ASTHMA…
CAUSE OF MORTALITY SINCE 400 B.C.

TIM GILMORE, PHD, RRT, RRT-NPS, RRT-ACCS, CPFT, AE-C
ASSOCIATE PROFESSOR
CARDIOPULMONARY SCIENCE
LOUISIANA STATE UNIVERSITY HEALTH
SHREVEPORT, LOUISIANA

OBJECTIVES

- Discuss the incidence of asthma and asthma-related deaths
- Discuss brief history of asthma care
- Describe current literature and treatment options for severe asthma
- Analyze clinical indications of fatal asthma risk
  - Unusual case of severe refractory asthma

Asthma Defined

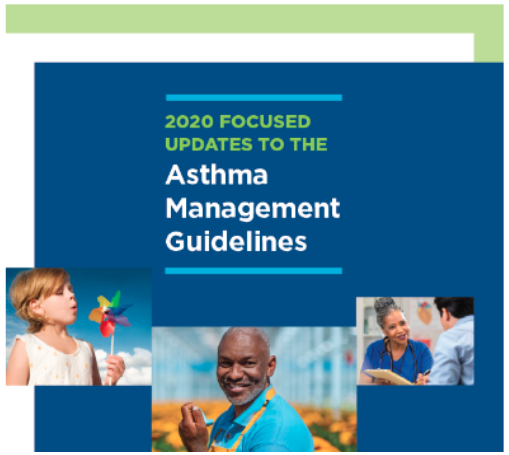
common **chronic** disorder of the airways that is **complex** and characterized by variable and recurring symptoms, *airflow obstruction*, *bronchial hyperresponsiveness*, and an underlying *inflammation*[*]

**NHLBI, NAEPP, 2007*

Asthma Defined

Heterogenous disease, usually characterized by chronic **airway inflammation** (usually associated with airway **hyperresponsiveness**), defined by the history of respiratory symptoms: **wheeze**, **SOB**, **chest tightness**, and **cough** that may vary over time and in intensity, together with *variable expiratory flow limitation**

*Global Initiative for Asthma (GINA) Main Report 2022



NHLBI PUBLICATIONS AND RESOURCES

2020 Focused Updates to the Asthma Management Guidelines: A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group

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PDF

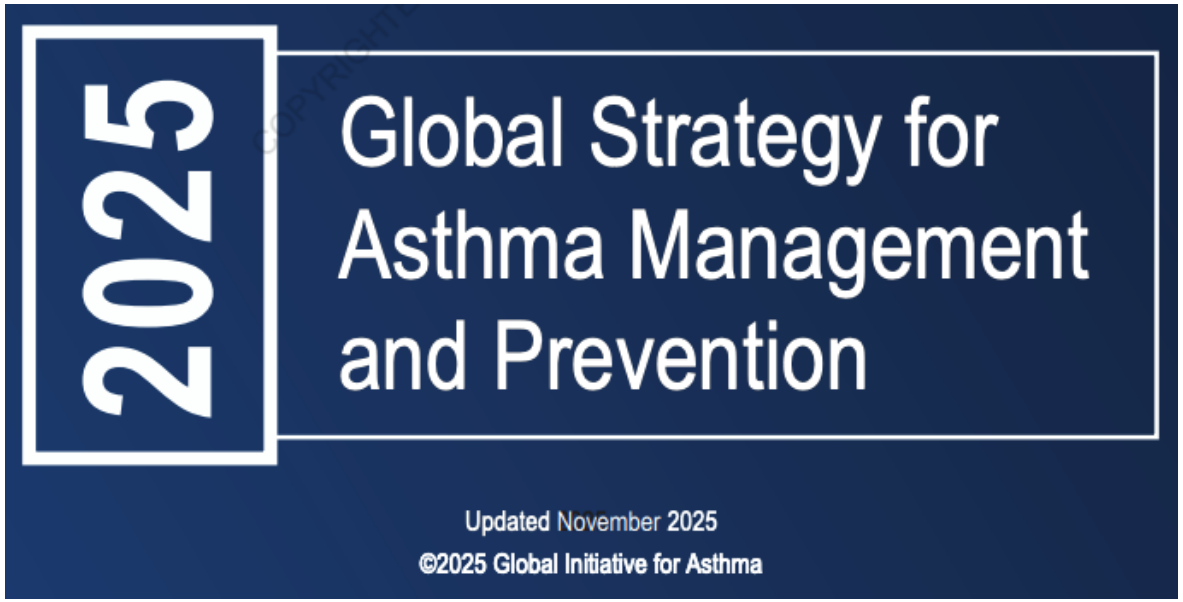
A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group

U.S. Department of Health and Human Services
National Institutes of Health
National Heart, Lung, and Blood Institute

2025 GINA STRATEGY REPORT

Global Strategy for Asthma Management and Prevention

The 2025 update of the *Global Strategy for Asthma Management and Prevention* incorporates new scientific information about asthma based on a review of recent scientific literature by an international panel of experts on the GINA Science Committee. This comprehensive and practical resource about one of the most common chronic lung diseases worldwide contains extensive citations from the scientific literature and forms the basis for other GINA documents and programs.



Asthma Myths:

Asthma "*goes away*"

Asthma is "*not that bad*" ….it's mostly psychosomatic

Mild cases of asthma are simply a nuisance

Albuterol is always the solution

History of **Asthma**

aazein - “to pant”, “to exhale with open mouth, sharp breath”

Corpus Hippocraticum *(460 – 360 BC)*

- *asthma* first used as a medical term

Aretaeus of Cappadocia (100 AD)

- first clinical description of asthma

Galen (130-200 AD) 

- description of asthma as “bronchial obstructions”

Ebers Papyrus (c. 1500 BC)

THE PAPYRUS EBERS

Translated from the German Version

By

CYRIL P. BRYAN

M.B., B.CH., B.A.O.

Demonstrator in Anatomy, University College, London

With an Introduction by

PROFESSOR G. ELLIOT SMITH

M.D., D.SC., LITT.D., F.R.C.P., F.R.S.

Professor of Anatomy, University College, London

A mixture of herbs heated on a brick so that the sufferer could inhale their fumes.

GEOFFREY BLES

22 SUFFOLK STREET, PALL MALL

LONDON, S.W.1

Atropine.

Caffeine: 1 to 5 grn.

Cannabis Indica: sometimes useful in chronic cases.

Alcohol: in combination with amyl nitrite in spasmodic asthma.

Ammonia Vapor.

Anesthetics: as a temporary remedy in severe cases.

Chloroform: relieves when inhaled from tumbler or with warm water.

Cocaine.

Coffee: very strong, during paroxysm.

Arsenic: in small doses in cases associated with bronchitis or simulating hay fever, or in the bronchitis of children, or in the dyspeptic asthma. Inhaled as cigarettes with caution.

Tobacco: smoking is sometimes beneficial.

Morphine: combined with belladonna, very useful.

Nitroglycerin: in bronchitic, nephritic and spasmodic asthma.


25 STÜCK
OTTO BROSIG MÜNCHEN
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BROSIG'S ASTHMA-ZIGARETTEN
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CONTAINS 20 CIGARETTES
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Toronto Canada


EACH 100 CC. CONTAINS:
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For TEMPORARY relief
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160 Metered Sprays
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The NEW ENGLAND JOURNAL of MEDICINE

200 NEJM ANNIVERSARY ARTICLE

A Patient with Asthma Seeks Medical Advice in 1828, 1928, and 2012

Erika von Mutius, M.D., and Jeffrey M. Drazen, M.D.

N Engl J Med 2012: 366(9)

WHERE ARE WE NOW?

Morbidity & Mortality

Almost 8% of the US population (adults + children) has **asthma**[1,2]

[1]CDC, US DHH (2024)

[2]Pate et al.; National Health Interview Survey (2021)

Asthma control in the United States, 2008-2010: Indicators of poor asthma control

Julia F. Slejko, PhD,[a] Vahram H. Ghushchyan, PhD,[b] Brandon Sucher, PharmD, CDE, AE-C,[c] Denise R. Globe, PhD,[d]* Shao-Lee Lin, MD, PhD,[d]‡ Gary Globe, PhD, MBA,[d] and Patrick W. Sullivan, PhD[c] *Seattle, Wash, Yerevan, Armenia, Denver, Colo, and Thousand Oaks, Calif*

N = 102,544

4.8% self-reported asthma exacerbation in last 1 year
28% had never used long-term control medication

J Allergy Clin Immunol, 2014; 133(6)

Coexisting chronic conditions associated with mortality and morbidity in adult patients with asthma

Kaharu Sumino, MD, MPH[1,2], Katiuscia O'Brian, MA[1,2], Brian Bartle, MPH[3], David H. Au, MD, MS[4,5], Mario Castro, MD, MPH[1], and Todd A. Lee, PharmD, PhD[6]

N = 25,975

13 most prevalent comorbidities:
hypertension, IHD, osteoarthritis, RA, DM, mental disorders, substance/drug abuse, enlarged prostate, depression, CA, EtOH, HIV, heart failure; sleep apnea, GERD, rhinitis, sinusitis

J Asthma, 2014; 51(3)

Contents lists available at ScienceDirect

Asthma control in the United States

Relationships between short-acting β_2-agonist and systemic corticosteroid use

Geoffrey Chupp, MD*; Kevin R. Murphy, MD†; Hitesh N. Gandhi, MBBS, MHA, MAS‡; Ileen Gilbert, MD‡; Eugene R. Bleecker, MD§

* Department of Pulmonary, Critical Care, and Sleep Medicine, Yale University, New Haven, Connecticut
† Boys Town National Research Hospital, Boys Town, Nebraska
‡ BioPharmaceuticals Medical, AstraZeneca, Wilmington, Delaware
§ Department of Medicine, The Mayo Clinic, Phoenix, Arizona

Results: A total of 4,506,527 patients were included; 15.1% had 2 or more SCS fills, 29.1% had 3 or more SABA fills, and 37.4% fulfilled either or both criteria. If only SCS use was assessed, 21.4% of cases that were treated as mild to moderate and 27.6% that were treated as severe asthma would have been misclassified as controlled. If only SABA use was evaluated, 7.8% of cases treated as mild to moderate and 11.2% treated as severe asthma would have been misclassified. Overall, 80.9% of uncontrolled asthma occurred in patients treated for mild to moderate disease. Among patients with 2 or more SCS fills, the mean SABA fills were 2.9; the correlation between SCS and SABA fills per patient was significant but weak ($r = 0.18$; $P < .001$).

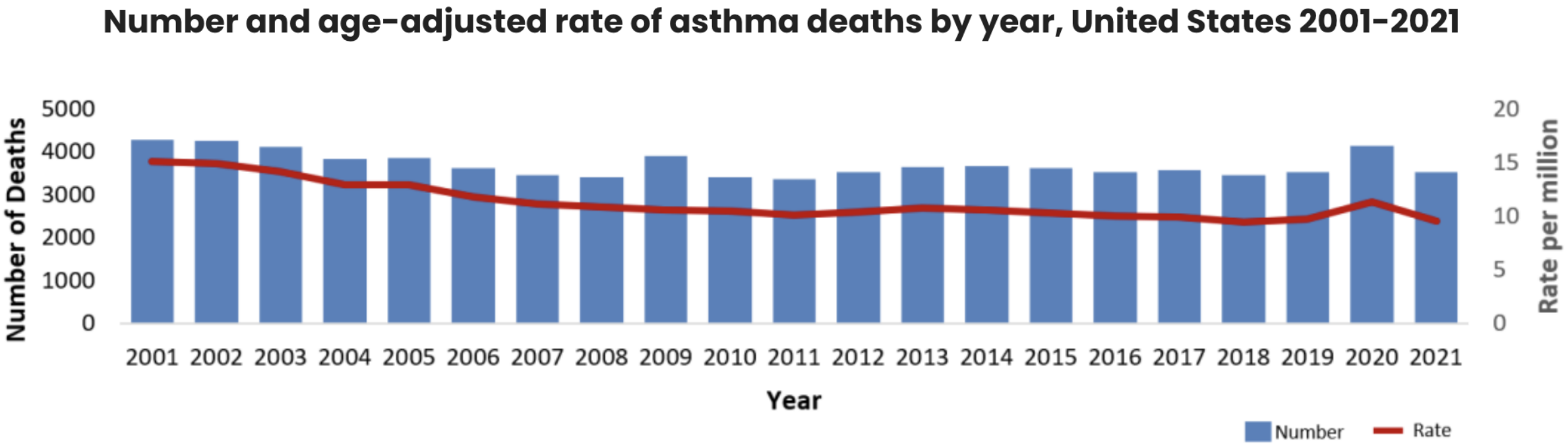
Conclusion: High symptom burden and SCS exposures are not limited to severe asthma but are also characteristic of patients treated for mild to moderate disease. Both impairment and risk assessments are required to understand the full extent of uncontrolled asthma across disease severities.

American Journal of Respiratory and Critical Care Medicine

U.S. Health Care Spending on Respiratory Diseases, 1996-2016

Kevin I Duan , Maxwell Birger , David H Au , Laura J Spece , Laura C Feemster ; Joseph L Dieleman

Asthma deaths have decreased over time



CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Mortality

- In 2021, 3,517 people died from asthma.
- The asthma death rate decreased 44 percent from 1.7 per 100,000 population in 1999 to 1.0 in 2021, although progress has slowed since 2007.
- In 2021, 59 percent of asthma deaths were in women, and the asthma death rate was 27 percent higher among women than men.
- The asthma death rate was 2.1 times greater among Black individuals than white individuals in 2021.
- Both the number and rate of deaths from asthma are much greater among older age groups. Fortunately, death rates have been decreasing among those ages 45-64 and 65 years and older.

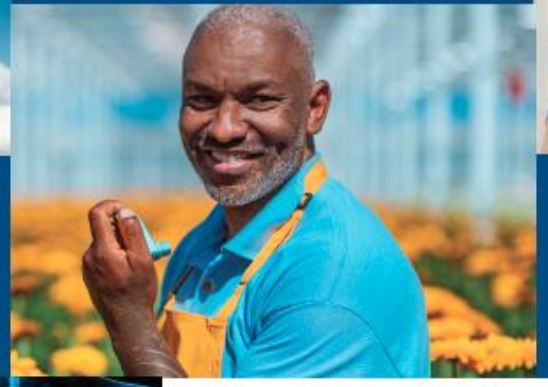
American Lung Association.

How Many People Die From Asthma?

- On average, 9 to 11 people in the U.S. die from asthma each day. In 2023, 3,190 people died from asthma. Nearly all of these deaths are avoidable with the right treatment and care.[9]
    - In 2020, deaths due to asthma rose for the first time in 20 years. [5] This increase may have been due to the COVID-19 pandemic.
- Adults are 7 times more likely to die from asthma than children.[9]
- Female adults are more likely to die from asthma than male adults, and male children are more likely than female children.[9]
- Black people in the U.S. are nearly 2 times more likely to die from asthma than White people in the U.S.[9]
- When sex is factored in, Black males had the highest rate of fatality due to asthma in 2023. Black males were more than 3 times more likely to die from asthma than White males.[10]

Asthma and Allergy Foundation of America

2020 FOCUSED UPDATES TO THE Asthma Management Guidelines



A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group

U.S. Department of Health and Human Services
National Institutes of Health
National Heart, Lung, and Blood Institute

Prior Recommendations of **Asthma** Treatment

SABA

ICS

- Low, Med, High

Alternative Rx

- Leukotriene receptor antagonist, Theophylline, Monoclonal antibody

Environmental control


Current Recommendations
of Asthma Treatment

Figure I.d: Stepwise Approach for Management of Asthma in Individuals Ages 12 Years and Older

Treatment	Intermittent Asthma	Management of Persistent Asthma in Individuals Ages 12+ Years				
	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6 ■
Preferred	PRN SABA	Daily low-dose ICS and PRN SABA or PRN concomitant ICS and SABA▲	Daily and PRN combination low-dose ICS-formoterol▲	Daily and PRN combination medium-dose ICS-formoterol▲	Daily medium-high dose ICS-LABA + LAMA and PRN SABA▲	Daily high-dose ICS-LABA + oral systemic corticosteroids + PRN SABA
Alternative		Daily LTRA* and PRN SABA or Cromolyn,* or Nedocromil,* or Zileuton,* or Theophylline,* and PRN SABA	Daily medium-dose ICS and PRN SABA or Daily low-dose ICS-LABA, or daily low-dose ICS + LAMA,▲ or daily low-dose ICS + LTRA,* and PRN SABA or Daily low-dose ICS + Theophylline* or Zileuton,* and PRN SABA	Daily medium-dose ICS-LABA or daily medium-dose ICS + LAMA, and PRN SABA▲ or Daily medium-dose ICS + LTRA,* or daily medium-dose ICS + Theophylline,* or daily medium-dose ICS + Zileuton,* and PRN SABA	Daily medium-high dose ICS-LABA or daily high-dose ICS + LTRA,* and PRN SABA	
		Steps 2–4: Conditionally recommend the use of subcutaneous immunotherapy as an adjunct treatment to standard pharmacotherapy in individuals ≥ 5 years of age whose asthma is controlled at the initiation, build up, and maintenance phases of immunotherapy▲			Consider adding Asthma Biologics (e.g., anti-IgE, anti-IL5, anti-IL5R, anti-IL4/IL13)**	

- Intermittent inhaled steroids
- Long-acting muscarinic antagonists
- Indoor allergy relief
- Immunotherapy in the treatment of allergic asthma
- Fractional exhaled nitrous oxide (FeNO) testing
- Bronchial thermoplasty

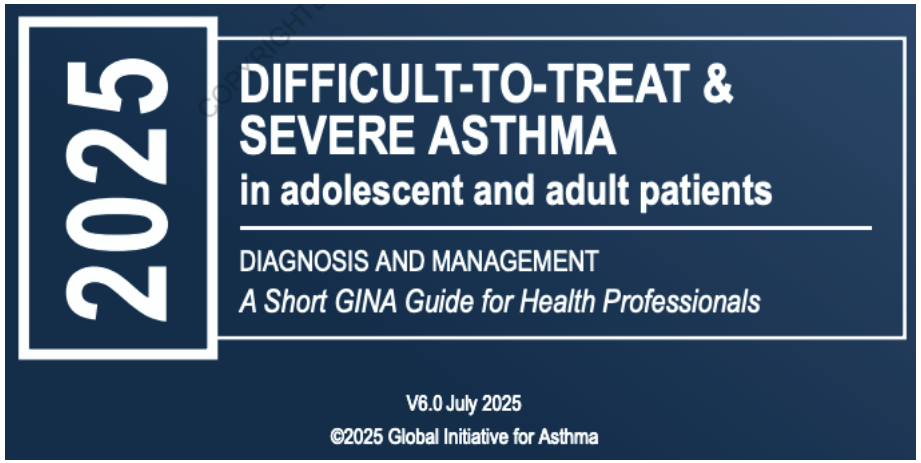
NHLBI EPR-4 Asthma Guidelines 2020

Current Recommendations of **Asthma** Treatment

- SABA
- Inhaled corticosteroids
  - Low, Med, High
- Oral systemic steroids prn
- Alternative Rx
  - Leukotriene receptor antagonist, Theophylline, Monoclonal antibody

**Environmental control*

GINA Guidelines



Key changes in GINA 2025

- Diagnosis of asthma in adults/adolescents: new flow-chart
- Type 2 biomarkers: new appendix
  - Factors affecting blood eosinophils and FeNO (updated Nov 2025)
  - Role in diagnosis, assessment and management of asthma
- Risk factors for severe exacerbations in adults/adolescents: new data
- Population-level and patient-level treatment decisions: new figure
- Asthma treatment recommendations for adults/adolescents
  - Main treatment figure, and summary of evidence: updated
  - Investigation of severe asthma: updated and clarified
- Exacerbations in adults, adolescents and children 6–11 years
  - Action plans for adults/adolescents: updated, split by treatment track
  - Management in primary care and in emergency department: updated
- Diagnosis and treatment of asthma in children aged 5 years and younger: major update (clarified Nov 2025)
- Impact of extreme weather: new section

Role of Type 2 biomarkers in initial diagnosis of asthma in adults, adolescents and children 6–11 years

- In a patient with typical asthma symptoms, if spirometry or PEF is not available, or testing is negative, the diagnosis of Type 2 asthma is supported by:
  - FeNO: >50 ppb (adults/adolescents); >35 ppb (children)
  - Blood eosinophil count: above the national/regional reference range
- However, blood eosinophils and FeNO can also be elevated because of other non-asthma conditions, including allergic conditions and parasitic infections
  - Many factors affect FeNO and blood eosinophil counts, including time of day
- Low blood eosinophils and low FeNO do not rule out asthma

FeNO: fractional exhaled nitric oxide; PEF: peak expiratory flow

Criteria for initial diagnosis in adults, adolescents and children 6–11 years - variable respiratory symptoms

Box 1-2. Criteria for initial diagnosis of asthma in adults (≥18 years) and children (6–17 years)

1. HISTORY OF TYPICAL VARIABLE RESPIRATORY SYMPTOMS	
Feature	*Symptoms or features that support the diagnosis of asthma*
Wheeze, shortness of breath, chest tightness and/or cough (Descriptors may vary by region and by age)	• Symptoms occur variably over time and vary in intensity • Symptoms are often worse at night or on waking • Symptoms are often triggered by exercise, laughter, allergens, cold air • Symptoms worsen after end-exercise (very distinctive) • Symptoms often appear or worsen with viral infections

Criteria for initial diagnosis in adults, adolescents and children 6–11 years - variable expiratory airflow

2. CONFIRMED VARIABLE EXPIRATORY AIRFLOW	
Feature	*Considerations, definitions, criteria*
Excessive variability in expiratory lung function (one or more of the following):	The greater the variations, or the more occasions excess variation is seen, the more confidently the diagnosis of asthma can be made. If spirometry is not possible, PEF† may be used, but it is less reliable.
Positive bronchodilator (BD) responsiveness (reversibility) test with spirometry (or PEF†) When possible, test during symptoms or in the morning	Measure change 10–15 minutes after 200–400 mcg salbutamol (albuterol) or equivalent, compared with pre-BD readings. Positive test more likely if BD withheld before test: SABA ≥4 hours, long-acting bronchodilators 24–48 hours (see below). *Adults*: increase from baseline in FEV_1 or FVC of ≥12% and ≥200 mL, with greater confidence if the increase is ≥15% and ≥400 mL; or increase in PEF† ≥20% if spirometry is not available *Children*: increase from baseline in FEV_1 of ≥12% predicted (or in PEF† of ≥15%)
Excessive variability in twice-daily PEF over 2 weeks*	*Adults*: average daily diurnal PEF variability >10%* *Children*: average daily diurnal PEF variability >13%*

FEV_1: forced expiratory volume in 1 second; FVC: forced vital capacity; PEF: peak expiratory flow; SABA: short-acting $beta_2$-agonist

Criteria for initial diagnosis in adults, adolescents and children 6–11 years – variable expiratory airflow *(continued)*

Increase in lung function after 4 weeks of ICS-containing treatment	*Adults*: increase from baseline in FEV_1 by ≥12% and ≥200 mL (or PEF† by ≥20%) after 4 weeks of daily ICS-containing treatment *Children*: increase from baseline in FEV_1 of ≥12% predicted (or in PEF† of ≥15%).
Positive bronchial provocation test	*Adults*: Fall from baseline in FEV_1 of ≥20% with standard doses of methacholine, or ≥15% with standardized hyperventilation, hypertonic saline or mannitol challenge, or >10% and >200 mL with standardized exercise challenge. *Children*: fall from baseline in FEV_1 of >12% predicted (or fall in PEF† >15%) with standardized exercise challenge. If FEV_1 decreases during a challenge test, check that FEV_1/FVC ratio has also decreased, since incomplete inhalation, e.g., due to inducible laryngeal obstruction or poor effort, can result in a false reduction in FEV_1.
Excessive variation in lung function between visits (good specificity but poor sensitivity)	*Adults*: variation in FEV_1 of ≥12% and ≥200 mL (or in PEF† of ≥20%) between visits. *Children*: variation of ≥12% in FEV_1 (or ≥15% in PEF†) between visits

FEV_1: forced expiratory volume in 1 second; FVC: forced vital capacity; ICS: inhaled corticosteroid; PEF: peak expiratory flow; SABA: short-acting beta$_2$-agonist


Let’s look at a
case study...
Discussion
Outline
85.00%

18-Year-Old, Black Female

- 5’5”, 80 kg (176 lbs)
- Brought in via EMS on stretcher
  - 1 Albuterol treatment given *en route*
- Upon arrival, Patient in remarkable distress
  - Unable to perform ROS; Patient unable to speak in complete sentences

- Pmed Hx: Schizoeffective disorder, asthma, eczema, depression

Physical Exam

- BP: 105/47
- HR: 120-140’s
- Temp: 92.5 °F (33.6 °C, rectal)
- RR: 40’s
- SpO2: 70-90% (poor waveform)
- Bilateral breath sounds: Diminished with faint wheezes

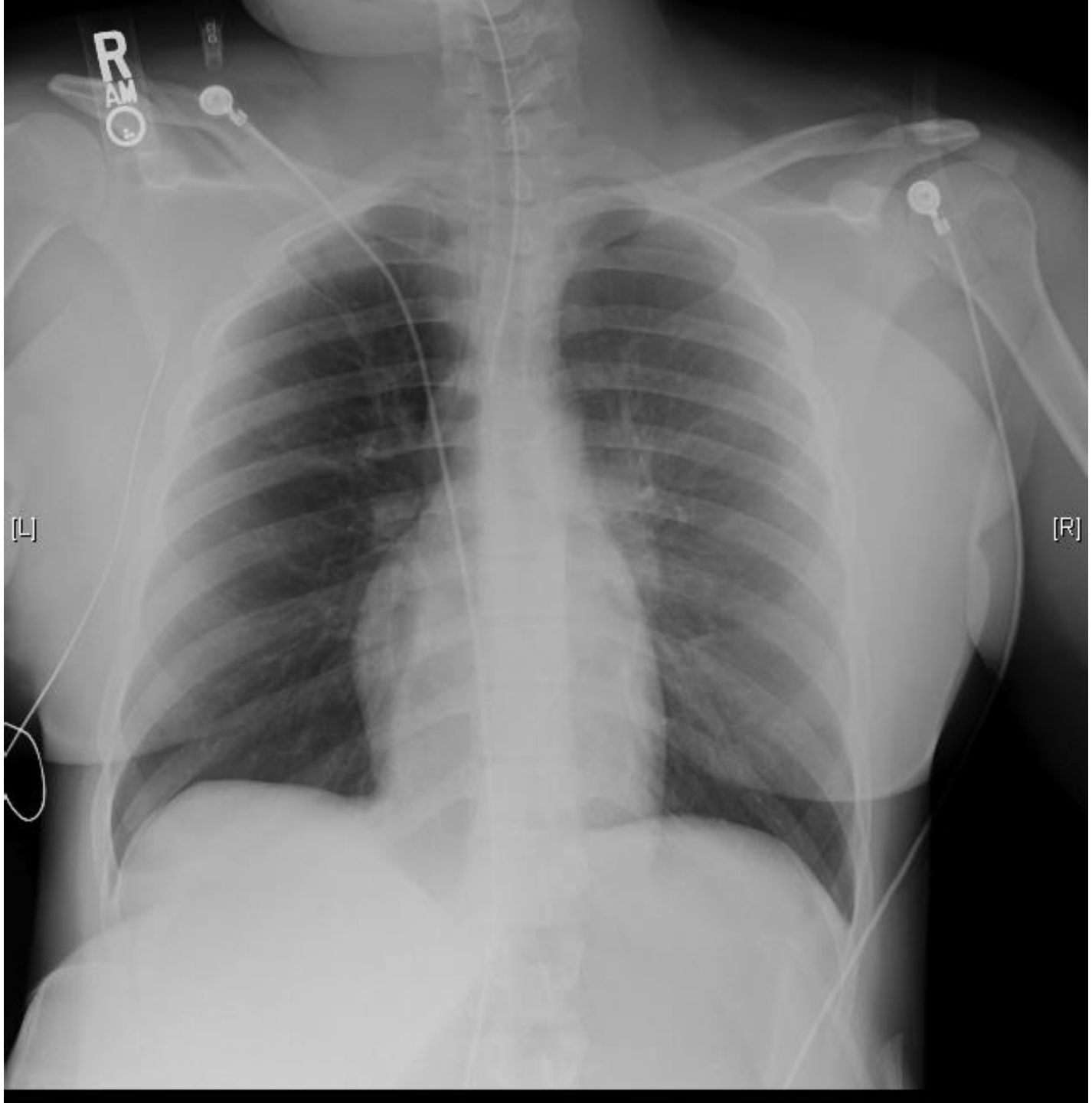
Initial Interventions

- 2 gm Magnesium Sulfate IV
- 125 mg Solumedrol IV
- Heliox started
- 10 mg Ketamine given

NONE OF THE ABOVE HAD SIGNIFICANT CLINICAL EFFECT

…Patient becomes apneic

- Rapid sequence intubation performed
- Post-intubation difficulty bagging
- Patient becomes bradycardiac… then pulseless
- CPR started
  - –return of pulse after 2 mins. CPR & 3rd dose Epi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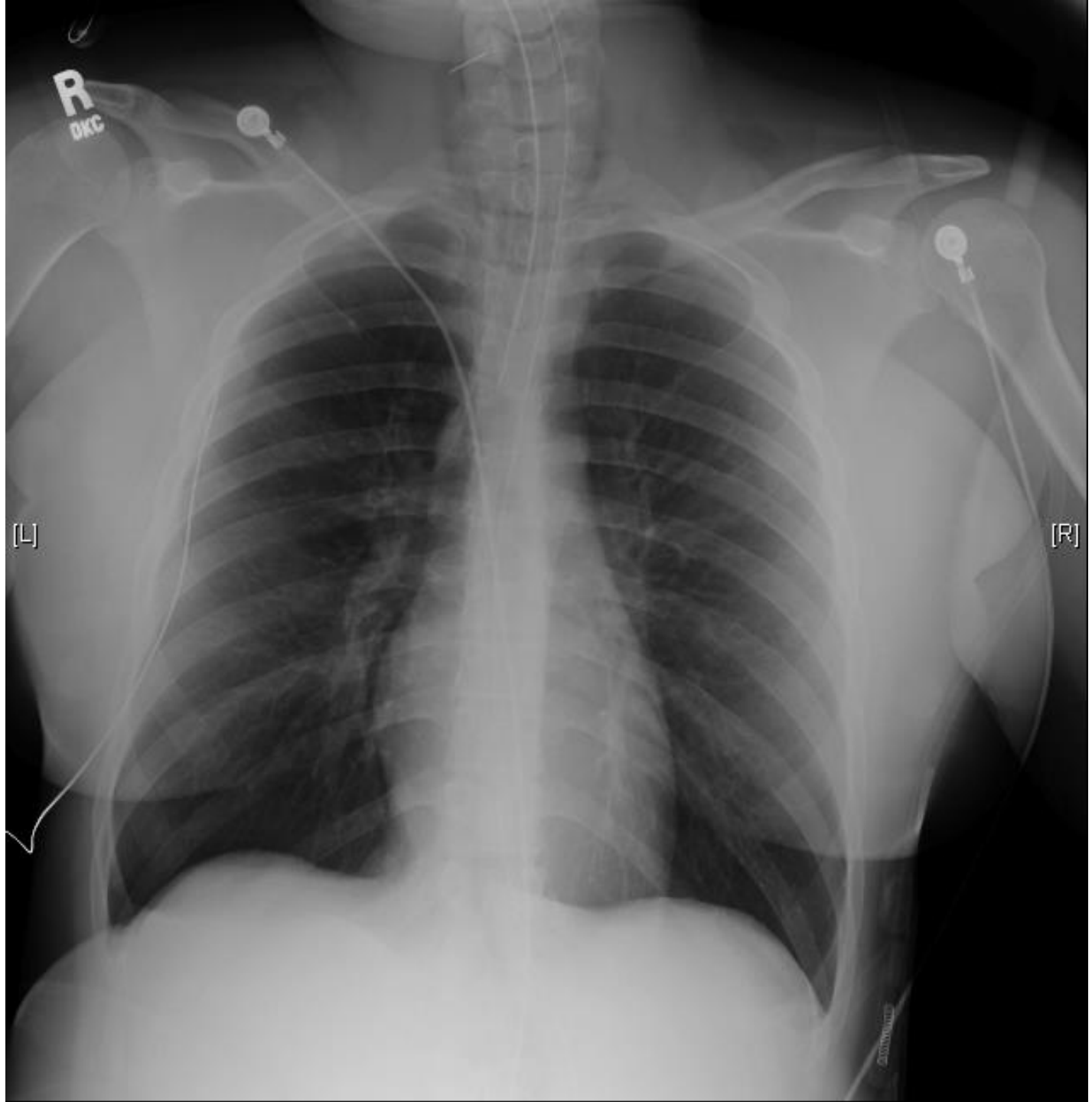
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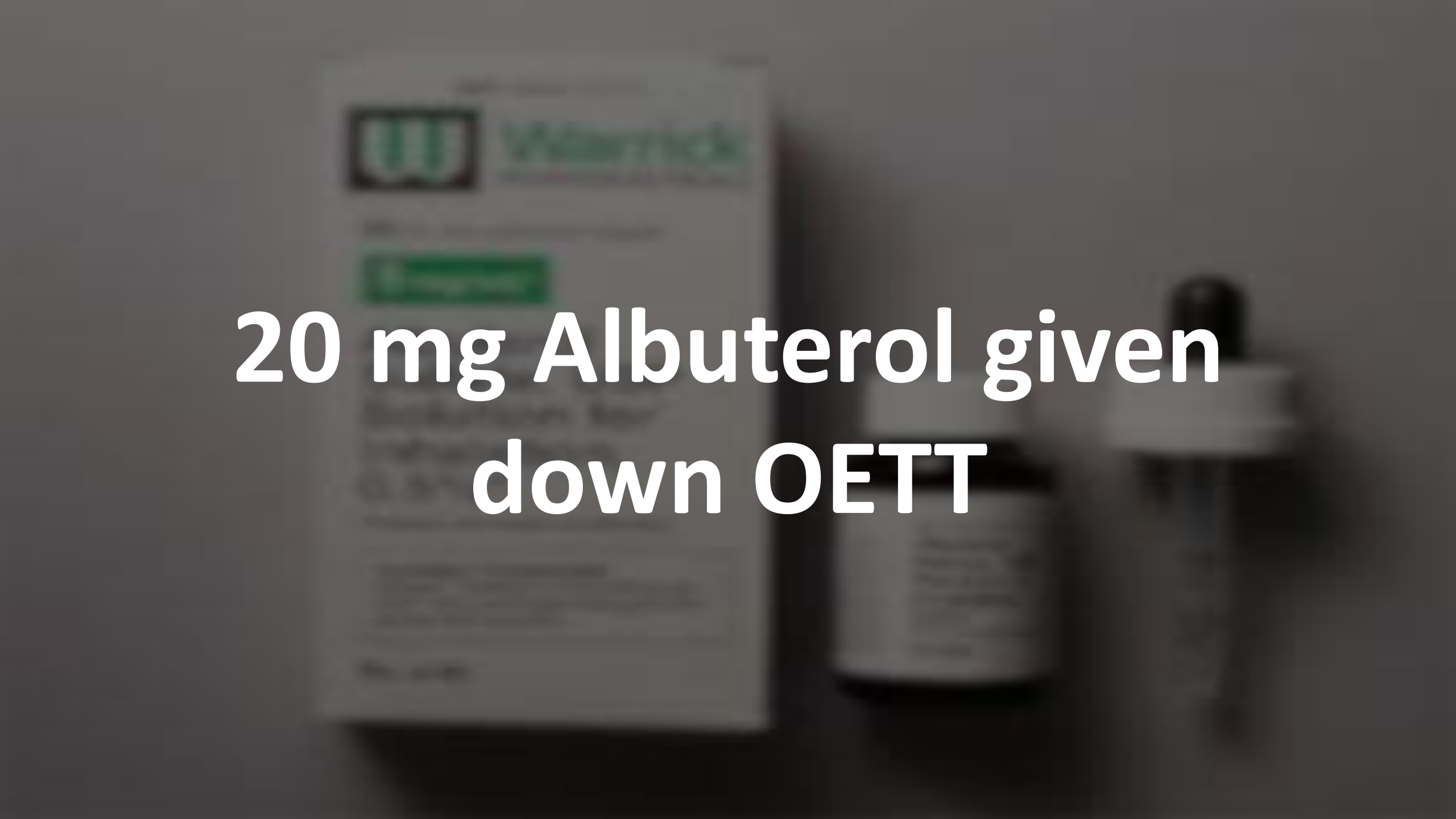
Post Intubation – Post Code

- Patient with sustained ‘rebound’ tachycardia & placed on PPV
  - **Propofol** for sedation
    - PRVC 350/12/.50/+5

- SpO2 begins dropping; PIPs increasing
  - Disconnected/bagged with improvement noted

- *New facial and neck edema noted*
- Asymmetrical excursion of R chest


20 mg Albuterol given
down OETT

Initial Post-Intubation, Post-Code ABG

pH: 6.74

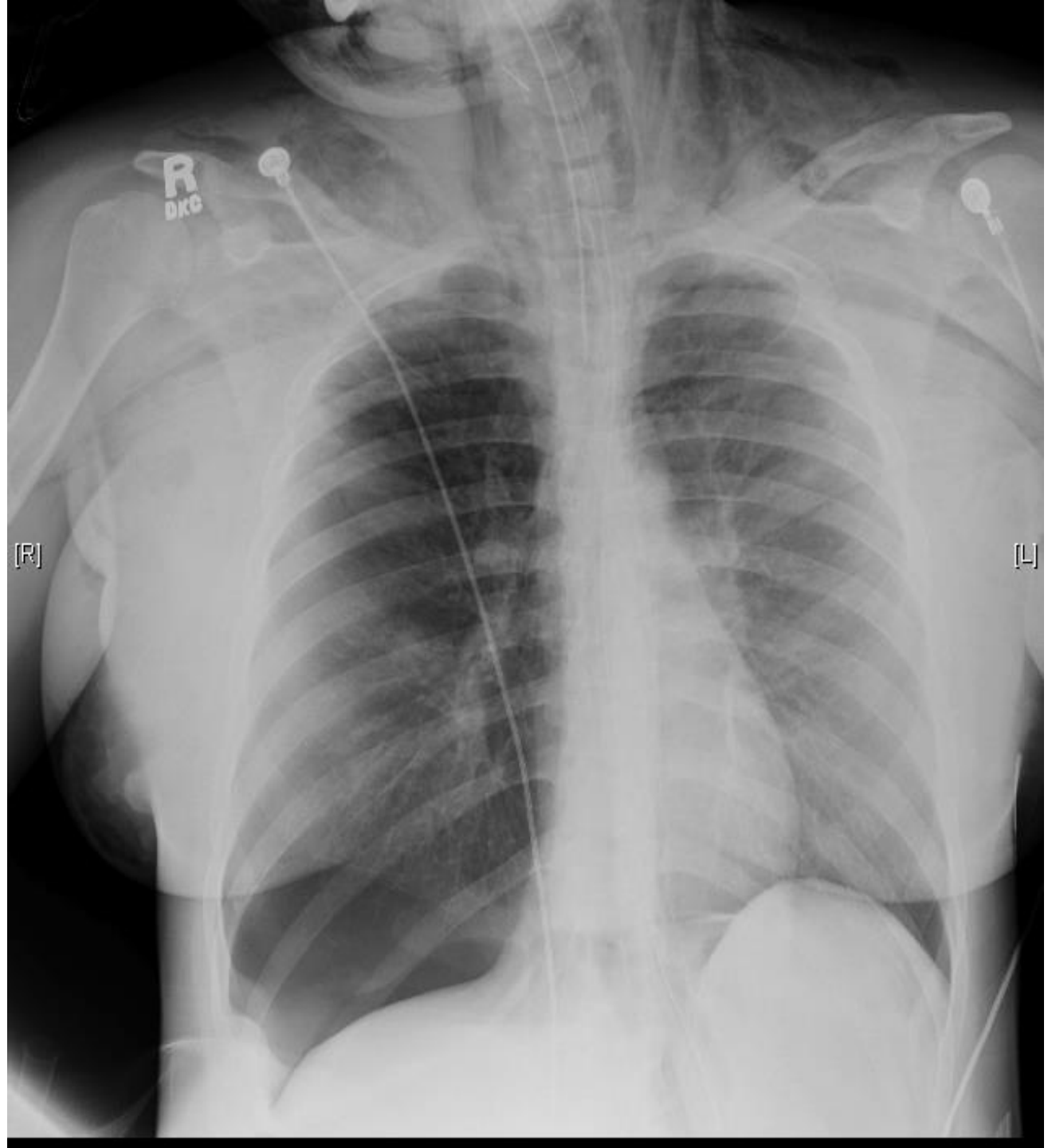
PaCO2: 213

PaO2: 50

HCO3: 11.4

BE/D: 8.7

Lactate: 11.7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Complications continue…

- Patient with altered mental status
- Still unable to be ventilated via PPV

2nd ABG drawn

2nd ABG

pH: 7.18

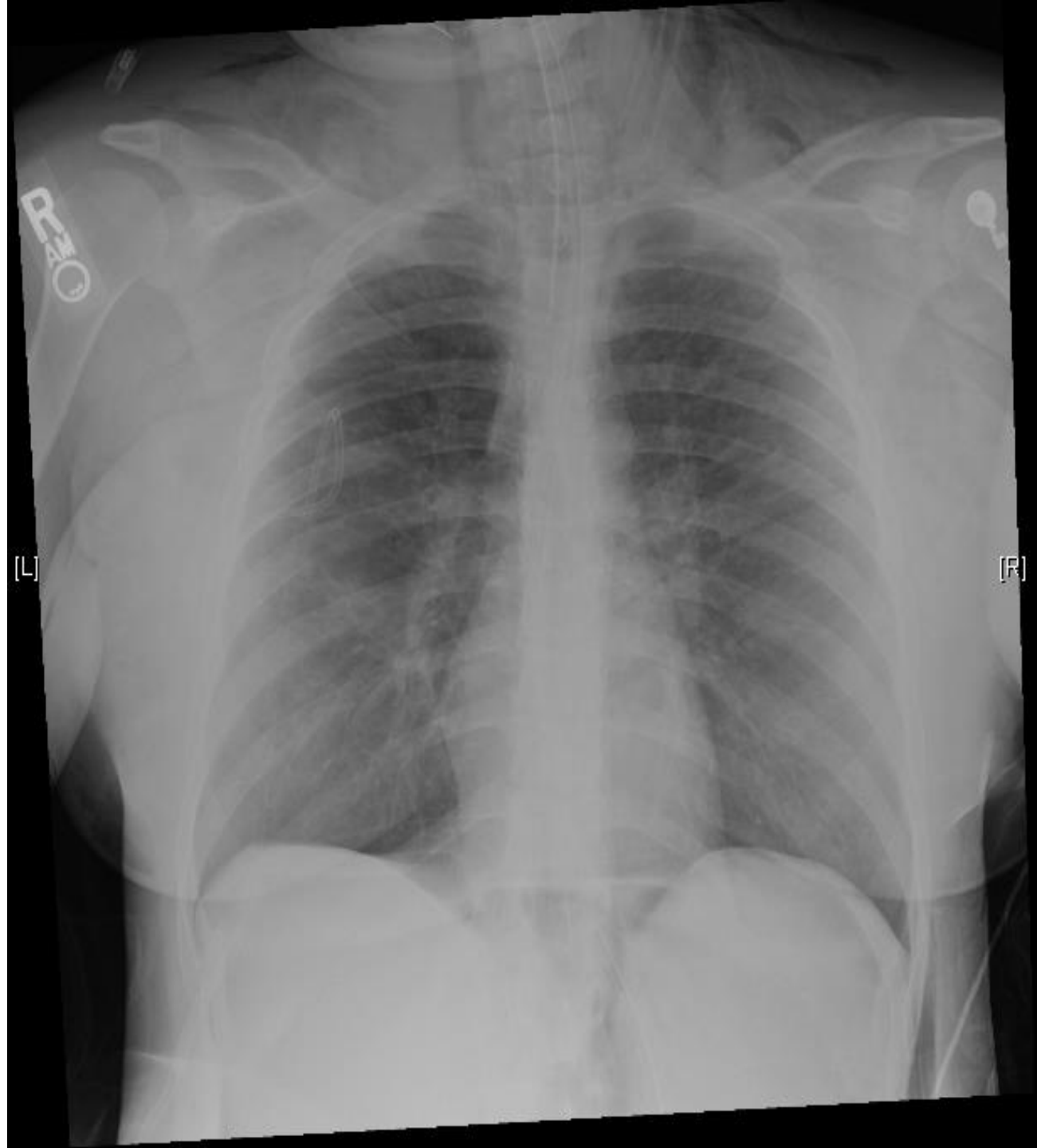
PaCO2: 80

PaO2: 389

HCO3: 20.3

BE/D: 20.3

Lactate: 2.9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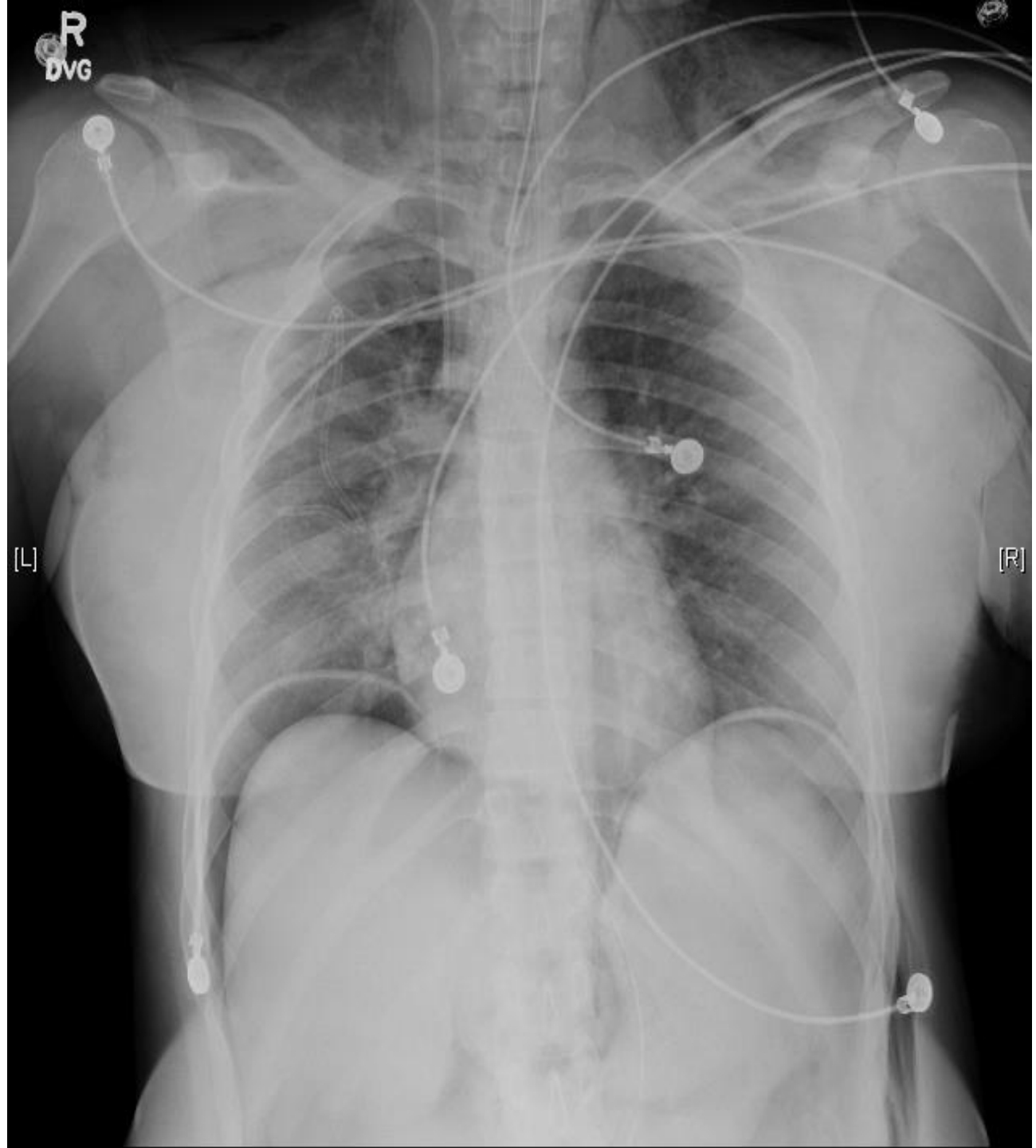
R
DVG
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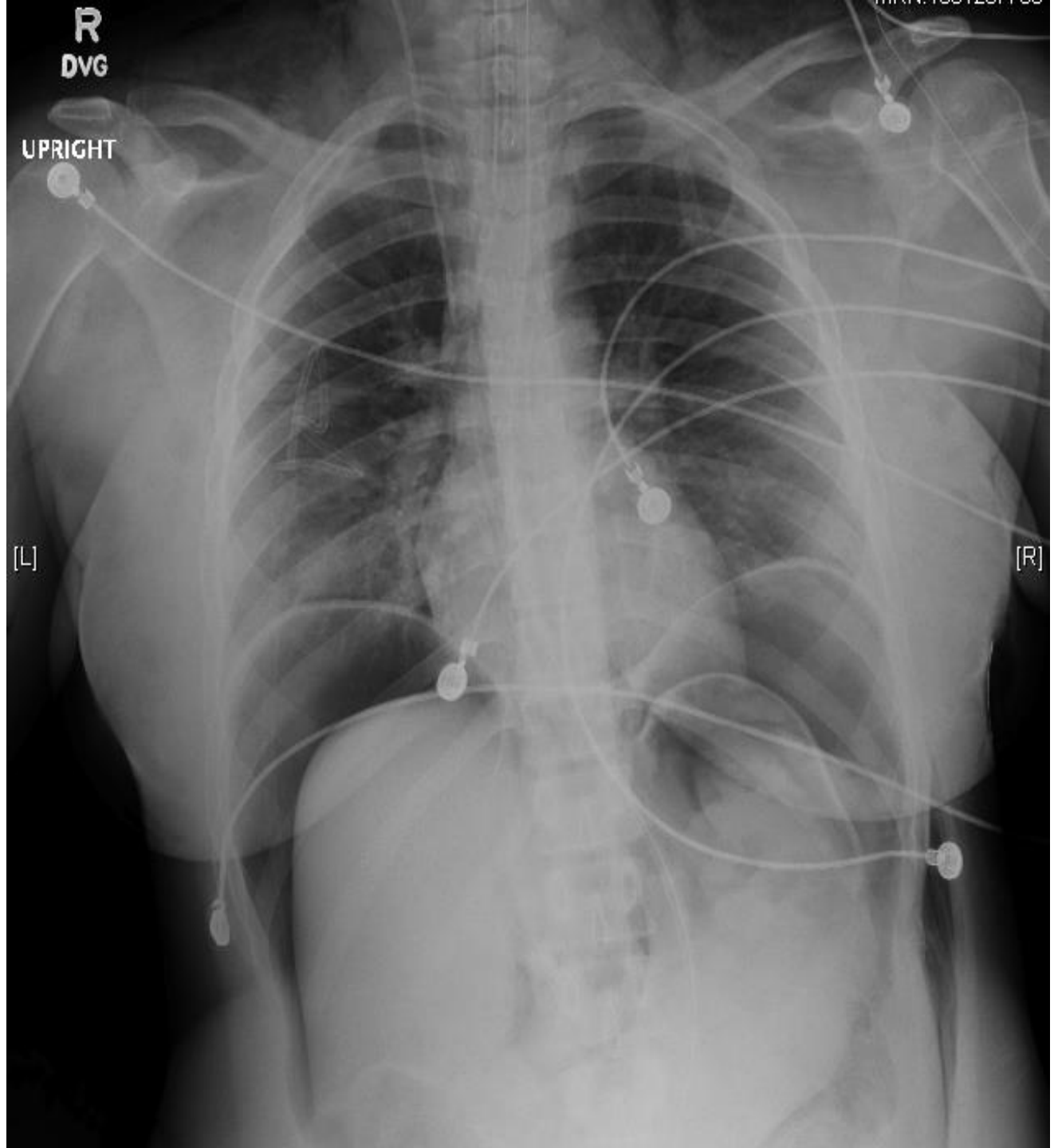
3rd ABG

pH:	7.00
PaCO2:	130
PaO2:	102
HCO3:	19.5
BE/D:	0.3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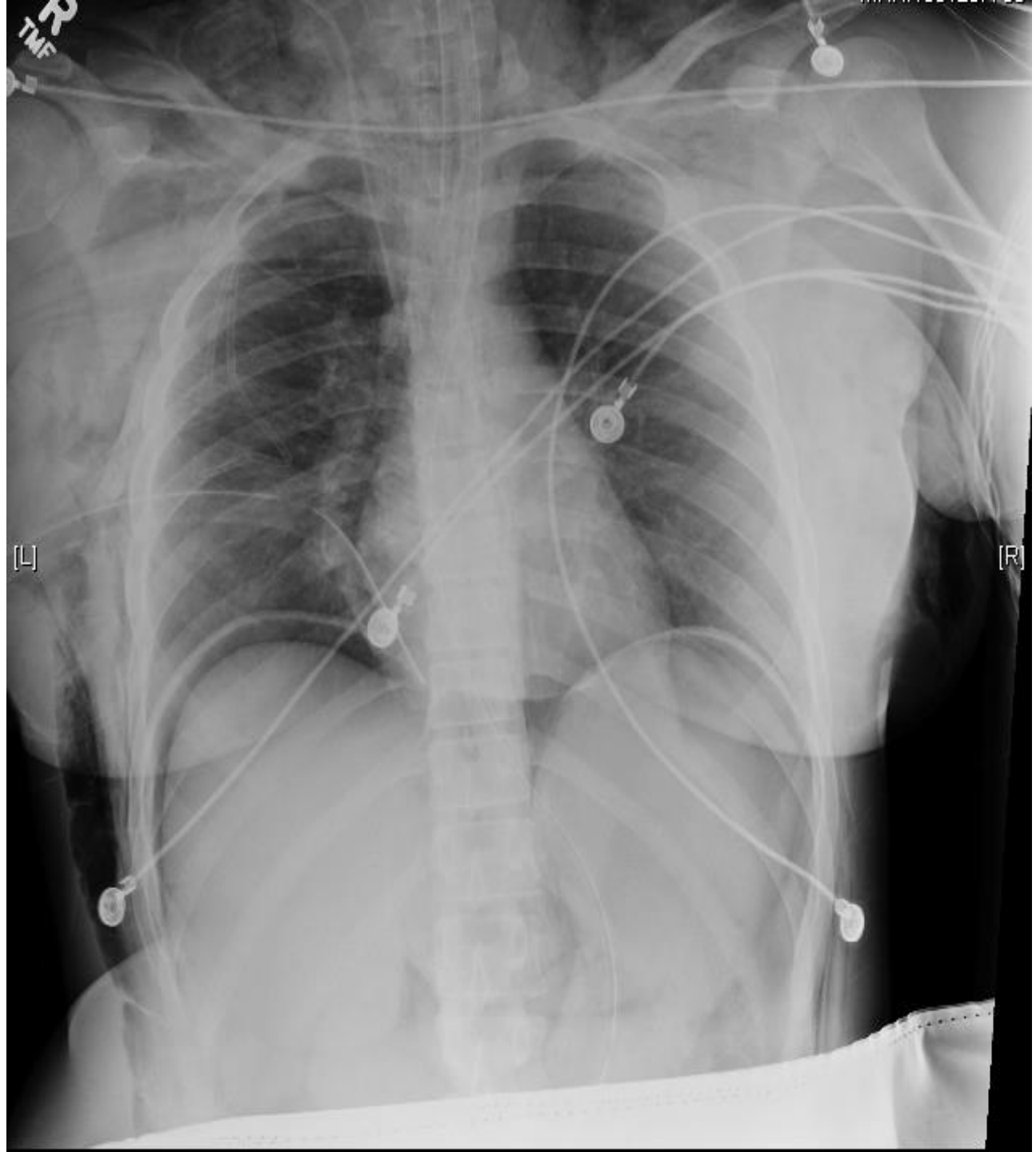
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Outcome

- Difficult to manage on PPV
- Prolonged “reversal” time
- Patient survived
  - Mild anoxic brain injury

- Recovered at outlying rehab facility

Approximately 25 Million Americans Have Asthma

Group with highest proportional prevalence:
22-39 (Young Adults)

Females > Males
Highest risk = highest poverty level

CDC, 2023

Number of visits to ED with asthma as primary diagnosis: 1.6 million

Number of asthma-related deaths in 2020 = 4,145

CDC, 2023

"If you think about how healthcare is delivered, it's on an ad hoc basis. Someone comes into a hospital, someone comes into a pharmacy, someone comes into a doctor. But beyond those touchpoints, the patients are on their own.

Viehbacher – CEO, Sanofi [Harvard's First Forum on Healthcare Innovation Report]

THE BEST ‘TREATMENT’ FOR ASTHMA?

PREVENTION OF EXACERBATION

THE NEW ENGLAND JOURNAL OF MEDICINE Feb. 13, 1986

FATAL ASTHMA

SOLOMON R. BENATAR, M.B., CH.B., F.F.A. (S.A.), F.R.C.P. (LOND.)

ASTHMA has been recognized for more than 30 centuries,[1] but only in the past 50 years has death from the disease attracted much atte[illegible] Floyer re-

ic" of deaths among young persons with asthma was observed in the United Kingdom,[10-12] New Zealand,[13] Australia,[14,15] and to a much lesser extent, in the

- **Delay** in seeking medical assistance
- **No** history of **specialist care**
- History of **previous hospitalizations**
- High incidence of death **after recent hospitalization** for asthma
- At least 1 **ED visit** for asthma **in last 1 year**

Why asthma still kills
The National Review of Asthma Deaths (NRAD)

Royal College of Physicians

UpToDate®

Identifying patients at risk for fatal asthma

AUTHORS: J Mark Madison, MD, Richard S Irwin, MD
SECTION EDITOR: Monica Kraft, MD
DEPUTY EDITOR: Paul Dieffenbach, MD

All topics are updated as new evidence b[illegible]s available and our peer review process is complete.

Literature review current through: **Jan 2026.**
This topic last updated: **Oct 06, 2025.**

Most asthma-related deaths are preventable if risk factors are recognized and addressed early

Specific characteristics that would help the clinician predict which patients are predisposed to rapid-onset asthma attacks have not been identified

UpToDate®

Identifying patients at risk for fatal asthma

AUTHORS: J Mark Madison, MD, Richard S Irwin, MD
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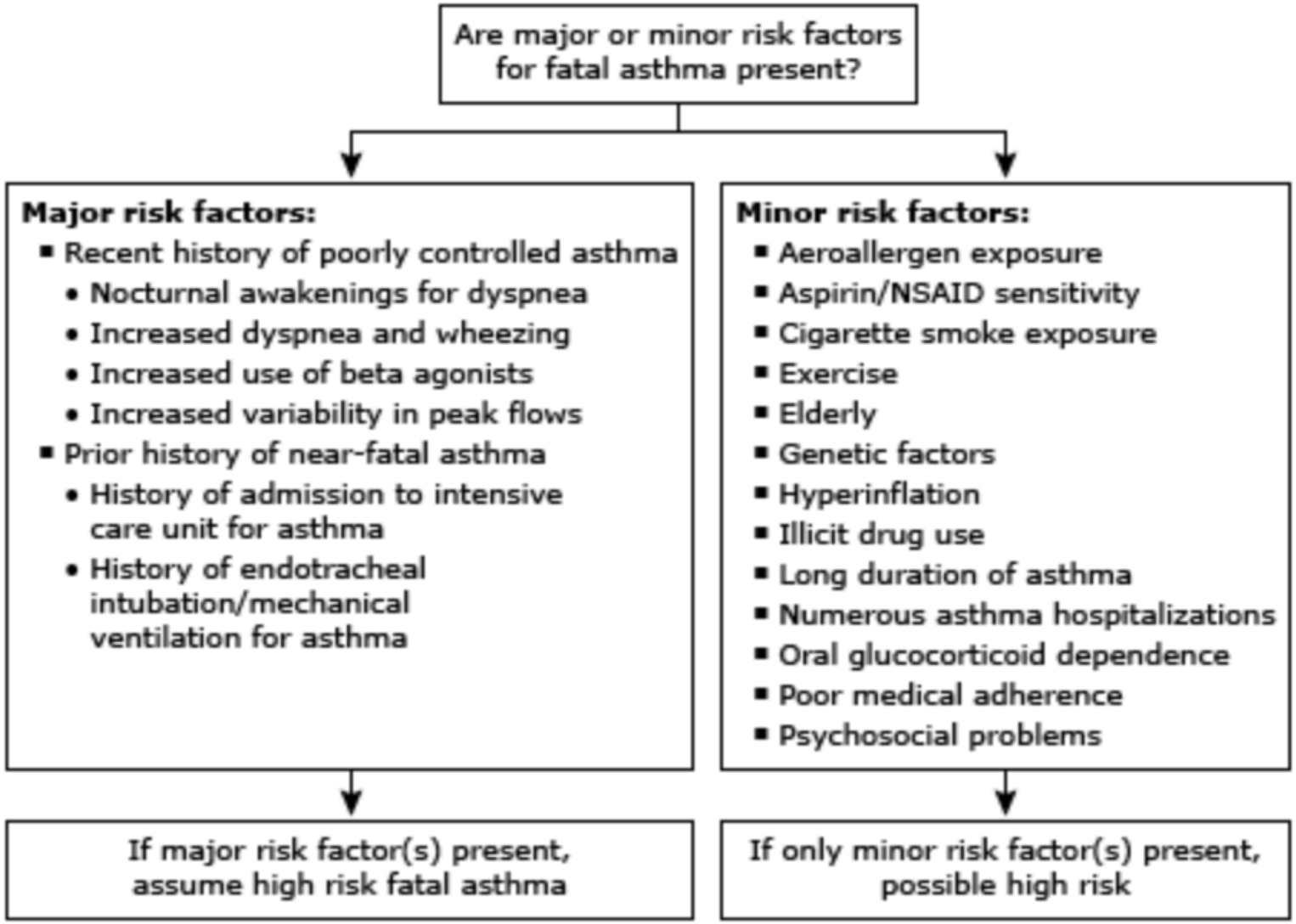
All topics are updated as new evidence b[illegible] available and our peer review process is complete.

Literature review current through: **Jan 2026.**
This topic last updated: **Oct 06, 2025.**

Highest risk patients = Recent history of poorly controlled asthma

Highest risk patients = Prior history of near-fatal asthma



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EMERGING **RESEARCH**

ATS Journals

Comparing the Effect of Acute Moderate and Vigorous Exercise on Inflammation in Adults with Asthma: A Randomized Controlled Trial

Hayley A Scott, Lisa G Wood, Evan J Williams, Natasha Weaver, and John W. Upham

Conclusions: Exercise intensity modifies the acute inflammatory response to exercise in adults with asthma. While a bout of moderate exercise is associated with a reduction in eosinophilic airway inflammation, vigorous exercise has no effect on airway inflammation. Interestingly, the effects of moderate exercise vary by asthma phenotype, with greater anti-inflammatory effects in participants with eosinophilic asthma. Future studies should examine the impact of exercise training at different intensities on inflammation and clinical asthma outcomes.

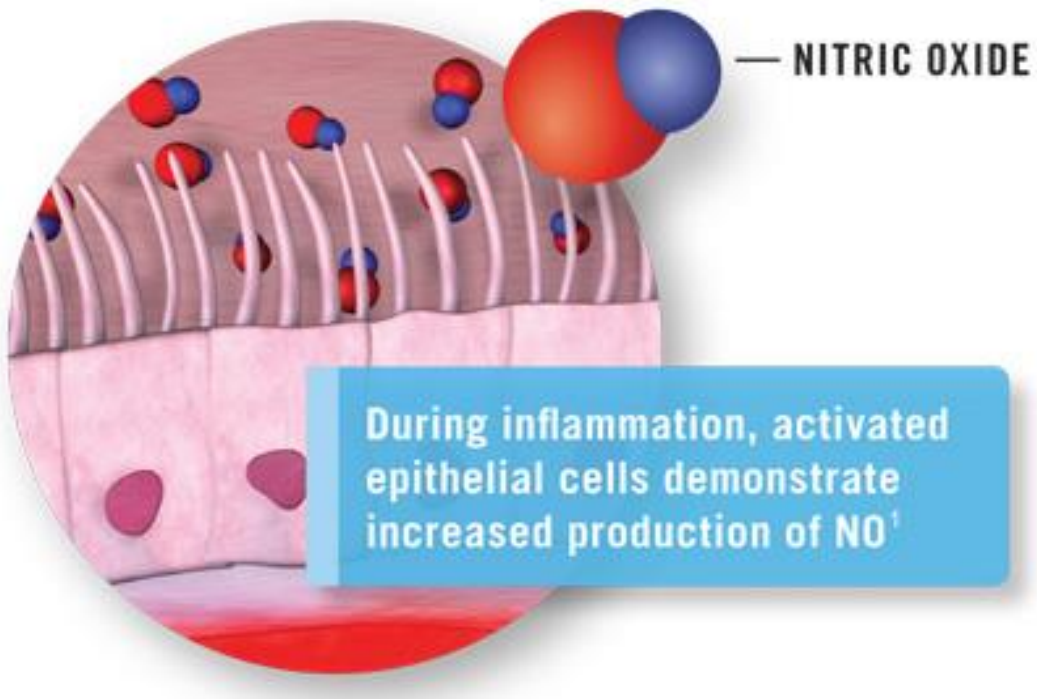
ANNALS OF THE
AMERICAN THORACIC SOCIETY®

A journal dedicated to advancing care in respiratory diseases, sleep disorders, and critical illness

Breathing Exercises for Patients with Asthma in Specialist Care: A Multicenter Randomized Clinical Trial

Karen H. Andreasson, Søren T. Skou, Charlotte S. Ulrik, Hanne Madsen, Kirsten Sidenius, Karin D. Assing, Celeste Porsbjerg, Jannie Bloch-Nielsen, Mike Thomas, and Uffe Bodtger

ATS Journals
American Journal of Respiratory and Critical Care Medicine



Use of Fractional Exhaled Nitric Oxide to Guide the Treatment of Asthma: An Official American Thoracic Society Clinical Practice Guideline

Sumita B Khatri, Jonathan M Iaccarino, Amisha Barochia, Israa Soghier, Praveen Akuthota, Anna Brady, Ronina A Covar, Jason S Debley, Zuzana Diamant, Anne M Fitzpatrick, David A Kaminsky, Nicholas J Kenyon, Sandhya Khurana, Brian J Lipworth, Kevin McCarthy, Michael Peters, Loretta G Que, Kristie R Ross, Elena K Schneider-Futschik, Christine A Sorkness, Teal S Hallstrand, American Thoracic Society Assembly on Allergy, Immunology, and Inflammation

Am J Respir Crit Care Med. 2021

Hunter Medical Research Institute

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Home / Research / Asthma and Breathing / Launch of new research initiative means asthma cure could be just a breath away

Launch of new research initiative means asthma cure could be just a breath away

Date Published: November 24, 2025

New Advances in Asthma Care: Improving Management and Outcomes

Désirée Larenas-Linnemann, MD[a], and Mario Castro, MD, MPH[b] Mexico City, Mexico; and Kansas City, Kan

J Allergy Clin Immunol Pract 2025;13:1605-8.
2213-2198

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26 November 2025

Monthly injection helps severe asthma patients safely stop or reduce daily steroids

A monthly injection has helped 90% of severe asthma patients reduce daily steroid tablets, which are associated with long-term side effects

Keck School of Medicine of USC

NEWSROOM

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PRESS RELEASE

New discovery could help pave the way for better allergic asthma treatments

Leigh Hopper March 26, 2024

The Future of Asthma Treatment: Insights from Phase II and III Clinical Research

PMI PRINCETON MEDICAL INSTITUTE

Asthma / By blankadm

Advancements in asthma treatment are shaping a future where patients can expect more effective, personalized, and long-lasting relief. Ongoing Phase II and III clinical trials are exploring innovative therapies, from biologics to targeted inhalers, that could redefine asthma management. Here's a look at the latest developments.

Biologics for Severe Asthma

Review > J Asthma Allergy. 2025 Aug 16:18:1179-1191. doi: 10.2147/JAA.S535264. eCollection 2025.

Artificial Intelligence in the Management of Asthma: A Review of a New Frontier in Patient Care

Laren D Tan [1 2], Nolan Nguyen [3], Enrique Lopez [1], Daniel Peverini [4], Mathew Shedd [1], Abdullah Alismail [1 2 5], H Bryant Nguyen [1]

WORD OF THE DAY: **ARMAMENTARIUM**

armamentarium noun

ar·ma·men·tar·i·um ˌär-mə-ˌmen-ˈter-ē-əm -mən-

plural **armamentaria** ˌär-mə-ˌmen-ˈter-ē-ə

Synonyms of *armamentarium* ›

: a collection of resources available or utilized for an undertaking or field of activity

especially **:** the equipment, methods, and pharmaceuticals used in medicine

Respiratory Treatments

2022

Allergy & Asthma Network
AllergyAsthmaNetwork.org
800.878.4403

DOSE INDICATOR = DOSE INDICATOR G = GENERIC AVAILABLE DISEASE STATES: A = ASTHMA C = COPD

American College of Allergy, Asthma & Immunology

CHEST FOUNDATION

Allergy & Asthma Network is a national nonprofit organization dedicated to ending needless death and suffering due to asthma, allergies and related conditions through outreach, education, advocacy and research.

SHORT-ACTING BETA$_2$-AGONIST BRONCHODILATORS

relax tight muscles in airways and offer quick relief of symptoms such as coughing, wheezing and shortness of breath for 3-6 hours

- **ProAir® Digihaler™** 90 mcg albuterol sulfate inhalation powder — DOSE INDICATOR, A
- **ProAir® HFA** 90 mcg albuterol sulfate — DOSE INDICATOR, A, G
- **ProAir RespiClick®** 90 mcg albuterol sulfate inhalation powder — DOSE INDICATOR, A
- **Proventil® HFA** 90 mcg albuterol sulfate — DOSE INDICATOR, A, G
- **Ventolin® HFA** 90 mcg albuterol sulfate — DOSE INDICATOR, A, G
- **Xopenex HFA®** 45 mcg levalbuterol tartrate — A, G

LONG-ACTING BETA$_2$-AGONIST BRONCHODILATORS

relax tight muscles in airways and offer lasting relief of symptoms such as coughing, wheezing and shortness of breath for at least 12 hours

- **Serevent® Diskus®** 50 mcg salmeterol xinafoate inhalation powder — DOSE INDICATOR, A, C
- **Striverdi® Respimat®** 2.5 mcg olodaterol hydrochloride — DOSE INDICATOR, C

INHALED CORTICOSTEROIDS

reduce and prevent swelling of airway tissue; they do not relieve sudden symptoms of coughing, wheezing or shortness of breath

- **Alvesco® HFA** 80, 160 mcg ciclesonide — DOSE INDICATOR, A
- **ArmonAir® Digihaler™** 55, 113, 232 mcg fluticasone propionate inhalation powder — DOSE INDICATOR, A
- **Arnuity® Ellipta®** 50, 100, 200 mcg fluticasone furoate inhalation powder — DOSE INDICATOR, A
- **Asmanex® HFA** 50, 100, 200 mcg mometasone furoate — DOSE INDICATOR, A
- **Asmanex® Twisthaler®** 110, 220 mcg mometasone furoate inhalation powder — DOSE INDICATOR, A
- **Flovent® Diskus®** 50, 100, 250 mcg fluticasone propionate inhalation powder — DOSE INDICATOR, A
- **Flovent® HFA** 44, 110, 220 mcg fluticasone propionate — DOSE INDICATOR, A
- **Pulmicort Flexhaler®** 90, 180 mcg budesonide inhalation powder — DOSE INDICATOR, A
- **QVAR® Redihaler™** 40, 80 mcg beclomethasone dipropionate — DOSE INDICATOR, A

MUSCARINIC ANTAGONISTS (ANTICHOLINERGIC)

relieve cough, sputum production, wheeze and chest tightness associated with chronic lung diseases

Short-acting

- **Atrovent® HFA** 17 mcg ipratropium bromide — DOSE INDICATOR, C

Long-acting

- **Incruse® Ellipta®** 62.5 mcg umeclidinium inhalation powder — DOSE INDICATOR, C
- **Spiriva® HandiHaler®** 18 mcg tiotropium bromide inhalation powder — C
- **Spiriva® Respimat®** 1.25, 2.5 mcg tiotropium bromide — DOSE INDICATOR, A, C
- **Tudorza™ Pressair™** 400 mcg aclidinium bromide inhalation powder — DOSE INDICATOR, C

COMBINATION MEDICATIONS

contain both short-acting beta$_2$-agonist and short-acting muscarinic antagonist

- **Combivent® Respimat®** 20/100 mcg ipratropium bromide and albuterol — DOSE INDICATOR, C

COMBINATION MEDICATIONS

contain both inhaled corticosteroid and long-acting beta$_2$-agonist (LABA)

- **Advair Diskus®** 100/50, 250/50, 500/50 mcg fluticasone propionate and salmeterol inhalation powder — DOSE INDICATOR, A, C, G
- **Advair® HFA** 45/21, 115/21, 230/21 mcg fluticasone propionate and salmeterol xinafoate — DOSE INDICATOR, A, G
- **AirDuo® Digihaler™** 55/14, 113/14, 232/14 mcg fluticasone propionate and salmeterol inhalation powder — DOSE INDICATOR, A
- **AirDuo® RespiClick®** 55/14, 113/14, 232/14 mcg fluticasone propionate and salmeterol inhalation powder — DOSE INDICATOR, A, G
- **Breo® Ellipta®** 100/25, 200/25 mcg fluticasone furoate and vilanterol inhalation powder — DOSE INDICATOR, A, C
- **Dulera®** 50/5, 100/5, 200/5 mcg mometasone furoate and formoterol fumarate dihydrate — DOSE INDICATOR, A
- **Symbicort®** 80/4.5, 160/4.5 mcg budesonide and formoterol fumarate dihydrate — DOSE INDICATOR, A, C, G
- **Wixela™ Inhub™** 100/50, 250/50, 500/50 mcg fluticasone propionate and salmeterol xinafoate (approved generic of Advair Diskus) — DOSE INDICATOR, A, C

contain both long-acting beta$_2$-agonist (LABA) and long-acting muscarinic antagonist (LAMA)

- **Anoro® Ellipta®** 62.5/25 mcg umeclidinium and vilanterol inhalation powder — DOSE INDICATOR, C
- **Bevespi Aerosphere®** 9/4.8 mcg glycopyrrolate and formoterol fumarate — DOSE INDICATOR, C
- **Duaklir® Pressair®** 400, 12 mcg aclidinium bromide and formoterol fumarate — DOSE INDICATOR, C
- **Stiolto™ Respimat®** 2.5/2.5 mcg tiotropium bromide and olodaterol — DOSE INDICATOR, C

contain inhaled corticosteroid, long-acting beta$_2$-agonist (LABA) and long-acting muscarinic antagonist (LAMA)

- **Trelegy® Ellipta®** 200/62.5/25 mcg, 100/62.5/25 mcg fluticasone furoate, umeclidinium and vilanterol inhalation powder — DOSE INDICATOR, A, C
- **Breztri Aerosphere™** 160/9/4.8 mcg budesonide, glycopyrrolate and formoterol fumarate — C

BIOLOGICS

target cells and pathways that cause airway inflammation; delivered by injection or IV

- **Cinqair®** reslizumab — A
- **Dupixent®** dupilumab — A
- **Fasenra™** benralizumab — A
- **Nucala®** mepolizumab — A
- **Tezspire™** tezepelumab-ekko — A
- **Xolair®** omalizumab — A

BRONCHIAL THERMOPLASTY

A minimally invasive procedure that uses mild heat to reduce airway smooth muscle, leading to fewer severe asthma flares, ER visits, and days lost from activities. www.btforasthma.com — A

PDE4 INHIBITORS

ease lung inflammation and reduce exacerbations

- **Daliresp®** 250, 500 mcg roflumilast — C

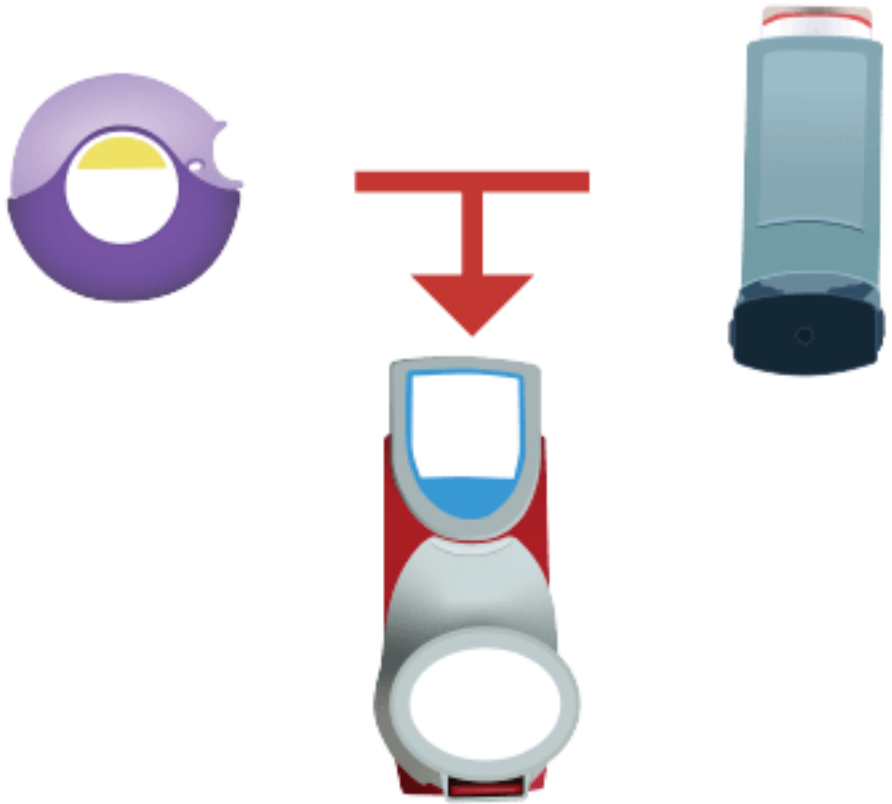
Reviewed by Dennis Williams, PharmD

BIOLOGICS

WHAT'S NEW?

Your everyday inhaler

Your rescue inhaler



With **SMART**, your everyday and rescue inhalers are the same!

THE LANCET
Respiratory Medicine

Treating eosinophilic exacerbations of asthma and COPD with benralizumab (ABRA): a double-blind, double-dummy, active placebo-controlled randomised trial

Sanjay Ramakrishnan, MBBS [a,b] · Richard E K Russell, PhD [b,d] · Hafiz R Mahmood, MBBS [a] · Karolina Krassowska, MSc [b] · James Melhorn, MBBS [b] · Christine Mwasuku, MSc [b] · Prof Ian D Pavord, FMedSci [b] · Laura Bermejo-Sanchez, MSc [b] · Imran Howell, MBBCh [b] · Mahdi Mahdi, BSc [b] · Stefan Peterson, PhD [e] · Thomas Bengtsson, MSc [e] · Prof Mona Bafadhel, PhD [c,d]

Interpretation Benralizumab can be used as a treatment of acute eosinophilic exacerbations and achieves better outcomes than the current standard of care with prednisolone alone. These results offer a new way of treating eosinophilic endotypes of asthma and COPD exacerbations.

FDA-APPROVED BIOLOGICS FOR SEVERE ASTHMA

Omalizumab (anti-IgE): For severe allergic asthma with aeroallergen sensitization and elevated IgE; ages ≥6

Mepolizumab (anti-IL-5): For severe eosinophilic asthma (blood eosinophils ≥150/μL); ages ≥6

Benralizumab (anti-IL-5Rα): For severe eosinophilic asthma; ages ≥6; dosed every 8 weeks after loading

Reslizumab (anti-IL-5, IV): For severe eosinophilic asthma; ages ≥18

Dupilumab (anti-IL-4Rα): For severe eosinophilic/Type 2 asthma or OCS-dependent asthma; ages ≥6; also effective in comorbid atopic dermatitis and CRSwNP

Tezepelumab (anti-TSLP): For severe asthma regardless of phenotype (broadest eligibility); ages ≥12; reduced exacerbations by 56% including in Type 2-low patients

Prevention remains the cornerstone of effective asthma management

Association between Glucagon-Like Peptide-1 Receptor Agonists and Asthma Exacerbations in Non-Diabetic Patients with Obesity: Cohort Study

Ruchi Patel, MD [1] · Zaria Beckley [2] · Brian Patchett, MS [3] · Edward Schulman, MD FAAAAI [2]

JACI The Journal of Allergy and Clinical Immunology

GLP-1s May Reduce Asthma Exacerbations in Non-Diabetic Overweight Patients

ANNOUNCEMENT

SPACER USE DECREASES PATIENT COORDINATION NEED AND **WILL ENHANCE** OVERALL **AEROSOL** MEDICATION **DELIVERY**

Asthma Educator Specialist (AE-C)

The Asthma Educator Specialty Examination is designed to measure comprehensive, current knowledge of asthma pathophysiology and management including developmental theories, cultural dimensions, the impact of chronic illness, and principles of teaching-learning. Therefore, wearing the Asthma Educator Specialist (AE-C) badge of distinction signals to employers, colleagues and patients that your skills are highly specialized.

The AE-C Examination is a multidisciplinary program available for currently licensed or credentialed professionals (shown below) who have proven their dedication to excellence by earning the AE-C credential.

1. Be issued a current, active, unrestricted license or credential from the United States in one of the following:
   Physician (MD, DO)
   Physician Assistant (PA-C)
   Nurse (RN, LPN, NP)
   Respiratory Therapist (RRT, CRT)
   Pulmonary Function Technologist (RPFT, CPFT)
   Pharmacist (RPh)
   Social Worker (CSW)
   Health Educator (CHES)
   Physical Therapist (PT)
   Occupational Therapist (OT)
   Emergency Medical Technician (EMT, AEMT)
   Paramedic
   Speech Language Pathologist (CCC-SLP)

   OR

2. Have a minimum of 1,000 hours of direct patient asthma education, counseling or coordinating services prior to applying for the examination.

THANKS FOR LISTENING!

Tim.Gilmore@lsuhs.edu