



## The Fight Against Disease

### Preventing Disease

It is much less costly, in terms of both human suffering and economics, to prevent disease than to treat it. Public health services and medical professionals play critical roles in helping people avoid disease. In addition, each individual plays a vital role in protecting his or her personal health.

Public health services are charged with protecting community health. Their activities include provision of adequate clean water and the sanitary disposal of sewage and other wastes. Food supplies-on farms, at food processing plants, and in supermarkets and restaurants-are inspected for microorganisms. Pesticide spraying programs are undertaken to control populations of mosquitoes and other carriers of disease. Public facilities, such as schools and hospitals, are inspected to ensure that they meet appropriate standards of cleanliness and safety. Education and surveillance programs alert physicians and other medical workers to disease threats. Physicians, dentists, and other medical experts have a number of preventive tools at their disposal. Among the most effective are vaccines, which stimulate the immune system to produce antibodies against particular antigens. A vaccine may contain killed or weakened pathogens, parts of the pathogens, or modified toxins produced by the pathogens, which are strong enough to arouse the immune system to fight off new invading pathogens but not powerful enough to cause disease themselves. Thanks to vaccines, polio is rare today, smallpox has been eliminated, and diseases such as diphtheria and whooping cough, which once killed many young children, have largely been brought under control.

Regular medical check-ups are another important preventive tool. These help doctors to find disease in its early stages, when it is easier to treat and before it causes significant damage. For example, during a check-up a dentist will remove plaque, a sticky bacterial coating on teeth. Left undisturbed in hard-to-reach areas, such as between the teeth and along the gums, plaque can lead to periodontal disease, which can destroy the tissues that anchor the teeth in the mouth (Dentistry).

Even the finest public health and medical services are of limited value to people who have poor health habits. Numerous studies have proven that physical health and longevity are linked to the following: eating a balanced diet, maintaining proper weight, exercising regularly, using condoms and limiting the number of sexual partners, avoiding tobacco, and avoiding alcohol or consuming it in moderation. People who fail to follow these guidelines increase their risk of cardiovascular disease, cancer, AIDS, hepatitis, and other lethal diseases.

The interplay among public health measures, medical practices, and personal responsibility is exemplified in the fight against tooth decay. Caused by bacteria that feed on food debris in the mouth, tooth decay can be virtually eliminated through a combination of three steps: the addition of fluoride to public drinking water supplies; the professional coating of teeth with a plastic sealant, which fills microscopic pits where bacteria can collect and cause decay; and regular brushing and flossing of teeth.