

EXAMINAT

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Near Fatal Asthma in Children and Young People

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The study aimed to identify the how often children and young people in the UK have near fatal asthma attacks. We also wanted to learn whether particular children and young people were more likely to have a near fatal asthma attack and more about their medical care after an attack, so that we could develop ways to reduce the risk of future events.



KEY FINDINGS

- Near fatal asthma appears infrequent in the UK (62 reported cases over 18 months of surveillance), but the cases identified had critical illness (very low oxygen levels and very high carbon dioxide levels)
- Children and young people experiencing near fatal asthma are most significantly from lower socioeconomic and/or south Asian backgrounds
- Children and young people experiencing a near fatal asthma attack commonly lived in a postcode that exceeded WHO recommended levels for outdoor air pollution: PM 2.5 (94% of cases) or nitrogen dioxide (62%).
- Approaches to discharge and follow up were extremely variable across the UK leaving children and young people at risk of future near fatal asthma and fatal asthma attacks.
- The information from this study will be used to inform future best practice for use across the UK



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WHAT DID THE STUDY INVOLVE?

We performed an 18-month surveillance of near fatal asthma attacks to determine the frequency of events in the UK population aged 5 to 15 years of age. The surveillance was performed by the British Paediatric Surveillance Unit (BPSU) (<u>https://www.bpsu.org.uk</u>), a UK wide surveillance system for rare disease that emails participating clinicians each month for retrospective case reporting. Each verified reported case has follow up questionnaires sent to the reporting clinician at 12 and 24 months.

Children, young people and their parents helped us design the survey questionnaires. They also provided feedback that was pivotal in enabling the research team to collect some personal data under BPSU methodology within a secure online database ('safe haven').



WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?

The study found 62 cases of near fatal asthma across the UK over the 18-month surveillance (October 2022 – April 2024). We found that almost 1 in 5 cases were not previously diagnosed with asthma (17%). Many had a cardio-respiratory arrest (39%) and most required ventilation in intensive care (69%). But not all were admitted to intensive care and so previous studies only looking at intensive care admissions would have missed these children and young people.

One third of cases were seen in children and young people from the poorest households. Children and young people of south Asian heritage represented 1 in 5 cases.

Living in a postcode with high levels air pollution was very high in children and young people experiencing near fatal asthma. 94% of cases had PM 2.5 levels (a measure of air pollution) above the limits recommended by the World Health Organisation.

1 in 20 children and young people experienced some form of brain injury because of the lack of oxygen during their near fatal asthma attack.

We found that some children and young people went home from hospital without an adjustment to their regular medicines and plans for follow up were variable from place to place, potentially leaving the children and young people at risk of a future near fatal or fatal asthma attack.

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WHAT IMPACT COULD THE FINDINGS HAVE?

This study could help deliver better, consistent asthma care for those most at risk of a severe asthma attack or future asthma death. Work will continue to develop and deliver this to children and young people.

The significant impact of air pollution on children and young people's asthma health that we observed in this study, should help make the case for reducing air pollution in our environment to protect children and young people most at risk.



HOW WILL THE OUTCOMES BE DISSEMINATED?

The outcomes are being presented to doctors, nurses, researchers and charity organisations that work with children and young people with asthma, both at national and international conferences and meetings. We will publish the full results of the study in a medical journal in the near future.

The outcomes will be disseminated to policy makers as part of a process to effect change within healthcare for children and young people who experience near fatal asthma.



CONCLUSION

Some children and young people are more likely to experience a near fatal asthma attack because of poverty, ethnicity and/or exposure to outdoor air pollution. Inconsistent care when in the health system can and should be standardised to reduce the risk of future asthma attacks in this vulnerable population.



RESEARCH TEAM & CONTACT

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Additional Information

Project completed 31 January 2025. Funding £106,828