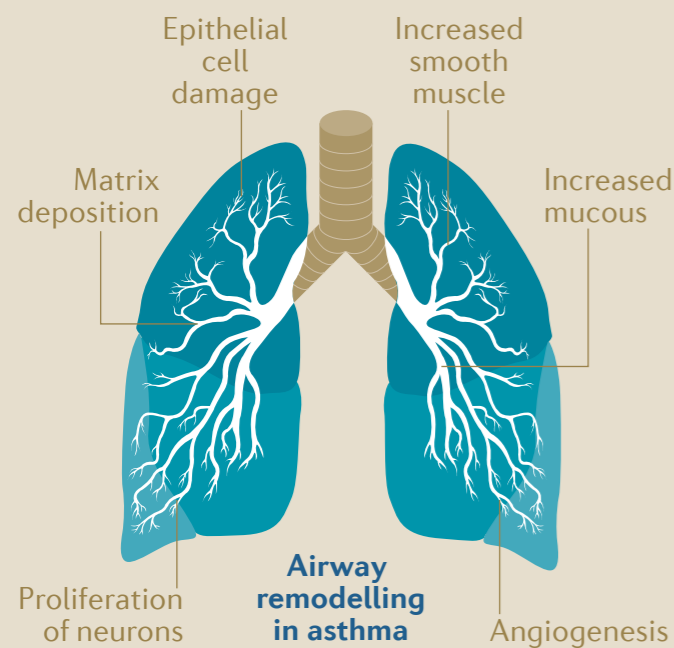


For the Primer, visit [doi:10.1038/nrdp.2015.25](https://doi.org/10.1038/nrdp.2015.25)

➔ Asthma is a chronic disease of the large-conducting and small-conducting airways characterized by hyper-responsiveness and reversible airway obstruction. Globally, >300 million people are affected by asthma.

MECHANISMS

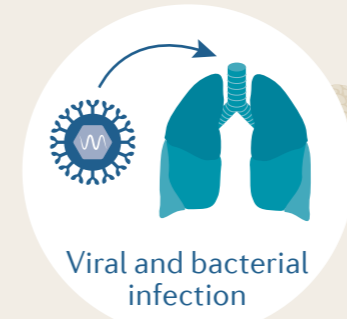
Asthma arises from a complex interplay between genetic and environmental factors. This heterogeneous disease has many subtypes, which probably reflect different underlying disease mechanisms. Asthma can be broadly divided into two classes based on the presence or absence of a T2-type immune response. Most of what is known about asthma aetiology relates to T2-type asthma, which often involves allergic sensitization and inflammation of the airways caused by infiltration of activated eosinophils, mast cells, basophils and neutrophils. Both T2-type and non-T2-type asthma might each comprise further subtypes. Asthma is also accompanied by a range of remodelling events in the airways — changes that lead to the thickening of the airway wall and that contribute to airway hyper-responsiveness.



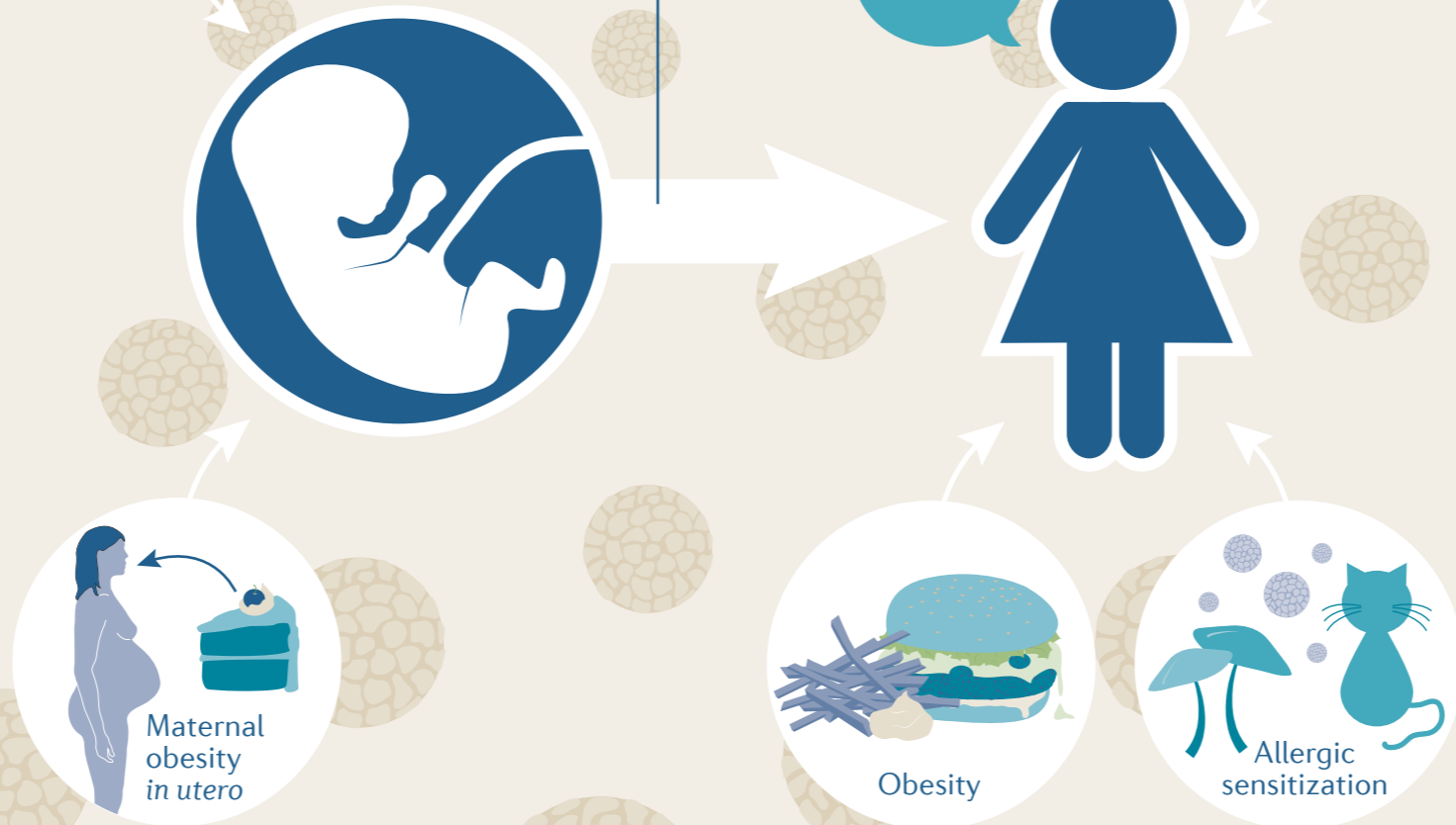
PREVENTION



! Premature birth is the largest single risk factor for the development of asthma, conferring a fourfold increased risk of developing the disease



COUGH



OUTLOOK

Increasing understanding of the heterogeneous mechanisms that cause asthma is leading a move towards the development of targeted approaches for managing the disease.

These emerging therapies include T2-type cytokine biologics that target IgE, IL-4, IL-5 and IL-13. Progress is also being made in identifying biomarkers, such as eosinophil

counts, which can be used to predict and monitor treatment responses. Despite these advances, there is an unmet need for effective strategies to prevent the onset of asthma.

QUALITY OF LIFE

Asthma can have substantial long-term effects on quality of life, especially for patients with severe disease who experience more frequent and serious co-morbidities, such as rhinosinusitis and gastro-oesophageal reflux. Moreover, the social stigma that many patients experience as a result of being labelled as having a chronic disease can have considerable consequences for psychological well-being.

MANAGEMENT **Rx**

In addition to reducing exposure to known causes, asthma is commonly treated using a combination of reliever therapies to alleviate immediate symptoms and controller therapies to manage long-term chronic airway inflammation. Recently, bronchial thermoplasty — a procedure that uses radiofrequencies to reduce the amount of airway smooth muscle — has been developed, although it is not yet part of standard asthma management approaches.

Reliever therapies include short-acting β_2 -adrenergic receptor agonists, whereas controller drugs include inhaled corticosteroids, long-acting β_2 -adrenergic receptor agonists, leukotriene receptor antagonists and IgE-specific antibodies

