

The role of medical technologies in the fight against Healthcare-Associated Infections



Executive Summary

Healthcare-Associated Infections are a serious global threat that puts in jeopardy the effective prevention and treatment of patients. It is essential to acknowledge the relation between Healthcare-Associated Infections, the inappropriate use of antibiotics as well as the development of resistance. HAIs are often caused by resistant bacteria. Preventing and detecting these infections in primary care or other care institutions at an early stage is essential to reduce antibiotic usage, consequently reducing the risk of developing resistance. This is critical for the safety of both patients as well as healthcare professionals.

Medical technologies (medical devices and in vitro diagnostics) can help prevent, diagnose and control infections, stopping the spread of resistant bacteria throughout the patient pathway. Prevention and management of HAIs contribute to the control of bacterial resistance, by limiting the transmission of multi-drug resistant organisms, and consequently lowering the need for antibiotic therapy.

The BeMedTech HAI Coalition encourages policymakers to consider the medical technology industry as a solution provider. We recommend the following actions to the Belgian governments:

1. Promote a prevention culture.
2. Encourage the implementation of the current EU Action Plan and improve this plan with bold new actions and policies on a local level.
3. Implement and monitor national targets, by the creation of surveillance systems.
4. Development of evidence-based guidance on infection control and the use of best practice-sharing.
5. Development of new funding and business models for improved access to innovative technological solutions, made possible by the savings made through the implementation of the recommendations.

Medical Technologies can support AMR/HAI prevention and management measures across the entire patient pathway

What can medtech do?

Medical technology has a role to play in reducing AMR and preventing HAIs.

Prevent and contain healthcare-associated infections and the development and spread of resistant bacteria.

Examples of technologies: coated sutures and implants, impregnated incise drapes, predictive monitoring, alcohol-based antiseptic and proper hand disinfection, and single use duodenoscopes.



Detect and identify bacterial infections and their susceptibility to medication, therefore avoiding the misuse or overuse of antibiotics.

Examples of technologies: Point-of-Care C-reactive protein test and Strep A pharyngitis rapid test.



Guide treatment duration and enable patient compliance to the appropriate use of antibiotics.

Examples of technologies: monitoring of immune biomarkers, real time molecular tests and digital health solutions.



Outbreak management and surveillance.

Hospital and healthcare facilities can compile data from diagnostic tests to track antimicrobial resistance patterns. This is also vital for the effective implementation of antibiotic stewardship programmes.

Example of technologies: clinical surveillance software, next generation sequencing-based technologies.



Help new antibiotic drug development by supporting the recruitment of appropriate patients for clinical trials.



What is needed to progress?

The HAI coalition would like to encourage policymakers to consider the medical technology industry as a solution-provider in the fight against Healthcare-Associated Infections. Therefore, the HAI coalition would like to advise the following actions to be taken by the Belgian governments.

1. Promote a prevention culture.

The development of educational programmes with and for healthcare professionals and the rest of society. Behavioural change is crucial in improving awareness.

2. Encourage the monitoring of the implementation of the current EU Action Plan on the fight against AMRs and HAIs and even improve this plan with bold new actions and policies on a national and local level.

3. Implement national healthcare targets for HAI reduction. Publish infection rates in hospitals and healthcare settings. Transparency about infection rates can enable better monitoring and prevention mechanisms to be put in place, while providing key information about patient safety. Publishing hospital and healthcare facility infection rates within the right context and setting annual targets can encourage "healthy" competition for the reduction of hospital-acquired infections, a high percentage of which are caused by highly resistant bacteria¹⁷.

4. Promote the development of evidence-based guidance on infection control. Many evidence-based guidelines are already in place in either local [SF2H, KRINKO, NICE] or global [WHO] settings. For example, the WHO has issued global guidelines for the prevention of surgical site infections. The EU and national governments should encourage Member States to implement these evidence-based protocols in healthcare settings to enable better infection prevention as well as monitoring. Best practice-sharing by different governments is also encouraged.

5. Create and support the development of new funding and business models for improved access to innovative technological solutions that help to prevent and control HAIs, together with cost-savings.

The major benefit of available technologies are still not well known or incentivised by the Belgian healthcare system, making them less available to patients and embraced by healthcare professionals. To fully use the potential of these technologies and ensure their access, structural changes will have to be implemented in a manner that acknowledges the value they provide. Firstly, incentives for hospital management should be reshaped to encourage better outcomes in terms of infection prevention and AMR rates. For example, using funding models that reward adherence to standardised protocols and that are based on HAI/AMR indicators, would incentivise clinical practice to address AMR reduction/management goals. Secondly, the way products are procured by hospitals should also be re-thought. Implementing a value-based procurement approach could for example enable the healthcare organisation to include AMR/infection reduction as one of their key criteria for value. This way, tenders for products would have to demonstrate the value they would bring to meet this goal. In turn, this would lead to purchasing of appropriate medical technologies which can help fight resistance and increase patient safety in the hospital setting overall

Medical technology-enabled solutions that support complementary actions at the level of the Belgian governments, can lead to significant prevention and reduction of AMR and HAIs. MedTech Europe is ready to engage and partner with stakeholders in further exploring the aforementioned recommendations.





Best Practices

Opportunities to streamline patient pathways:

- Antimicrobial stewardship: Up to 50% of antimicrobial therapy given in hospitals is inappropriate. The ability to use existing databases/artificial intelligence to recommend the most appropriate antibiotic, dose and duration for a given patient based on clinical parameters could minimise inappropriate prescribing.
- Point-of-care testing (POCT): There is good evidence of POCT's clinical benefit in some areas, such as influenza POCT in the emergency department, but there is scope for a greater range of available tests. For example, up to 90% of 'penicillin-allergic' patients are found to tolerate penicillin on skin-prick testing. A rapid, inexpensive way to validate allergies would enable more patients to be prescribed narrow spectrum antibiotics, decreasing antimicrobial selection pressure and cost, while avoiding harm.
- Microbiology test reporting: There is a need for technologies that improve the time from sample-taking to clinical decision, as opposed to sample processing to result reporting. Additionally, since some clinicians may lack a detailed knowledge of antimicrobials, selective reporting of antimicrobial susceptibility within test reports should be considered to assist clinicians in optimal antimicrobial prescribing.
- Mobile automated dispensing systems: These systems could reduce the burden on overworked staff by automating basic administrative tasks such as stock management, preparation and dispensing. While this technology is available, its use is not widespread.

Existing technology needs to be adapted to ensure clinical utility:

- End-to-end systems: Some IT systems are in development that enable systems from different hospital departments, e.g. radiology, microbiology, clinical chemistry and pharmacy, to be connected, but these are not yet in widespread use.
- Laboratory testing systems: Adaptations to test order systems to flag, or even block, unnecessary repeat orders would be valuable.
- Electronic prescribing: Many healthcare services use some form of electronic prescribing system. However, adaptations should be considered to improve the use of 'hard stops', which theoretically prevent antibiotic prescriptions from being dispensed if the patient does not meet certain criteria or where there is a potential for a serious medication error (e.g. daily methotrexate instead of weekly).

A culture change at all levels of healthcare infrastructure:

- Hospital leadership: For staff who are motivated by data and performance, seeing their department or organisation's position in benchmarked data regarding patient safety metrics may encourage change and allow identification of areas for improvement.
- National policy makers: National policy can be used to accelerate the uptake of innovative technology. For example, the UK Global Digital Exemplar programme promotes investment in digital capability in targeted areas, which is then blueprinted and used to enhance the digital capacity of other regions. Meanwhile, the German Ministry of Health supports an e-health initiative that aims to accelerate digitalisation within the healthcare sector.
- Industry: The medical technology industry could be well-placed to offer desired training on guidelines and best practice updates either through live or web-based channels. Indeed, some responsibility for technology deployment and optimisation must lie with the industry selling these technologies.
- Comment BD: [EB]...like the sterile single use skin preparation devices including 2% chlorhexidine. Reducing hospital staff handling and preparation time.

About BeMedTech

BeMedTech is the Belgian federation of the medical technology industry and represents nearly 200 companies, representing 80% of the relevant market. Its members are manufacturers and / or distributors of medical devices. Together they bring more than 500,000 medical technologies to the patient.

How the industry supports these recommendations



Strong recommendation by the WHO, by NICE and by KRINKO to use alcohol-based antiseptic solution based on chlorhexidine gluconate instead of povidone iodine [PVI] with an applicator for surgical site skin preparation in patients undergoing surgical procedures.^{1,2,3}



Antibacterial (triclosan-coated) sutures have been shown to reduce the risk of surgical site infection (SSI) by 26-28%.^{4,5} 3 globally recognised health authorities now include triclosan-coated sutures in their guidelines for SSI prevention: WHO, CDC and ACS & SIS ^{6,7,8}



Diagnostic-based AMS programs reduce incidence of MDR gram-negative infections by 50%⁹ and decrease antimicrobial use with no mortality impact by 20%¹⁰. Furthermore, antimicrobial stewardship initiatives can reduce hospital resistance levels by over 15% in 4 years¹¹.



Current guidelines include preoperative bathing and decolonization of the nose and skin in their recommended measures for a bundle strategy to reduce SSI. Polyhexanide was shown to be a safe and effective antiseptic for universal decolonization and reduces SSI rates due to *S. aureus* considerably^{12,13,14,15,16}



As a trusted global leader we take a holistic approach to identify and reduce infection and transmission risks, navigate rapidly changing standards and guidelines^{17,18,19} and provide science-based solutions that can help protect patients, staff and everyone entering health care facilities.

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