# Developing And Implementing an Asthma Program to Optimize Outcomes

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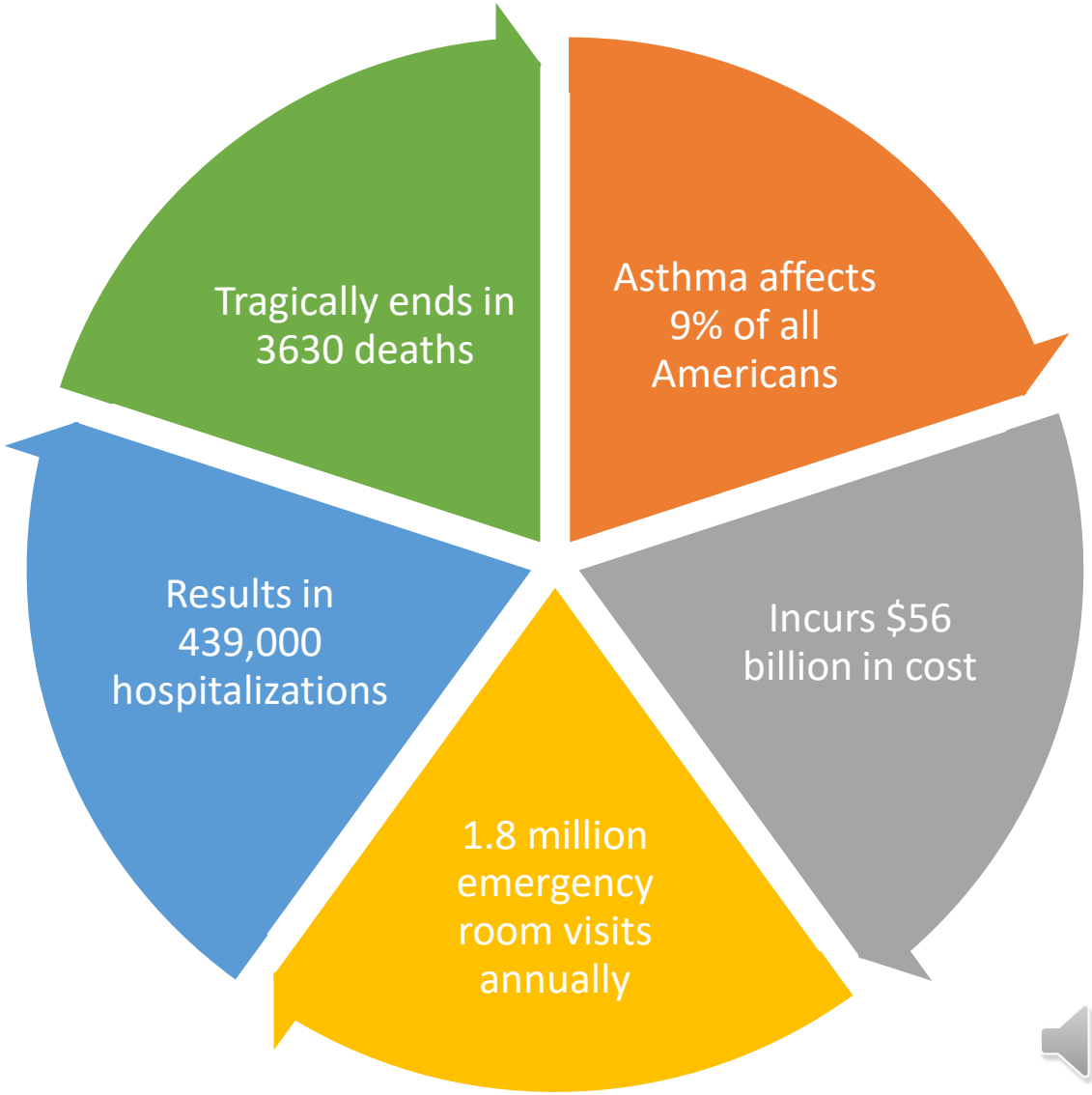
# Learning Objectives

- Describe the magnitude of asthma in the United States
- Define the goals of asthma management
- Review different strategies to optimize asthma outcomes
- Describe methodology to assess improvement in asthma outcomes

# The Magnitude of Asthma



# The Hidden Cost of Asthma

Report commissioned by Asthma Australia in partnership with the National Asthma Council Australia as part of consultations to develop the National Asthma Strategy 2016–2020


## burden of disease

**$24.7bn**

this includes the effect of disability and premature death

## healthcare

**$1.2bn**

costs to the health system, including medication, hospital and out-of-hospital costs

## productivity

**$1.1bn**

in productivity losses including lost wages for people with asthma

## time off

**2.1**

more days off work for people with asthma

## carers

**$72.9m**

in lost wages for carers

## support

**$289.4m**

in income support for carers of people with asthma

**1 in 10** Australians have asthma

**45%**[1]

have poorly controlled asthma

Sources: The Hidden Cost of Asthma – Deloitte Access Economics, November 2015

[1] Reddel H, Sawyer S et al. (2015) 'Asthma control in Australia: a cross-sectional web-based survey in a nationally representative population.' Medical Journal Australia, 202 (9), p492-497

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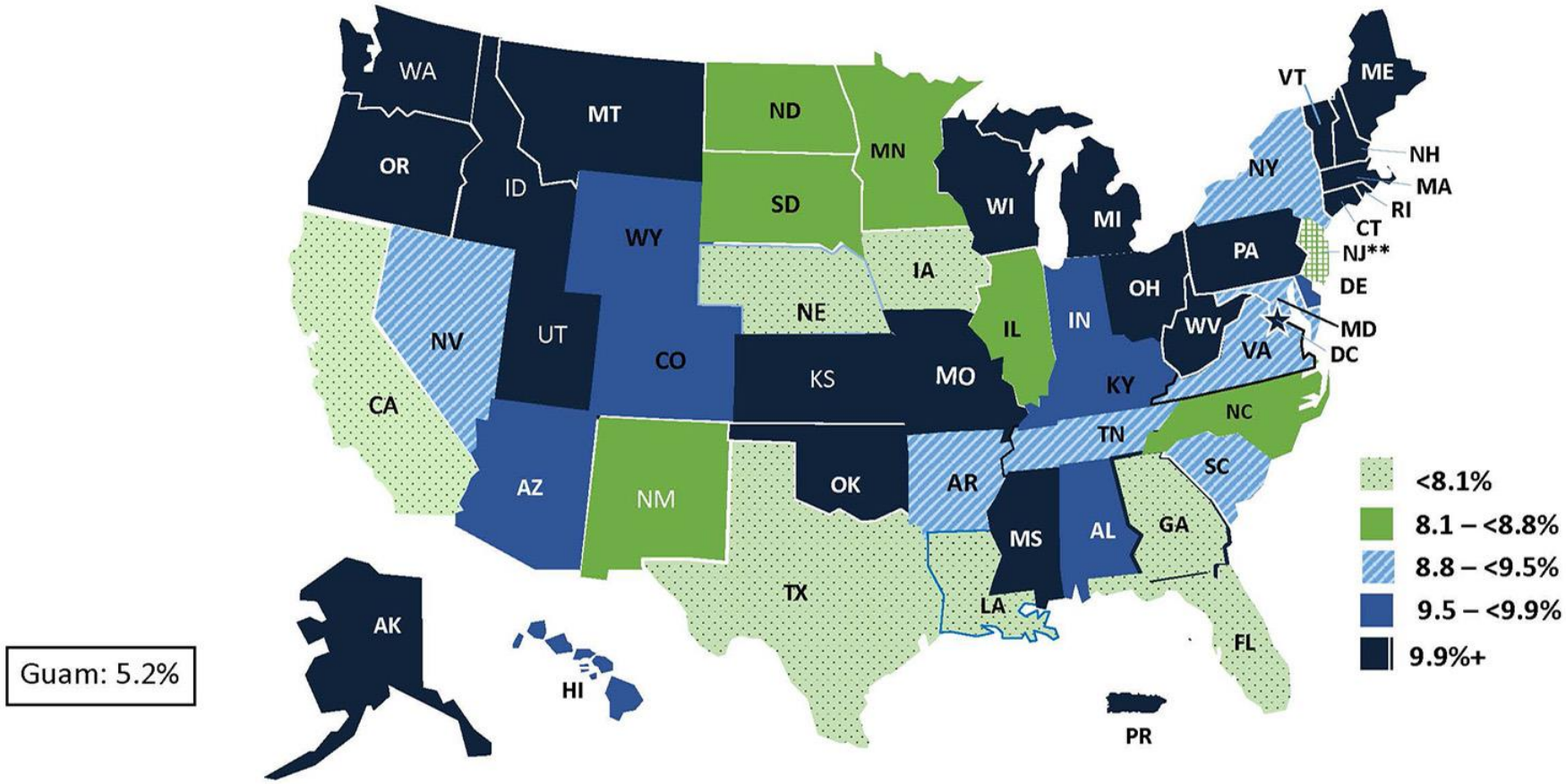
**Looking for help with managing asthma?**

**1800 ASTHMA**
**1800 278462**

# Adult* Self-Reported Current Asthma Prevalence, BRFSS 2019




Guam: 5.2%

*Aged 18+ years

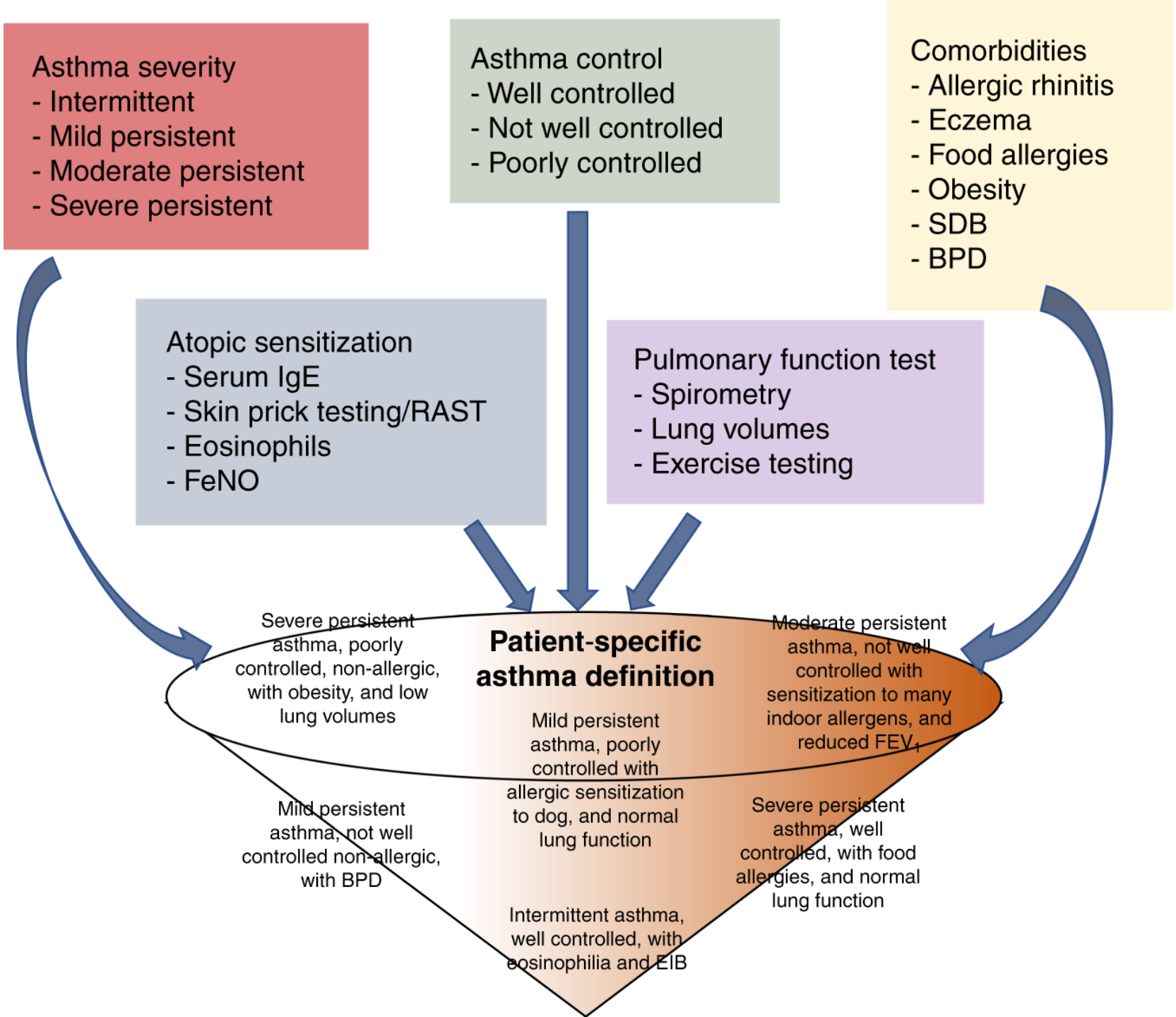
**New Jersey did not meet the minimum requirements for inclusion in the annual aggregate data set for 2019

Legend: percentiles of the overall current asthma prevalence estimates from year 2011 data: 0%, 20%, 40%, 60%, 80%, 100%

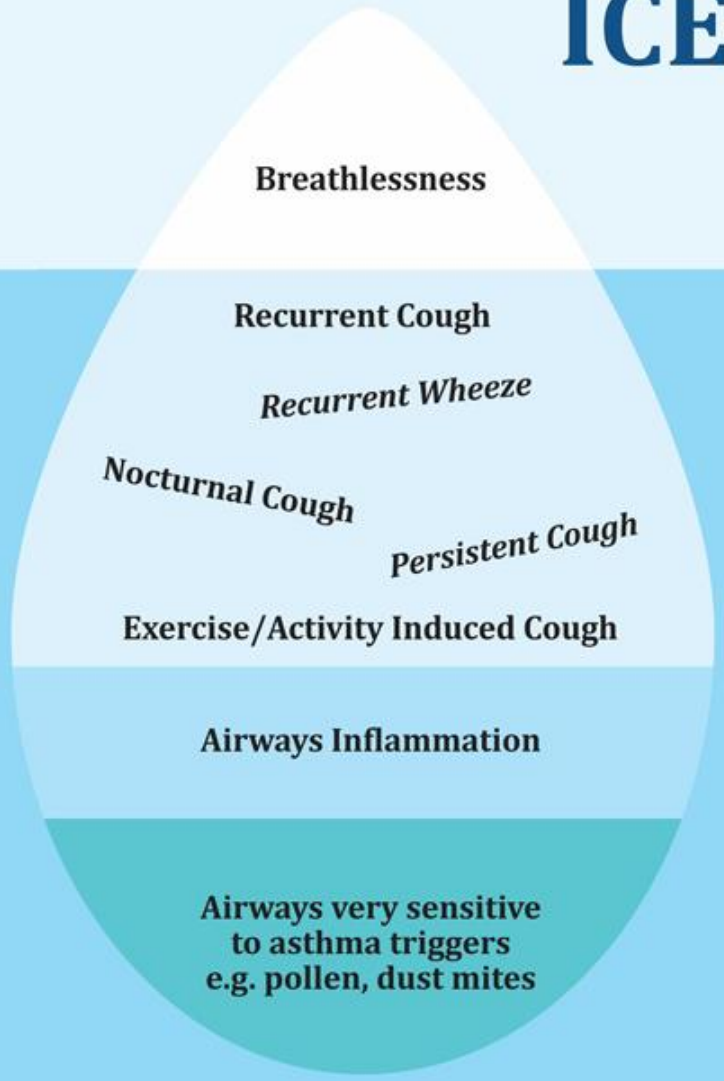
Asthma and Community Health Branch, National Center for Environmental Health
Centers for Disease Control and Prevention

# Magnitude of Asthma

- As is true for many chronic diseases, a small fraction of asthma patients with severe disease, high vulnerabilities, or great barriers to care consume most health care costs and resources.
- The top 20% of patients consume 80% of costs, and the top 1% consume 25%.
- Often these patients are also refractory to conventional asthma interventions.
- Almost all private health plans provide, and most major employers purchase, care management services that implement tailored care plans with early interventions for high-risk patients to avoid high costs and health status degradation.

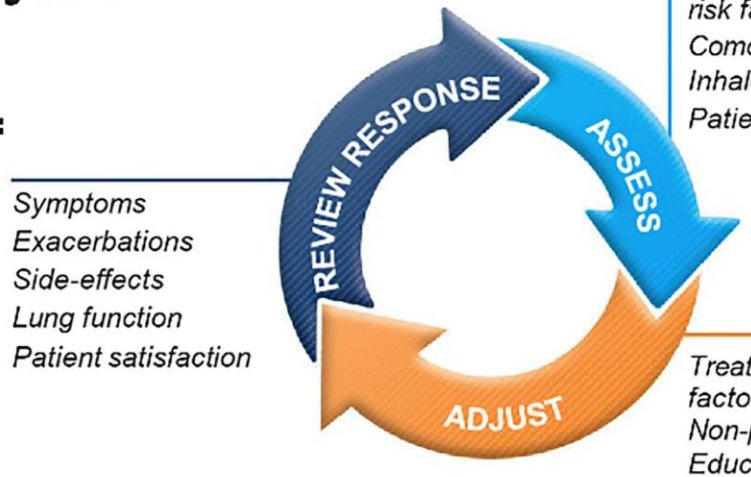

Asthma severity
- Intermittent
- Mild persistent
- Moderate persistent
- Severe persistent
Asthma control
- Well controlled
- Not well controlled
- Poorly controlled
Comorbidities
- Allergic rhinitis
- Eczema
- Food allergies
- Obesity
- SDB
- BPD
Atopic sensitization
- Serum IgE
- Skin prick testing/RAST
- Eosinophils
- FeNO
Pulmonary function test
- Spirometry
- Lung volumes
- Exercise testing
Patient-specific asthma definition
Severe persistent asthma, poorly controlled, non-allergic, with obesity, and low lung volumes
Moderate persistent asthma, not well controlled with sensitization to many indoor allergens, and reduced FEV1
Mild persistent asthma, poorly controlled with allergic sensitization to dog, and normal lung function
Mild persistent asthma, not well controlled non-allergic, with BPD
Severe persistent asthma, well controlled, with food allergies, and normal lung function
Intermittent asthma, well controlled, with eosinophilia and EIB

# THE ASTHMA ICEBERG



# Adults & adolescents 12+ years

**Personalized asthma management:**
Assess, Adjust, Review response




*Confirmation of diagnosis if necessary*
*Symptom control & modifiable risk factors (including lung function)*
*Comorbidities*
*Inhaler technique & adherence*
*Patient goals*

*Symptoms*
*Exacerbations*
*Side-effects*
*Lung function*
*Patient satisfaction*

*Treatment of modifiable risk factors & comorbidities*
*Non-pharmacological strategies*
*Education & skills training*
*Asthma medications*

**Asthma medication options:**
Adjust treatment up and down for individual patient needs

| | STEP 1 | STEP 2 | STEP 3 | STEP 4 | STEP 5 |
|---|---|---|---|---|---|
| **PREFERRED CONTROLLER** to prevent exacerbations and control symptoms | As-needed low dose ICS-formoterol* | Daily low dose inhaled corticosteroid (ICS), or as-needed low dose ICS-formoterol* | Low dose ICS-LABA | Medium dose ICS-LABA | High dose ICS-LABA<br>Refer for phenotypic assessment ± add-on therapy, e.g.tiotropium, anti-IgE, anti-IL5/5R, anti-IL4R |
| *Other controller options* | *Low dose ICS taken whenever SABA is taken†* | *Leukotriene receptor antagonist (LTRA), or low dose ICS taken whenever SABA taken†* | *Medium dose ICS, or low dose ICS+LTRA#* | *High dose ICS, add-on tiotropium, or add-on LTRA#* | *Add low dose OCS, but consider side-effects* |
| **PREFERRED RELIEVER** | As-needed low dose ICS-formoterol* | | As-needed low dose ICS-formoterol‡ | | |
| *Other reliever option* | *As-needed short-acting $\beta_2$ -agonist (SABA)* | | | | |

# Goals of Asthma Management

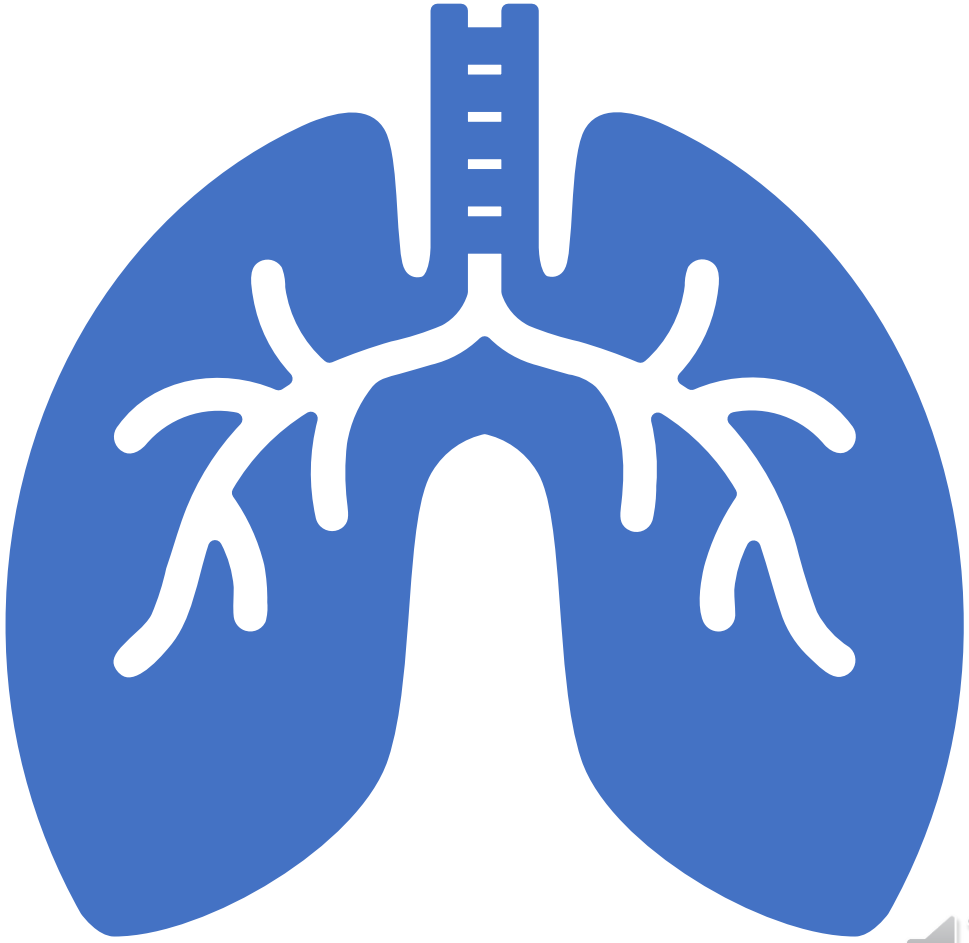
- The main goals of asthma management are to optimize control of asthma symptoms and reduce the risk of asthma exacerbations while minimizing medication adverse effects.
- It is expected that a person with well-controlled asthma should be able to participate in work, school, play, and sports without limitation due to breathing.
- Have uninterrupted sleep
- The four essential components of asthma management are patient education, minimizing exposure to asthma triggers, monitoring for changes in symptoms or lung function, and pharmacologic therapy.

# Goals of Asthma Management

- The four essential components of asthma management are:
  - patient education
  - minimizing exposure to asthma triggers
  - monitoring for changes in symptoms or lung function
  - and pharmacologic therapy for daily symptom control

# Goals of Asthma Management

- No asthma symptoms during the day or night.
- No limits in activities or play.
- No missed school or work.
- Fewer attacks or flares.
- No emergency room or hospital visits for asthma.
- Decreased need for quick relief medicine.

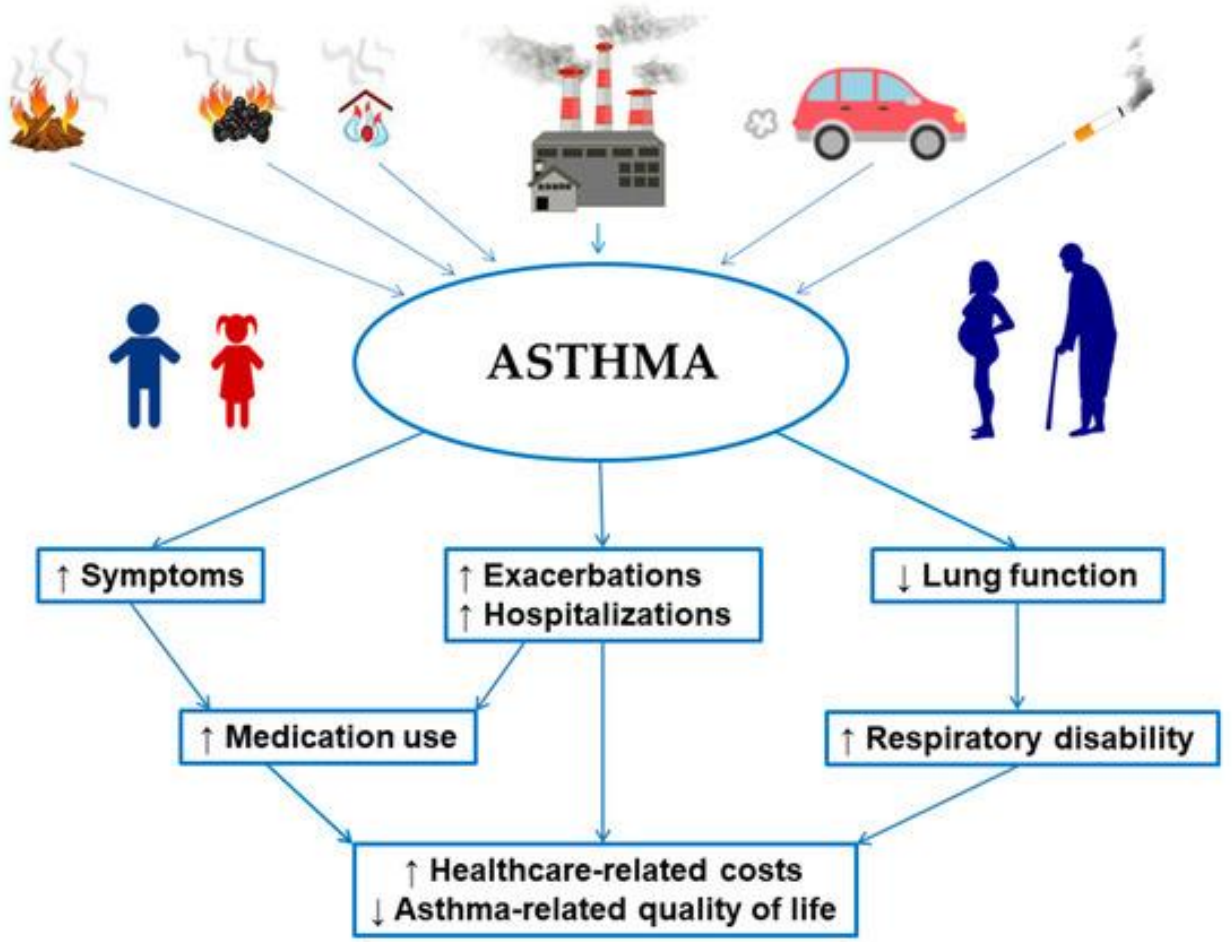


**Symptoms**
Shortness of breath, chest tightness, wheeze, cough, difficulty breathing, nocturnal awakenings, daytime fatigue, acute attacks

**Impact**
Motivation, physical activity, social life, employment, relationships/intimacy, travel, mental health

**Burden**
Emotional, financial, functional, medication


**Treatment**
Pharmacological interventions, nonpharmacological interventions, multidimensional assessment


ASTHMA
↑ Symptoms
↑ Exacerbations
↑ Hospitalizations
↓ Lung function
↑ Medication use
↑ Respiratory disability
↑ Healthcare-related costs
↓ Asthma-related quality of life

# Global Asthma at a Glance

Download

## The Prevalence of Asthma Is Increasing

**300M**
people with asthma
2004

APPROXIMATE ESTIMATE
**400M**
people with asthma
2025

Source: Masoli M, Fabian D, Holt S, Beasley R; Global Initiative for Asthma (GINA) Program. The global burden of asthma: executive summary of the GINA Dissemination Committee Report. Allergy. 2004;59:469-478.

## Rising Morbidity of Asthma

WORLD HEALTH ORGANIZATION ESTIMATES

**430K**
deaths from asthma
2015

APPROXIMATE ESTIMATE
**610K**
deaths from asthma
2030

Source: Global health estimates, World Health Organization, July 2013.

## Patient Noncompliance or Adherence Failure

UP TO
**80%** of patients cannot use their inhaler correctly

AROUND
**50%** of adults and children do not take their controller medications as prescribed

Source: Global Initiative for Asthma

# How Do We Define Asthma Goals Not Being Obtained?

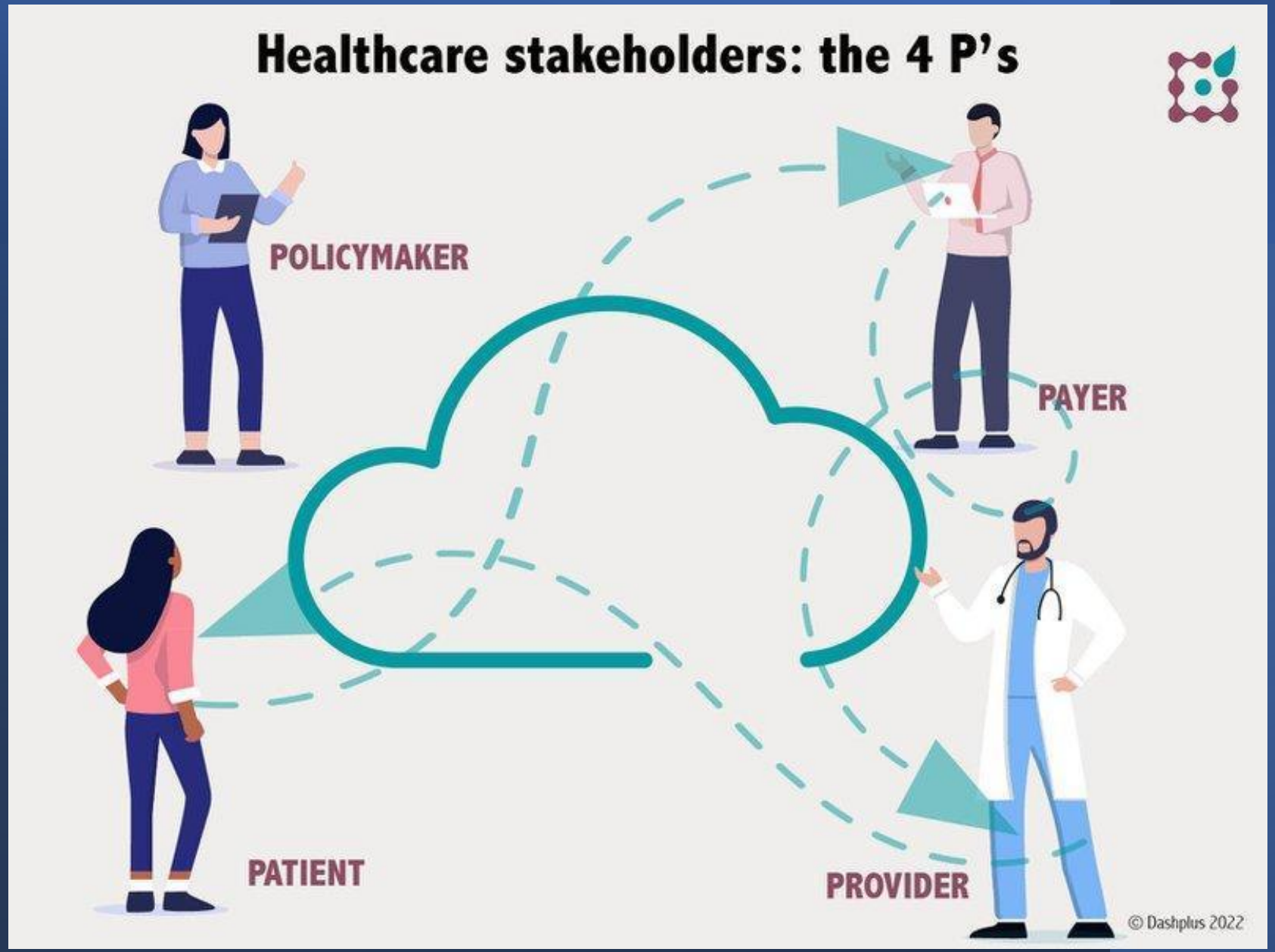
- Increased exacerbations
- Increased missed workdays or school absenteeism
- Increased ED visits
- Increased hospitalizations
- Lack of medication adherence

# Six Step Method to Successful Asthma Management

- Step 1: Make Your Medical Visits More Productive.
- Step 2: Create an Asthma Management Plan.
- Step 3: Assess and Monitor Your Control.
- Step 4: Understand Your Medication.
- Step 5: Reduce Asthma Triggers.
- Step 6: Learn Asthma Self-Management Skills.

# Who Are The P's Healthcare Stakeholders?

- **The 4 P's**. the four types of stakeholders in the healthcare (eco)system:
  - patients,
  - providers,
  - payors
  - policymakers.
- They all have a different role in the healthcare value chain, which means that different interests and/or visions will also play a role.


Healthcare stakeholders: the 4 P's
POLICYMAKER
PAYER
PATIENT
PROVIDER
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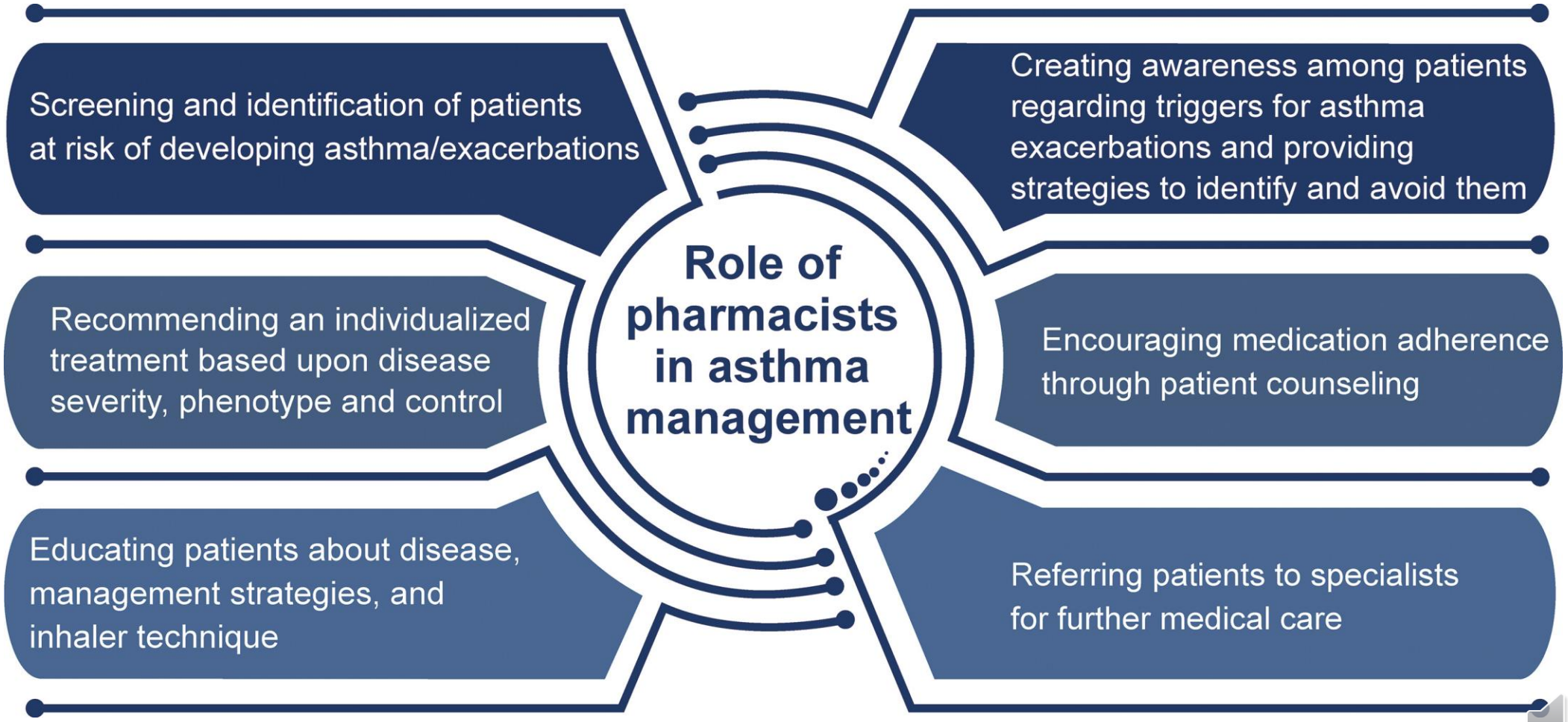
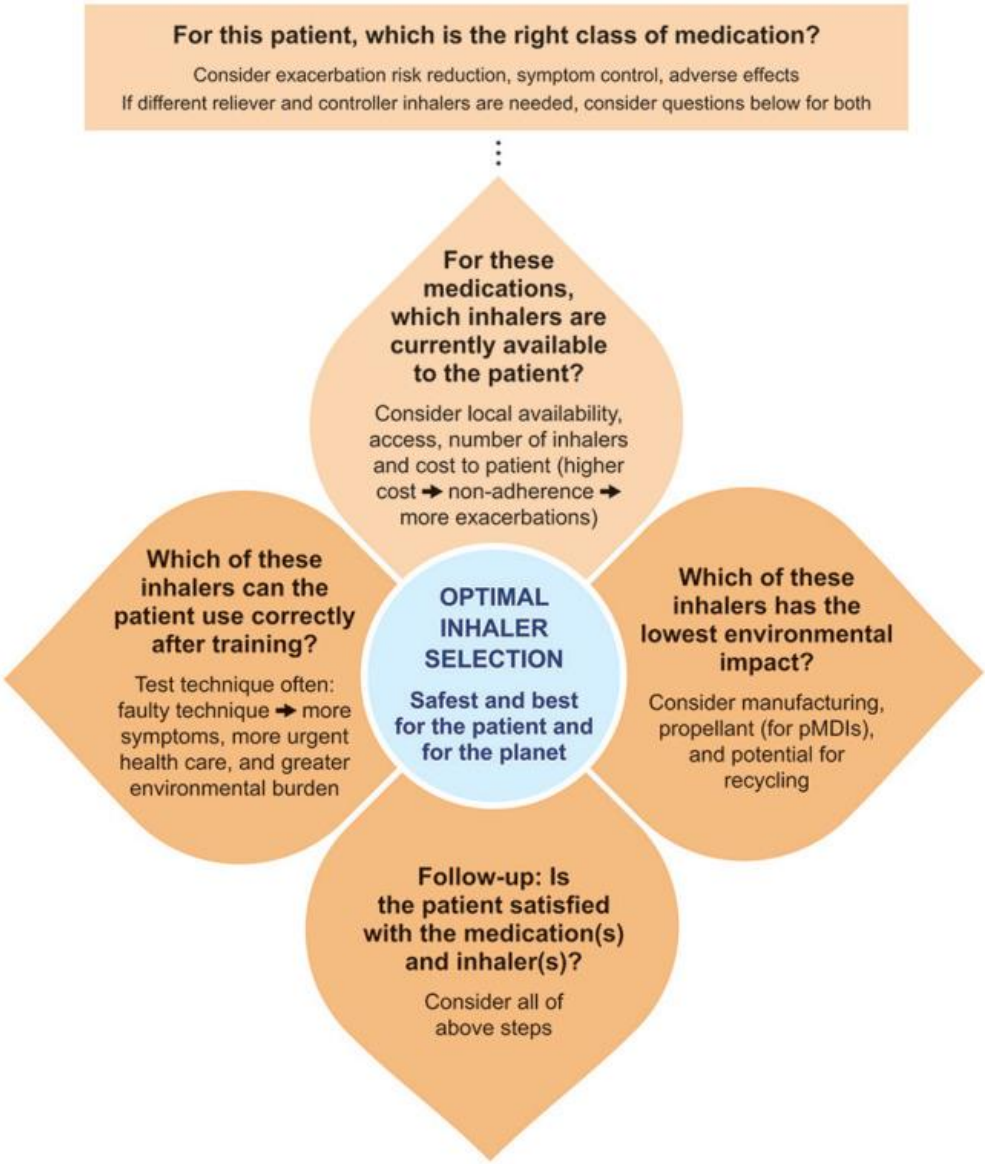

Role of pharmacists in asthma management
Screening and identification of patients at risk of developing asthma/exacerbations
Creating awareness among patients regarding triggers for asthma exacerbations and providing strategies to identify and avoid them
Recommending an individualized treatment based upon disease severity, phenotype and control
Encouraging medication adherence through patient counseling
Educating patients about disease, management strategies, and inhaler technique
Referring patients to specialists for further medical care


For this patient, which is the right class of medication?
Consider exacerbation risk reduction, symptom control, adverse effects
If different reliever and controller inhalers are needed, consider questions below for both
For these medications, which inhalers are currently available to the patient?
Consider local availability, access, number of inhalers and cost to patient (higher cost → non-adherence → more exacerbations)
Which of these inhalers can the patient use correctly after training?
Test technique often: faulty technique → more symptoms, more urgent health care, and greater environmental burden
OPTIMAL INHALER SELECTION
Safest and best for the patient and for the planet
Which of these inhalers has the lowest environmental impact?
Consider manufacturing, propellant (for pMDIs), and potential for recycling
Follow-up: Is the patient satisfied with the medication(s) and inhaler(s)?
Consider all of above steps

# Potential Countermeasures

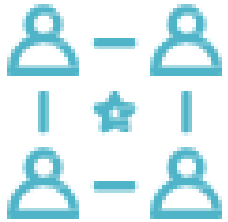
- An effective approach is needed to find high-risk patients and implement appropriate interventions to improve outcomes and to reduce costs and resource use.
- Care management is a cooperative process to assess, plan, coordinate, implement, evaluate, and monitor services and options to fulfill a patient's health and service needs.
- It includes a care manager who regularly calls the patient, arranges for health and related services, and helps make medical appointments.
- Asthma exacerbations account for 63% of annual total asthma cost Using care management properly can reduce asthma exacerbations, cut hospital admissions and emergency room visits by up to 40%.
- Trim cost by up to 15% and enhance patient treatment adherence, quality of life, and satisfaction by 30% to 60%.
- Owing to resource constraints, usually only 1% to 3% of asthma patients are enrolled in care management.

**Table 2. Summary of Short- and Long- Term Action Steps**

| RECOMMENDATION CATEGORY | INITIAL STEPS | LONG-TERM STEPS |
|---|---|---|
| Define non-traditional asthma services for high risk patients | • Standardize definition of high risk patient<br>• Identify gaps in existing evidence<br>• Fund comparative effectiveness research to identify highest impact non-traditional asthma components | • Align benefit design with highest value services for high risk patients |
| Use payment reform to support integration, system transformation, and service coverage | • Define population outcome measures<br>• Offer small add-on payments to practices to support the costs of a shared social worker<br>• Identify best practices used by successful community asthma programs that have aligned medical, public health, and social services | • Implement sustainable APM funding mechanisms<br>• Establish management structures, which share resources and accountability across health care and social services silos |
| Improve information sharing and coordination for asthma | • Establish mechanism to collect and update contact information of local stakeholders and service providers<br>• Increase provider awareness of available services by working with specialty societies, state medical associations, and hospitals to disseminate information<br>• Establish task force with community stakeholders (schools, local health departments, housing) to identify regulations which could be improved | • Build information exchange clearinghouse<br>• Identify gaps in community asthma programs and offer technical assistance to address them |

# What Asthma Patient Can Benefit From This?

- Ideally, the asthmatic patient enrolled should be those at the **highest risk**.
- Predictive modeling is the best method to find high-risk patients.
  - It uses a model for predicting individual patient cost or health outcome to automatically find high-risk patients
- Cost reflects use and efficiency of care and indirectly reflects outcomes such as hospitalization and emergency room visit.
- For patients predicted to have the highest costs or worst outcomes,
  - care managers examine patient records,
  - consider various factors such as social ones,
  - and make the ultimate allocation and intervention decisions.
- **Correct identification** of high-risk patients is key to effective care management, but current identification methods have limitations.

|  |  |  |  |
|---|---|---|---|
| **Data and Surveillance** | **Environmental Approaches** | **Health Care System Interventions** | **Community Programs Linked to Clinical Services** |
| Monitor trends, track progress, provide information for action. Disseminate data to improve health outcomes. | Promote health, support and reinforce healthful behaviors in schools, childcare, worksites, and communities. Create awareness of asthma triggers and environmental factors that affect those living with asthma. | Improve the effective delivery and use of clinical and other preventive services in order to prevent disease, detect diseases early, and reduce or eliminate risk factors and mitigate or manage asthma complications. | Connecting clinical services to community programs and resources that help people prevent and manage their asthma. |

# Charter to Improve Patient Care in Severe Asthma

**Developed to raise awareness and understanding of the impact of severe asthma, to empower patients and to create opportunities for improved care**

1. **I deserve timely, straightforward referral when my severe asthma cannot be managed in primary care**
   Referral to a specialist is needed if oral corticosteroids (OCS) use is > 3 months; >2 rounds OCS in past year, any hospitalisation for asthma or impaired lung function

2. **I deserve a timely, formal diagnosis of my severe asthma by an expert team**
   By a specialist multidisciplinary team (MDT), following assessment and management of treatable factors

3. **I deserve support to understand my type of severe asthma**
   Understanding of patient-specific processes causing disease (phenotype) to support a targeted therapy approach

4. **I deserve care that reduces the impact of severe asthma on my daily life and improves my overall quality of care**
   Recognition of persistent symptoms and shared patient-clinician decision-making to minimise the effects of asthma

5. **I deserve not to be reliant on oral corticosteroids**
   Limit the use and adverse effects of long-term OCS treatment

6. **I deserve to access consistent quality care, regardless of where I live or where I choose to access it**
   Care models to support efficient service delivery and provide access to care regardless of geographic location

Published by Menzies-Gow, A., et al. Adv Ther (2018) 35: 1485. https://doi.org/10.1007/s12325-018-0777-y

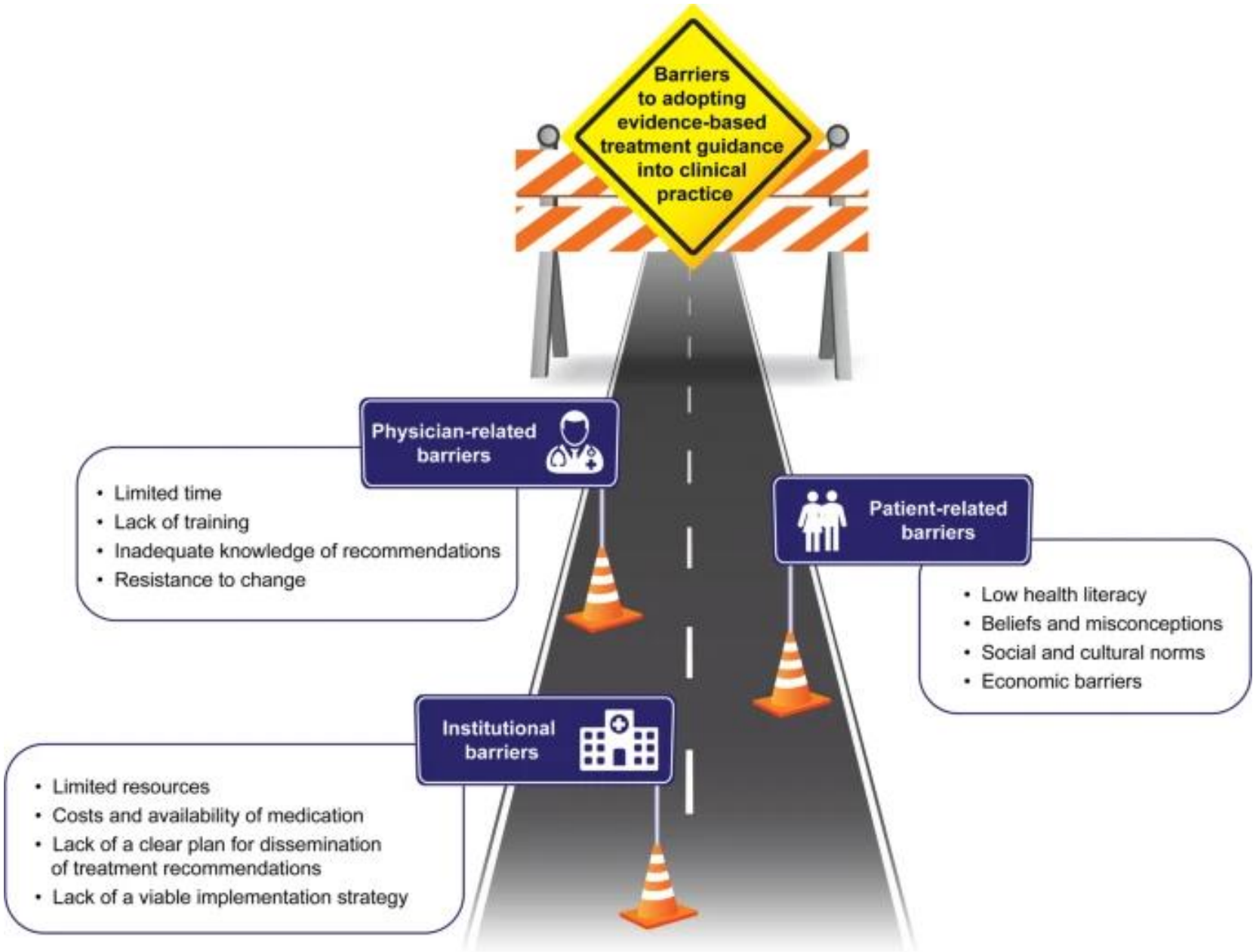

Infographic developed as part of the:
SEVERE ASTHMA TOOLKIT
toolkit.severeasthma.org.au

# Barriers to Success

- Current predictive models for individual patient costs and health outcomes exhibit poor accuracy causing misclassification and need improvement.
- When projecting individual patient cost, the R2 accuracy measure of models reported in the literature is less than 20% and the average error is typically comparable to the average cost.
- When projecting individual patient health outcome, the area under the receiver operating characteristic curve accuracy measure is usually much smaller than 0.8
- Those large errors make enrollment **miss more than half of patients a care management program can help most.**
- **Studies showed that the top 10% risk group identified by a predictive model missed more than 60% of the top 10% and about 50% of the top 1% of patients who had the largest costs.**
- If 10% more of the top 1% patients who had the largest costs and enroll them, could save up to $210 million in asthma care each year and also improve asthmatic outcomes.

# Are The Social Needs of Asthma Patient Being Met?

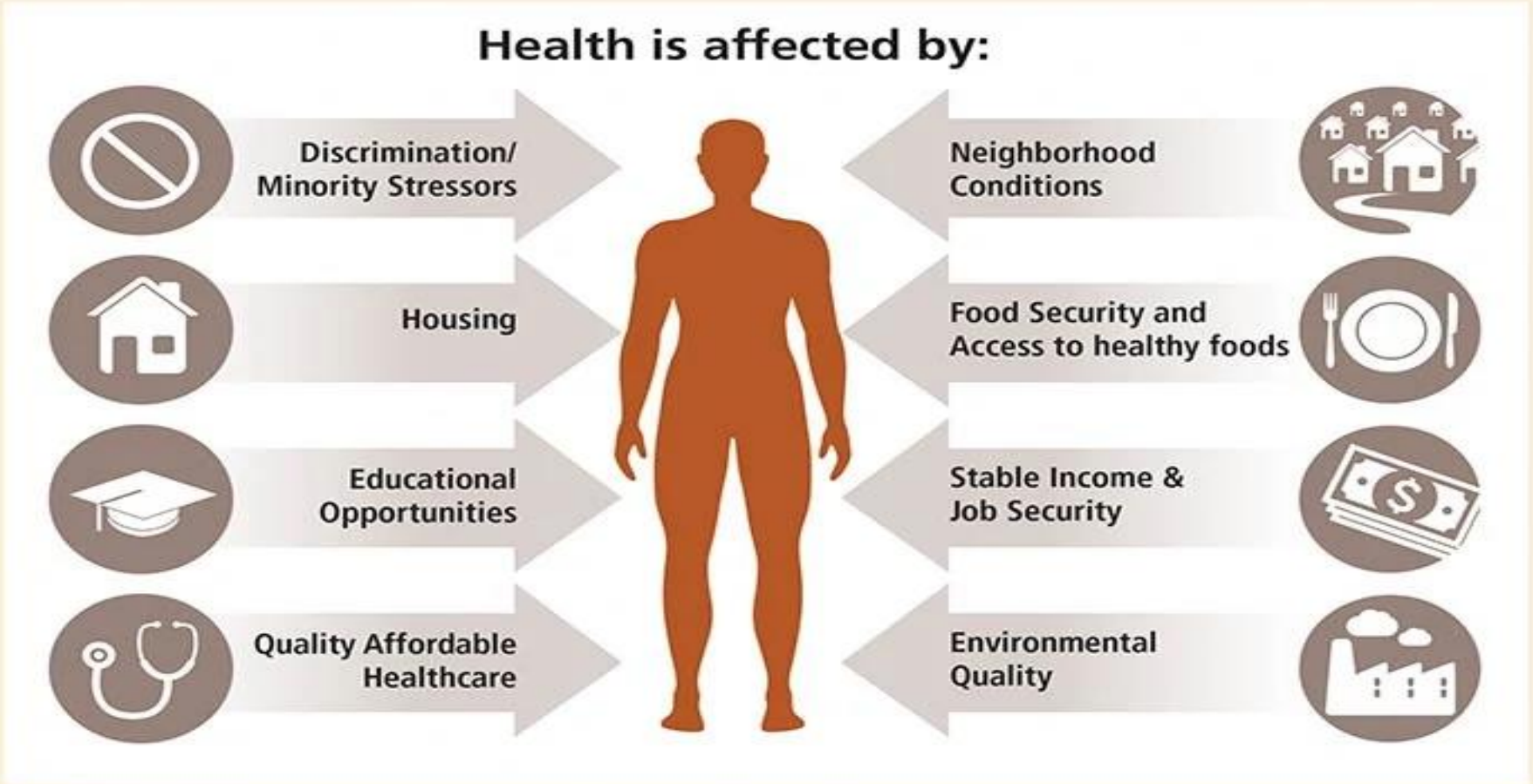
- Persistent asthma severity status was associated with several unmet social needs
  - including housing quality and stability,
  - lack of money for food,
  - transportation,
  - healthcare costs.


Barriers to adopting evidence-based treatment guidance into clinical practice
Physician-related barriers
• Limited time
• Lack of training
• Inadequate knowledge of recommendations
• Resistance to change
Patient-related barriers
• Low health literacy
• Beliefs and misconceptions
• Social and cultural norms
• Economic barriers
Institutional barriers
• Limited resources
• Costs and availability of medication
• Lack of a clear plan for dissemination of treatment recommendations
• Lack of a viable implementation strategy

Allergy & Asthma NETWORK

# The Path to Achieving Health Equity

What social and economic factors must be addressed on the continued path to achieving Health Equity?




Health Equity aims to ensure that all people have full and equal access to opportunities that enable them to lead healthy lives.

AllergyAsthmaNetwork.org

# ASTHMA AND ALLERGY DISPARITIES: AT A GLANCE

## Compared to white Americans:

Black Americans are nearly **1.5 times** more likely to have asthma[1]

Puerto Rican Americans are nearly **2 times** more likely to have asthma[1]

Black Americans are **5 times** more likely to visit the emergency department due to asthma[2]

Black Americans are **3 times** more likely to die from asthma[3]

When sex is factored in, **BLACK WOMEN** have the highest rates of death due to asthma[3]

## Compared to white children:

Black children are **more likely** to die from food-induced anaphylaxis[4]

Black children are **1.5 times** more likely to have skin allergies[5]

Black children are **7% more likely** to have food allergies[1]

[1] CDC, National Center for Health Statistics, National Health Interview Survey (2018)

[2] CDC, National Center for Health Statistics, National Ambulatory Medical Care Survey (2017)

[3] CDC, National Center for Health Statistics, National Vital Statistics System: Mortality (2018)

[4] Jerschow, E., Lin, R. Y., Scaperotti, M. M., & McGinn, A. P. (2014). Fatal anaphylaxis in the United States 1999–2010: temporal patterns and demographic associations. *The Journal of Allergy and Clinical Immunology*, 134(6), 1318–1328.e7. https://doi.org/10.1016/j.jaci.2014.08.018

[5] Bilaver, L. A., et al. (2021). Prevalence and Correlates of Food Allergy Among Medicaid-Enrolled United States Children. *Academic Pediatrics*, 21(1), 84–92. https://doi.org/10.1016/j.acap.2020.03.005

aafa Asthma and Allergy Foundation of America

aafa.org/healthequity

CHEST FOUNDATION

Allergy & Asthma NETWORK

# ASTHMA: TAKE ACTION, TAKE CONTROL

asthma.chestnet.org

## ASTHMA HEALTH DISPARITIES

Asthma crosses all racial, ethnic and socioeconomic groups. It is more common among African-American, Hispanic and Native American populations, particularly those living in poor urban areas.

### RATE OF ASTHMA-RELATED ER VISITS AND DEATHS COMPARED WITH CAUCASIANS

| | ER VISITS | DEATHS |
|---|---|---|
| African-American children: | 4.5X HIGHER | 7X HIGHER |
| African-American adults: | 2.8X HIGHER | 3X HIGHER |
| Hispanic children: | 2.1X HIGHER | 2X HIGHER |

### INCOME LEVEL AND EDUCATION PLAY A SIGNIFICANT ROLE IN ASTHMA PREVALENCE

**Adults** with an annual income of **<$75,000** are **MORE LIKELY to have asthma**

**Adults** who didn't finish high school are **MORE LIKELY to have asthma**

**People with asthma** who earn **<$50,000** per year are **twice as likely** to have an **asthma flare**

**ADULTS WHO CANNOT AFFORD THEIR ASTHMA MEDICATION:**
**1 in 4** African-Americans
**1 in 5** Hispanics

**Native Americans**
**30%** MORE LIKELY to have asthma
Asthma-related deaths **20%** HIGHER

**Minority children** are **LESS LIKELY to take daily asthma medication**

Asthma prevalence among **Puerto Ricans** is **2X GREATER** than other Hispanic populations

## FACTORS THAT CAN LEAD TO ASTHMA DISPARITIES

- **ACCESS TO CARE** – Limited or lack of transportation can result in patients missing or rescheduling doctor appointments and forgoing or delaying medication use.
- **INCOME** – Poverty can affect access to healthcare and health insurance, forcing low-income patients to skimp on medical care, including preventive medications.
- **ENVIRONMENTAL ALLERGENS AND IRRITANTS** – People with asthma who live in urban areas with substandard housing are exposed to more asthma triggers, including mold, dust mites, cockroaches and mice, cigarette smoke and vehicular exhaust from nearby highways.
- **EDUCATION INEQUALITY** – A lack of knowledge and understanding of the disease can lead to problems such as using asthma inhalers incorrectly or not following through on treatment.
- **LANGUAGE AND CULTURAL DIFFERENCES** – People with asthma who speak Spanish as a primary language may struggle to get appropriate health services.

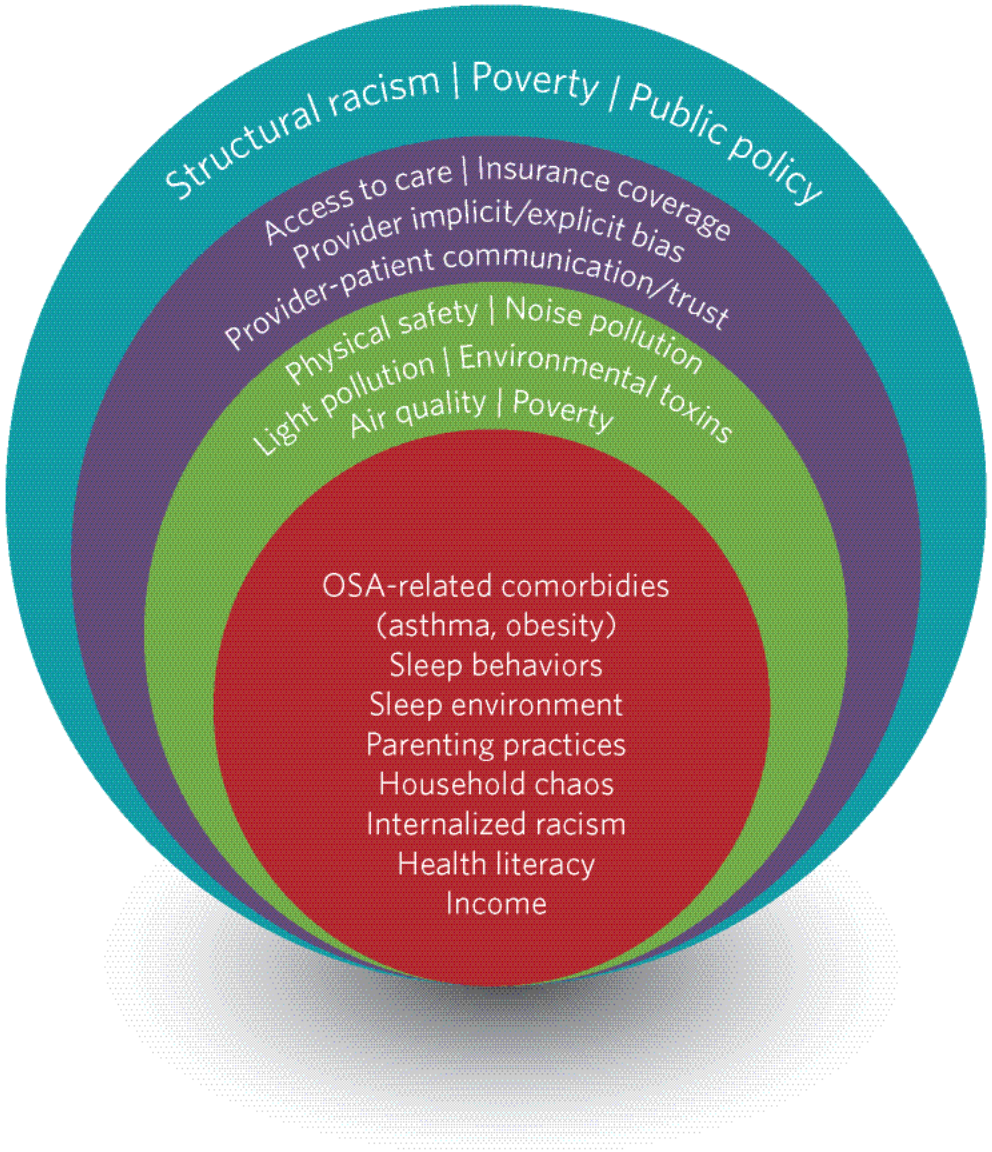
**TALK WITH YOUR LEGISLATORS ABOUT POLICIES THAT IMPACT COMMUNITIES EXPERIENCING A GREATER BURDEN OF ASTHMA.**

Sources: Centers for Disease Control and Prevention, Office of Minority Health and Health Equity; National Institutes of Health; American Academy of Allergy, Asthma & Immunology

# Asthma Resources

- Allergy & Asthma Network Mothers of Asthmatics.
- American Academy of Allergy Asthma & Immunology.
- The Asthma and Allergy Foundation of America.
- The America Lung Association

| | |
|---|---|
| E | **Education**<br>on asthma self-management |
| X | **X-tinguishing**<br>smoking and exposure to secondhand smoke |
| H | **Home**<br>visits for trigger reduction and asthma self-management education |
| A | **Achievement**<br>of guidelines-based medical management |
| L | **Linkages**<br>and coordination of care across settings |
| E | **Environmental**<br>policies or best practices to reduce asthma triggers from indoor, outdoor and occupational sources |




## Society

Public advocacy for policy change
Later school start times to increase sleep duration
Elimination of daylight savings time
Tax incentives for wellness programs
Sleep education initiatives
Employment policy to promote healthy work hours

## Healthcare System

Sleep education
Resources to improve access (transportation, social services)
Provider training in bias and cross-cultural communitcation

## Neighborhood

Increase community resources (community centers, greenspace)
Public safety
Targeted provision of services to high-risk groups

## Child/Family

Optimization of individual health
Group-based interventions for weight loss
Family education on sleep hygiene
Web-based social support

# How Do You Know Your Asthma Community Plan is Working?

- The Wisconsin Department of Health Services' Asthma Program provides leadership and coordination for asthma care and service-delivery statewide.
- While serving nearly 6 million state residents, activities focus on disproportionately affected populations including children, low-income, and racial and ethnic minorities.
- The Wisconsin Asthma Program is distinguished by its strong partnerships with community organizations and innovative projects including the Asthma-Safe Homes Program, the result of a successful collaboration with Medicaid to provide sustainable asthma funding.
- **This program builds upon a pilot home-visiting program and demonstrated a successful return-on investment of $2.34 for every $1 spent, as well as a 45% reduction in asthma-related emergency department visits and an 88% reduction in asthma hospitalizations.**
- The Wisconsin Asthma Program has led the nation in infrastructure development with its successful statewide asthma coalition. In partnership with the Children's Health Alliance of Wisconsin, the Wisconsin Asthma Coalition develops the state's asthma plan and brings together strategic partners including environmental experts, healthcare providers, schools, state and local government, and members of tribal communities.
- Through the development, implementation, and evaluation of the asthma plan activities, the Wisconsin Asthma Program successfully delivers high quality asthma care by building strong community ties, integrating health care services, and tailoring environmental interventions.

# The Asthma-Safe Homes Program

- Identify and fix asthma triggers in your home.
- Learn how to better control your asthma or a family member’s asthma.
- Live your best life.
- $ave money by:
  - Using less asthma medication.
  - Making fewer trips to the emergency room or urgent care clinic.
  - Avoiding overnight stays in the hospital.
  - Missing fewer days of school and work.
  - Covering costs for home assessment and repair services for eligible clients.
  - Accessing free products to reduce home asthma triggers.
  - Accessing free professional services to create a healthier home.

# Asthma Safe Home Project

- **Component One:** in-home asthma education and asthma products. An asthma educator provides asthma self-management education to clients during two to six home visits.
  - Topics include:
- Asthma self-management education on asthma symptoms, triggers, medication use, and asthma action plans.
- Home walkthrough to identify asthma triggers and ways to address them.
- Referral for limited home repairs if major asthma triggers are identified.
- Up to $1,000 worth of free asthma-friendly products that can help reduce asthma triggers in the home. Products may include dust mite covers for pillows and mattresses, asthma-friendly cleaning kits, vacuums with HEPA filters, home air cleaners, air conditioners, and more.

# Asthma Safe Home Plan

- **Component Two:** environmental home repair services. A trained asthma home assessor will conduct an in-depth review of your home and recommend repairs worth up to $5,000.
  - Steps in the home repair process include:

- Getting a referral from the asthma educator to access eligible home repair services.
- Scheduling a time for a trained home assessor to investigate sources of asthma triggers and recommend ways to reduce them, such as mold cleanup, carpet removal, pest control, leaking plumbing or roof repairs, and drafty window and door sealing.
- Getting approval from property owners for recommended repairs and cleanup before home repairs begin. The Asthma-Safe Homes Program and partners can help get property owner approvals.
- Scheduling free home repair work with certified contractors worth up to $5,000 per home.

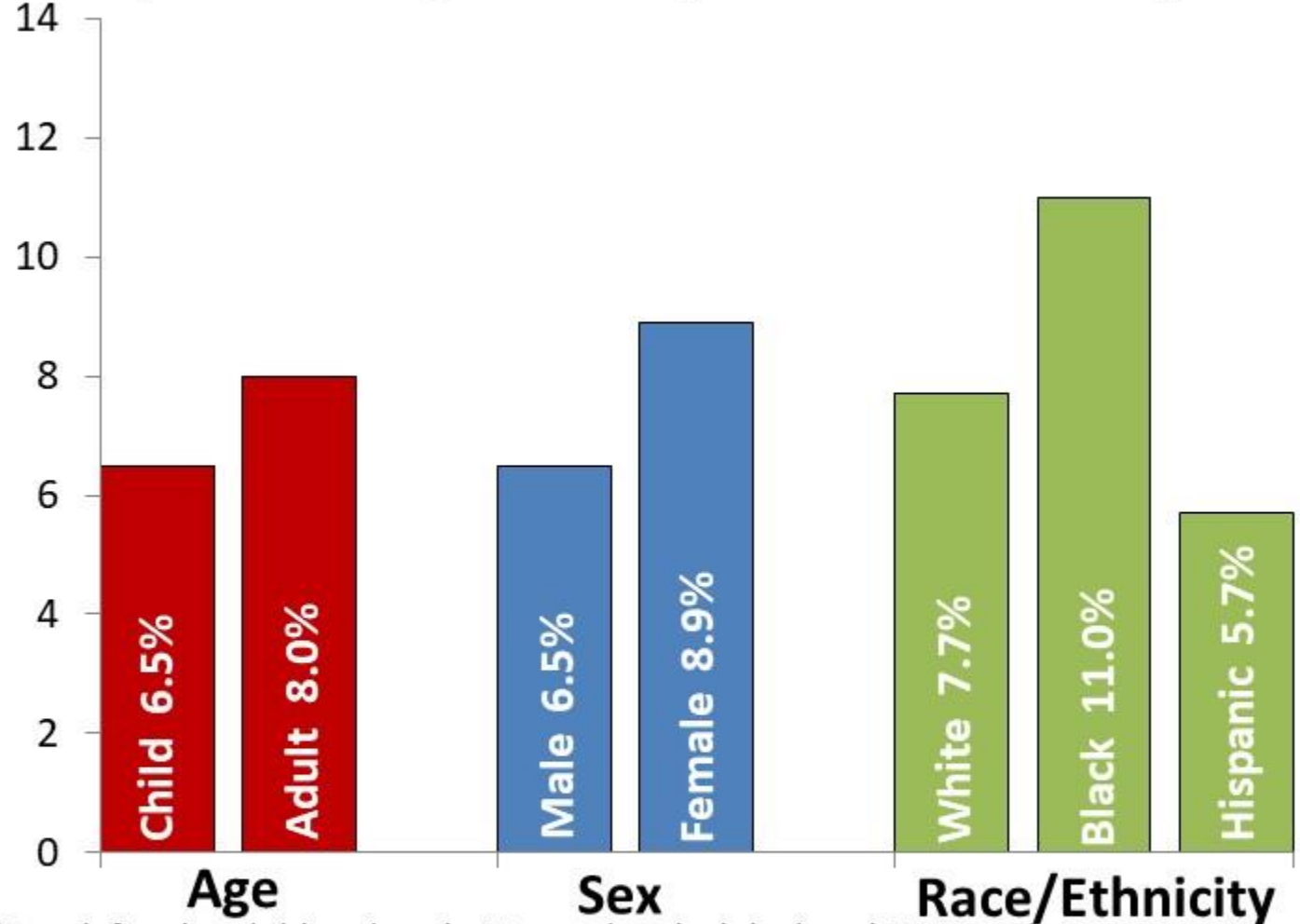
# Metrics to Asthma Success

- Asthma Attacks in the Past 12 Months by **Year**
- Asthma Attacks in the Past 12 Months by **Age**
- Asthma Attacks in the Past 12 Months by **Gender**
- Asthma Attacks in the Past 12 Months by **Race and Ethnicity**
- Asthma Attacks in the Past 12 Months by **Poverty Level**
- Asthma Attacks in the Past 12 Months by **Area**

# Benchmarks of Good Asthma Control

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

# Percentage of People With Current Asthma by Age[1], Sex[2,3], and Race/Ethnicity[3]: United States, 2021




[1]Age defined as children (aged <18 years) and adults (aged 18+ years)

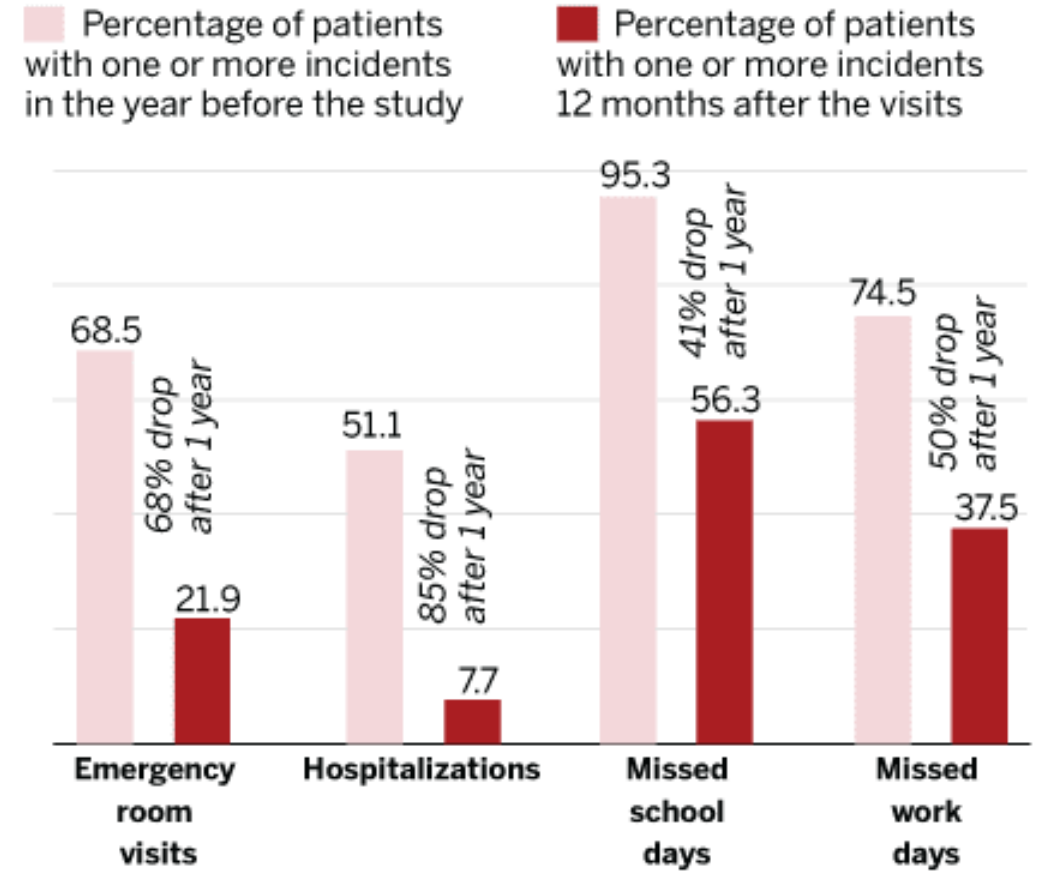
[2]Sex is defined as persons who answered "male" or "female" to the question "Are you male or female?"

[3]Sex and race/ethnicity include all ages

**Source: National Health Interview Survey, National Center for Health Statistics, Centers for Disease Control and Prevention**

# Community Asthma Initiative outcomes

Workers taught patients and their families how to properly use asthma medications and checked their homes for environmental triggers.




SOURCE: Children's Hospital Boston

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# Conclusion

- Asthma is a very common disease in the United States
- Asthma exacerbations cause a matrix of problems
- There are many barriers to achieving successful asthma management
- Developing an asthma action plan can help achieve successful asthma symptom control
- Assessing asthma outcome metrics can help direct and maintain beneficial programs
- Asthma prevalence may increase in the future

# Questions

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# Thank You!!!

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