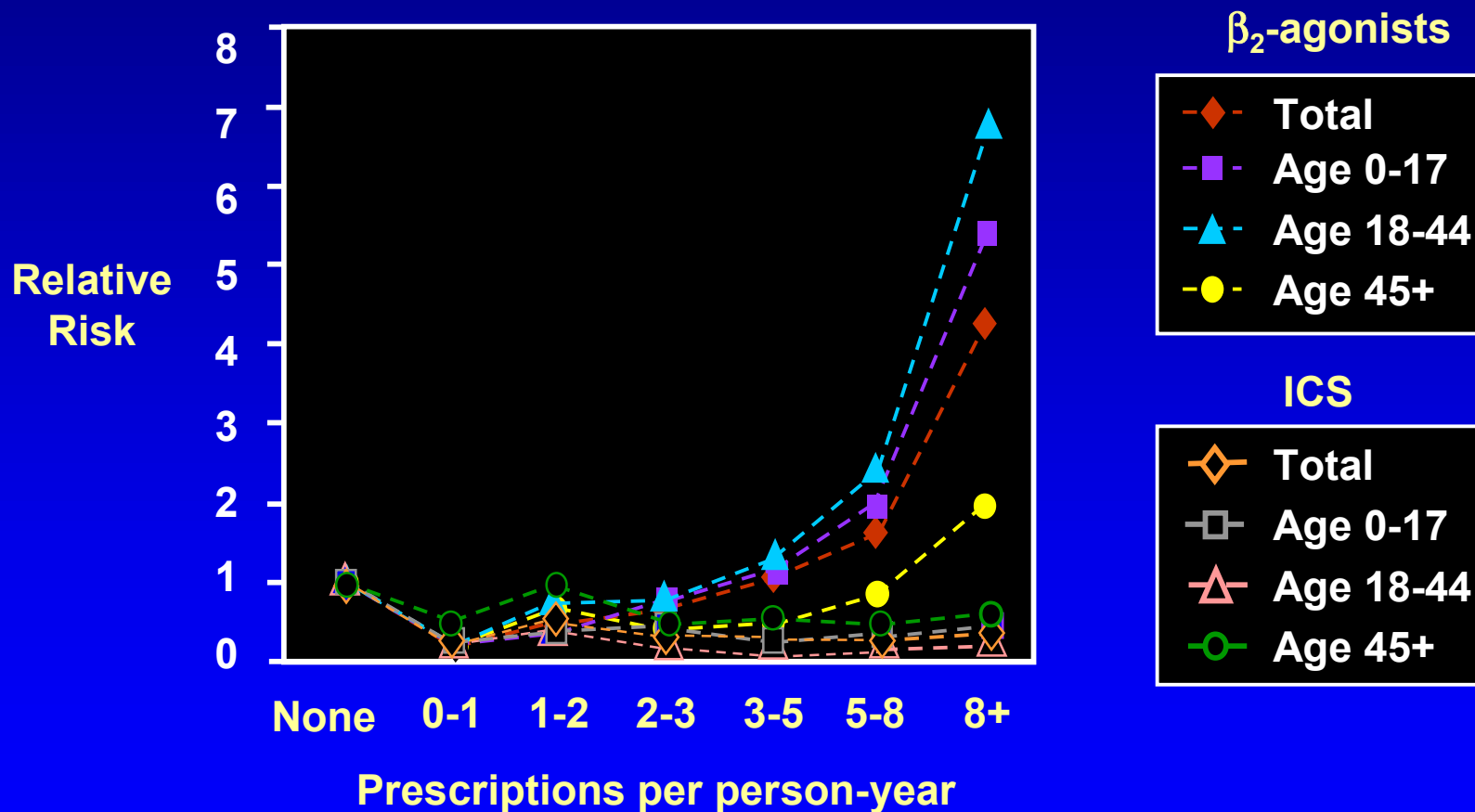
Use of Inhaled Corticosteroids (ICS) in Sweden



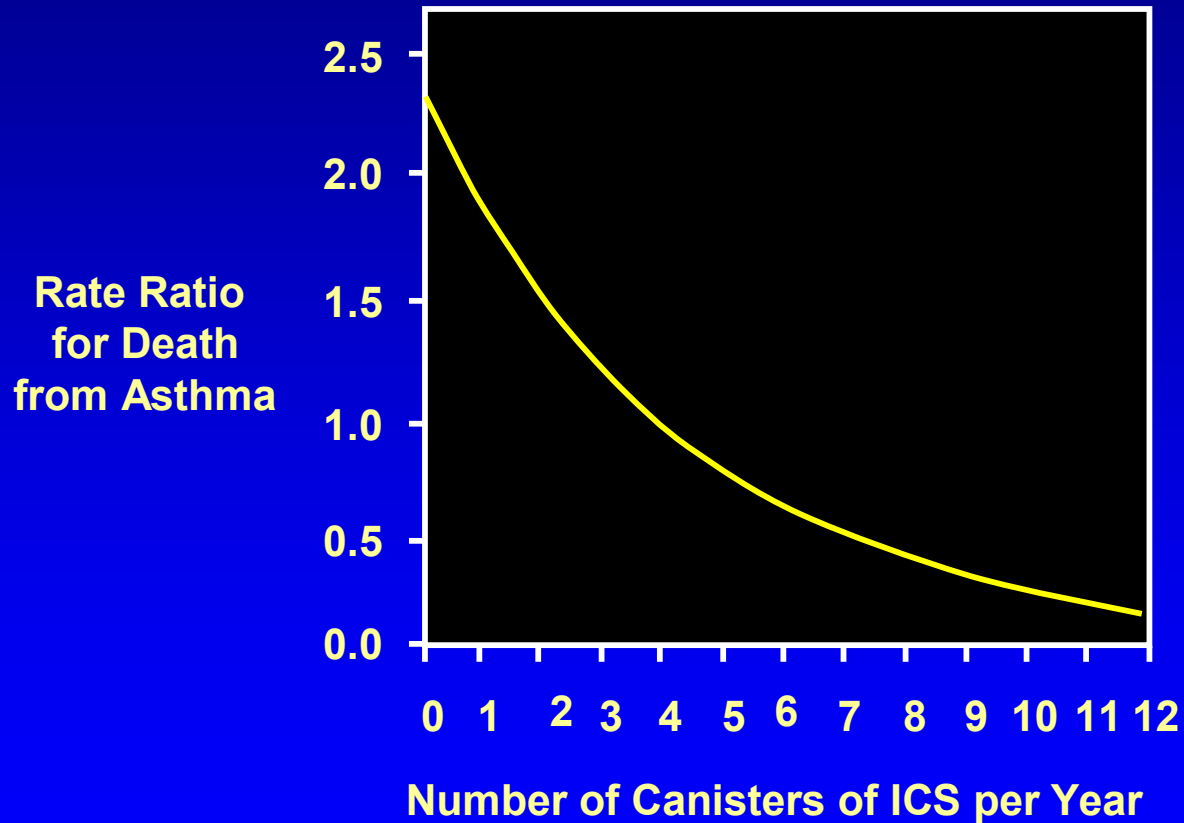
Asthma-Related Inpatient Hospital Days in Sweden



Relative Risk of Hospitalization in the United States

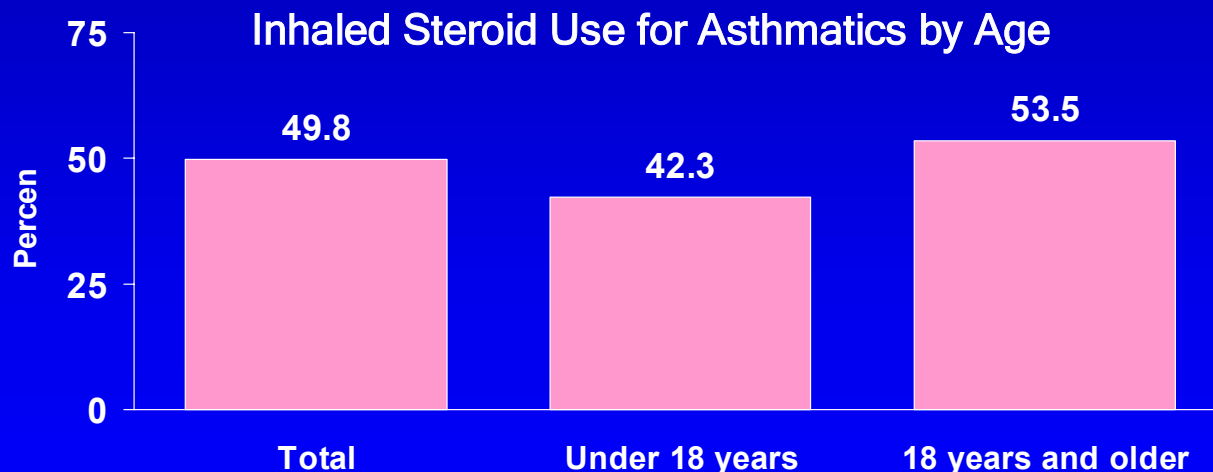


Low-dose ICS and the Prevention of Death from Asthma in Canada



But Wide Gap Remains Between Best Practice and Real World

- Studies suggest 30-60% compliance with national guidelines in real-world, primary care practices.¹
- Studies consistently show fewer than 50% of patients adhere to daily medication regimens.²



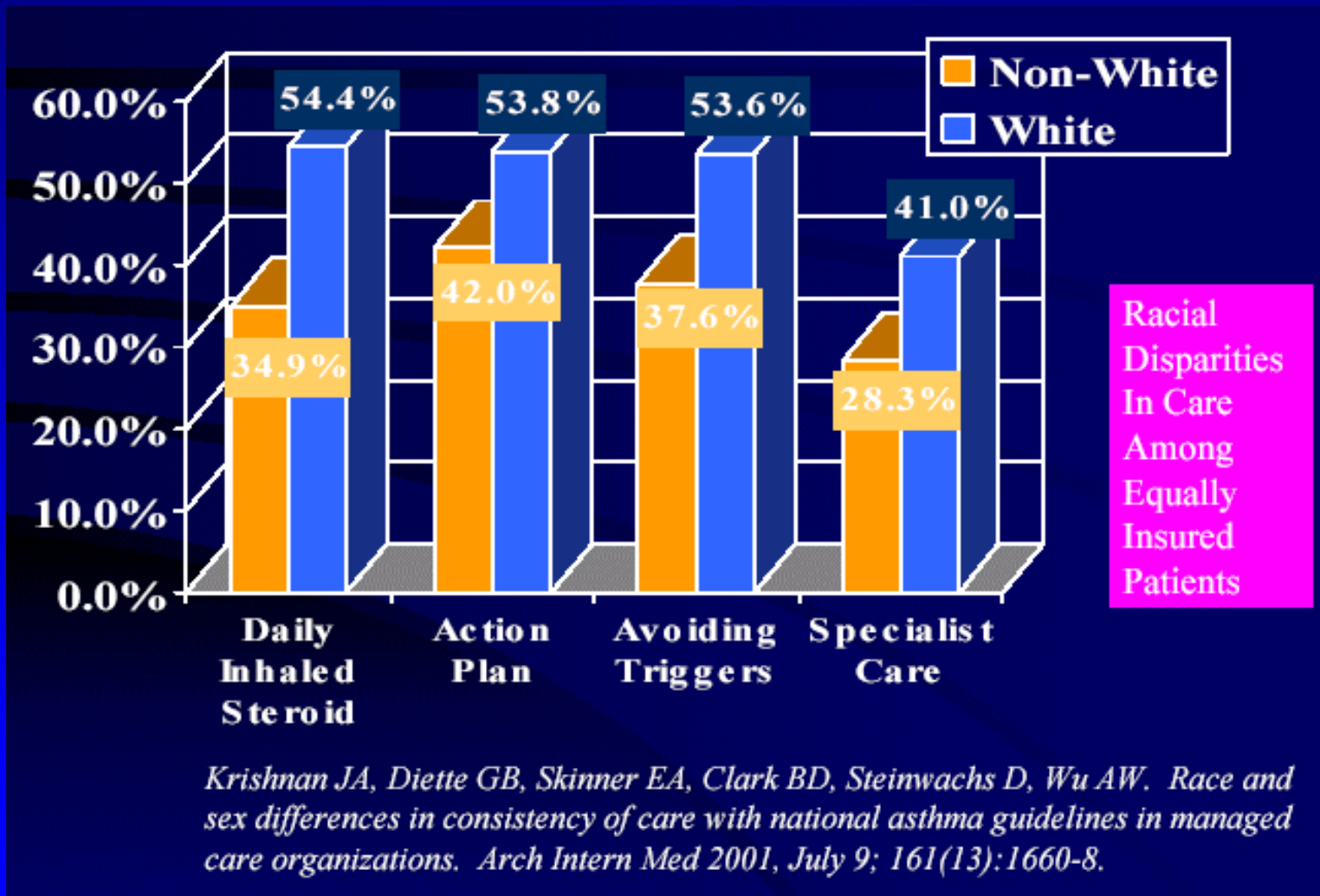
Note: Inhaled steroids may be taken in conjunction with other asthma medications.

Source: Center for Cost and Financing Studies, AHRQ, Medical Expenditure Panel Survey, 2000.

¹ Cabana MD, Rand CS, Becher, OJ, Rubin HR. Reasons for pediatrician nonadherence to asthma guidelines. Arch Pediatr Adolesc Med 2001, Sep; 155: 1057-62

² Physician Asthma Care Education Program, University of Michigan, School of Public Health.

Health Disparities in Asthma Care Persist Among Equally Insured Patients



Inner-City Children with Asthma Remain Undertreated

- Physicians under-prescribe controller medications among inner-city children.
- Even when prescribed, one-third (38%) of parents did not report a controller prescription.
- Discordance in perception between caregiver and physician related to caregivers' beliefs about treatment (e.g., attitude toward preventive care, worry about side effects).

What is this costing us?

Impact of Asthma on Children

- Affects about 3 out of every 30 schoolchildren.
- Often misdiagnosed (e.g., bronchitis, bronchiolitis, pneumonia).
- Under-treated.
- Associated with high urgent care usage.
(Asthma sends 1 in 3 children with asthma to emergency room yearly.)
- Responsible for many sleepless nights.
- Most common cause of school absences from chronic disease.
(Children miss 14 million missed school days per year due to asthma.)
- A common reason for caregivers to miss work.
(Adults miss 14.5 million workdays per year due to asthma.)

Costs of Occupational Asthma

- Disability is always much more expensive than acute health care costs or mortality
- Much occupational/aggravational asthma goes unreported, unrecognized
 - Occupational surveillance data are a joke (for asthma, bigger joke)
 - Few occupational disease cases are claimed, and then accepted, by workers' compensation
 - American studies suggest a cost of US \$1.1 B for asthma in working adults (Leigh et al. 2002)
- The biggest factor impacting productivity may be “presenteeism,” not absence
 - Reduced productivity while working
 - Well documented for allergies, migraine, other

Uncontrolled Asthma is Expensive

- Children use more medications when their asthma is out of control than when it is stable.
- Emergency + hospital care = 51% of direct asthma costs.
- Drug treatment ↑ asthma control & ↓ overall costs:
 - More than 7.5 million sick days could be avoided each year if American workers with asthma had medication management rates similar to those in the best health plans (90th percentile).
 - A 45% reduction in the risk of repeat ED visits shown in patients ages 5 to 60 using inhaled corticosteroid treatment v. nonusers.
- Cost to society is even greater
 - Sickness absence and “presenteeism”



Steps to Long-Term Asthma Control

- **SEE IT**
 - Recognize and diagnose
- **TREAT IT**
 - Assess and monitor
 - Control contributing factors
 - Medicate as appropriate
 - Educate child, family, and others
- **BEAT IT**
 - Apply strategies to:
 - ↑ asthma control
 - ↑ adherence to treatment
 - ↑ reimbursement

Benchmarks of Good Asthma Control

- No coughing or wheezing.
- No shortness of breath or rapid breathing.
- No waking up at night.
- Normal physical activities.
 - Able to exercise vigorously
- No school absences due to asthma.
- No missed time from work for parent or caregiver.

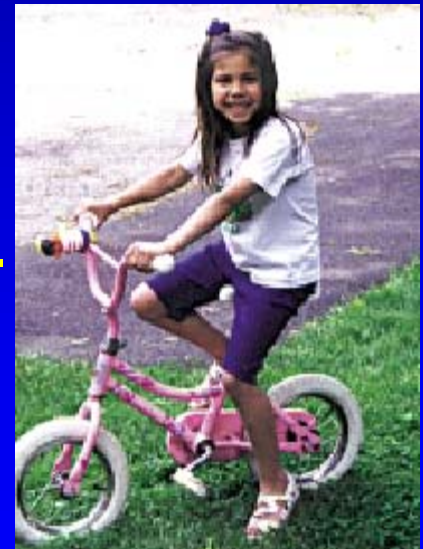


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SEE IT: Recognize and Diagnose

Symptoms: Coughing, wheezing, shortness of breath or rapid breathing, chest tightness.

If the initial symptoms suggest asthma, *then* suspect asthma!

Establish the diagnosis with a careful history. Focus on symptom patterns.

Confirm the diagnosis with objective measures. Spirometry is the "gold standard"*



*For children <4 years old and others unable to do spirometry, clinical judgment and/or response to asthma treatment may be the only reliable means for diagnosing asthma.

Classification of Asthma Severity: Clinical Features Before Treatment (NAEPP Guidelines)

	Days with Symptoms	Nights with Symptoms	PEF or FEV ₁
Step 4 Severe Persistent Asthma	Continual	Frequent	≤ 60%
Step 3 Moderate Persistent Asthma	Daily	≥ 5/month	> 60% to < 80%
Step 2 Mild Persistent Asthma	3-6/week	3-4/month	≥ 80%
Step 1 Mild Intermittent Asthma	≤ 2/week	≤ 2/month	≥ 80%

TREAT IT: Optimal Asthma Treatment is Multi-Pronged

- Optimal pharmacologic intervention
- Environmental control
 - To reduce exposure to allergens, irritants, and other factors that worsen asthma.
- Patient/caregiver education
 - To improve adherence to treatment plan.

Suboptimal asthma & allergy quality of care in the inner-city

- Only 60% undergo allergen sensitization evaluation (skin tests).
- Physician counseling about what to do about this is highly variable
- Patient adherence is less than ideal
- Efforts to improve asthma outcomes will need to address these barriers

Daily: Long-Term Control Medications

- Taken daily, over a long period of time.
- Used to reduce inflammation, relax airway muscles, and improve symptoms and pulmonary function.
- Some types of controller medications:
 - Inhaled corticosteroids
 - Long-acting, inhaled β_2 -agonists
(should not be used alone)
 - Cromolyn sodium
 - Nedocromil sodium
 - Leukotriene modifiers

Inhaled Steroids In Children

- Most potent and effective long-term anti-inflammatory medications now available.
- Reduce the need for quick-relief medications.
- Fewer side effects than steroid tablets or syrup. For severe persistent asthma, high doses of inhaled corticosteroids have less risk than oral corticosteroids.
- Long-term studies have shown no long-term inhibition of growth.
- Poorly controlled asthma may delay growth.
- Rinsing the mouth after inhaling steroids and using spacer devices decrease local side effects and systemic absorption.

As Needed: Quick-Relief Medications

- Used to treat acute asthma symptoms (coughing, wheezing, difficulty breathing, chest tightness).
- Used to prevent exercise-induced bronchospasm.
- Some types of quick-relief medications:
 - Short-acting beta-agonists
 - Inhaled anticholinergics
 - Systemic corticosteroids (short course)

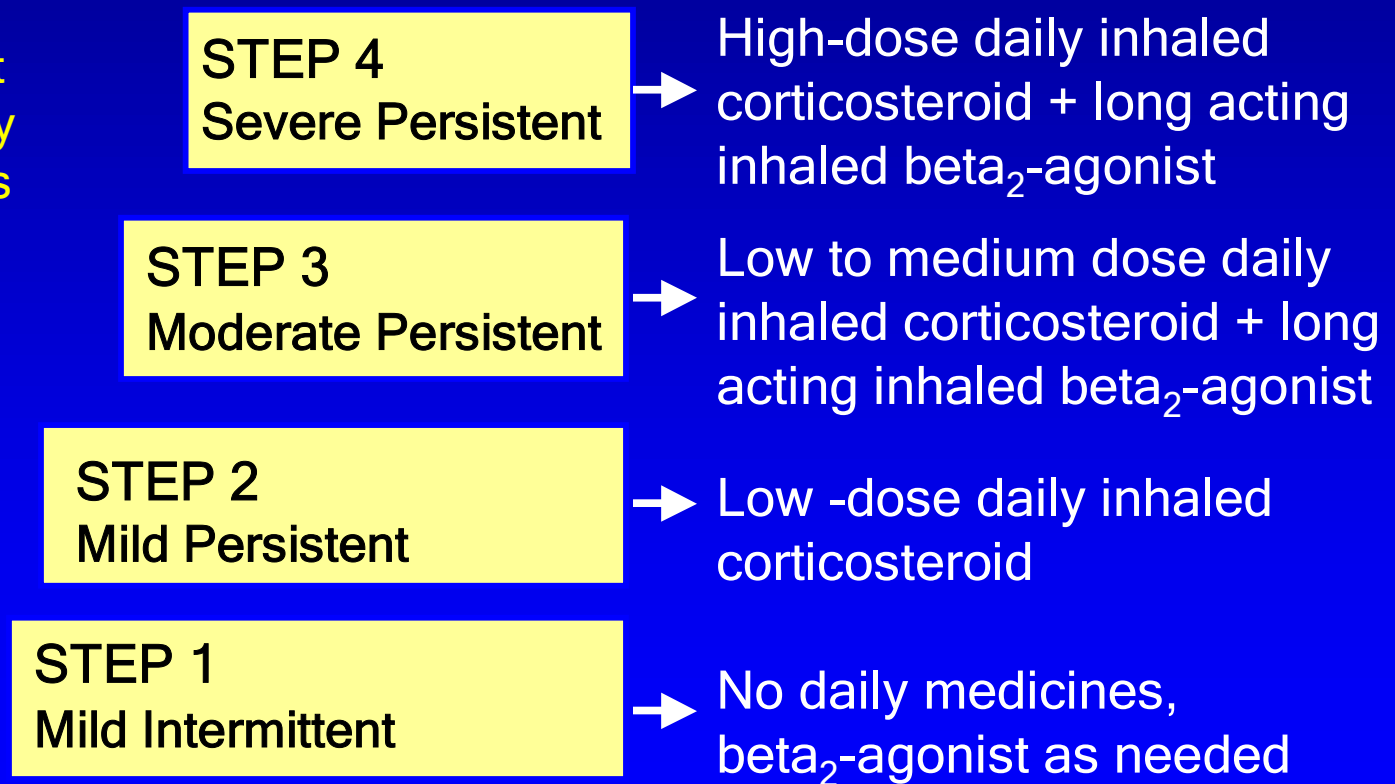
Stepwise Approach to Asthma Therapy

*At all levels patient should have a beta₂-agonist as needed

↓ Step down if possible but not too quickly (may take 4-6 months for therapy to yield maximum benefit).

↑ Step up if necessary.

- Patient education and environmental control at every step.



Written Asthma Action Plan

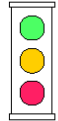
- NHLBI/NAEPP Expert Panel recommends use of written action plans as part of an overall effort to educate patients in self-management and as a means to enhance clinician-patient communication.

ASTHMA-PATIENT ACTION PLAN


PLEASE USE A BALL POINT PEN AND PRESS FIRMLY

Name: _____ Member No.: _____
 Address: _____
 Doctor: _____ Date: _____
 Address: _____
 Phone for doctor or clinic: _____
 Phone for taxi or friend: _____
 Personal Best Peak Flow: _____

You can use the colors of a traffic light to help learn about your asthma medicines.




- Green means Go.** 80–100% Personal Best Peak Flow. Use controller medicine.
- Yellow means Caution.** 50–79% Personal Best Peak Flow. Use reliever medicine.
- Red means Stop.** <50% Personal Best Peak Flow. Get help from a doctor.



1. Green - Go

Use controller medicine.

- Breathing is good
- No cough or wheeze
- Can work and play






Peak Flow Number _____ to _____
 (80–100% Personal Best Peak Flow)

Medicine	How much to take	When to take it
_____	_____	_____
_____	_____	_____

10-20 minutes before sports or other strenuous activity, use this medicine: _____


2. Yellow - Caution

Take reliever medicine to keep an asthma attack from getting bad.

Cough Wheezing Tight Chest

Peak Flow Number _____ to _____
 (50–79% Personal Best Peak Flow)




Wake up at night

Medicine	How much to take	When to take it
_____	_____	_____
_____	_____	_____

3. Red - Stop - Danger

Get help from a doctor now!
 Take these medicines until you talk with the doctor.

- Medicine is not helping
- Breathing is hard and fast
- Nose opens wide
- Can't walk
- Ribs show
- Can't talk well



Peak Flow Number _____ to _____
 (less than 50% Personal Best Peak Flow)

Medicine	How much to take	When to take it
_____	_____	_____
_____	_____	_____

If your symptoms do not improve and you cannot contact your doctor, go to the emergency room or call 911 immediately.

Signatures: _____
 Physician Patient Caretaker

Page 1: Patient Page 2: Primary Care Physician Page 3: Specialist Page 4: School Nurse Page 5: Health Plan

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PATIENT COPY

Written Asthma Action Plan

- Plan should be keyed to:
 - Severity.
 - Early warning signs and symptoms.
 - Peak flow ranges.
- Plans should include:
 - Instructions for daily management as well as management for exacerbations.
 - Medication names (trade and generic).
 - How much to take and when to take it.
 - When to seek medical help.
 - Emergency and after-hours phone numbers.

Why Don't People Take Their Medications?

- 10% difficulties in getting the prescription filled
- 14% decided they didn't need the drug
- 17% medication/co-pay was too costly
- 20% undesirable or debilitating side effects
- 24% forgetfulness

Key Asthma Management Issues

Patient Factors:

- Patients and families not recognizing symptoms.
- Patients treating asthma as episodic rather than chronic.
- Patients unaware that asthma can be well controlled & do not insist on optimal care
- Patients not adhering to recommended treatment.
 - Financial burden of care.
 - Fear that medicines will cause harm.
 - Regimen seen as time-consuming & hard to carry out.

Provider Factors:

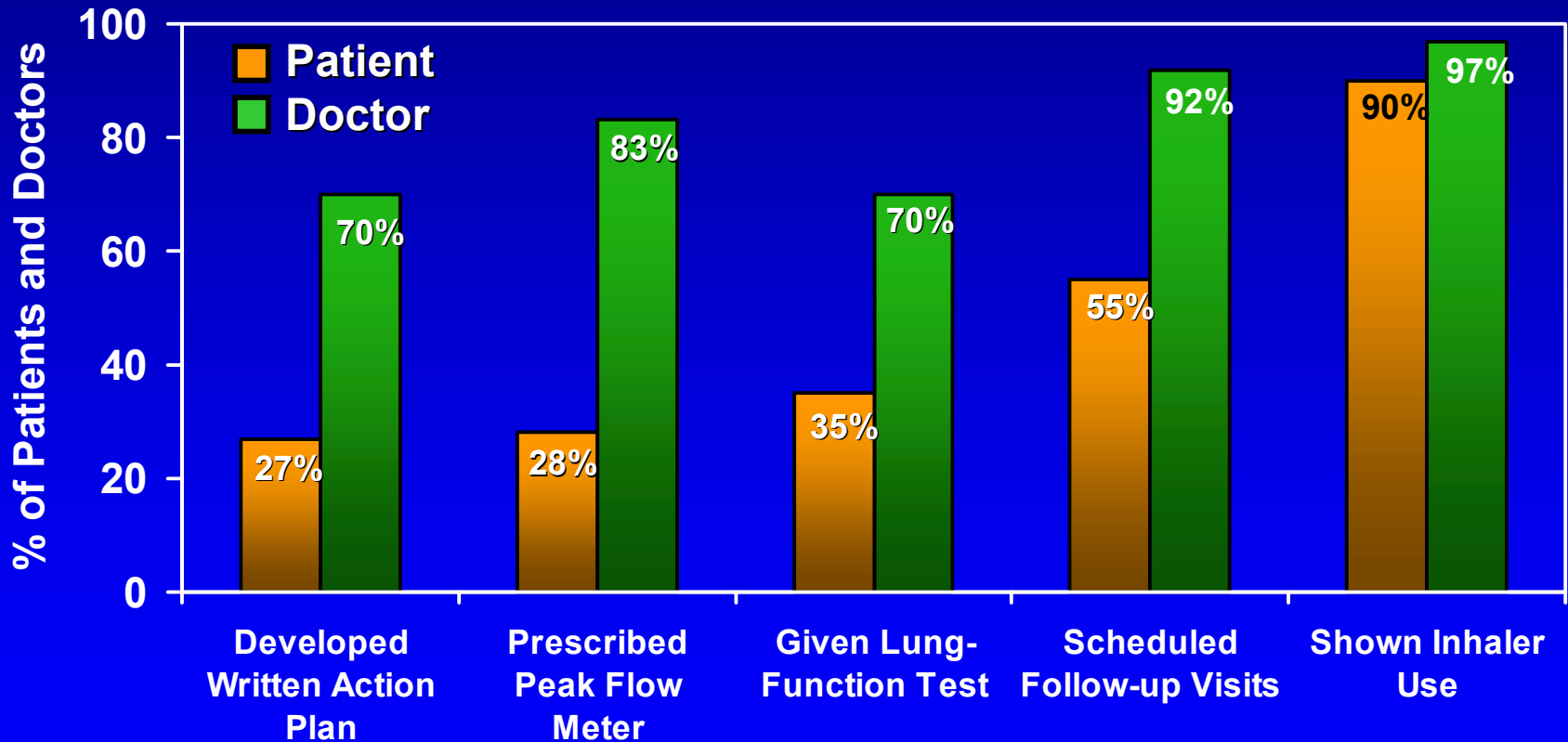
- Physicians not making the diagnosis, not recognizing severity, or misdiagnosing.
- Physicians not providing state of the art care.
- Physicians not considering patients' beliefs & concerns.

Cultural Competency Impacts Quality of Asthma Care

- Asthma Care Quality Assessment (ACQA) Project: a prospective cohort study with 1-year follow-up of Medicaid-insured children with asthma in 5 large health plans in CA, WA, and MA (n = 1663 children).
- Patients of practice sites with the highest cultural competence scores were less likely to be underusing preventive asthma medications based on parent report at follow-up and had better parent ratings of care.
- Patients of practice sites with policies to promote access and continuity had less underuse of preventive medications.

Disparities in What Patients & Providers Say Suggests Communications Gap

Asthma Practices- Two Perspectives: Patients and Doctors



Base: All patients (unweighted N=2509), all doctors (unweighted N=512).
National survey conducted May 21-July 7, 1998 for GlaxoSmithKline.

Implications of Patient-Provider Gap: Patient Concerns May Block Adherence

- Fears about asthma medicines¹:
 - 39% believe medicines are addictive.
 - 36% believe medicines are not safe to take over a long period.
 - 58% believe regular use will reduce effectiveness.
- Perceived costs of therapy:
 - Financial burden of care.
 - Fear that medicines will harm the child.
 - Regimen seen as time-consuming & hard to carry out.

¹ Wasilewski Y, et al. Factors associated with emergency department visits by children with asthma: Implications for health education. Am J Pub Health. 1996;86:1410-5.

Theoretical Framework: Health Belief Model

- Patient and caregiver beliefs influence willingness to follow preventive or therapeutic recommendations.
 - I am susceptible to this health problem.
 - The threat to my health is serious.
 - The benefits of the recommended action outweigh the costs.
 - I am confident that I can carry out the recommended actions successfully.

Barriers To Effective Communications

Studies show that patients often:

- Feel they are wasting the clinician's valuable time.
- Omit details they deem unimportant.
- Are embarrassed to mention things they think will make them look bad.
- Don't understand medical terms.
- May believe the clinician has not really listened and therefore doesn't have the information needed to make a good treatment decision.

BEAT IT: Close the Communications Gap

- Use communication strategies to:
 - Identify patient and family concerns that may block adherence.
 - Make patient teaching more effective.
 - Promote patient and caregiver self-confidence to follow the treatment plan.

Communication Strategies Associated with Positive Patient Outcomes

1. Show non-verbal attentiveness.
2. Give non-verbal encouragement.
3. Give verbal praise for things well done.
4. Maintain interactive conversation.
5. Find out underlying worries and concerns.
6. Give reassuring information.

Communication Strategies (cont.)

7. Tailor medication schedule to family's routine.
8. Reach agreement on short-term goal.
9. Review the long-term therapeutic plan.
10. Help patient to use criteria for making decisions about asthma management.

Maintain the Partnership to Improve Adherence to Asthma Therapy

Educational efforts should be continuous:

- Develop written asthma action plans jointly with patients.
- Review the written action plan and adjust the plan as needed.
- Teach and reinforce self-monitoring and environmental control.
- Demonstrate, review, evaluate, and correct inhaler/spacer technique at each visit because these skills deteriorate rapidly.



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Using Case Management Models to Redesign Care Systems

- Disease or case management models involve system reorganization as means to improve care:
 - use of guidelines
 - practice redesign
 - patient education
 - establishment of expert systems
 - and use of information systems. (Wagner et al, 1999)

Examples: Asthma Centers & Breathmobiles

- ACs Proven effective (in Canada)
- Breathmobiles in US (Baltimore, Phoenix, Orange County)
 - ↓ in school absences
 - ↓ in ER visits
 - ↓ in hospitalizations
- Not part of most health plans
- Subsidized by non-profits
- Multidisciplinary coordination of asthma care and ongoing patient education

Easy Breathing Program

City-wide asthma management program in Hartford for primary care physicians based on NAEPP guidelines

	Before	After
ED visits	73.05/hcy	27% ↓
Hospitalizations	9.65/hcy	35% ↓
Anti-inflammatory Rx	18%	96% 85% ICS
NAEPP Adherence of MDs	38%	96%
Cost		\$355↓/pt/yr

Cloutier MM et al. Use of Asthma guidelines by primary care providers to reduce hospitalizations & emergency department visits in poor, minority, urban children. J Pediatrics 2005;146;591-7

Conclusion

- Most urban minority children do not have severe steroid dependent asthma that is difficult to treat but are just poorly treated typical asthmatics.
- Simple use of the NAEPP guidelines reduces asthma morbidity

Possible solutions

- Limit Albuterol prescriptions
 - Limit number that providers can prescribe
 - Pharmacy limits on filling prescriptions
- Make Albuterol MDI available only in combination with steroids
- Breathmobiles
- Review physician performance and, if underperforming, remove asthmatics from panel or directly refer patients to allergist
- Remove barriers to allergist access
 - Don't require referrals

Possible solutions (cont'd)

- Classify asthma severity appropriately
 - ? Role of ACT test to conserve MD time
- Patients should leave with good basic treatment plan
 - Important to demonstrate how to use medications properly
 - Keep it simple, patients are in information overload
 - Fine tune with subsequent visits
- Patients should know that they will be regularly monitored