

PLAIN LANGUAGE SUMMARY

N-acetylcysteine in paediatrics: a review of efficacy, safety and dosing strategies in respiratory care

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What is N-acetylcysteine?

N-acetylcysteine (NAC) is a medication often used to help people with lung conditions that involve thick mucus such as bronchitis, pneumonia and cystic fibrosis. It works by thinning mucus, making it easier to clear from the lungs. It also has other helpful effects, for example, it can reduce inflammation, protect lung tissue from damage, and improve how antibiotics work by breaking down bacterial biofilms.

What did this study assess?

This review looked at how NAC is used in children with both short-term (acute) and long-term (chronic) breathing problems. The authors analyzed the results of 28 clinical trials and real-world studies including over 1,500 children. Their goal was to understand how effective NAC is, how safe it is, and how to determine the right dose for children of different ages and body weights.

The evidence shows that NAC can be helpful in treating respiratory infections in children, either as a standalone or in combination with antibiotics. For acute illnesses, a typical oral dose of 20 milligrams per kilogram of body weight per day was found to be effective. For chronic

lung diseases, a common dose was 200 mg taken three times a day. These doses were generally well tolerated in children over the age of 2 years.

The review shows that, while NAC can be taken by mouth, it may also be given as a nebulized, inhaled treatment. Inhaled NAC works quickly and reaches the lungs directly, although careful use is advised in patients with asthma.

Another important point is that NAC is sometimes prescribed based on a child's age alone, without considering body weight. Because children grow rapidly, this can lead to either underdosing or overdosing. The authors recommend adjusting NAC doses based on a child's weight to ensure the safest and most effective treatment.

Summary

In summary, NAC is a useful and generally safe option for treating mucus-related lung conditions in children over 2 years of age. It may help reduce cough, clear mucus and speed up recovery. Using weight-based dosing and closely monitoring children during treatment can help improve outcomes and reduce side effects.