



The following information resources have been selected by the National Health Library and Knowledge Service Evidence Virtual Team in response to your question. The resources are listed in our estimated order of relevance to practicing healthcare professionals confronted with this scenario in an Irish context. In respect of the evolving global situation and rapidly changing evidence base, it is advised to use hyperlinked sources in this document to ensure that the information you are disseminating to the public or applying in clinical practice is the most current, valid and accurate. For further information on the methodology used in the compilation of this document—including a complete list of sources consulted—please see our [National Health Library and Knowledge Service Summary of Evidence Protocol](#).

YOUR QUESTION

Is there any increased risk identified for paediatric asthma patients to get COVID-19?

Is there any increased risk of negative outcomes for paediatric asthma patients that get COVID-19?

IN A NUTSHELL

There is no clear evidence that people with asthma are at higher risk of SARS-CoV-2 infection^{3,4,8,9,10}. Most studies to date suggest that asthma patients have no greater risk of acquiring COVID-19 than the general population⁸. The literature is ambiguous on whether pre-existing asthma increases the risk of COVID-19 in children specifically^{5,10}.

People with moderate to severe asthma may be at higher risk of getting very sick from COVID-19^{1,2}. Poorly controlled asthma may lead to a more complicated disease course for those with COVID-19^{4,5,9}. It has been suggested that adults with a history of asthma were more likely to be hospitalised with COVID-19⁵. People taking biologic therapies for severe asthma are considered at very high risk of getting very sick because of the nature or instability of their condition⁹. The literature is unclear as to whether pre-existing asthma increases the risk of morbidity and mortality owing to COVID-19 in children⁶. There is a theoretical possibility that a child or youth with asthma infected with COVID-19 could experience an asthma exacerbation and serious morbidity due to combined effects on the respiratory tract^{8,10}.

Children, in general, seem to be at a lesser risk of COVID-19 morbidity and mortality than the adult population in general, although severe infection can occur^{5,6}.

Current medication for asthma in both children and adults should be continued as usual, and personalised asthma action plans should be

followed^{1, 2, 4, 5, 8, 9, 10}. However, it is unknown whether asthma medications such as high-dose inhaled corticosteroids or asthma biological therapies pose a risk in managing COVID-19 infections in paediatric populations⁶. Inhaled asthma medications should be given by inhaler rather than nebulizer when possible to avoid aerosolizing the virus and enhancing disease spread^{4, 10}.

IRISH AND INTERNATIONAL GUIDANCE

What does the European Centre for Disease Prevention and Control say?

[Q and A on COVID-19¹](#)

'Do persons suffering from pollen allergy or allergies in general have a higher risk to develop severe disease when having COVID-19?'

Allergies, including mild allergic asthma, have not been identified as a major risk factor for SARS-CoV-2 infection or for a more unfavourable outcome in the studies available so far. Moderate to severe asthma, on the other hand — where patients need treatment daily — is included in the chronic lung conditions that predispose to severe disease.

Children and adults on maintenance medication for allergies such as leukotriene inhibitors, inhaled corticosteroids and/or bronchodilators need to continue their treatment as prescribed by their doctor and should not discontinue their medication due to fears of COVID-19. If they develop symptoms compatible with COVID-19, they will need to self-isolate, inform their doctor and monitor their health as everyone else. If progressive difficulty breathing develops, they should seek prompt medical assistance.

What do the Centers for Disease Control and Prevention (United States) say?

[People with Moderate to Severe Asthma²](#)

Risk of Severe Illness from COVID-19

[No paediatric information specified.]

People with moderate to severe asthma may be at higher risk of getting very sick from COVID-19. COVID-19 can affect your respiratory tract [nose, throat, lungs], cause an asthma attack, and possibly lead to pneumonia and acute



respiratory disease. Current medication should be continued and personalised asthma action plans should be followed.

POINT-OF-CARE TOOLS

What does BMJ Best Practice say?

[COVID-19³](#)

There is no clear evidence that people with asthma or chronic obstructive pulmonary disease are at higher risk of infection or worse outcomes. However, patients with respiratory diseases such as cystic fibrosis, severe asthma, chronic obstructive pulmonary disease, interstitial lung disease or pulmonary sarcoidosis may have an increased risk for severe disease, poor prognosis, and worse outcomes. Chronic obstructive pulmonary disease is associated with a 5-fold increased risk of severe COVID-19 infection. Asthma has been associated with a longer intubation time in those who require mechanical ventilation, especially in patients younger than 65 years.

What does UpToDate say?

[An overview of asthma management⁴](#)

Advice Related to COVID-19 Pandemic

Asthma does not appear to be a strong risk factor for acquiring COVID-19, although poorly controlled asthma may lead to a more complicated disease course for those with COVID-19. We concur with expert groups that every effort should be made to avoid exposure to the SARS-CoV-2 virus and all regular medications necessary to maintain asthma control, including inhaled glucocorticoids, oral glucocorticoids and biologic agents [eg [omalizumab](#), [mepolizumab](#)] should be continued during the COVID-19 pandemic. Maintaining good asthma control helps minimize risk of an asthma exacerbation and the associated need for interaction with the healthcare system, which could lead to exposure to COVID-19. There is no good evidence that inhaled glucocorticoids or the biologic agents used for asthma have an adverse effect on the course of COVID-19 infection. For those taking long-term oral glucocorticoids, abruptly stopping this medication can have a number of serious consequences. Furthermore, the usual guidelines for prompt initiation of systemic glucocorticoids for asthma exacerbations should be followed, as delaying therapy can increase the risk of a life-threatening exacerbation. For patients with COVID-19 infection,



inhaled asthma medications should be given by inhaler rather than nebulizer when possible to avoid aerosolizing the virus and enhancing disease spread.

INTERNATIONAL LITERATURE

What does the international literature say?

[Brough et al \(2020\) Managing childhood allergies and immunodeficiencies during respiratory virus epidemics: The 2020 COVID-19 pandemic: A statement from the EAACI- section on pediatrics⁵](#)

While all humans are at risk of being infected regardless of age, gender, or health, vulnerable populations at higher risk of developing a severe form of COVID-19 disease have been identified. Among them, older age is a major risk factor. Since the beginning of the pandemic, it has become rapidly apparent that children less often present symptoms and that these are less often severe. The only systematic review bringing together data on children has been published recently and concluded that children account for 1%- 6% of the diagnosed COVID-19 cases often have milder disease than adults, and mortality rates are extremely low.

Patients with asthma — particularly severe or uncontrolled asthma — and immunodeficiency have also been classified to be at increased risk of developing more severe COVID-19 based more on common sense rather than mounting evidence. However, recently, the CDC in the United States released a Morbidity and Mortality Weekly Report which suggested that adults with a history of asthma were more likely to be hospitalized with COVID-19; those hospitalized with COVID-19 had a higher rate of a history of asthma (17.0%) than the general population (7.7%).

Uncontrolled asthma is classified as a risk factor; thus, asthma control with appropriate medications should be a major goal in such patients. Although asthma is most often multi-factorial, allergies may play a significant role in the pathogenesis of their disease. In particular, during months when seasonal allergies become common, asthma control according to current guidelines should be undertaken.

There has been no scientific evidence that allergy treatments either increase susceptibility to SARS-CoV-2 or the severity of COVID-19 disease. Paediatric allergists should treat patients with allergic asthma, allergic rhinitis, or other allergy conditions according to usual guidelines.



[Abrams and Szeftler \(2020\) Managing Asthma During Coronavirus Disease-2019: An Example for Other Chronic Conditions in Children and Adolescents⁶](#)

There is a theoretical risk that infection with COVID-19 in a child with asthma may increase the risk of pneumonia or acute respiratory disease. As a result, the CDC lists moderate to severe asthma as a risk factor for COVID-19 morbidity and mortality. However, to date the literature is ambiguous on whether pre-existing asthma increases the risk of either COVID-19 infection or morbidity/mortality owing to COVID-19 in children.

Although there is a paucity of literature on paediatric risk factors, the case series to date from Wuhan on hospitalized paediatric cases do not list asthma as a pre-existing risk factor for morbidity or mortality. It is further reassuring that children seem to be at a lesser risk of COVID-19 morbidity and mortality than the adult population in general, although severe infection still can occur. The CDC morbidity and mortality report notes that among the 149,082 reported US cases of COVID-19 for which age is known, only 2,572 (1.7%) occurred in children 18 years of age and younger. Although among the patients with information on underlying conditions, 23% had at least 1 underlying condition such as asthma, only 5.7% of children infected with COVID-19 required hospitalization [compared with 10% of adults aged 18-64 years] and only 3 deaths were reported in children: <1% of paediatric cases. In a case series from China of 72,000 cases, approximately 1% were children aged 0-18 years of age with only 1 death reported in the adolescent population, and none in children under 10 years of age.

In summary, based on available information to date, it is unclear whether there is a significantly increased risk of COVID-19 morbidity among children with asthma. It is also unknown whether asthma medications such as high-dose inhaled corticosteroids or asthma biological therapies pose a risk in managing COVID-19 infections. Before any definitive conclusions can be drawn, larger scale data are required from paediatric populations, and from heterogeneous locations that have been impacted by COVID-19. It also remains unclear if COVID-19 increases the risk of asthma exacerbations. As a result, good asthma control is essential as a precautionary measure during this time.

In addition to the current burden of COVID-19, the spring season is often a time for asthma exacerbations owing to emergence of seasonal aeroallergens, and other respiratory viruses. The best way to prevent an exacerbation is consistent proper use of medicines to control asthma such



as inhaled corticosteroids and/or montelukast. As a result, children should remain on their current asthma medications during the COVID-19 outbreak. This recommendation is supported by multiple international organizations, including the CDC, the Global Initiative for Asthma, and the North American consensus guideline on allergy care during the COVID outbreak.

[Matsumoto and Saito \(2020\) Does asthma affect morbidity or severity of COVID-19?](#)

Eight studies including a total of more than 17 thousand patients in 57 multiple geographic regions found that the comorbidity rates of COVID-19 with asthma were significantly lower than the reported prevalence of asthma in the respective regions. In addition, two independent studies similarly demonstrated that COVID-19 patients comorbid with chronic obstructive pulmonary disease or diabetes tended to be more severe, whereas those comorbid with asthma did not.

[Liciskai et al \(2020\) Key highlights from the Canadian Thoracic Society's Position Statement on the Optimization of Asthma Management during the COVID-19 Pandemic](#)

'Are asthma patients more at risk of acquiring SARS-CoV-2 infection?'

No. Most studies to date suggest that asthma patients have no greater risk of acquiring COVID-19 than the general population. In the largest studies published to date with 44,672 patients in China and 5,700 patients in the United States of America respectively, the prevalence of asthma in the COVID-19 population was below or approximated the expected general population prevalence; asthma patients were not over-represented.

'Are patients with asthma at risk of having an exacerbation triggered by SARS-CoV-2 (COVID 19)?'

Probably yes, but there is no direct evidence. Viral respiratory tract infections are a common cause of asthma exacerbations. Exacerbations requiring emergency department visits and hospitalizations increase annually at times when viral infections increase, typically week 38 on the calendar. Non-pandemic coronaviruses have been associated with asthma exacerbations.

'Is asthma a chronic medical condition that is associated with a higher risk of severe illness or death from COVID 19?'

Possibly yes, but there is no direct evidence to answer this question. The Centers for Disease Control identify people with asthma as a group that may be at higher risk for severe illness from COVID-19. While comorbid illness is common in people who are admitted to hospital and in people who die from



COVID-19, asthma has not been identified as an independent risk factor for severe illness or death. Regarding severe illness leading to hospitalization, two studies from China, one from Korea, and one from the United States of America did not find that hospitalized patients with asthma were overrepresented in the COVID-19 populations studied.

'Should asthma patients change treatment during the COVID-19 pandemic?'

No. Asthma patients should restart or continue their prescribed inhaled corticosteroid or inhaled corticosteroid steroid plus long-acting beta2-agonist maintenance therapy to improve disease control and to reduce the severity of exacerbations, including exacerbations that may be caused by SARS-CoV-2.

'Is it safe to use inhaled steroids?'

Yes. There is no evidence that inhaled corticosteroids increase the risk of acquiring COVID-19 or that inhaled corticosteroids increase the severity of infection.

OTHER

[Centre for Evidence-Based Medicine \(2020\) Asthma and COVID-19: risks and management considerations⁹](#)

It is unclear if people with asthma are at increased risk of contracting COVID-19 or of worse outcomes from COVID-19 infection. The evidence available is limited with some sources suggesting an underrepresentation of People With Asthma (PWA) in hospitalised cases, and others showing an increased risk of worse outcomes in PWA which may be associated with disease severity. Consensus broadly holds that asthma medications should be continued as usual. Asthma care may be disrupted during the pandemic; self-management and remote interventions may be of benefit but have not been tested in this context.

'Are people with asthma (PWA) at increased risk of contracting COVID-19?'

As community testing for COVID-19 is still limited, it is impossible to say with any certainty if any groups are more or less likely to contract the disease.

Most data on disease prevalence and outcomes come from people hospitalised with COVID-19. At the outset of the pandemic, it was anticipated that people with respiratory diseases, including asthma, would be at higher risk, but emerging data are inconsistent.

The [Canadian Thoracic Society](#) have issued a position statement that there does not appear to be an increased risk for PWA to acquire COVID-19 infection. The [British Thoracic Society](#) states that it remains unclear whether asthma is a risk factor for COVID-19 and COVID-19 related complications. As COVID-19 disproportionately affects older people, the [risk of COVID-19 in children with asthma](#) is also unclear.

'Are PWA at increased risk of worse outcomes from COVID-19?'

It is unclear whether PWA in general are at increased risk, given the above data showing some instances of under-representation of PWA in those hospitalised with COVID-19. [Others have noted](#) it may be difficult to differentiate between COVID-19 symptoms and asthma exacerbations, and that beyond the direct risk of infection itself, there is also a risk of experiencing [asthma exacerbations triggered by the virus](#).

Numerous bodies have identified people with moderate to severe asthma as being at increased risk: the [Centers for Disease Control](#) (CDC) state people with moderate to severe asthma are at increased risk of getting very sick from COVID-19; [Asthma UK](#) notes a PWA would be considered at very high risk if they were taking extra controller medicines as well as a preventer inhaler and continuous or frequent oral steroids; and the [British Thoracic Society](#) notes people taken biologic therapies for severe asthma are considered at very high risk.

Medication Considerations

All sources reviewed including [NICE](#) in the UK and the [CDC](#) in the US agreed that, on the whole, medications for asthma should continue to be taken as normal. This includes [biologics](#). Prednisone is recommended for [treating severe asthma exacerbations](#).

[Canadian Paediatric Society \(2020\) Paediatric asthma and COVID-19¹⁰](#)

COVID-19 is a predominantly respiratory infection, and there are concerns regarding the effects of this virus on children and youth with asthma. No evidence to date suggests that young people with asthma are at increased risk for COVID-19 infection. However, there is a theoretical possibility that a child or youth with asthma infected with COVID-19 could experience an asthma exacerbation and serious morbidity due to combined effects on the respiratory tract.



In Canada, children with asthma should remain on their current asthma medications. This recommendation is supported by multiple international organizations, including the Centers for Disease Control and Prevention, the Global Initiative for Asthma, and the North American consensus guideline on allergy care during COVID-19.

To summarize, children and youth living with asthma should remain on their current controller medications. Asthma exacerbations should be aggressively treated, including the use of oral corticosteroids when needed. Nebulization should be avoided, if possible, due to transmission risk. Close monitoring of medication shortages is required and ongoing.



Produced by the members of the National Health Library and Knowledge Service Evidence Team[†]. Current as at 8 JUNE 2020. This evidence summary collates the best available evidence at the time of writing and **does not replace clinical judgement or guidance**. Emerging literature or subsequent developments in respect of COVID-19 may require amendment to the information or sources listed in the document. Although all reasonable care has been taken in the compilation of content, the National Health Library and Knowledge Service Evidence Team makes no representations or warranties expressed or implied as to the accuracy or suitability of the information or sources listed in the document. This evidence summary is the property of the National Health Library and Knowledge Service and subsequent re-use or distribution in whole or in part should include acknowledgement of the service.

The following PICO(T) was used as a basis for the evidence summary:

P Population person location condition/patient characteristic	CHILDREN WITH ASTHMA
I Intervention length location type	
C Comparison another intervention no intervention location of the intervention	
O Outcome	INCREASED RISK IDENTIFIED FOR PAEDIATRIC ASTHMA PATIENTS TO GET COVID-19 AND THE OUTCOMES IF IDENTIFIED

The following search strategy was used:

CHILD OR CHILDREN OR PEDIATRIC* OR PAEDIATRIC* AND ASTHMA* AND "COVID-19" OR CORONAVIRUS OR "WUHAN VIRUS" OR "2019-NCOV" OR "SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2" OR "2019 NOVEL CORONAVIRUS" OR "2019 NEW CORONAVIRUS"

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- ¹ European Centre for Disease Control and Prevention (2020). Q & A on COVID-19. URL. <https://www.ecdc.europa.eu/en/COVID-19/questions-answers> [Accessed 04 June 2020].
- ² Centers for Disease Control and Prevention. People with Moderate to Severe Asthma (2020). https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/asthma.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fspecific-groups%2Ffasthma.html [Accessed 04 June 2020].
- ³ BMJ Best Practice (2020). Coronavirus disease 2019 (COVID-19). <https://bestpractice.bmj.com/topics/en-gb/3000168/> [Accessed 04 June 2020].
- ⁴ UpToDate (2020). An overview of asthma management. <https://www.uptodate.com/contents/an-overview-of-asthma-management> [Accessed 04 June 2020].
- ⁵ Brough HA, Kalayci O, Sediva A, et al. Managing childhood allergies and immunodeficiencies during respiratory virus epidemics - The 2020 COVID-19 pandemic: A statement from the EAACI-section on pediatrics [published online ahead of print, 2020 Apr 22]. *Pediatr Allergy Immunol.* 2020;10.1111/pai.13262. doi:10.1111/pai.13262 [Accessed 04 June 2020].
- ⁶ Abrams EM, Szeffler SJ. Managing Asthma during Coronavirus Disease-2019: An Example for Other Chronic Conditions in Children and Adolescents [published online ahead of print, 2020 Apr 21]. *J Pediatr.* 2020;S0022-3476(20)30528-X. doi:10.1016/j.jpeds.2020.04.049 [Accessed 04 June 2020].
- ⁷ Matsumoto K, Saito H. Does asthma affect morbidity or severity of COVID-19? [published online ahead of print, 2020 May 26]. *J Allergy Clin Immunol.* 2020;S0091-6749(20)30736-3. doi:10.1016/j.jaci.2020.05.017 [Accessed 04 June 2020].
- ⁸ Licskai C, Yang CL, Ducharme FM, et al. Key highlights from the Canadian Thoracic Society's Position Statement on the Optimization of Asthma Management during the COVID-19 Pandemic [published online ahead of print, 2020 May 28]. *Chest.* 2020;S0012-3692(20)31616-0. doi:10.1016/j.chest.2020.05.551 [Accessed 04 June 2020].
- ⁹ Centre for Evidence-Based Medicine (2020). Asthma and COVID-19: risks and management considerations. <https://www.cebm.net/COVID-19/asthma-and-COVID-19-risks-and-management-considerations/> [Accessed 05 June 2020].
- ¹⁰ Canadian Paediatric Society (2020). Paediatric asthma and COVID-19. <https://www.cps.ca/en/documents/position/paediatric-asthma-and-COVID-19> [Accessed 05 June 2020].