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March 2003

Dear Colleague

The Hygiene Hypothesis

In recent years media coverage on the Hygiene Hypothesis, which has often been presented as “the dangers of being too clean”, has led to some confusion and a sense of dilemma amongst the public about appropriate personal, domestic and institutional hygiene standards. Given the immensely complex nature of the issue, hygiene professionals have also had difficulty in unravelling the various evidence and reported opinions about the Hypothesis in order to construct a reasoned and practical response.

In September 2002, the Royal Institute of Public Health brought together leading experts in the relevant disciplines to assess the current state of the Hygiene Hypothesis and the possible implications for hygiene. The panel of speakers at this symposium was in agreement that there is still uncertainty about the validity of the Hypothesis, about the key changes that might be involved and about ways in which trends might be reversed. The Hypothesis, and possible links to hygiene practice, must continue to be investigated. Meanwhile, the panel also recognised the need to ensure that current hygiene standards do not regress, and that measures taken to implement recommended domestic and industrial food hygiene standards continue to be fully supported.

Following this symposium, the Royal Institute and the participating speakers have drawn up the attached consensus statement. It is hoped that by clarifying current thinking on the Hygiene Hypothesis and providing consensual advice, the statement will assist hygiene and other health professionals in their work and in their dealings with the public.

The Royal Institute of Public Health



Consensus Statement on the Hygiene Hypothesis

Over the last century, medical science and hygiene have dramatically improved health and increased life expectancy by protecting us from harmful microorganisms. Immunisation, antibiotic development, water purification, improved food production and improved personal and environmental hygiene have all played their part.

Patterns of exposure to harmless microbes may also have altered incidentally as a result of changing lifestyles, including the move from rural to urban living.

The Hygiene Hypothesis proposes that there may be an association between the change in exposure to microbes and the increased incidence of atopic disease observed in recent decades. The immunological interpretation of the Hypothesis suggests that if there is such a cause and effect relationship, it may operate by increasing predisposition to atopy, perhaps through inhibiting the normal balancing of the immune response.

However, the totality of evidence, despite extensive research, remains conflicting, though it is increasingly less supportive of an association with asthma. Moreover, in terms of public health policy, there is currently no clear indication of the types of microbes that might be 'protective' against atopy, the groups of people affected, or of the nature, extent or timing of the critical changes in microbial exposure. While it is quite likely that the critical period for immune balancing would be in infancy, or earlier, it is *unlikely* that intense, clinical infection with harmful pathogens would be necessary to achieve this 'protection'.

Many other changes in environment and lifestyles are being investigated as possible causes of increased predisposition to atopy. Other potential causes range from diet and lack of exercise, to particular pollutants and changed exposure to allergens themselves.

It still remains unclear as to whether microbial or non-microbial factors, or perhaps a combination of these, are responsible for the rise in atopy.

Meanwhile, infectious disease caused by pathogenic microbes continues to be a significant threat and cost to society, and this currently represents a serious challenge in the UK. Transmission of infection occurs throughout the range of community settings, from schools to places of work, from hospitals and other care institutions to private homes. Evidence suggests that exposure to microbes, both potentially harmful and harmless, is still routine and extensive. Within all these settings, and throughout the food chain – from farm to fork, we depend both collectively and as individuals, on good hygiene as a primary defence against infectious disease. While work continues to identify the reasons for the rise in atopic disease, and to establish ways of reversing trends, it is important that defence against infectious disease is not undermined.

Hygiene standards in organisations, institutions, the community and the home, and especially in relation to food and health-care, need to be maintained. Initiatives to improve standards, where necessary, should continue to be fully supported.

These initiatives should follow modern hygiene approaches based on risk assessment and should focus on preventing exposure to harmful organisms in sufficient numbers to cause disease or other adverse affects. Such approaches are likely to be both the most effective in preventing disease, and the least likely to disturb harmless exposure to microbes.

The following professionals spoke at the Hygiene Hypothesis symposium and have agreed this statement:

Professor David Strachan, Professor of Epidemiology, St George's Hospital Medical School, London
Professor John Warner, Professor of Child Health, School of Medicine, University of Southampton at
Southampton General Hospital
John Pickup, Consultant in Scientific Issues, John Pickup Associates
Dr Martin Schweiger, Consultant in Communicable Disease, Leeds Health Protection Unit
Professor Hugh Pennington, Head of Medical Microbiology Department, University of Aberdeen
Dr Rosalind Stanwell-Smith, Public Health Consultant, Royal Institute of Public Health
Dr Martin Jones, Hygiene Research Manager, Unilever Research & Development, Port Sunlight

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