

# HYGIENE HYPOTHESIS

The Hygiene Hypothesis, first proposed in 1989 suggested that a lack of exposure to infection in early childhood leads to an increase in allergic disease in children. Not only was this thought to be due to the trend for smaller families leading to a reduction in the spread of infection, but also to concurrent improvement in household facilities and higher standards in personal hygiene. This led people in the media to suggest that we may be being 'too clean for our own good'. However, many microbiologist and public health experts now believe that rather than exposure to infectious microorganisms, it is exposure to non-harmful microbes that is important. These microbes have been termed our 'old friends'.<sup>1</sup>

## KEY FACTS

CAESAREAN BIRTHS, LACK OF BREASTFEEDING AND USE OF ANTIBIOTICS ARE THOUGHT TO BE KEY CONTRIBUTORY FACTORS IN THE RISE OF ALLERGIES<sup>3</sup>

THERE IS A COMMON BELIEF THAT **BEING 'TOO CLEAN'** IS A ROOT CAUSE IN THE RISE OF ALLERGIES SUCH AS ASTHMA AND ECZEMA<sup>2</sup>

HAVING A **DIVERSE MICROBIOME** IS IMPORTANT IN HELPING TO REGULATE OUR IMMUNE SYSTEM<sup>4</sup>

## WHO ARE OUR 'OLD FRIENDS?'

The 'old friends' theory first suggested by Professor Graham Rook in 2003, refers to non-harmful organisms that inhabit our natural environment, animals and other humans. Because the immune system is constantly exposed to these harmless microbes, it learns to tolerate them, and this exposure also teaches it which other agents such as pollen and other allergens should also be tolerated. Lack of exposure to 'old friends' in early childhood appears to cause dysregulation of the immune system, causing it to overreact and attack the agents that cause hay fever, asthma, eczema and food allergies.

There seems to be no single cause behind our reduced exposure to 'old friends'. It is more likely the result of a combination of public health measures, lifestyle changes and medical advances over the last two centuries. Provision of clean water, sanitation and microbiologically safe food, as well as a trend toward more urban lifestyles have led to a reduced exposure to environmental microbes. Increased caesarean births and reduced breast feeding means that many babies are less exposed to the old friends inherited from their mother. An overuse of antibiotics in childhood also affects the balance of old friends in our gut microbiome, leading to an increase in asthma and other allergies.<sup>1</sup>

## WHY IS HYGIENE STILL IMPORTANT?

Although contact with non-harmful microbes, particularly in early life, appears to be important in regulating our immune systems, protection from harmful pathogens is still essential in preventing the spread of infectious disease. By focussing on germ hotspots in the home and interrupting the routes of transmission using targeted hygiene practices at key times, we can control the hazardous microorganisms while continuing our exposure to our 'old friends'. It is important to understand where and how hazardous microorganisms occur and spread and what can be done to control them.

## PREVENT AND PROTECT



Wash your hands with soap and clean water at key times e.g after using the toilet; changing nappies; before and after preparing food; before eating and after coughing, sneezing or blowing your nose.



If you are out and about and don't have access to soap and water, use an alcohol-based hand sanitiser to kill germs on the hands.



Regularly clean and disinfect hand and food contact surfaces around the home.

