



# Healthcare-Associated Infections



**MedTech Europe**  
from diagnosis to cure

# A healthcare crisis requiring European leadership

Healthcare-associated infections (HAIs - also referred to as “nosocomial” infections) are defined as “an infection occurring in a patient during the process of care in a hospital or other healthcare facility, which was not present or incubating at the time of admission” (WHO, 2016).

## HAIs:

- Prolong the suffering of patients
- Increase healthcare costs

In the EU, it is estimated that 4.1 million people are affected by HAIs every year. This results in at least 37,000 deaths and an annual economic impact of €7 billion according to the European Centre for Disease Prevention and Control (ECDC). The ECDC estimates that implementing hygiene and infection control programmes could prevent 20-30% of HAIs.

In times of austerity and budget cuts, the provision of health services requires innovative solutions to preserve the highest standards of care whilst ensuring the sustainability of healthcare systems.

Patients expect that every effort along the clinical patient pathway, from admission to recovery back at home, is made to ensure their safety.

The medical technology industry has made significant progress in the research and development of technologies to prevent, detect and manage HAIs at every stage of the patient pathway.

MedTech Europe, the European trade association representing the medical technology industries (medical devices and in-vitro diagnostics) is working to drive value-based innovation in the industry to create more sustainability in healthcare systems throughout Europe.

## HAIs: a true burden

*4.1 million* The number patients impacted with HAIs



*37,000* deaths  
as a direct consequence of these infections.

Source: ECDC

# Antimicrobial Resistance and Healthcare - Associated Infections

The challenge of HAIs is closely linked to the development of another serious cross-border health threat: antimicrobial resistance (AMR). In fact, HAIs are often caused by resistant bacteria (ECDC), but the occurrence of an infection in the first place can also increase the risk of developing resistant strains.

*“The excessive and inappropriate use of antibiotics together with poor infection control practices, have progressively turned antimicrobial resistance into a massive threat for humankind”*

(Speech of Vytenis Andriukaitis, Commissioner for Health and Safety at the Lithuanian Conference on Challenges in Addressing the Issue of Antimicrobial Resistance, 2016)

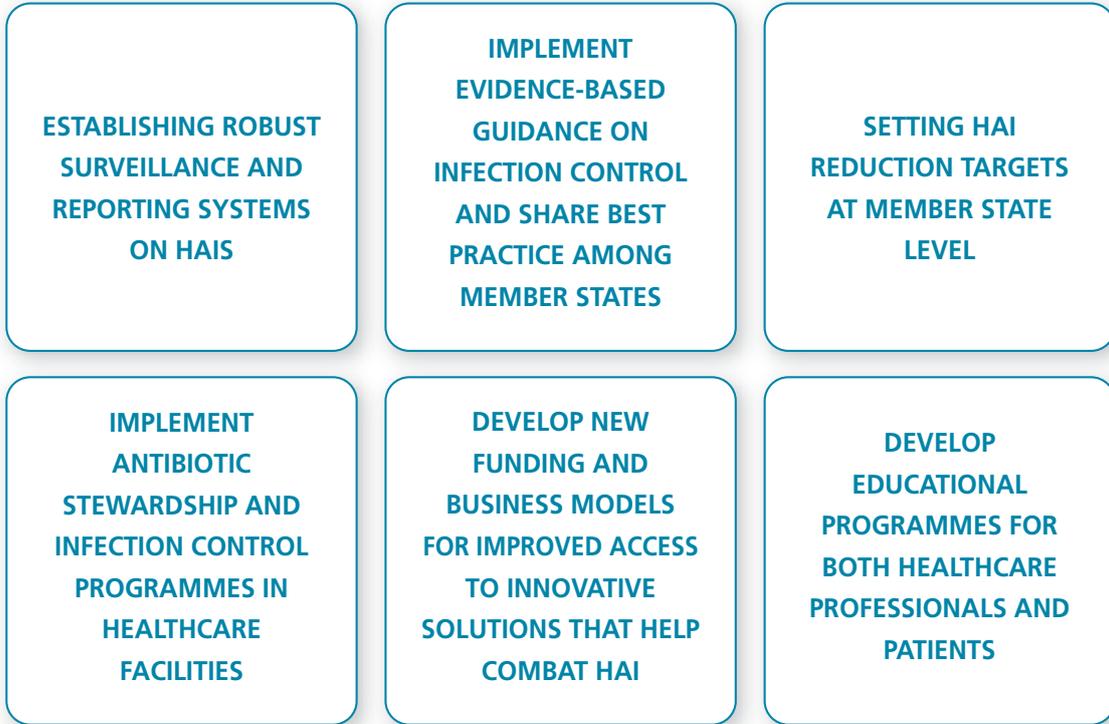
The WHO published its Guidelines for the Prevention of Surgical Site Infections (SSI,) in 2016 which is one of the most common infections associated with longer post-operative hospital stays (ECDC). This is the first international evidence-based guideline on SSIs available. In their Global AMR Action Plan (2015), the WHO also sets out reduction of incidence of infections as one of their five objectives to address resistance.

## The role of the Medtech industry

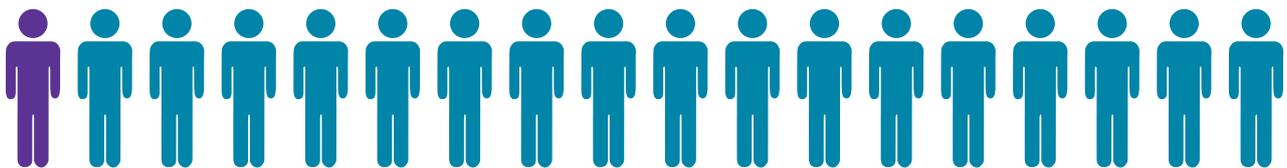
The medical technology industry is committed to addressing HAIs and AMR as interconnected topics. We believe that our industry has effective solutions to these challenges throughout the patient pathway, leading to better clinical outcomes for patients and better value for the healthcare system as a whole.

# Call to action

Building on the ongoing efforts of the EU and Member States, MedTech Europe encourages further cooperation and improved European response to HAIs through:



One in eighteen hospitalised patients acquires an infection



Source: ECDC

## THE PATIENT PATHWAY

# Before admission to hospital

For patients having an elective procedure in a hospital, as well as in the case of an emergency admission, programmes can be put in place to help reduce the risks of healthcare-associated infections and ensure better outcomes.



### The magnitude of the problem

Everybody carries germs on their skin and in respiratory and digestive tracts, which usually do no harm. When hospitalised, some of these germs can lead to infections. This can lead to a longer stay in the hospital, increased costs of treatment and sadly even disability and death.

### What can be done?

Screening programmes: Prior to being admitted to hospital patients are screened to establish if they are colonised with bacteria, before being moved to the ward.

### Technology examples



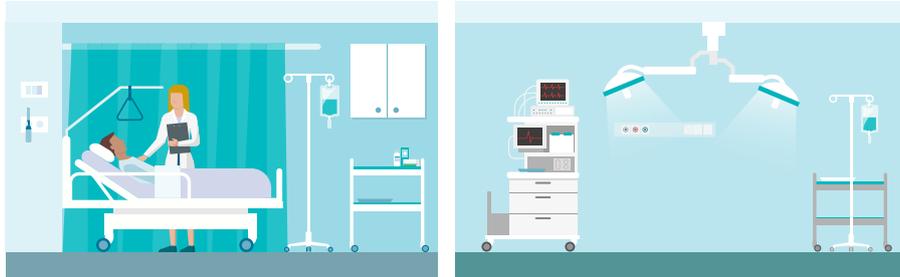
**Pre-surgical nasal screening:** This can be used to detect whether a patient is carrying a certain type of bacteria. Advanced screening technologies can provide sophisticated and rapid test findings before (e.g. during pre-admission consultation) or on admission. This can help to reduce the infection rate in patients during the medical intervention, facilitate appropriate use of antibiotics avoid contaminating other patients and staff.



**Molecular screening techniques:** These techniques are beginning to be applied to HAI control. These technologies allow for rapid identification of bacteria. The implementation of such diagnostic tools, in conjunction with appropriate patient management interventions (such as the use of antiseptics), can lead to a decrease in infection rate of up to 60%.

# Arrival at the ward

For many medical interventions patients need catheters (thin, clean hollow tube usually made of soft plastic or rubber). These are introduced in the body to inject (e.g. saline solution or anesthetics) or remove fluids (e.g. urine, wound fluids).



## The magnitude of the problem

Many patients will require catheterisation following admission. The European Centre for Disease Prevention and Control (ECDC) has identified catheter related bloodstream infections (CRBSI) as one of the 5 top clinical priority areas for additional scientific guidance. CRBSI occurs when a patient develops a bloodstream infection with the site of the infection being an intravascular catheter. This may happen when bacteria or fungus grow in or around the catheter and spread to the patient's bloodstream. These infections have serious consequences: 30-35% of patients in intensive care with catheter-related bloodstream infections die.

## What can be done?

The best way to prevent infections is through good professional practice including hand-hygiene and appropriate care when dealing with patients. Innovative medical technology can also help.

## Technology examples



**Cleaning and disinfection procedures:** These procedures are essential to decrease the number of microbes in the area close to the patient. It is also crucial to put in place personal protective barriers (e.g. gloves, gown) to prevent healthcare workers from carrying bacteria to other patients.



**Advanced medical technologies:** Substantial reductions in CRBSI can be achieved with the aid of advanced medical technologies together with complementary improved practices. These include integrated safety catheter systems and closed IV access together with associated care and maintenance.



**Use of antimicrobial dressings:** In addition, the use of Chlorhexidine Gluconate (CHG) antimicrobial dressings that integrate a clear CHG gel pad reduce the level of bacteria from the skin flora which is the most common source of catheter related bloodstream infections.

**Pre-filled saline flushing devices:** The use of pre-filled saline flushing devices for maintenance of indwelling catheters reduces the potential for contaminated solutions, saves staff time and eliminates the need for needles, glass vials and ampoules.

# Operating room surgery and invasive diagnostic procedures

An infection can occur after surgery in the part of the body where the procedure took place. In case of surgery, these are called surgical site infections (SSIs) and they account for more than half of all adverse events in this group of patients.



## The magnitude of the problem

SSIs, if not prevented, can result in longer post-operative hospital stays, may require intensive care and even additional surgical procedures. It is estimated that approximately 6% of all patients undergoing surgery develop SSIs.

## What can be done?

Approximately 40 to 60% of SSIs can be prevented by implementing good clinical practices, using innovative medical technologies including minimally invasive procedures and putting in place adequate surveillance mechanisms. Ensuring the right ventilation in the operating room, best practices of sterilisation and disinfection of surgical instruments, the adherence of healthcare workers to guidelines such as wearing gloves and gowns are important to control SSIs.

## Technology examples



**Active patient warming:** Hypothermia is a significant risk factor for developing SSIs. The use of active patient warming blankets to maintain patient temperature during the procedure is proven to significantly reduce the rate of SSIs.



**Using adequate antimicrobial measures:** Using gowns and drapes that are resistant to microbial penetration is also important to prevent SSIs. Skin disinfection combined with the use of antimicrobial incise drapes for high-risk procedures have shown to reduce the risk of SSIs. Similarly, the use of antimicrobial coated sutures have shown to reduce the risk of SSIs. These different medical devices significantly contribute to improve patients' clinical outcome.



**Sterilisation of reusable instruments:** Sterilisation of invasive devices is key in avoiding infections. Low temperature sterilisation protects delicate instruments and ensures functionality. Increasing automation of high-level disinfection processes does ensure consistent outcomes and minimises risks.

# Hospital stay (intensive care unit or ward)

Patients staying at a hospital expect to recover quickly and receive the best possible care without being exposed to any unnecessary harm. An infection acquired will diminish the patient's well-being. In severe cases such infections can cause prolonged illness, disability or even death.



## The magnitude of the problem

Patients who acquire infections from surgery spend, on average, an additional 6.5 days in the hospital, are five times more likely to be readmitted after discharge and twice as likely to die.

## What can be done?

Healthcare workers' adherence to adequate antibiotic stewardship programmes, suitable measures to detect bacterial infection avoiding the risks of transmission and the use of minimally invasive procedures during surgery, reduces patients' recovery time and risk of infections.

## Technology examples



**Safety devices:** The use of needles or syringes with safety devices can prevent a healthcare worker from a needle stick injury and thus from being infected with HAI or blood borne diseases such as HIV or Hepatitis.



**ECG cables:** Reusable ECG cables are designed for multiple use, however these cables for patients receiving cardiac monitoring have been shown to still be colonized with pathogens even after cleaning.

In these circumstances, the introduction of a disposable single patient use product enables the ability to reduce the risk of cross contamination in a post treatment environment.



**Automated systems for the disinfection of the environment:** The use of automated area decontamination using for example hydrogen peroxide as a biocidal agent, in conjunction with manual cleaning can reduce the environmental contamination by pathogens in the environment like patients' rooms, operating rooms and intensive care units. Automation ensures efficiency and that the level of disinfection achieved is consistent every time.



**Subglottic Secretion Drainage:** Endotracheal tubes help maintain the efficacy of the patient's airway during surgical procedures. Actively managing the endotracheal tube cuff pressure in the airway and removing secretions above the cuff via a suction port in the tube can reduce the risk of Ventilator Associated Pneumonia (VAP), especially if the patient requires additional ventilation post-surgery.

# Discharged and back at home

The delivery of healthcare is constantly changing. There is an increasing trend towards outpatient clinics and day surgery which means that patients continue to be treated in other healthcare facilities or in their home environment. Patients expect their safety to be taken care of throughout the continuum of care.

The role of patients, caretakers and family in combatting healthcare-associated infections is crucial during recovery and back at home. They need to be educated on how they can contribute to reduce HAI to ensure safe recovery of the patient.



## The magnitude of the problem

Patients and caregivers need to be vigilant when recovering back at home. Adherence to hygiene measures, detection of infections that may appear after the patient has been discharged and the adequate use and replacement of medical devices are crucial to complete the recovery of the patient. If not prevented, infections can lead to decreased quality of life; more time lost from work and increases the burden on family and healthcare systems.

## What can be done?

The home care setting is a challenging environment because it is more difficult to control. Patients and their caregivers play an important role through adhering to good patient safety practices.

## Technology examples



**Wound care management:** Dressings are important to maintain sterility and absorb blood and serum from wounds. Advanced dressings containing barriers to protect the wound site from bacteria as well as antimicrobial wound care products can contribute to improving patient recovery.



**Timely detection of bacteria:** Antibiotic treatment can be life-saving but constitutes also a risk factor for acquiring infections such as nosocomial diarrhea and other intestine infections. Modern medical technology can help detect and identify the bacteria within a few hours. Clinicians can then determine the most appropriate and targeted therapy, infection prevention and control measures which will lead to better management of the disease and a reduced risk of undesired side effects.



The European trade association representing the medical technology industries, from diagnosis to cure

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