

Simple, well-designed safe hygiene and infection control procedures in the clinic make it possible to further develop the dental office, heighten quality and at the same time improve the economy.

Cross infection control must be considered as today's most important tasks in all health care systems. The level of antibiotic resistant bacteria is increasing globally, which will have consequences on all current available advanced treatments, as well as the development of modern society and global economy.

Infectious diseases – a threat to prosperity and welfare

Major killer in mankind

The global burden of infectious diseases has a major impact on all healthcare systems as well as international prosperity and welfare. Throughout the history of mankind, infectious diseases have been one of the largest killers.

As recently as the 19th century, the likelihood of dying prematurely from infectious diseases was as high as 40%.

Antibiotics – important lifesavers

Not until the late 1930s did humanity find a way to counterattack bacterial infections through penicillin and antibiotics. For more than half a century antibiotics have been – and still are – important lifesavers. With the ever-increasing development of antimicrobial resistance, the world population is facing a serious threat to major achievements in healthcare as well as the development of modern society and global economy.

Old diseases in new shapes

By the mid-1960s, confidence in the ability to fight infectious diseases had become so high that some professionals were even regarding infectious microbes as largely conquered. The reversal and wake-up was sudden and brutal with the recognition of HIV and all consequences associated with HIV infection. In the last couple of decades, people all over the world have been hearing about major new microbes and older ones in new shapes.

Increased international contacts

One of the key issues is the ease and frequency of modern travel. The global population in the 18th century was less than 1 billion versus over 6 billion today. Intercontinental travel is measured in hours rather than months and in millions of travelers rather than hundreds. Well over a million passengers, each one a potential carrier of microbial pathogens, travel daily by aircraft to international destinations. Add to this all the intercontinental transport of food products and other goods.

Modern technology has upset the previous ecological balance between humans and microbes. The combination of rapid travel times of people and goods and the incubation time of disease mean that carriers of infectious disease can arrive and leave any given place long before the danger they harbor is detectable.

New serious outbreaks will happen

Outbreaks of diseases will occur in geographical locations, animal species and human populations where the diseases in question previously have been unusual. There is no need to wonder whether we will see new outbreaks. The only questions are when, where and how.... Examples include HIV, West Nile encephalitis, mad cow disease (BSE), SARS, and avian flu.

Antimicrobial resistance – a major drawback

Before the advent of antibiotics, infectious diseases caused a very high mortality rate. The rapid development of antibiotic-resistant strains of bacteria further heightens the risk that epidemics of "banal" diseases will be more difficult or maybe even impossible to treat and control. Antibiotic resistance has been observed for almost all the known antibiotics and it is becoming increasingly difficult to develop new ones.

Proper hygiene and infection control is therefore one of the most important issues in all daily activities both from an individual perspective and from a general healthcare perspective.

Antimicrobial medications are intended to treat infectious diseases, whereas hygiene and infection control aim at preventing and avoiding them. Once humanity loses the possibilities provided by antimicrobial pharmaceuticals, due to increased antimicrobial resistance, all modern healthcare achievements will be in

vain. Patients undergoing cancer therapy are in great need of antimicrobials, as are patients with transplants, major surgery, implants, and many other treatments. This scenario will of course have a great impact on society's development and prosperity.

With increasing knowledge about the risk of transmission of infection and about hygiene, all types of care can be provided under safe, hygienic conditions that minimize the risk of transmission of infection.

A decrease in the incidence of infectious disease also leads to a reduction in the use of antibiotics. This will save lives, reduce additional suffering and contribute to minimizing further development of antibiotic resistance.

A decrease in the incidence of infectious disease also leads to lower incidence of patients with hospital-acquired infections, which will have a great impact on the care provider's reputation and economy.

Hygiene, infection prevention and infection control is therefore the most important functions in all healthcare contexts. All types of health care personnel have a great responsibility in several respects.

Fighting further development of antimicrobial resistance comes down to avoiding unnecessary infections – where the key issue is hygiene and infection control.

Unfortunately, hygiene is seldom recognized as equally important as, for example, heart surgery, advanced organ transplants and other sophisticated medical procedures. Despite that, infectious diseases, health care associated infections included, are one of the major causes for treatment failure which most often can be avoided if basic hygiene protocols are followed.

For the individual patient, the implications of heightened resistance to antibiotics are increased suffering and delayed response to, or failure of, treatment. The cost to society will also be much greater in terms of prolonged hospitalization, increased need for care in isolation units and greater costs for pharmaceuticals.

Proper hygiene and infection control – simply crucial

From a global perspective, certain characteristics of modern life present a marked increase in the risk of transmission of infection on a large scale: growing populations, rapid population migration, new megacities and particularly increasing international contacts and rapid means of travel (e.g. tourism, international business, import and export of goods and foodstuffs). Previously stable relationships (ecology) between microorganisms and humans have been markedly altered. Every change in the human condition has led to adaptation by the microorganisms and exploitation of the new situation.

The breakthrough in bacteriology in the 1880s is one of the most important events in the history of modern medicine. It formed the basis of understanding hygiene and infection control and opened ways to prevent and limit the spread of infections and infectious diseases.

Hygiene, infection control and vaccination programs are important to ensure that as many people as possible can enjoy good health. A decrease in the incidence of infectious diseases also leads to a reduction in the use of antibiotics.

Work with hygiene and prevention of infection is important in many varied fields of activity. Hygiene control is important in health and medical care, dentistry, water supplies, handling of foodstuffs, rearing livestock, restaurants, tattooing, piercing and even in the home, to name but a few.

The potential of infectious diseases, evolving epidemics and drug resistance to catapult us all back into a world of premature death and chronic illness is all too real. Our grandparents lived during an age without antibiotics. So could many of our grandchildren. We have the means to ensure that antibiotics remain effective, and to limit the devastating effects of emerging life-threatening infections, but we are running out of time. Monitoring, surveillance and proper infection control are all key issues.

Infection prevention and control are often perceived as being limited to healthcare facilities and to the surveillance and control of health care associated infections. However, the scope is much wider. Infection control refers to all policies, procedures and activities that aim to prevent or minimize the risk of transmission of infectious diseases.

General and simple infection control measures are often effective when specific interventions such as vaccination or antimicrobial treatment are not available or failing. Infection control measures should be seen as an integral and indispensable part of all activities in modern society.

Everybody infected with everything

Diseases are at their most infectious during their incubation period, i.e. before the first symptoms appear. Symptom-free carriers of infectious diseases cannot always be identified through medical history, physical examination or laboratory tests. It is therefore important to work on the principle that everyone we meet and everything we eat can be carriers of microorganisms which can cause disease. Simply because microorganisms are everywhere.

Hygiene, infection control and vaccination programs are important to ensure that as many people as possible can enjoy good health. As in all other contexts, the main rule is to *"think globally and act locally"*.

Key issues – infection prevention and infection control:

Modern dentistry perform highly sophisticated and invasive procedures and Important goals for hygiene and infection control should include:

- Decrease risk for further development of antimicrobial (antibiotic) resistance
- Decrease risks for health care associated infections
- Decrease risks for the spread of infections
- Decrease costs for health care systems and societies due to infectious diseases
- Fulfilment of international recommendations, standards and norms

Basic infection control includes:

- Hand hygiene
- Cleaning of instruments
- Disinfection
- Sterilization
- Instrument quality
- Equipment quality
- Prudent use of antimicrobials

Healthcare-associated infections (HCAI):

- cause tremendous additional costs,
- increase antibiotic resistance
- jeopardize treatment outcomes,
- prolong patient suffering,
- decreases treatment capacity,
- creates "bad-will"