

CHILDREN ASTHMA and COVID 19

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Problem Cases?

- A 10 mo infant was referred to ER with wheezing & tachypnea.
 - Could it be asthma?
- A 12 yo girl referred to ER with acute asthma exacerbation,
 - What are the acute management measures?
 - What are the future control actions?



Asthma:

A chronic inflammatory condition of the lung airways resulting in episodic airflow obstruction which is reversible



ETIOLOGY

- 1) Inflammatory cells (mast cells, eosinophils, T lymphocytes, neutrophils)
- 2) Chemical mediators (histamine, leukotrienes, platelet-activating factor, bradykinin)
- 3) Chemotactic factors (cytokines, eotaxin)



- Inflammation >> airway hyperresponsiveness

Airway hyperresponsiveness :

- ✓ airways constricting in response to allergens, irritants, viral infections, and exercise

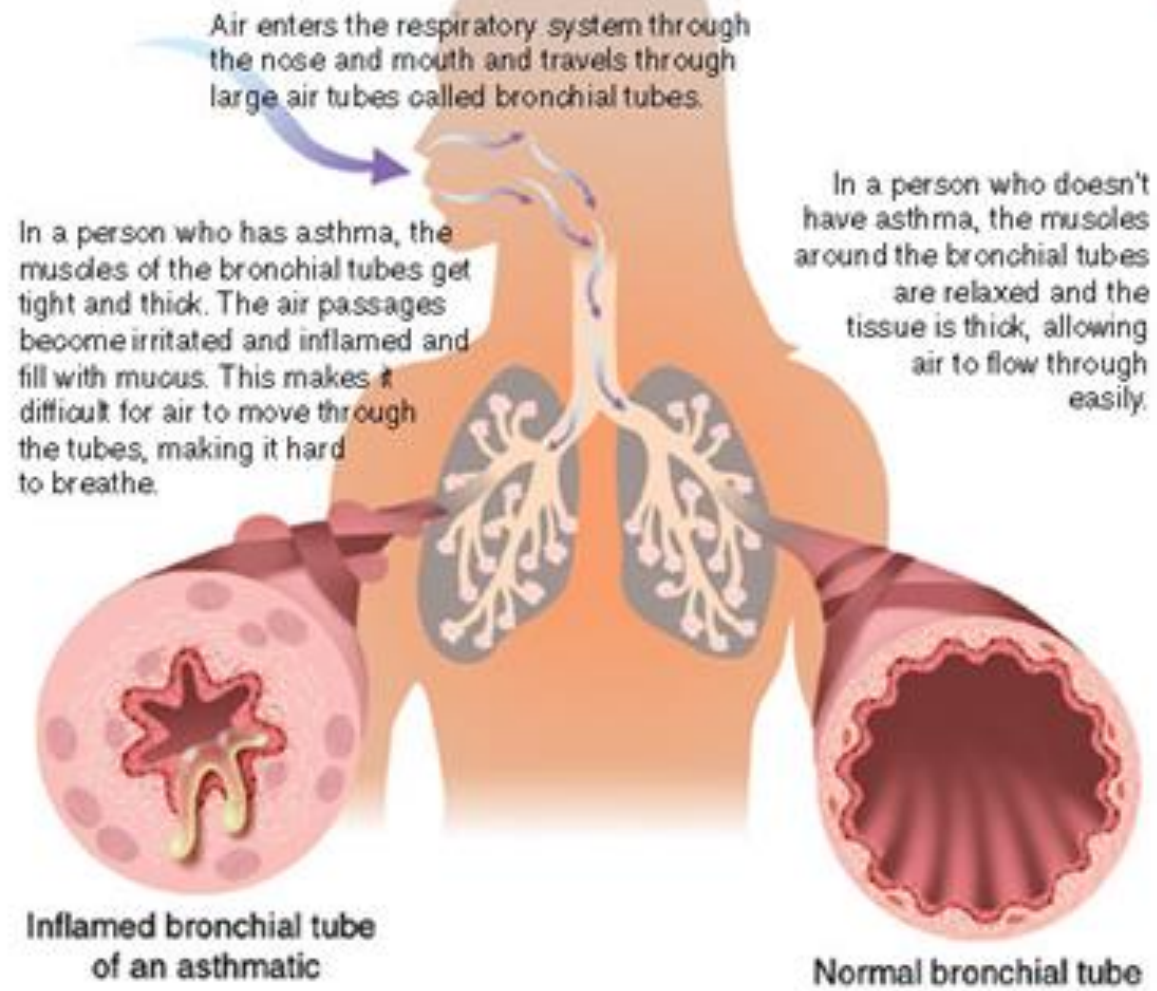


Chronic inflammation of airways

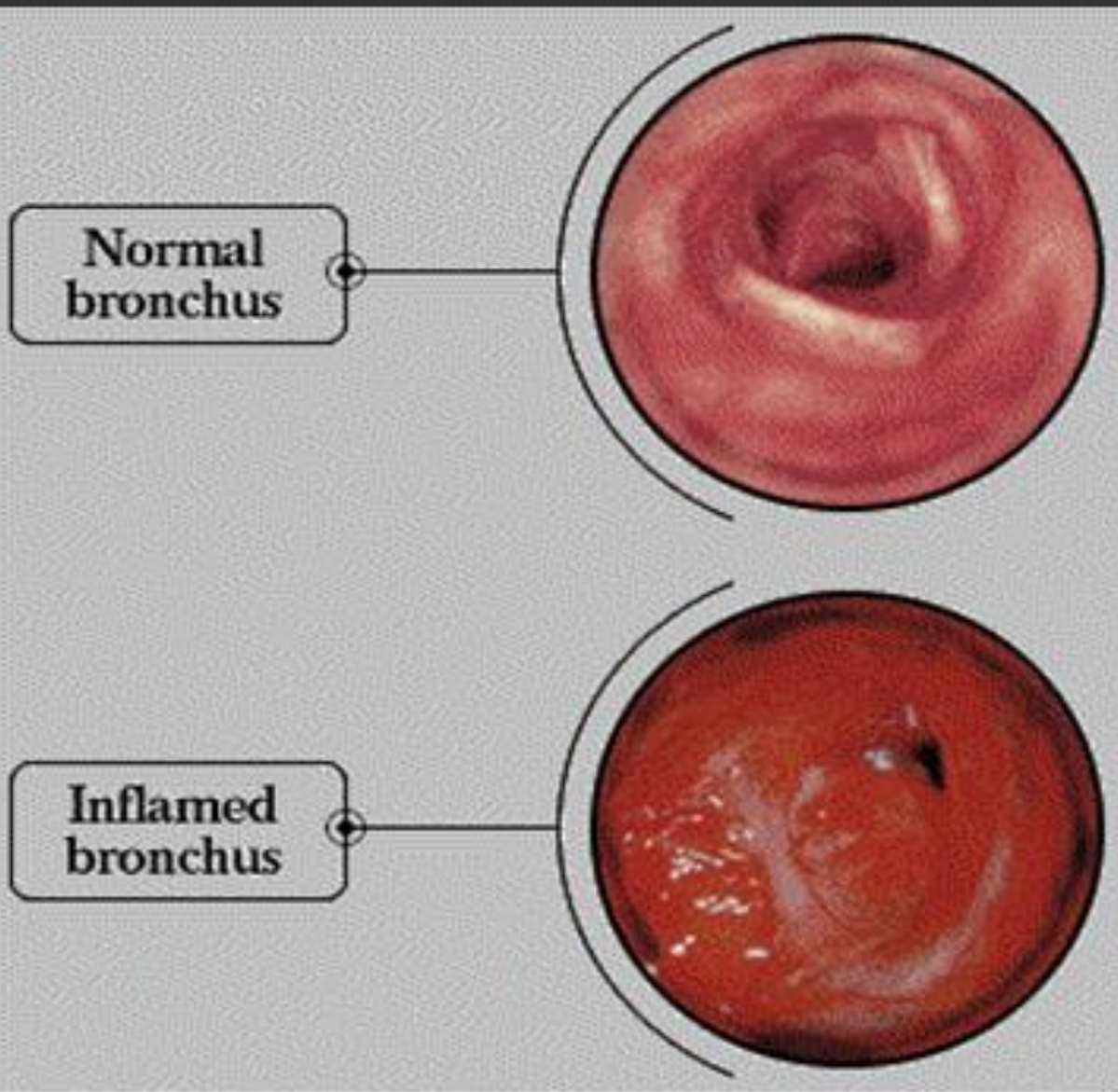
✓ **Remodeling**

proliferation of extracellular matrix proteins and
vascular hyperplasia

irreversible structural changes and a progressive
loss of pulmonary function



Source: American Academy of Allergy, Asthma and Immunology



Burden of asthma

- Asthma is one of the most common chronic diseases worldwide with an estimated 300 million affected individuals
- Prevalence is increasing in many countries, especially in children
- Asthma is a major cause of school and work absence
- Health care expenditure on asthma is very high
 - Developed economies might expect to spend 1-2 percent of total health care expenditures on asthma.
 - Developing economies likely to face increased demand due to increasing prevalence of asthma
 - Poorly controlled asthma is expensive
 - However, investment in prevention medication is likely to yield cost savings in emergency care



EPIDEMIOLOGY

- The most common chronic disease of childhood in industrialized countries
- The most common non-communicable disease in children
- The most common cause of hospitalization in children
- Boys are more likely than girls to have asthma
- Women are more likely than men to have asthma



- According to the latest WHO estimates, released in December 2016, there were 417,918 deaths due to asthma in 2016.

Enough Asthma Deaths



WORLDASTHMADAY

MAY 5, 2020 | GINASTHMA.ORG/WAD | @GINASTHMA

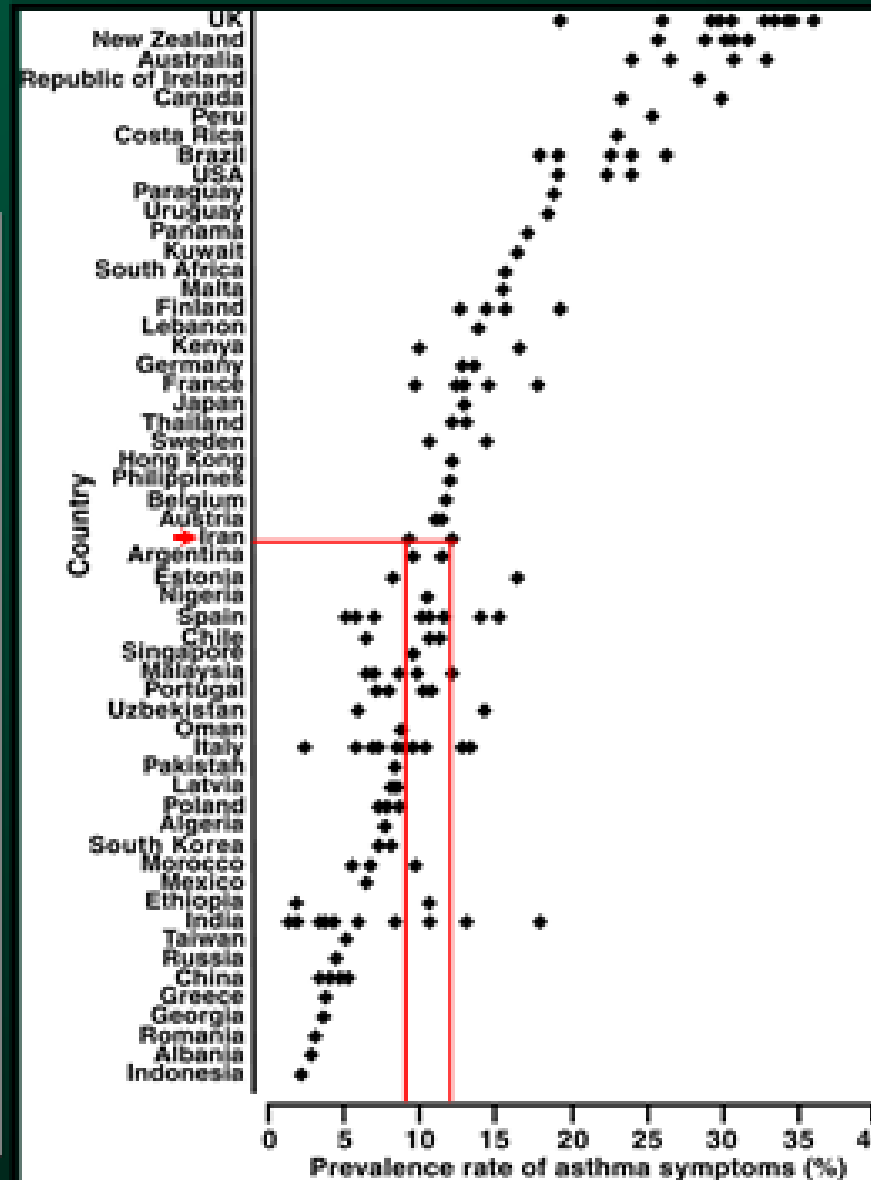




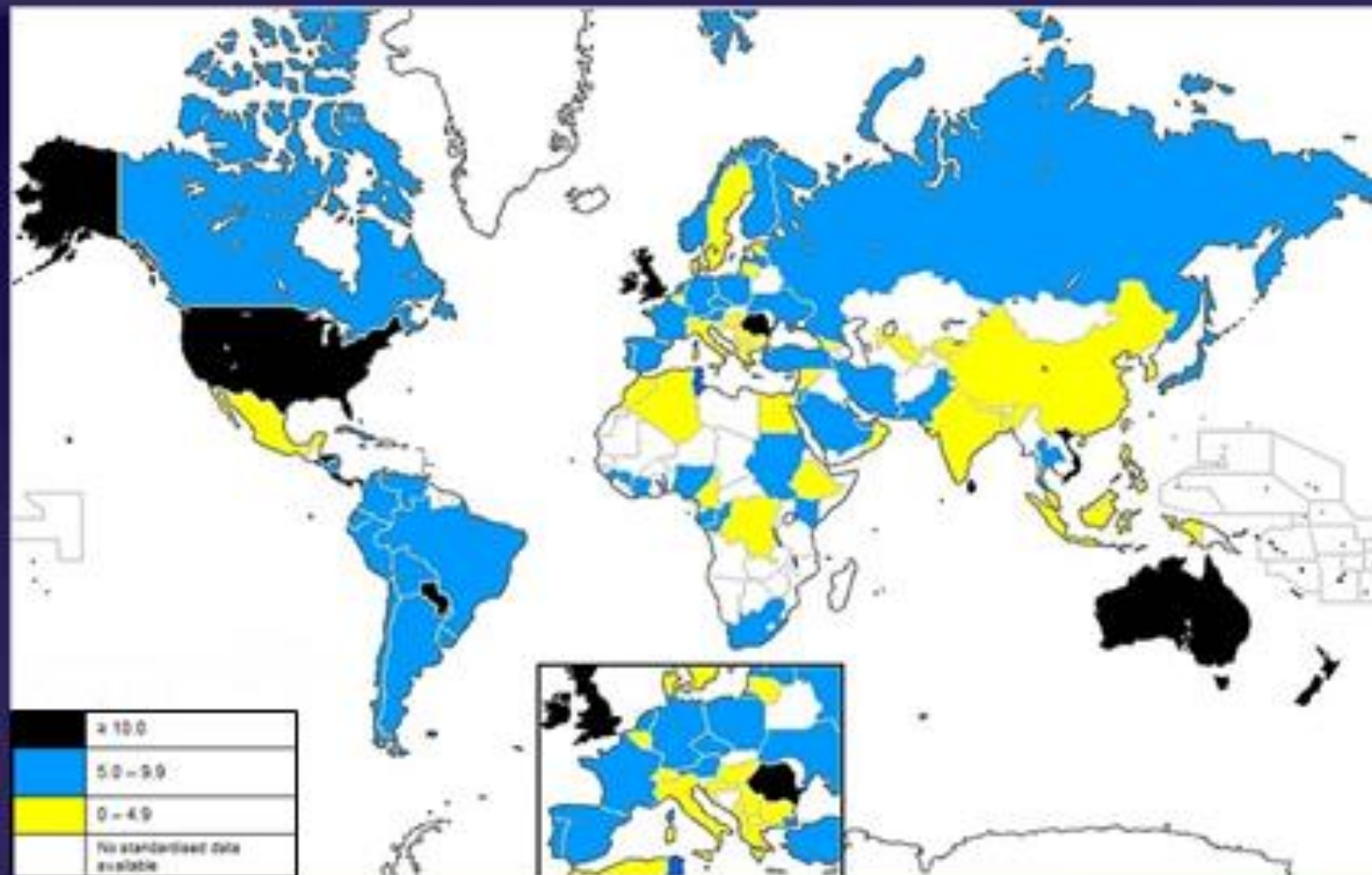
Worldwide Variation in Prevalence of Asthma Symptoms

International Study of Asthma and Allergies in Children (ISAAC)

Lancet 1998;351:1225

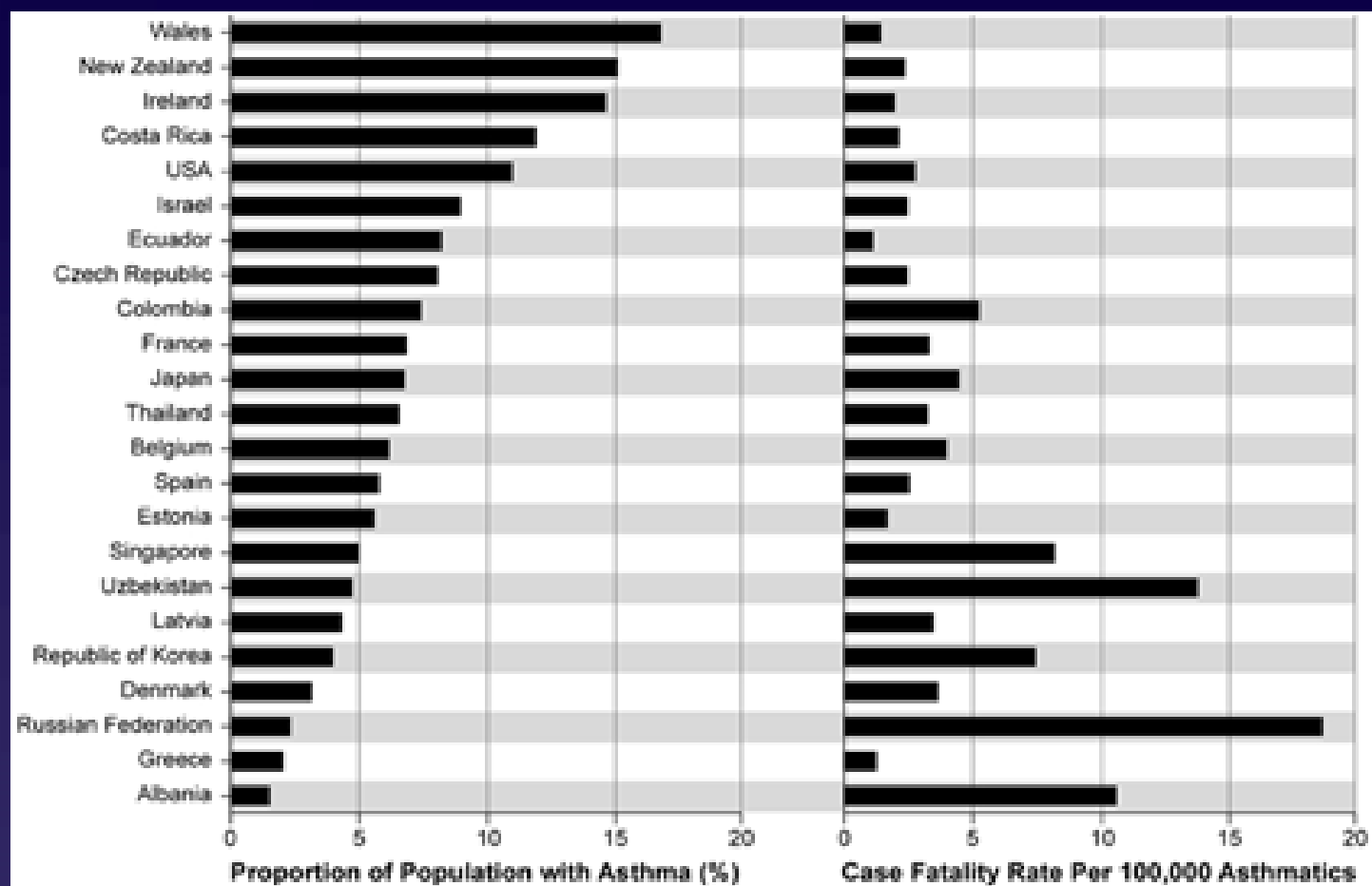


Prevalence of asthma in children aged 13-14 years





Asthma Prevalence and Mortality



Source: Masoli M et al. Allergy 2004

Increasing Burden of Diseases and Injuries: Change in Rank Order of DALYs*

1999

1. Acute lower respiratory infections
2. HIV/AIDS
3. Perinatal conditions
4. Diarrhoeal diseases
5. Unipolar major depression
6. Ischemic heart disease
7. Cerebrovascular disease
8. Malaria
9. Road traffic injuries
10. COPD
11. Congenital abnormalities
12. Tuberculosis

2020

1. Ischemic heart disease
2. Unipolar major depression
3. Road traffic injuries
4. Cerebrovascular disease
5. COPD
6. Acute lower respiratory infections
7. Tuberculosis
8. War
9. Diarrhoeal diseases
10. HIV
-
15. Trachea, bronchus, lung cancers

*DALY = Disability-adjusted life year

Source: WHO Evidence, Information and Policy, 2000

Risk Factors for Developing Asthma



- Genetic characteristics
- Occupational exposures
- Environmental exposures

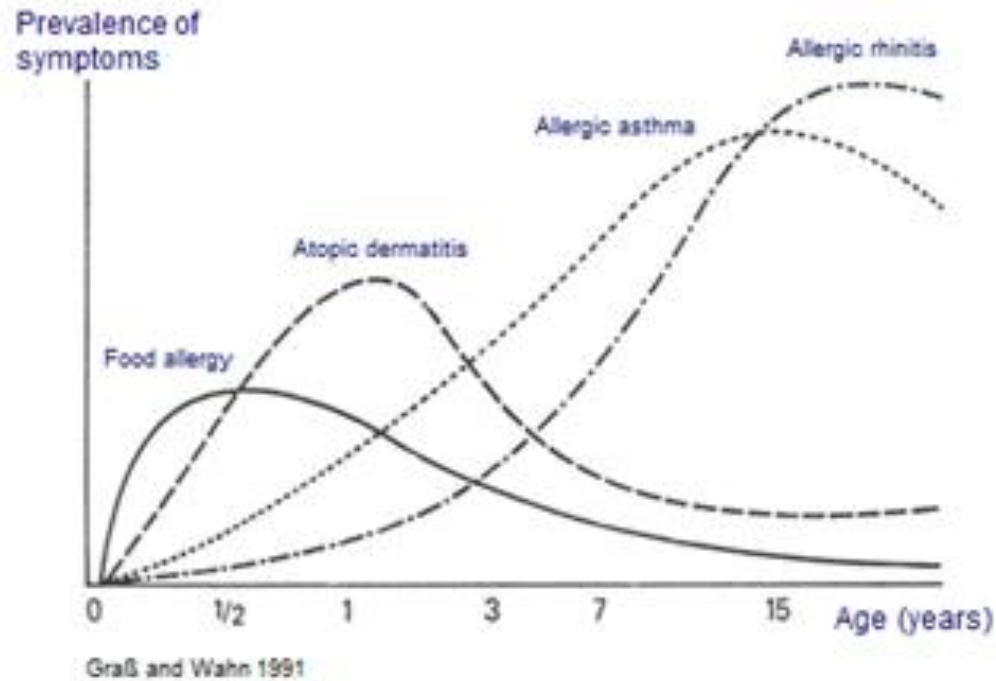


Risk Factors Associated the Development of Asthma

- Predisposing Factors
 - Atopy
 - Genetics
 - Gender
- Causal Factors
 - Indoor Allergens
 - Occupational Sensitizers
 - Outdoor Allergens
- Contributing Factors
 - Air Pollution
 - Diet
 - Low Birth Weight
 - Respiratory Infections
 - Smoking

Allergic (Atopic) March

Course of Atopic Diseases in Childhood





Assessment of risk factors for poor asthma outcomes



Risk factors for exacerbations include:

- Ever intubated for asthma
- Uncontrolled asthma symptoms
- Having ≥ 1 exacerbation in last 12 months
- Low FEV₁ (measure lung function at start of treatment, at 3-6 months to assess personal best, and periodically thereafter)
- Incorrect inhaler technique and/or poor adherence
- Smoking
- Obesity, pregnancy, blood eosinophilia

Assessment of risk factors for poor asthma outcomes



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Risk factors for fixed airflow limitation include:

- No ICS treatment, smoking, occupational exposure, mucus hypersecretion, blood eosinophilia

Assessment of risk factors for poor asthma outcomes



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Risk factors for fixed airflow limitation include:

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Risk factors for medication side-effects include:

- Frequent oral steroids, high dose/potent ICS, P450 inhibitors



CLINICAL MANIFESTATIONS

- ✓ Coughing
- ✓ Wheezing
- ✓ Shortness of breath or rapid breathing
- ✓ Chest tightness



Exacerbating factors

- viral infections
- exposure to allergens and irritants
(e.g., smoke, strong odors, fumes)
- exercise
- emotions
- change in weather/humidity



Aggravated by:

- Rhinosinusitis
- Gastroesophageal reflux
- Nonsteroidal anti-inflammatory drugs
(especially aspirin)

Treatment of these conditions may lessen the frequency and severity of the asthma

CLINICAL MANIFESTATIONS:

During acute episodes

- Tachypnea, tachycardia, cough, wheezing, and a prolonged expiratory phase
- Physical findings may be subtle
- Classic wheezing may not be prominent
- As the attack progresses, cyanosis, diminished air movement, retractions, agitation, inability to speak, tripod sitting position, diaphoresis, and pulsus paradoxus



LABORATORY

Spirometry

- help establish the diagnosis
- monitor response to treatment
- assess degree of reversibility with therapeutic intervention
- measure the severity of an asthma exacerbation



Spirometry

- Children older than 5 years of age can perform spirometry maneuvers
- For younger children who cannot perform spirometry maneuvers or peak flow:
a therapeutic trial of controller medications



Allergy skin testing

- For all children with persistent asthma
but not during an exacerbation of wheezing
- Positive skin tests results:
- identifying immediate hypersensitivity to
aeroallergens (tree and grass pollens, dust)
- correlate strongly with bronchial allergen
provocative challenges



In vitro serum tests

- I. Radioallergosorbent test (RAST):
- II. Fluorescent enzyme immunoassay (FEIA)
- III. Enzyme linked immunosorbent assay

- less sensitive ,more expensive, and require several days for results compared to several minutes for skin testing

Chest Radiograph

should be performed

- 1) with the **first episode** of asthma
- 2) with **recurrent episodes** of undiagnosed cough or wheeze

➤ Repeat chest radiographs ?

not needed with new episodes

unless there is fever (suggesting pneumonia) or localized findings on physical examination



Optimal medical treatment of asthma

➤ includes several key components:

- I. Environmental control
- II. Pharmacologic therapy
- III. Patient education



Minimize allergen exposure

- Minimize exposures to tobacco , wood smoke and to persons with viral infections
- Influenza Immunizations are indicated



Minimize allergen exposure

➤ Tobacco smoke, wood smoke:

- No smoking around the child or in child's home
- Help parents and caregivers quit smoking
- Eliminate use of wood stoves and fireplaces



FARS

photo : Ghader agheli

 FARS NEWS AGENCY

abidi | Leading Innovation
SINCE 1946 | Leading Quality



Minimize allergen exposure

➤ Dust mites :

- Encase pillow, mattress, and box spring in allergen-impermeable encasement
- Wash bedding in hot water weekly
- Avoid sleeping or lying on upholstered furniture
- Minimize number of stuffed toys in child's bedroom
- Reduce indoor humidity to <50%
- If possible, remove carpets from bedroom and play areas; if not possible, vacuum frequently



Minimize allergen exposure

➤ Animal dander:

- Remove the pet from the home or keep outdoors
- Keep pet out of bedroom

Minimize allergen exposure

- Cockroach allergens:
 - Do not leave food or garbage exposed
 - Use boric acid traps
 - Reduce indoor humidity to <50%
 - Fix leaky faucets, pipes



Minimize allergen exposure

➤ Indoor mold:

- Avoid vaporizers
- Reduce indoor humidity to <50%
- Fix leaky faucets, pipes

Authentic Action plan

نوع و نام خدمات	تاریخ و مکان	تاریخ و مکان
خدمات اجتماعی و فرهنگی	تاریخ و مکان	تاریخ و مکان

این برنامه شامل سه مرحله است که با توجه به علاقه و دانش‌های آموخته در هر مرحله آشنایی اولیه، درختان مناسب و انتخاب و کاشت، به‌همراه است و همچنین این برنامه ۱۵۵۰ نفر از دانشجویان و فارغ‌التحصیلان در این کارگاه حضور داشت.

[illegible]

نام خانوادگی	نام و نام خانوادگی	نام و نام خانوادگی

نام و نام خانوادگی دانشجو:
نام و نام خانوادگی استاد:

مرحله دوم: ارزیابی کمی و کیفی داده‌ها از طریق پرسشنامه‌های استاندارد انجام شد.

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Case study: a patient with a urinary tract infection

این کتاب به مناسبت هفته کتاب و کتابخوانی و با هدف ترویج فرهنگ مطالعه و ارتقای سواد عمومی در میان دانش آموزان و جوانان کشور، به صورت رایگان در اختیار شما قرار می‌گیرد. امید است با مطالعه این کتاب، آشنایی شما با تاریخ و تمدن ایران باستان، به ویژه شهرهای باستانی آن، افزایش یابد و به شما در شناخت بهتر ریشه‌های تمدن و فرهنگ ایران باستان کمک کند.



رسول خدا (ص) فرمودند: حجامت درمان تمام بیماریهاست

طب سنتی حجامت

توسط پزشک با وسائل استریل و بکبار مصرف

پاره ای از خواص حجامت:

- ۱- تنظیم سیستم ایمنی و هورمونال بدن
- ۲- درمان درد های مزمن (آرتروز، میگرن، انواع کمر دردها و ...)
- ۳- کاهش غلظت خین (خواب رفتگی دست و پا و ...)
- ۴- درمان بیماریهای فشار خون، چربی خون، مرض قند
- ۵- درمان انواع آلرژی ها (کهیر ها، حساسیتهای فصلی، آسم، پولیپ بینی و ...)
- ۶- درمان بیماریهای روحی (افسردگیها، اضطرابها)
- ۷- درمان بیماریهای پوستی (آکنه های پوستی، اگزماها، پسوریازیس و ...)
- ۸- و درمان بیش از یکصد بیماری دیگر

در این مرکز پیش از حجامت توسط پزشک متخصص طب سنتی
ویزیت شده و پس از حجامت نسخه های گیاهی مکمل درمان برای
تجویز خواهد شد.

(عضو هیئت علمی مرکز تحقیقات حجامت ایران)



۲۲۴۵۲۸۰۷

با تعیین وقت قبلی

۱. مهم : تنگی نفس : تنگی عمومی : تنگی اعصاب کم خونی

هنگام مراجعه بعدی ، گرفتن نوبت الزامی است. تا پایان دوره درمان ، داروها را حتماً مصرف کنید.

«حوالشناس»

برای آمپم و تنگی نفس دستور ۲۱ نوبت ۳ بار مصرف کنید.

استنشاق هندی ۴ نوبت صبح و عصر ۲۱ نوبت ۳ بار

۲ کیسول آلبرموانی ۴ عدد ۱ عدد موقع خواب

کیسول مغز اعصاب ۴ عدد ۱ عدد بعد صبحانه

روغن باراسمیرین ۱ شیشه ۱ شیشه موقع خواب ۵ قطره

مراجعه سر بنویسید ۳ بار ۳ بار ۳ بار

۳. انتهای اینوها و بالای پیشانی زالو بیدارید ۳ بار با فاصله های ۵ روز

«عمارة أفلاطون»

از سرنه‌های بسیار شدید. رفع خلط سینه، برونشیت

حاشیہ: اسم و نفس تنگی. ملین سیف نقی

بازرس

بینه مصرف: یک قاشق مرباخوری از پودر را با

نصف لیوان آب جوش ریخته ۲۰ دقیقه بماند

بماند سپس بعد از غذا و موقع خواب میل کنید



ر.ب. دس گروہ فرنی

غذائیکہ نباید مصرف شود :

شیر ، سرشیر ، خامه ، کشک ، تخم مرغ ، گوجه فرنگی

ماهی ، گوشت های کنسرو ، (سوسیس ، کالباس) دل و جگر

کله پاچه و مخلفات ، سرکه ، ادویه جات ، پیاز ، سیر ، آجیل

شکلات ، قهوه ، کاکائو ، نوشابه .
بشی - انجیر - انڈر - خربزہ

نوت فرنی



Covid 19 and Asthma



Question

- How do the symptoms of COVID-19 differ from the symptoms of (spring) asthma/allergies?

COVID-19: clinical presentation

Watch for symptoms

People with COVID-19 have a wide range of symptoms ranging from mild symptoms to severe illness.

These symptoms may appear **2-14 days** after exposure to the virus:

- Fever
- Cough
- Shortness of breath or difficulty breathing;
- Chills
- Repeated shaking with chills;
- Muscle pain
- Headache
- Sore throat
- New loss of taste or smell.

COVID-19: emergency warning signs

When to Seek Medical Attention?

If you have any of these **emergency warning signs*** for COVID-19 get **medical attention immediately**:

- Trouble breathing
- Persistent pain or pressure in the chest
- New confusion or inability to arouse
- Bluish lips or face

*This list is not all inclusive. Please consult your medical provider for any other symptoms that are severe or concerning to you.

How do the symptoms of COVID-19 differ from the symptoms of (spring) asthma/allergies?

COVID-19 GENERAL FAQs

SYMPTOMS	CORONAVIRUS Symptoms range from mild to severe	COLD Gradual onset of symptoms	FLU Rapid onset of symptoms	HAYFEVER	ASTHMA
Fever(37.8C)	Common	Rare	Common	No	No
Cough	Common (usually dry & continuous)	Mild	Common (usually dry)	Sometimes (usually dry)	Sometimes (wheeze & cough)
Shortness of breath	Sometimes	No	No	No	Sometimes
Headache	Sometimes	Rare	Common	Sometimes	No
Sore throat	Sometimes	Common	Sometimes	'Itchy' throat	No
Runny / stuffy nose	Rare	Common	Sometimes	Common	No
Sneezing	No	Common	No	Common	Rare
Aches & pains	Sometimes	Common	Common	Sometimes	No
Fatigue	Sometimes	Sometimes	Common	Sometimes	No
Diarrhoea	Rare	No	Sometimes (for children)	No	No

GINA guidance about COVID-19 and asthma

Updated 26 April 2021



GINA Global Strategy for Asthma
Management and Prevention

www.ginasthma.org

© Global Initiative for Asthma

COVID-19 and asthma

- Are people with asthma at increased risk of COVID-19, or severe COVID-19?
 - People with asthma do not appear to be at increased risk of acquiring COVID-19, and systematic reviews have not shown an increased risk of severe COVID-19 in people with well-controlled, mild-to-moderate asthma

COVID-19 and asthma

- Are people with asthma at increased risk of COVID-19-related death?
 - Overall, people with well-controlled asthma are not at increased risk of COVID-19-related death
(Williamson, Nature 2020; Liu et al JACI JP 2021)
 - However, the risk of COVID-19 death was increased in people who had recently needed oral corticosteroids (OCS) for their asthma *(Williamson, Nature 2020)* and in hospitalized patients with severe asthma
(Bloom, Lancet Respir Med 2021).

COVID-19 and asthma

- What are the implications for asthma management?
 - It is important to continue good asthma management (as described in the GINA report), with strategies to maintain good symptom control, reduce the risk of severe exacerbations and minimise the need for OCS

COVID-19 and asthma

- Have there been more asthma exacerbations during the pandemic?
 - No. In 2020, many countries saw a *reduction* in asthma exacerbations and influenza-related illness. The reasons are not precisely known, but may be due to handwashing, masks and social/physical distancing that reduced the incidence of other respiratory infections, including influenza

COVID-19 and asthma - medications

- Advise patients to continue taking their prescribed asthma medications, particularly inhaled corticosteroids (ICS)
- For patients with severe asthma, continue biologic therapy or oral corticosteroids if prescribed

COVID-19 and asthma - medications

- Are ICS protective in COVID-19?
 - In one study of hospitalized patients aged ≥ 50 years with COVID-19, ICS use in those with asthma was associated with lower mortality than in patients without an underlying respiratory condition

(Bloom, Lancet RM 2021)

COVID-19 and asthma - medications

- Make sure that all patients have a written asthma action plan, advising them to:
 - Increase controller and reliever medication when asthma worsens (see GINA report Box 4-2)
 - Take a short course of OCS when appropriate for severe asthma exacerbations

COVID-19 and asthma - medications

- Avoid nebulizers where possible, to reduce the risk of spreading virus
 - Pressurized metered dose inhaler via a spacer is preferred except for life-threatening exacerbations
 - Add a mouthpiece or mask to the spacer if required

COVID-19 and asthma – infection control

- Avoid spirometry in patients with confirmed or suspected COVID-19, or if community transmission of COVID-19 is occurring in your region
 - Follow aerosol, droplet and contact precautions if spirometry is needed
 - Consider asking patients to monitor PEF at home, if information about lung function is needed

COVID-19 and asthma – infection control

- Follow strict infection control procedures if aerosol-generating procedures are needed
 - Nebulization, oxygen therapy (including nasal prongs), sputum induction, manual ventilation, non-invasive ventilation and intubation

COVID-19 and asthma – infection control

- Follow local health advice about hygiene strategies and use of personal protective equipment, as new information becomes available in your country or region

COVID-19 vaccines and asthma

- Have COVID-19 vaccines been studied in people with asthma?
 - Yes. Many types of COVID-19 vaccines have been studied and are being used worldwide
 - New evidence, including in people with asthma, will emerge over time

COVID-19 vaccines and asthma

- Are COVID-19 vaccines safe in people with allergies?
 - In general, allergic reactions to vaccines are rare
 - The Pfizer/BioNTech and Moderna COVID-19 vaccines should be administered in a healthcare setting where anaphylaxis can be treated if it occurs
 - These vaccines should not be administered to patients with a history of severe allergic reaction to polyethylene glycol, or any other vaccine ingredient. More details from ACIP are [here](#)
 - As always, patients should speak to their healthcare provider if they have concerns

COVID-19 vaccines and asthma

- Usual vaccine precautions apply, for example:
 - Ask if the patient has a history of allergy to any components of the vaccine
 - If the patient has a fever or another infection, delay vaccination until they are well

COVID-19 vaccines and asthma

- At present, based on the risks and benefits, and with the above caution, GINA recommends COVID-19 vaccination for people with asthma

COVID-19 vaccines and asthma

- COVID-19 vaccination and biologic therapy
 - We suggest that biologic therapy and COVID-19 vaccine should not be given on the same day, so that adverse effects of either can be more easily distinguished

COVID-19 vaccines and asthma

- After COVID-19 vaccination
 - Current advice from the United States Centers for Disease Control and Prevention (CDC) is that people who have been fully vaccinated against COVID-19 should continue to wear a mask in crowded settings. Further details are [here](#)

COVID-19 vaccines and asthma

- Influenza vaccination
 - Remind people with asthma to have an annual influenza vaccination
 - A gap of 14 days between COVID-19 vaccination and influenza vaccination is recommended by [CDC](https://www.cdc.gov)



Thank you