
بسم الله الرحمن الرحيم

- At-risk children with asthma (ARC):

a systematic review

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ارائه دهنده :

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1. Introduction

What is the key question?

What are the factors that could enable clinicians and healthcare services to ‘spot the child’ (5–12 years) with asthma who is at increased risk of a severe asthma attack(requiring systemic steroids or hospital care)?

What is the bottom line?

The ‘at-risk’ picture that emerges is of a child with persistent symptoms who has had previous attacks and is on a suboptimal treatment regimen, especially if they have poor access to healthcare services or other risk factors including comorbid atopic/allergic diseases, vitamin D deficiency, living in poverty and being of African-American ethnicity

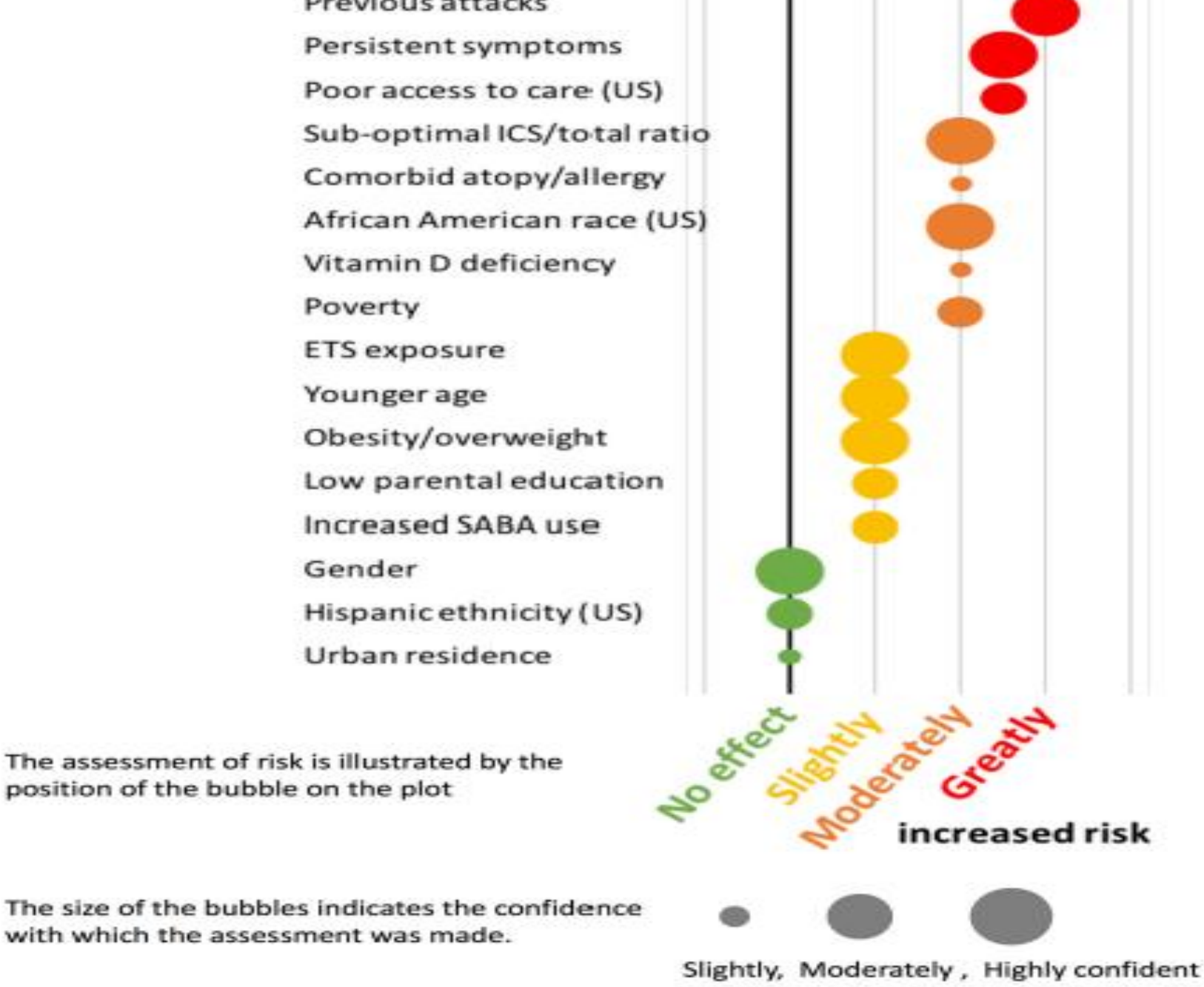
Why read on?

This systematic review identifies risk factors and, based on the consensus view of an Expert Panel, weights the factors to enable parents , clinicians and healthcare services to target evidence-based management on children with asthma at most risk of having a severe attack

Table 2 Thresholds for weighting risk factors

	Description	Thresholds and criteria for decision
Risk weighting (OR)	Greatly increased risk	Majority of ORs >2.5
	Moderately increased risk	Majority of ORs 1.5–2.5
	Slightly increased risk	Majority of ORs 1.1–1.5
	No effect	Majority of ORs <1.1
Confidence	Highly confident	Number, design and quality of studies, consistency of results, biological plausibility of factors
	Moderately confident	
	Slightly confident	
Inconclusive	Unable to decide on risk	Inconsistent or insufficient evidence

Buelo A, *et al*. *Thorax* 2018;**73**:813–824. doi:10.1136/thoraxjnl-2017-210939



ICS = inhaled corticosteroid; SABA = short-acting beta$_2$ agonist; ETS = environmental tobacco smoke

- **Asthma:**
  - one of the most common pulmonary diseases among individuals of any age
  - prevalence of 8% in adults and 15% in children in the United States population
  - Recent researches : the presence of a comorbid condition with asthma can have an

- **effect on:**
    - the patient's quality of life,
    - treatment options,
    - frequency of asthma-related exacerbations,
    - mortality rates

- **This literature Review:**
  - analyzed patients of any age, sex, and ethnicity on their severity of asthma-related symptoms.
  - **The Chosen Comorbid debases are:**
    1. chronic obstructive pulmonary disease (COPD),
    2. obesity
    3. obstructive sleep apnea (OSA),
    4. mental illness (depression and anxiety),
    5. diabetes mellitus,
    6. hypertension,myocardial ischemia,
    7. rhinitis, and sinusitis

4.1 COPD-Asthma

- **COPD = Chronic obstructive pulmonary disorder**
- separately, asthma and COPD are the two most common obstructive airway diseases among adults
- **ACO (asthma-COPD overlap syndrome):**
  - When COPD comorbid with Asthma
  - There is little research and not well defined
  - even such that it may not even be appropriate to define the overlap as a syndrome
  - is not common practice for all physicians

4.2 Mental illness- Asthma

- **relationship between asthma and anxiety/depression, especially in younger populations:**
  - prevalence of anxiety or major depressive disorder (MDD) would increase the: likelihood of asthmatic exacerbations and hospital visits
  - Mental illness is also
  - a common comorbidity with many diseases and unfortunately is quite commonly gone unrecognized and inadequately treated.
  - analyzed this relationship of depression and ER visit frequency
  - showed that those with depression (n = 187, 32.9% of study population) were at a greater risk of visiting the ER due to asthma-related complications

- **Anxiety:**
- commonly analyzed with asthma comorbidity, especially in pediatric patients
- overlap between these two diseases:
- increase hyperventilation in patients =>
- creating a difficult clinical setting in determining:
- if one disease is the underlying cause or if the comorbidity is the reason for the increase in symptoms

4.3 Obesity & Asthma-Obstructive Sleep Apnea-Asthma

- obesity and obstructive sleep apnea (OSA) are major comorbid diseases with asthma

- **4.3.1 Obesity:**
- Obesity has become an increasingly substantial health related problem for individuals
- obesity (based on the BMI index) can be:
  - worsening asthmatic outcomes
  - including exacerbation frequency and overall mortality

- **4.3.2: obstructive sleep apnea (OSA):**
- OSA has been linked with poor asthma control and an increased burden of disease with both obese and nonobese patients

- **Becerra et al:**
- conducted a U.S.-based nationwide inpatient study to observe the hospitalization
- effects of asthmatic patients with OSA, obesity, or a combination of both on
- mean hospitalization length of stay (LOS) for both male and female asthmatic patients of any age :

4.4 Diabetes-Asthma

- Type 1 diabetes mellitus (T1DM) is a common chronic disorder with early childhood onset and a continuously growing prevalence with health-related issues
- However, little research in the association between T1DM and asthma and the possible worsening affects these chronic diseases may have on one another

- significantly greater incidence of asthma in patients with T1DM when compared to the
- general population (6.49 vs. 4.42 per 1,000 person-years)
- this result is contradicting to preciouses studies that: T1DM had
- a negative association between asthmatic symptoms

4.5 Hypertension & Myocardial Ischemia-Asthma

- **Hypertension-Myocardial Ischemia:**
  - analyzed a large population of adults for possible correlations of asthma and onsets of other varying types of heart disease
  - Results, Compared to their non-asthmatic control group:
    - 1.40-fold increase in coronary heart disease (CHD)
    - 1.20-fold increase in cerebrovascular disease (CVD)
    - 2.14-fold increase in heart failure,
    - 3.28-fold increase in all-cause mortality in patients with an asthma comorbidity
    - Women have greater hazard ratios in all categories compared to men
  - These findings shed considerable light on the importance of understanding the consequences of having asthma with a comorbid cardiac disease

4.6. Rhinitis & Sinusitis-Asthma

- Both allergic rhinitis and sinusitis have been shown to commonly occur as a comorbidity with Asthma
- however, the understanding of this association has not been fully determined
- no studies found that directly analyzed asthmatic-only patients with those that have an asthma-rhinitis or asthma-sinusitis comorbidity
- Other studies, however, that describe:
  - the beneficial impacts that the treatment of one of the two diseases could have on the symptoms of both diseases

- **Peters et al:**
- those with chronic asthma who were treated nasally for allergic rhinitis (AR)
    - with either inhaled steroids, oral steroids, theophylline, and/or cromolyn
- had a significantly lower risk of subsequent pulmonary symptoms, asthma hospitalizations, and ER visits
- Although the physiology of the association between AR and asthma is still yet to
- be fully understood,
- this research allows for
    - further understanding of the economic and patient benefit in treatment of AR, yielding a reduction in health-care utilization for comorbid asthma symptoms.

5. Conclusion

- Comorbidities are common for many chronic diseases
- understanding of the increased complexity that arises with these multiple illnesses is crucially important for:
  - improved outcomes of patient quality of life
- This article analyzed the effects of asthma comorbidity with COPD, obesity, obstructive sleep apnea, mental illness (anxiety and depression), diabetes mellitus, hypertension, myocardial ischemia, rhinitis, and sinusitis
- From the 687 articles identified initially, only 32 remained after title and abstract exclusion, and of those, 9 remained relevant for this article after full text review

- Common trends were observed for COPD, obesity, OSA, diabetes mellitus, or anxiety/depression, included the increase of:
  - Patient's ER visits
  - hospital length of stay
  - overall mortality rates
- a large discrepancy between the amount of available research conducted for the varying comorbidities:
  - a much higher number of relevant articles pertaining to asthma-COPD than any other comorbid disease

Thank you for your kind attention