

Improving asthma outcomes through asthma education and disease management

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- Clinical Pharmacists
- Yakama Indian Health Service

Ryan G Pett

- Ryan completed his pharmacy residency at Rapid City PHS Indian Hospital.
- Instituted a pediatric asthma education clinic at Rapid City.

Shane Nye

- Shane served as an active-duty pharmacist in the Navy for five years prior to entering the IHS.
- Developed the Yakama Indian Health pharmacy asthma clinic in conjunction with multidisciplinary collaboration.

LT Ryan Pett



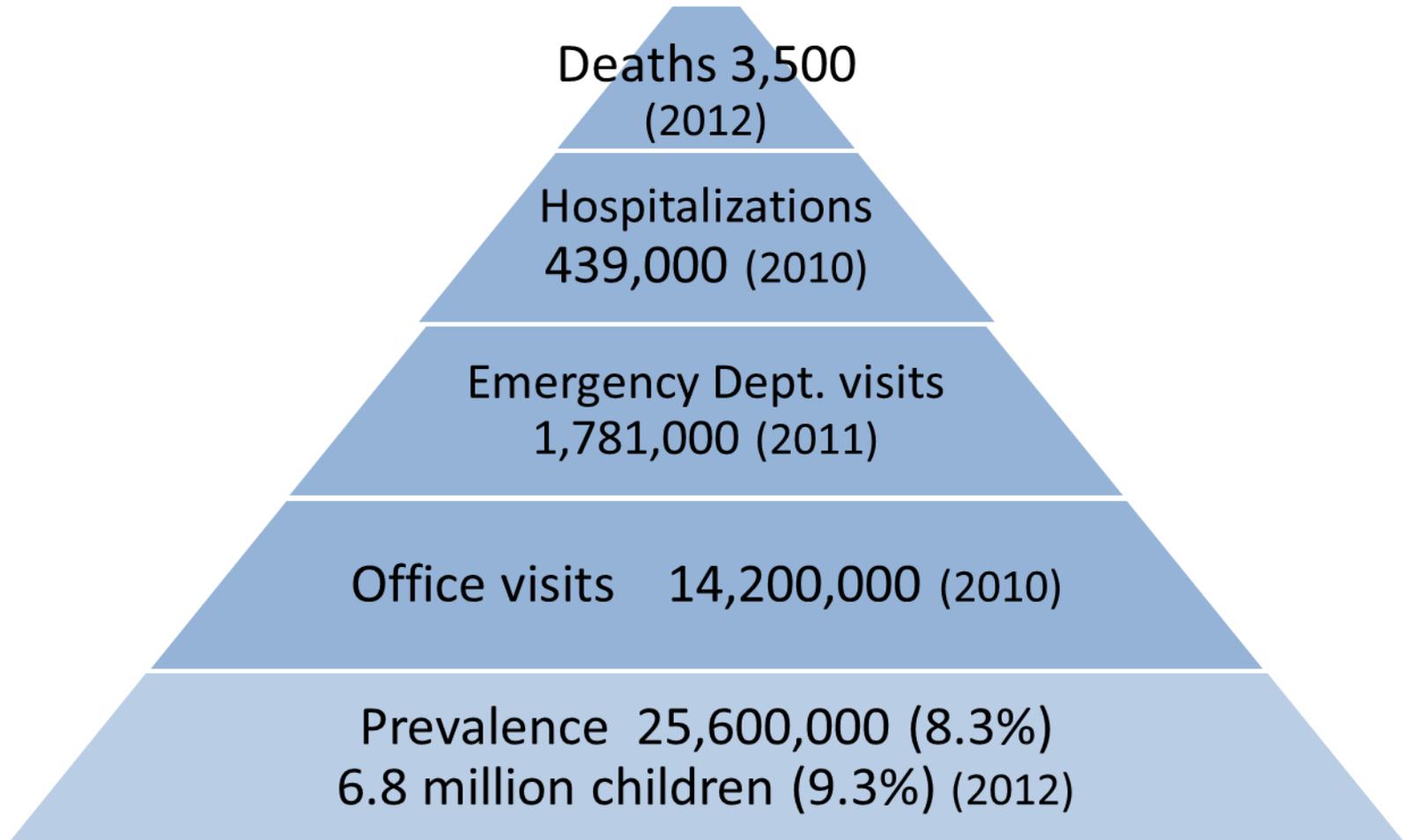
LCDR Shane Nye



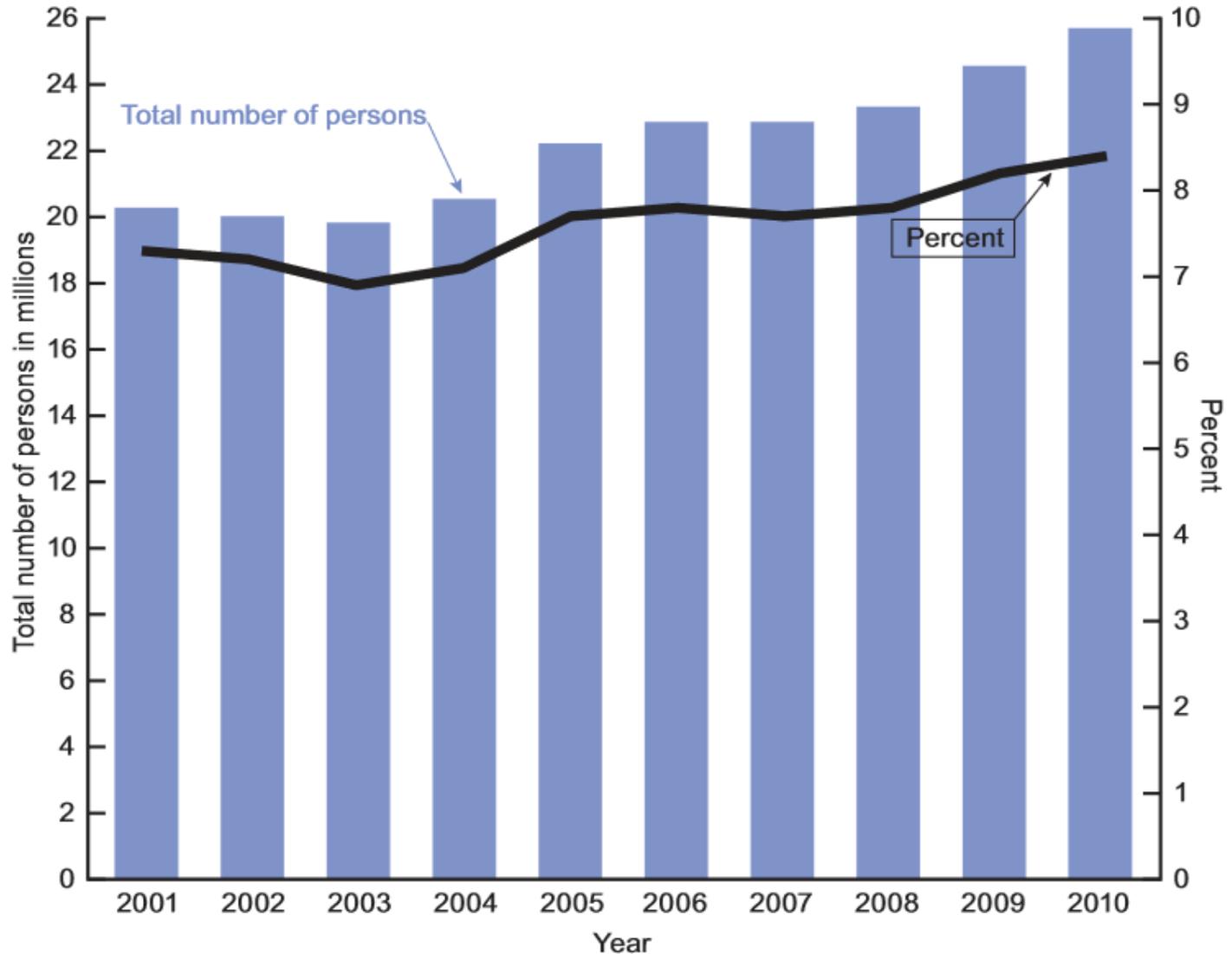
Learning objectives

- Cite the Healthy People 2020 objectives for asthma
- Apply the four components of asthma care to professional practice
- Describe how collaborative practice by the entire Indian Health Service (IHS) professional staff (physician, nurse, pharmacist, respiratory therapist, environmental health engineer) can affect outcomes in asthma patients

Public health burden of asthma (year)

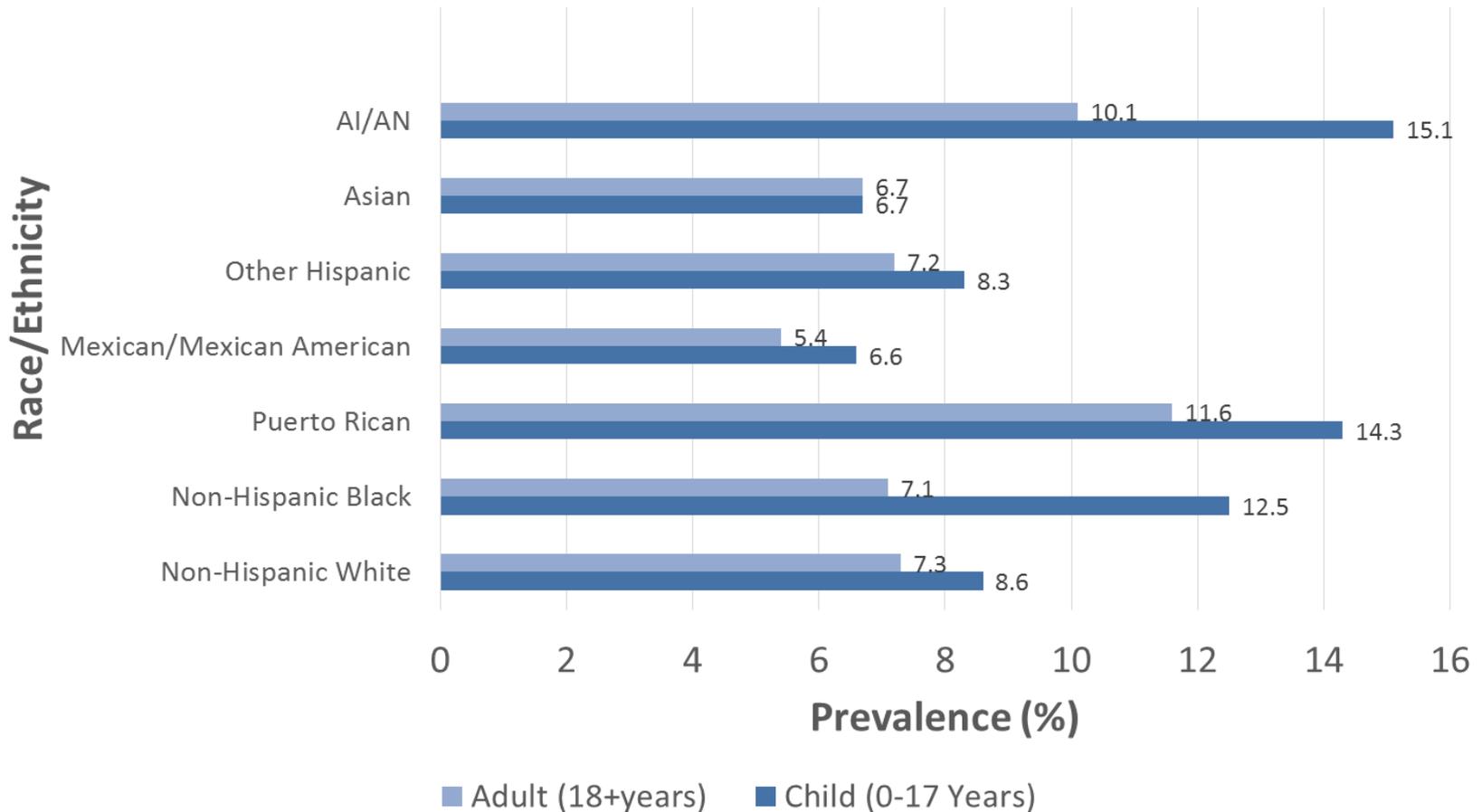


Current asthma prevalence: US 2001-2010



Asthma prevalence by race/ethnicity

National Health Interview Survey 2001-2010

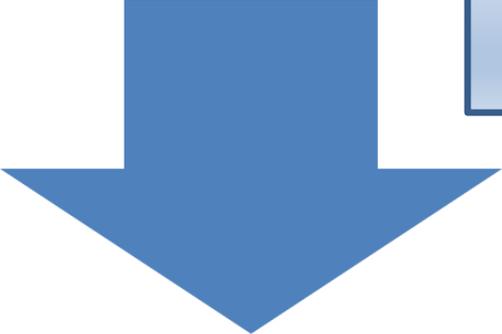


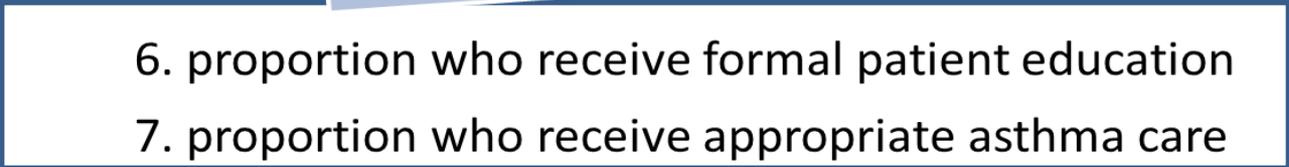
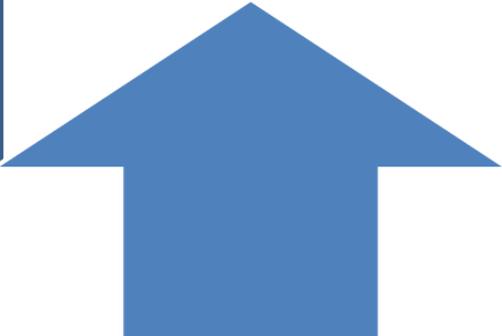
What is Healthy People 2020?

- Healthy People (HP2020) provides science-based, 10-year national objectives for improving the health of all Americans
 - Encourage collaborations across communities and sectors
 - Empower individuals toward making informed health decisions
 - Measure the impact of prevention activities



Healthy People 2020: Eight national asthma objectives

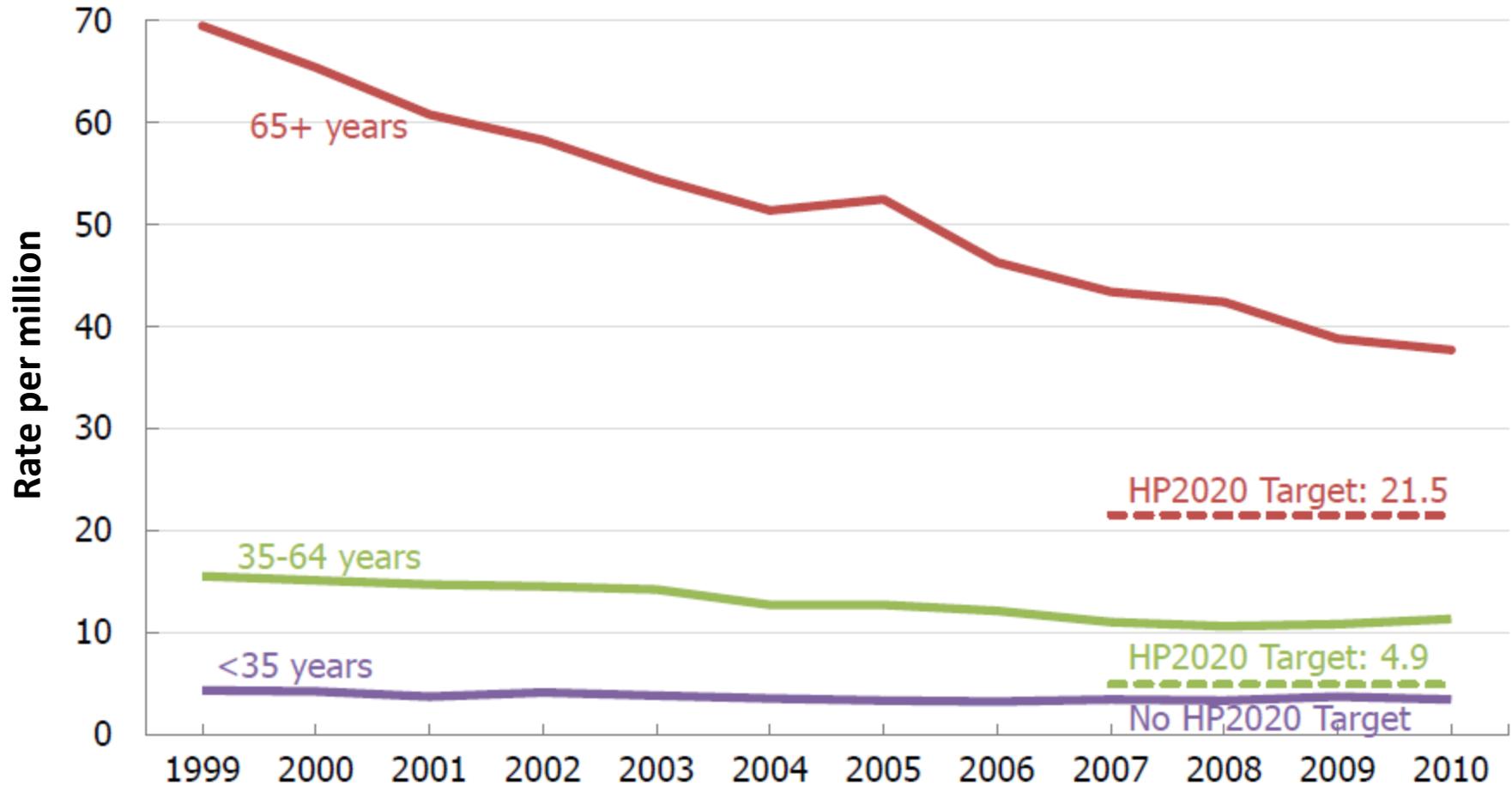
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 2. hospitalizations for asthma
 3. emergency department (ED) visits for asthma
 4. activity limitations among persons with asthma
 5. proportion asthma who miss school or work days

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 7. proportion who receive appropriate asthma care
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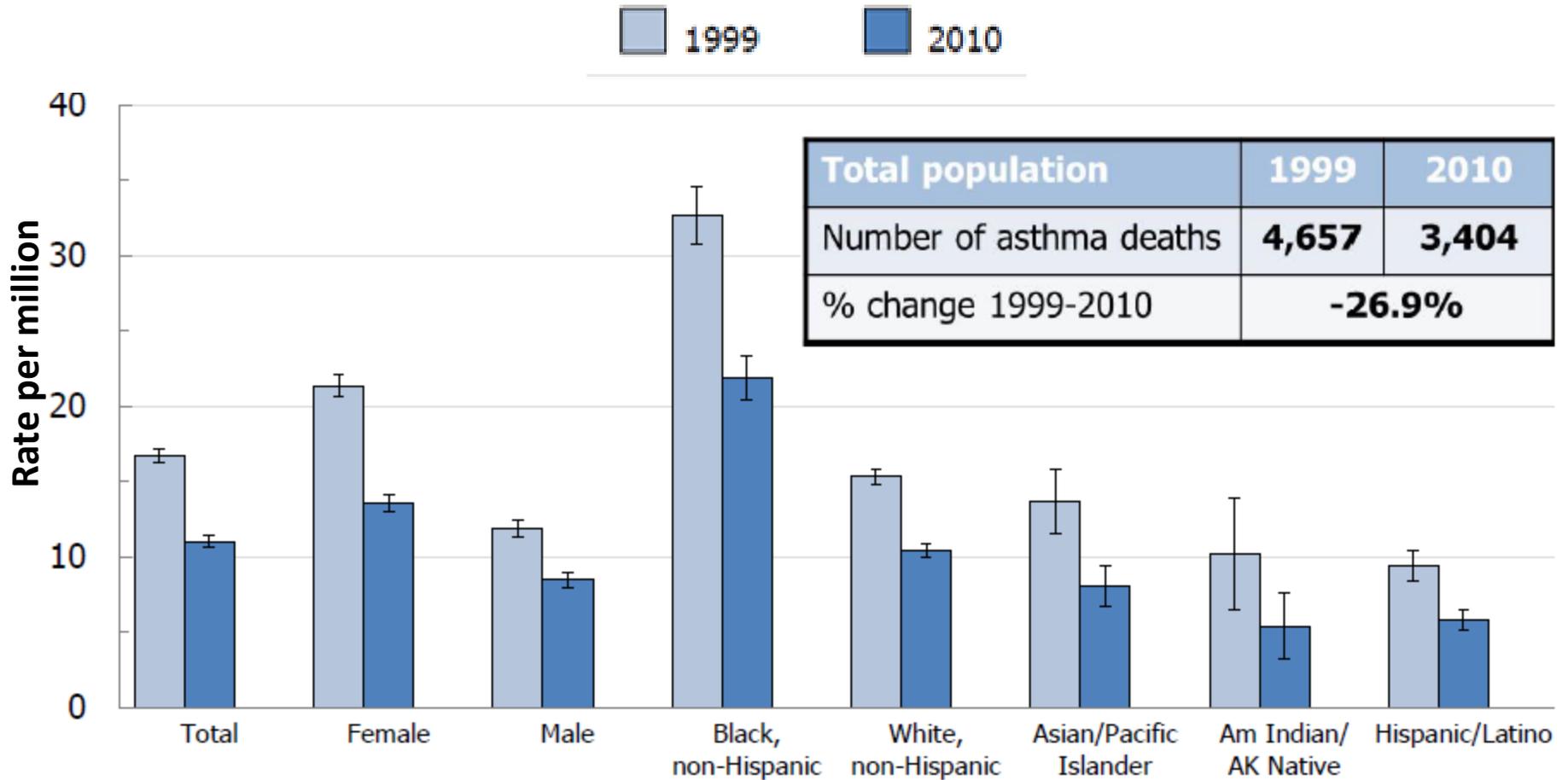
Objective 1: Reduce asthma deaths

- **Under age 35 years**: 3.4 asthma deaths per million children and adults occurred in 2007
 - This measure is being tracked for informational purposes. If warranted, a target will be set during the decade.
 - No target set as of December 2014

Asthma deaths, 1999-2010



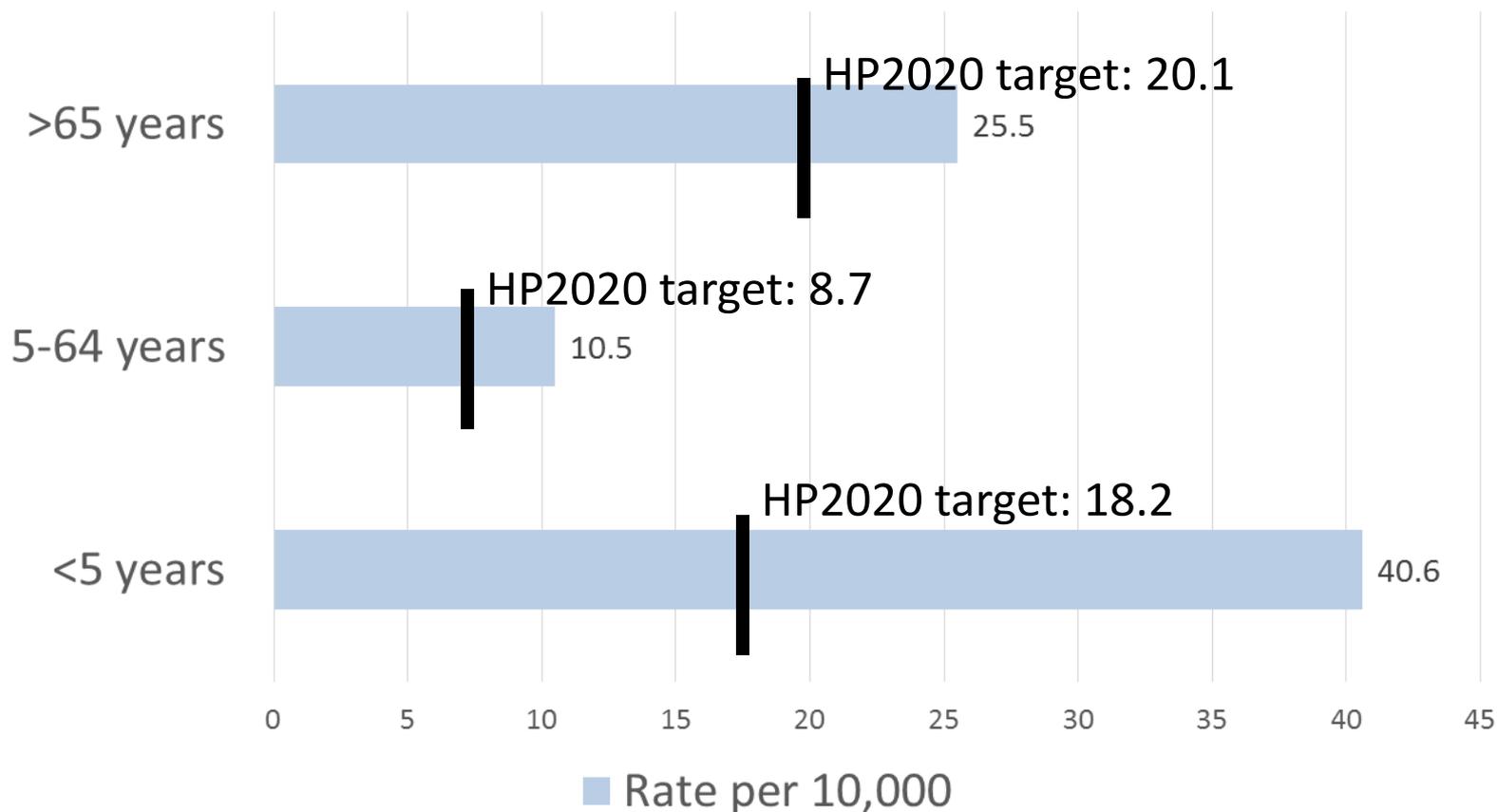
Asthma deaths



Objective 2: Reduce asthma hospitalizations

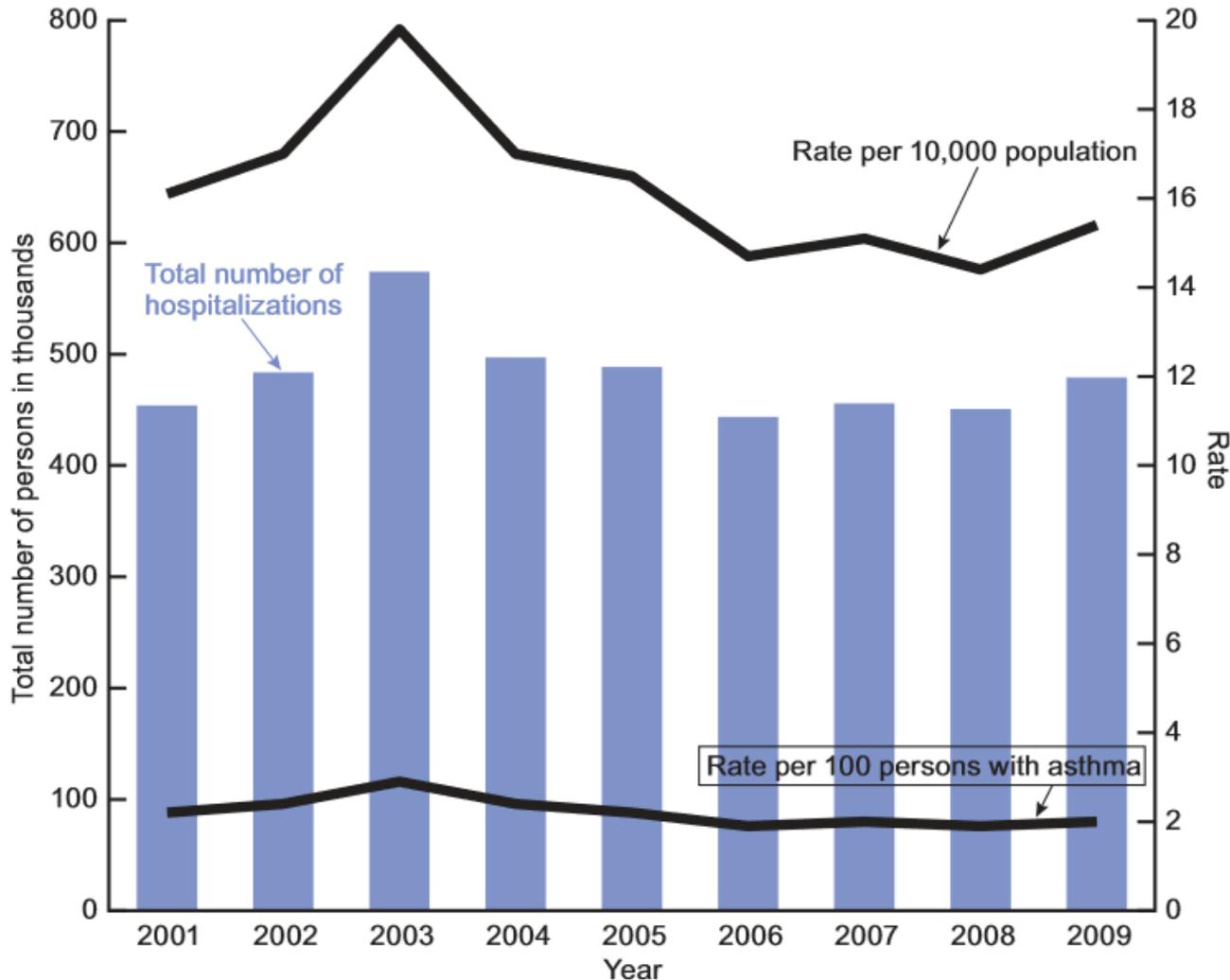
- **<5 years**: Target 18.2 hospitalizations per 10,000
 - Baseline: 41.4 occurred in 2007
- **5-64 years**: Target 8.7 hospitalizations per 10,000
 - Baseline: 11.1 occurred in 2007
- **>65 years**: Target 20.1 hospitalizations per 10,000
 - Baseline: 25.3 occurred in 2007

Asthma hospitalizations U.S., 2010



Note: data for group <5 years is from 2009

Asthma hospitalizations: U.S., 2001-2009



Asthma hospitalizations 439,000 (2010)

Comparing asthma hospitalizations among AI/AN versus general US population, 2003-2011

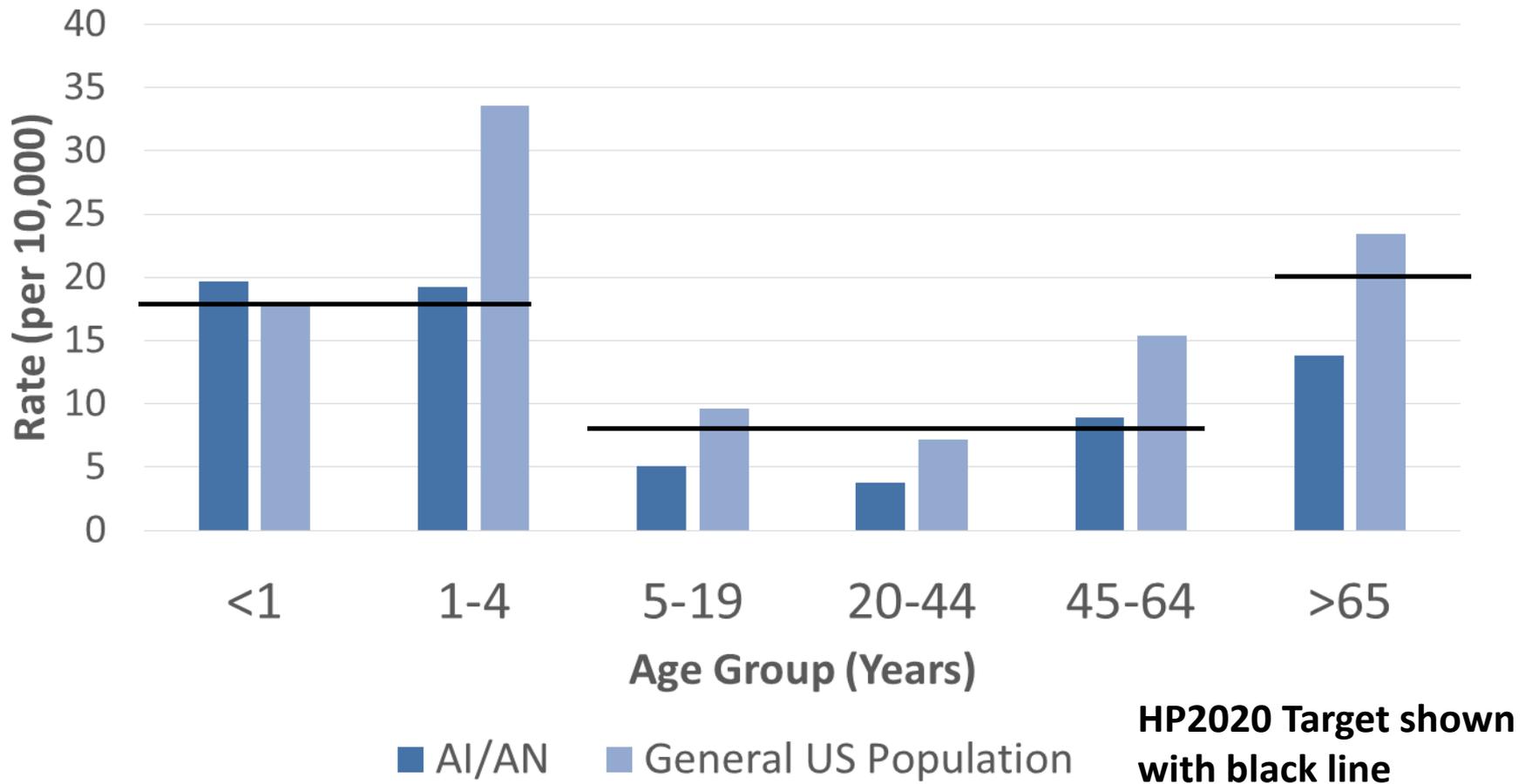
2003-2011	Asthma Hospitalizations (total number)	All Hospitalizations (percentage)
AI/AN	10,116	1.5%
General US population	3,820,242 (SE, 49,382)	1.2% (SE, 0.01%)

Asthma Hospitalizations 2003-2005 vs 2009-2011	2003-2005		2009-2011		Difference
	No. (SE) [all ages]	Rate ^a (95% CI)	No. (SE) [all ages]	Rate ^a (95% CI)	Rate Change, % (SE)
AI/AN	3,939	10.8	2,924	7.3	-32.4 ^b
General US Population	1,332,056 (30,822)	15.2 (14.5-15.9)	1,254,874 (27,564)	13.5 (12.9-14.1)	-10.8 ^b (2.8)

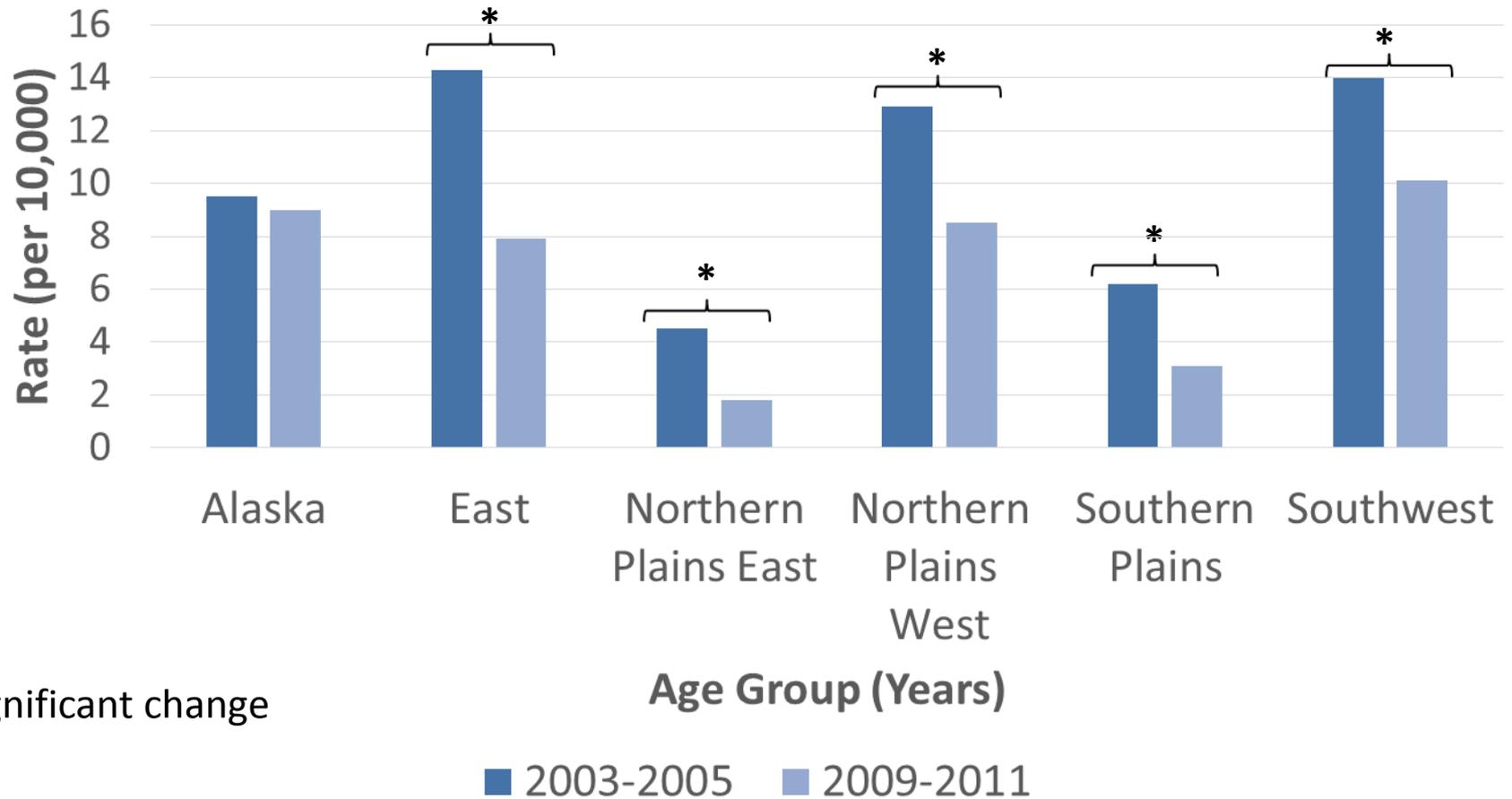
^aUnadjusted rate per 10,000

^bsignificant change from 2003-2005 to 2009-2011

Age-specific average annual rate of asthma hospitalizations among AI/AN and the general US population, 2009-2011



Region-specific average annual rate of asthma hospitalizations among AI/AN 2003-2005 vs 2009-2011



Comparing asthma hospitalizations among AI/AN by gender

2003-2005 vs 2009-2011	2003-2005		2009-2011		Difference
	No. [all ages]	Rate ^a	No. [all ages]	Rate ^a	Rate Change, %
Male	1,651	9.5	1,180	6.2	-34.7 ^b
Female	2,288	12.0	1,744	8.4	-30.0 ^b

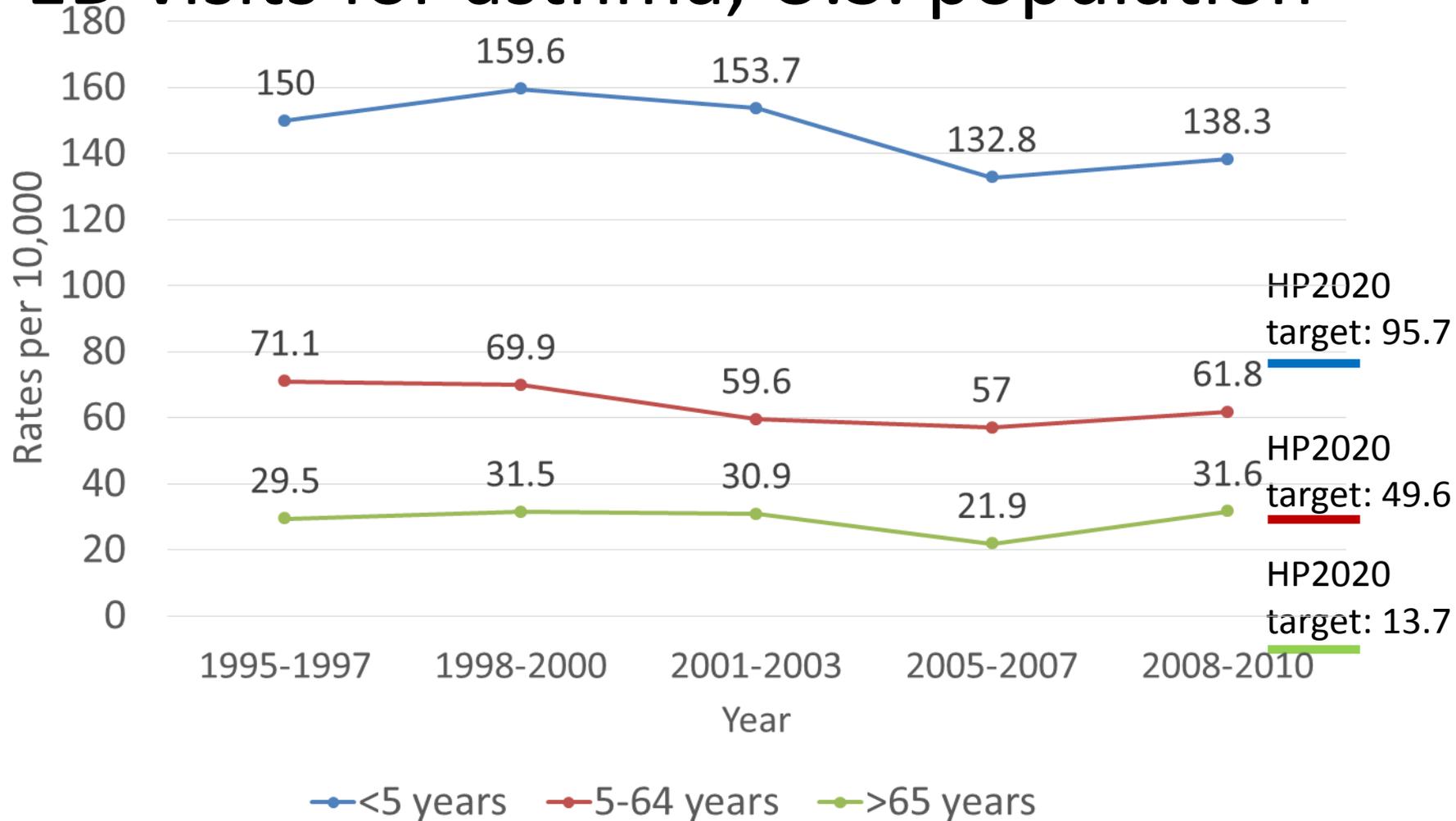
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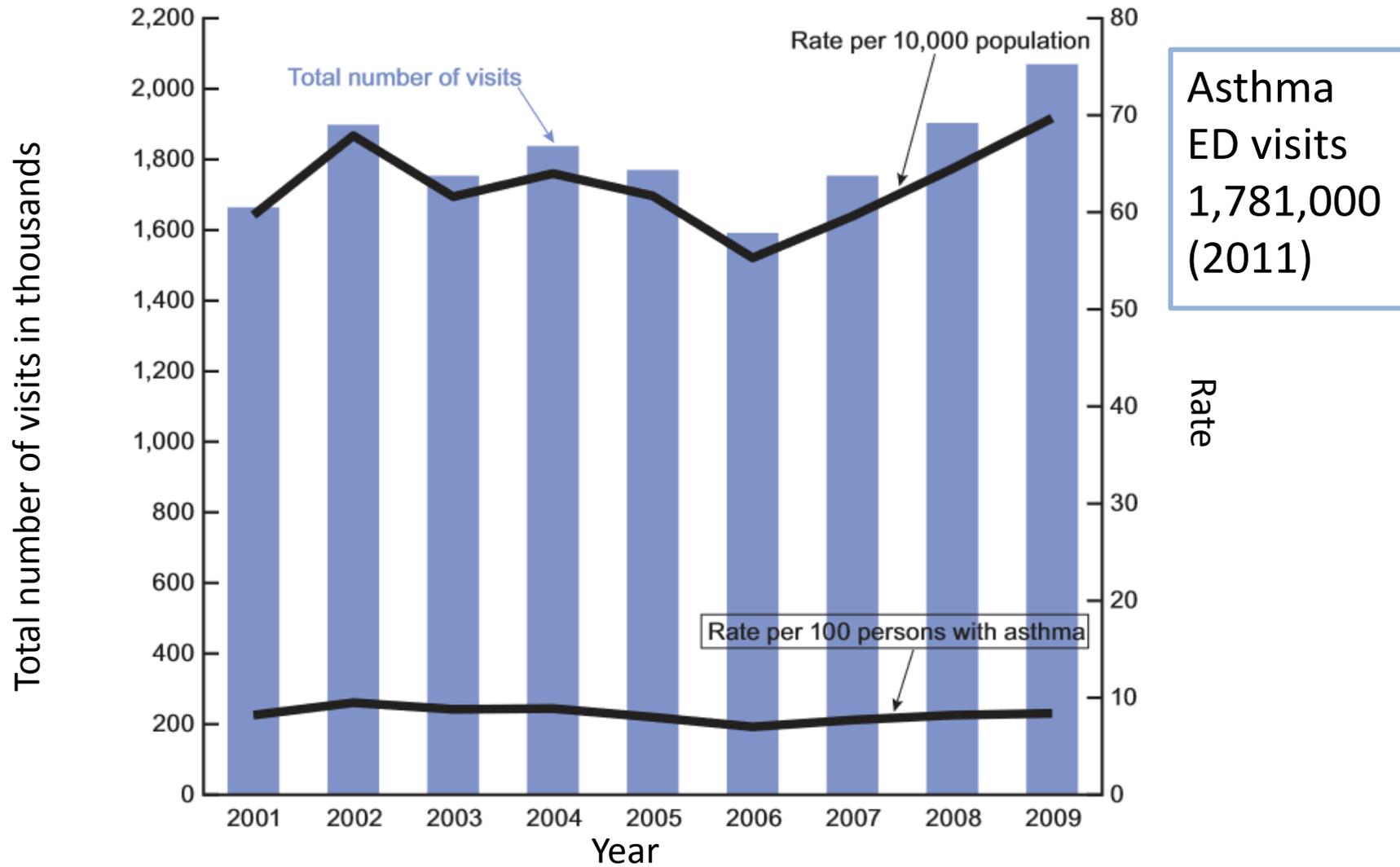
Objective 3: Reduce asthma ED visits

- **<5 years**: Target 95.7 ED visits per 10,000
 - Baseline: 132.8 occurred in 2005-2007
- **5-64 years**: Target 49.6 ED visits per 10,000
 - Baseline: 57.0 ED visits occurred in 2005-2007
- **>65 years**: Target 13.7 ED visits per 10,000
 - Baseline: 21.9 occurred in 2005-2007

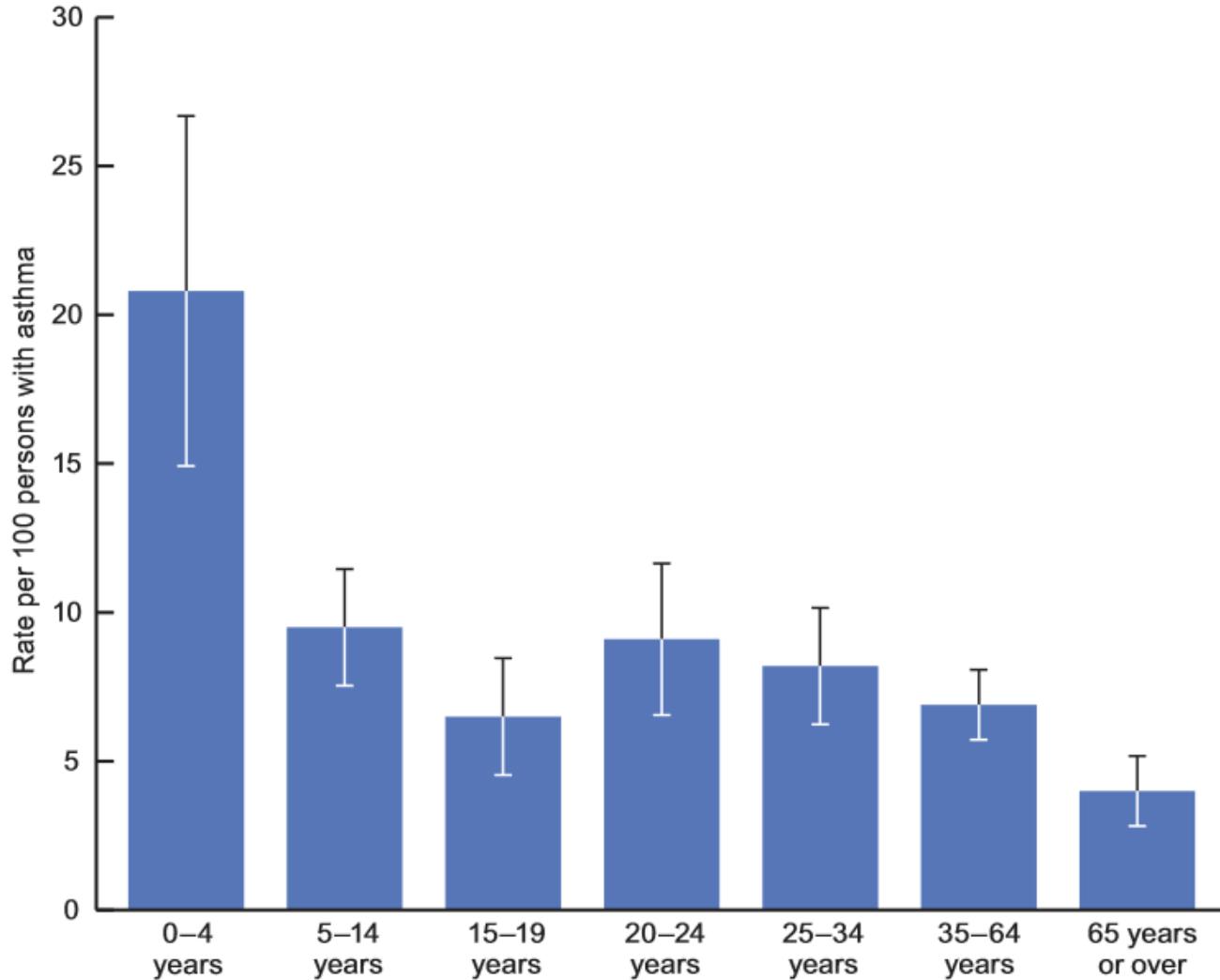
ED visits for asthma, U.S. population



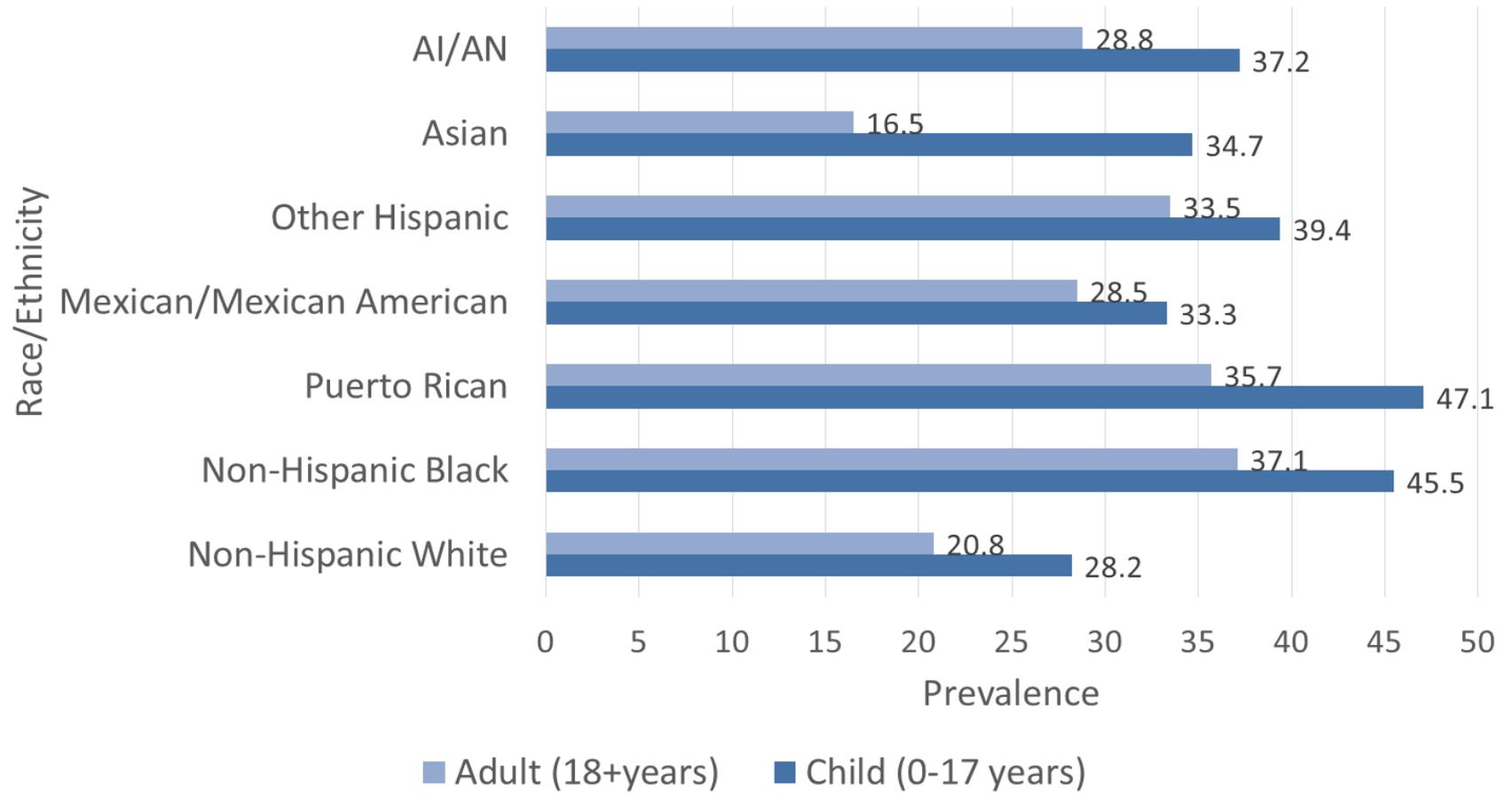
Asthma ED visits U.S., 2001-2009



Asthma ED visit rates (risk-based), by detailed age group: U.S., average annual 2007-2009



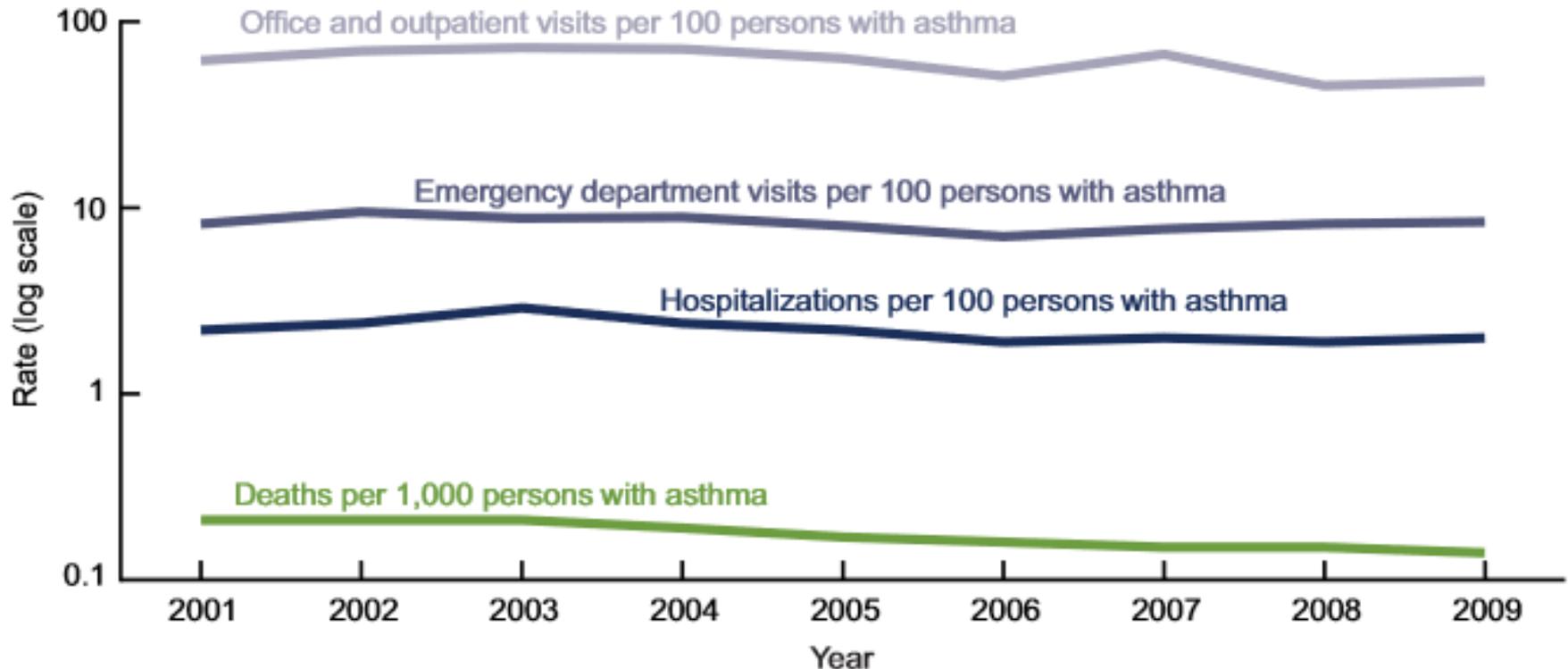
Asthma-related ED or urgent care center visit in past 12 months, National Health Interview Survey 2001-2010



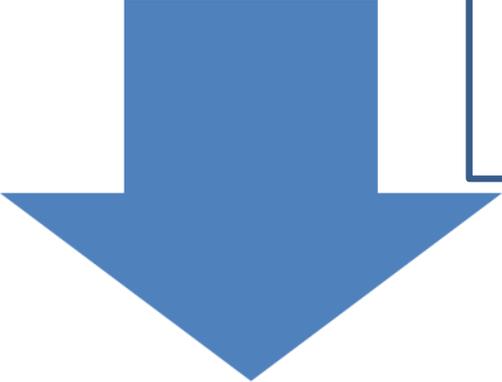
Objective Status (1-3): Asthma

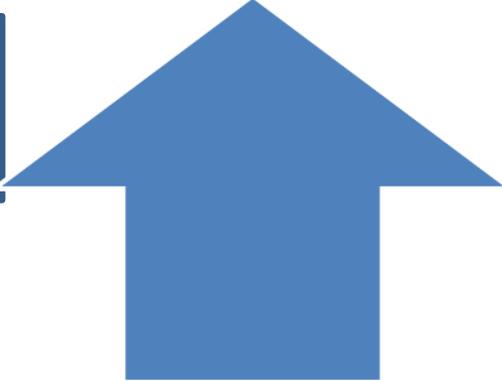
- Objective 1
 - Asthma deaths: <35 – little/no change
- Objective 2
 - Asthma hospitalizations <5 years: improving
 - Asthma hospitalizations 5-64 years: improving
- Objective 3
 - ED visits <5 years: little/no change
 - ED visits 5-64 years: little/no change

Asthma health care encounters per 100 persons with asthma: United States 2001-2009



Healthy People 2020: Eight national asthma objectives

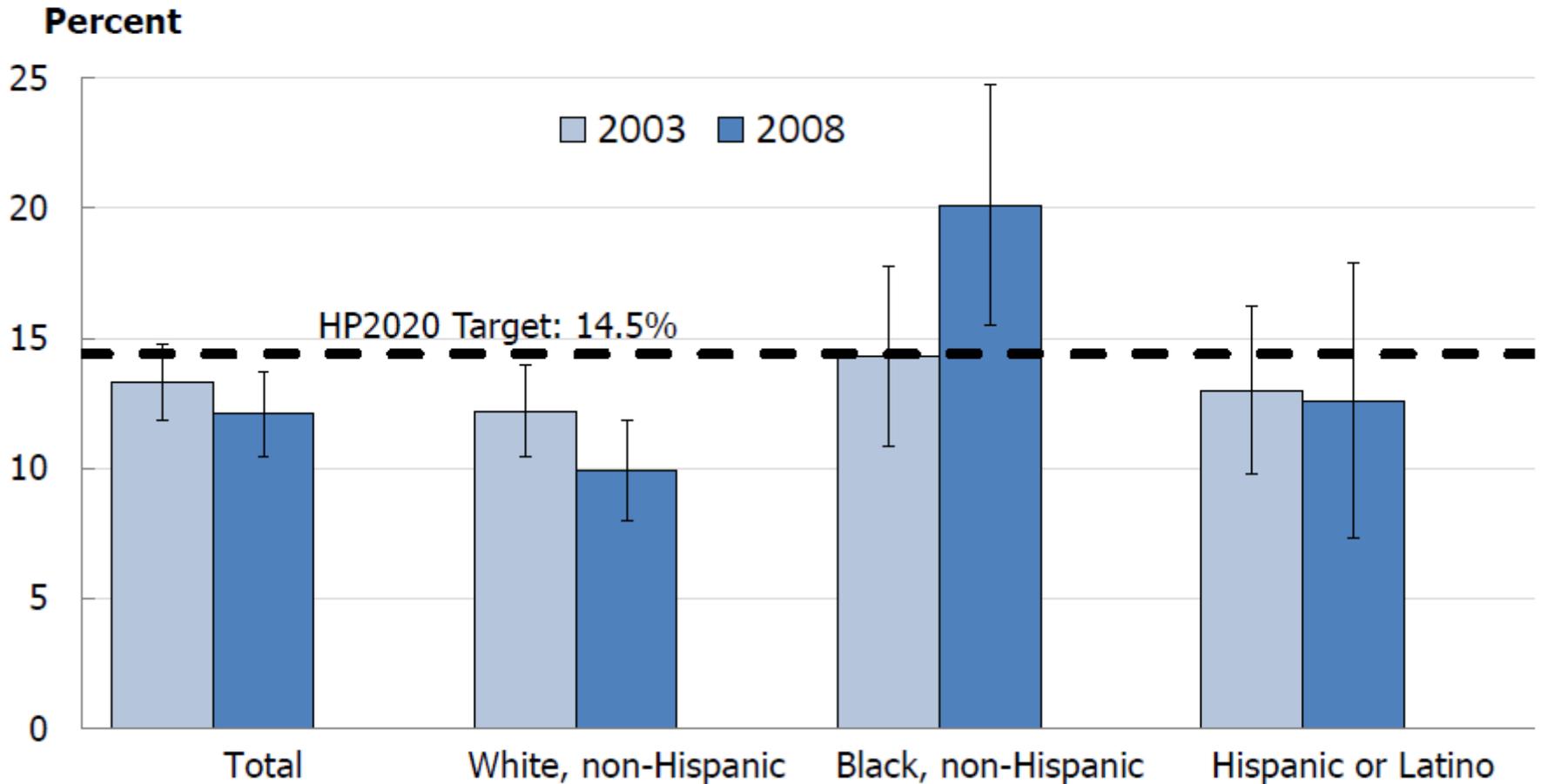
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 8. number of States...with a comprehensive asthma surveillance system for tracking asthma cases, illnesses, and disability at the state level

Objectives 6 & 7

- **Objective 6:** Proportion who receive formal patient education
 - proportion of persons with current asthma who have ever taken a course or class on how to manage their asthma
- **Objective 7:** Proportion who receive appropriate asthma care
 - Using National Asthma Education and Prevention Program (NAEPP) guidelines

Asthma patient education



Key takeaways: HP2020 Objectives

- Despite increasing asthma prevalence, **deaths and hospitalization rates have declined** while
- ED visits have remained stable.
- Age, sex, race and income **disparities persist.**
- Asthma hospitalization rates for AI/AN children still remain higher than for older age groups.
- Overall asthma education **has declined**

Self-assessment question

Which of the following is the BEST indicator of asthma morbidity?

- A) Prescribing patterns of asthma medications
- B) Spirometry or other pulmonary function test results
- C) Asthma-related emergency department visits
- D) Adherence of the national asthma guidelines by health care providers

How to meet the Healthy People 2020 goals in AI/AN youth

Team Work!

Four components of asthma control

1. Assessing and Monitoring Asthma Severity and Asthma Control
2. Education for a Partnership in Care
3. Control of Environmental Factors and Comorbid Conditions that Affect Asthma
4. Medications

Role of spirometry

- Spirometry is an objective measure to establish diagnosis of asthma
 - May be used in children as young as 5 years old
- Peak Flow meters may be used to monitor asthma, but not diagnose



What to assess at each visit

- Asthma control
 - Validated questionnaires (e.g. ACT, ACQ, ATAQ)
- Medication technique
- Written asthma action plan
- Adherence
- Patient concerns

Four components of asthma control

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Asthma education

- **Integral** component of effective asthma care
- Has been shown to reduce:
 - ER/Urgent care visits, hospitalizations
- Has been shown to improve:
 - Quality of life, health status and perceived control of asthma
- Teach and Reinforce at EVERY opportunity!

Key educational messages

(not all inclusive)

- Basic facts about asthma
 - Inflammation, pathophysiology of asthma attacks
- Role of medications
 - Rescue versus controller
- Patient skills
 - Proper use
 - Assess proper use (and proper education by providers)
 - Self monitoring
 - Asthma action plan, when to seek medical care

National Asthma Educators Certification Board (NAECB)

- Administers test for Asthma Educator Certified (AE-C) credential
- Definition of AE-C:
 - “An AE-C is an expert in teaching, educating, and counseling individuals with asthma and their families in the knowledge and skills necessary to minimize the impact of asthma on their quality of life.”

Four components of asthma control

1. Assessing and Monitoring Asthma Severity and Asthma Control
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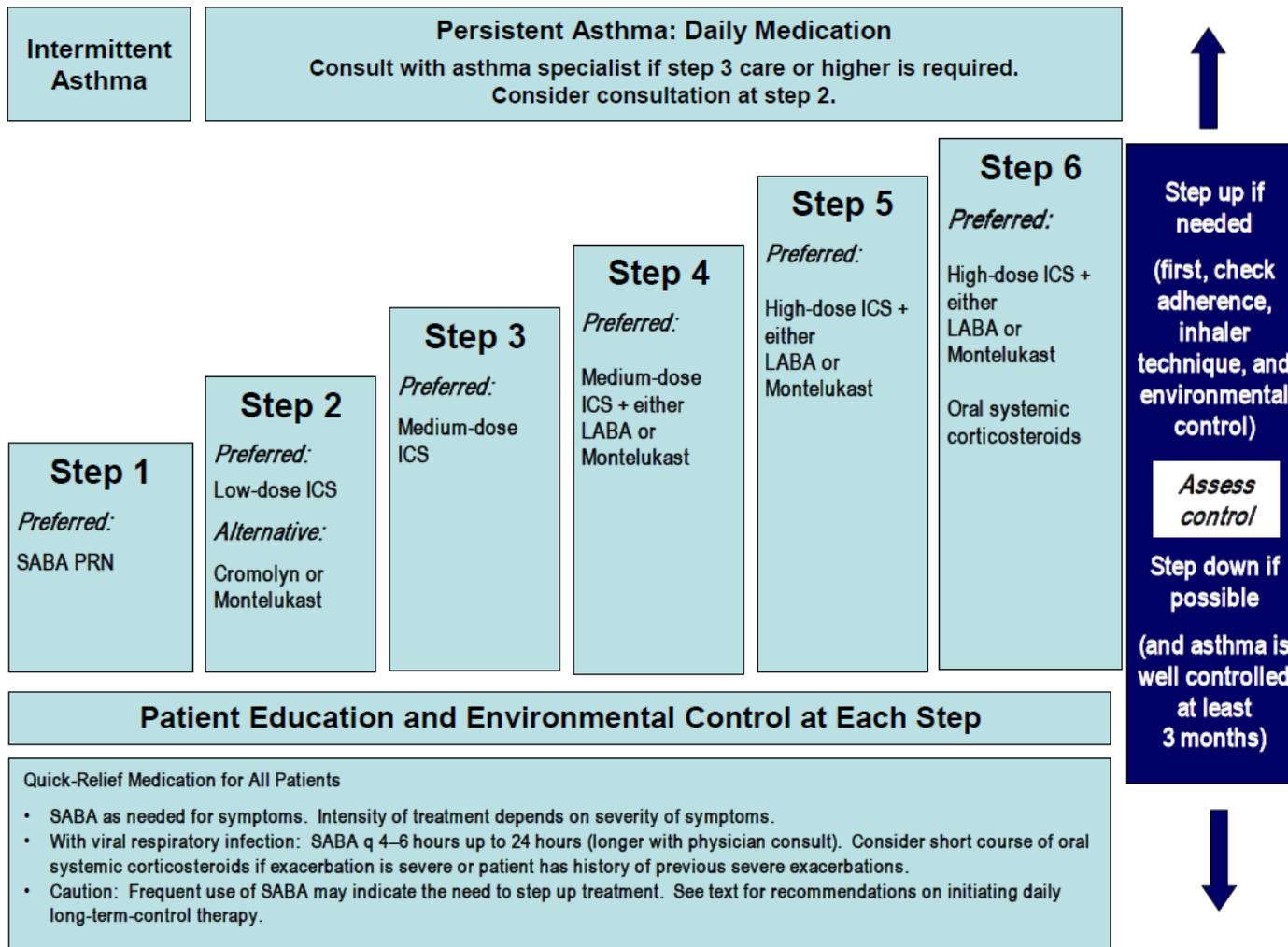
Control of environmental factors and comorbid conditions that affect asthma

- Environmental Factors
 - Measures to control allergens/irritants
 - Team Work!
 - Environmental Health Engineer
 - Home Health Nursing
- Recognition and treatment of comorbid conditions may improve asthma control
- Recommend influenza & pneumonia vaccines

Four components of asthma control

1. Assessing and Monitoring Asthma Severity and Asthma Control
2. Education for a Partnership in Care
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Medications: stepwise approach



Proper technique of inhalers



- Metered-dose inhaler (MDI)
 - SLOW breath (3-5 seconds) followed by a 10 second breath hold
- Dry Powder Inhaler (DPI)
 - Rapid deep inhalation (1-2 seconds)
 - For use in ≥ 4 years old
 - Dose is lost if patient exhales through device after activating
- For corticosteroids, wash mouth and spit after use

Case study

- W.E.Z. is a 25 y/o female with intermittent asthma since childhood. She presents to your asthma clinic for follow-up 3 weeks post asthma flare that was treated outpatient with a 5-day prednisone burst, along with OTC cough/congestion medications.
- During the visit she is comfortable and conversing. She reports she is back to normal breathing and uses albuterol 1 or 2 times/day and usually just once during the night. No cough or notable wheeze. Her vitals are:

Case study (cont.)

- Vitals

Peak flow: 345 L/min (predicted = 430 L/min)

Temp: 98.3°F

Lungs: CTA bilaterally

BP: 128/72

RR: 20

P: 78 bpm

Wt: 212 lbs

Ht: 60"

- Current Medications (NKDA)

- Albuterol MDI 2 puffs every 4-6 hours as needed
- Montelukast 10mg by mouth daily
- Loratadine 10mg daily
- Ortho Evra 1 patch weekly

Case study (cont.)

- How would you classify this patient's level of asthma control?
 - A. Well controlled
 - B. Not well controlled
 - C. Very poorly controlled
- What factors led you to select that answer?
- What additional medical history would you obtain from this patient?

Case study (cont.)

- After more questioning, you find that she does not use tobacco but her husband is a smoker although he usually smokes outside (unless it is cold); she does not have pets, and her symptoms seem to worsen in the Fall and Winter or when cleaning the house or when at the rodeo.
- What asthma triggers would you document for this patient?
 - Seasonal Allergies
 - Tobacco Smoke
 - Dust Mites
 - Household cleaners?

Case study (cont.)

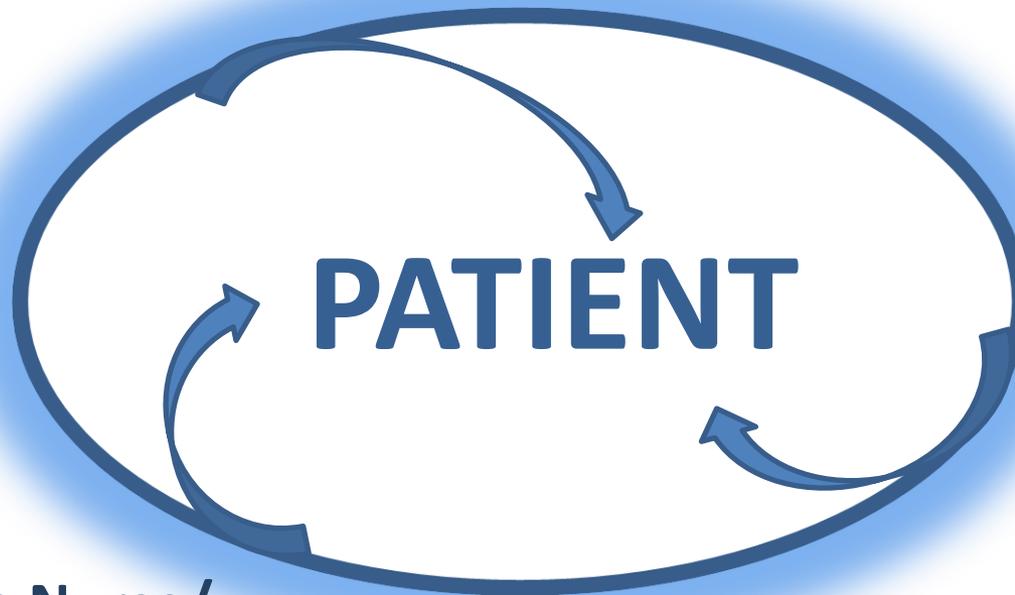
- Which of the following may also be possible triggers to ask about?
 - a. Strong emotions or anxiety
 - b. Tobacco smoke
 - c. Exercise
 - d. Menses
 - e. Mold
 - f. Household cleaners
 - g. a, b, e
 - h. a, b, c, e, f
 - i. all of the above

Case study (cont.)

- What immunization history would be beneficial to check on?
- What changes (if any) would you recommend for treatment of this patient's asthma?
 - Inhaled corticosteroid (high vs med dose?).
 - Assess technique with MDI or DPI.
 - Recommend bedding covers.
 - Continue vs d/c montelukast?

Yakama IHS team approach

Medical Provider



**Home Health Nurse/
Environmental Health Officer**

Pharmacist

Yakama IHS team approach

- Medical Provider
 - Patient diagnosis of asthma
 - Specialty referrals (pulmonology, PFT, etc) by provider
 - Initiates patient referral
 - Pharmacy asthma clinic and/or
 - Home review
 - Reviews and cosigns all encounter notes
 - Maintains patient relationship through annual or semiannual visits

Yakama IHS team approach

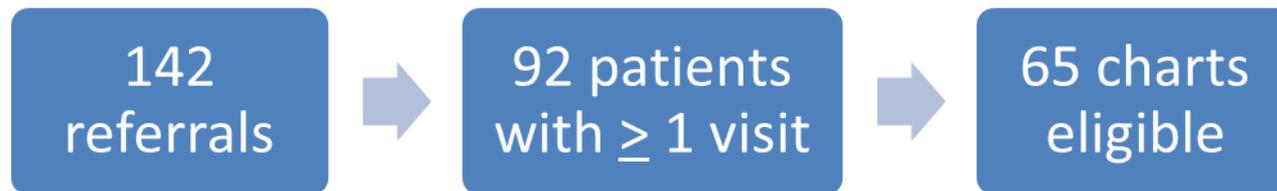
- Pharmacist
 - Supervised and trained by medical provider
 - 12 Hours direct supervision for RPh credentialing
 - Administrative and Clinical support
 - AE-C preferred
 - Coordinates all provider referrals
 - Medical management of asthma pt ages 6 and up
 - Patient Education
 - Asthma follow up

Yakama IHS team approach

- Home Health Nurse / EHO
 - Home review and evaluation for environmental factors
 - Series of 3 incentivized home visits
 - Patient education
 - Trigger elimination and avoidance
 - Currently only billable through HH Nurse
 - Evaluation documented in health record
 - EHO Funded by grant

Quality improvement project: Yakama IHS pharmacist-run asthma clinic

- **Chart review** from Sept 2010 – Sept 2014 of patients referred to asthma clinic
- Eligibility: ≥ 1 visit at asthma clinic & ≥ 12 months elapsed since first visit
- **Compared 2 time periods** for asthma-related hospitalizations and ER visits: 12 months preceding and immediately following the first asthma clinic visit



Primary Outcomes (n=65)	Period 1	Period 2	p-value
Asthma-related Hospitalizations	13	2	<0.05*
Asthma-related ED/Urgent Care Visits	45	25	<0.05*

*Statistical significance; paired t-test

Reimbursement for asthma education

- Opportunities for reimbursement are highly variable from state-to-state
 - Physician versus non-physician billing

Description	Billing Codes
Asthma education in person per visit	S9441 / 98960
Group asthma education visit	99078
Evaluation and teaching of inhaler and/or nebulizer	94664
Spirometry test +/- bronchodilator	94060 / 94010

Objectives

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- Describe how collaborative practice by the entire Indian Health Service (IHS) professional staff (physician, nurse, pharmacist, respiratory therapist, environmental health engineer) can affect outcomes in asthma patients

References

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12. National Asthma Educators Certification Board. Gilbert, AZ. 2014. <http://www.naecb.com/> [accessed 12/17/14]