Health First Europe

INSIGHT REPORT:

Identifying the gaps between evidence and practice in the prevention of surgical site infections

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WITH THE ENDORSEMENT OF

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FOREWORD

Surgery is part of essential, lifesaving health services that must be guaranteed for all, timely, safely and with high quality standards. However, each year surgical site infections (SSIs) threaten the lives of millions of people who seek surgical care. Antibiotic use for preventing and treating them contribute to the spread of antibiotic resistance. SSIs are the most frequent type of health care associated infection in low- and middle-income countries, and can affect up to one-third of surgical patients. They are a very relevant patient safety problem also in higher income settings. Among their many consequences, SSIs prolong length of stay in the hospital and thus, increase the need for specialized care and costs. Very importantly, they cause additional suffering to patients who are already affected by a surgical procedure, add to the family's concerns and load, and delay recovery and return to physical activity and productive life.

SSIs are largely avoidable and up to one-half can generally be prevented through the successful implementation of clinical practice guidelines. SSI prevention is complex as the risk results from several factors arising at different times within the surgical patient journey, from the pre-operative, to the intra-operative and post-operative periods. It is complex also because it requires the engagement of many players, from surgeons, to other surgical staff, anaesthetists, infection prevention and control professionals, infectious diseases specialists, pharmacists, as well as patients and families. However, this is an invaluable opportunity for developing multi-disciplinary behavioural change approaches, fostering dialogue across disciplines, involving patients and families in care processes, and raising a culture of safety and quality of care.

This report represents an unprecedented step forward in understanding the level of implementation of evidence-based recommendations for SSI prevention in European countries, provides insightful considerations on achievements and challenges, and suggests very promising directions for improvement.

The results of the survey described in the report indicate that many critical recommendations for SSI prevention are adhered to. However, they also highlight some inconsistency of implementation across countries and for some recommendations, a gap between evidence and the actual clinical practice in surgical care. Among these, it is matter of serious concern that prolongation of antibiotic prophylaxis is common practice in many countries whereas there is no evidence of its effectiveness in reducing SSI and it is documented that it heavily contributes to antimicrobial resistance. Furthermore, simple interventions that would benefit from patient engagement strategies such as bathing/showering before the intervention or avoiding hair removal, are often not followed.

The report indicates a holistic and multilevel strategy as the way forward. It emphasizes the importance of implementation science and dissemination strategies in helping translate recommendations into practice. The economic case of SSI is identified as a critical lever for convincing senior managers to put in place clear policies and operating procedures. The document also highlights the need for making a culture of safety deeply rooted within health care, including the critical element of patient empowerment.

The report concludes with very powerful and inspirational recommendations to European policy makers, focused on the need for an infection prevention and control framework and curriculum, the importance of harmonization of recommendations and protocols for SSI prevention, the crucial role of standardized data collection and their use to inform tailored implementation of best practices. Reflections on the critical content of this report and adoption of the recommendations by all those involved will certainly lead to ensuring that infection prevention is more integrated in surgical care and will result in safer procedures and improving patient outcomes.

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EXECUTIVE SUMMARY

Surgical site infections (SSIs) are infections occurring within 30 days of a surgical procedure (or up to one year after surgery in patients receiving implants) and affecting either the incision or deep tissue at the operation site. Despite recent advances in prevention, SSIs threaten the lives of millions of patients each year and represent a serious clinical problem as they are associated with substantial mortality and morbidity, and impose severe demands on healthcare resources.

The most recent figures show 800 000 SSIs per year in Europe. This represents almost 20% of healthcare-associated infections (HAIs) in Europe and results in more than 16,000 deaths annually. Moreover SSIs negatively impact patients' physical and mental health. Increased patient morbidity, mortality, and loss of earnings during recovery are some of the indirect costs associated with infection. Intangible costs may also be incurred by the patient, such as pain and anxiety. In addition, patients may experience delayed wound healing and be more susceptible to secondary complications, such as bacteraemia. Distress may also be caused to the patient and family members if the patient is absent from home and work for a prolonged period of time. The development of an SSI causes a substantial increase in the clinical and economic burden of surgery. The overall cost of SSIs in Europe is estimated to be around €19billion per year.

Surgical Site Infections are also linked to anti-microbial resistance. As any HAI, SSIs are often caused by antibiotic-resistant organisms. SSI treatment has become very complex and challenging due to antibiotic resistance (AMR), the pathogens' adaptive ability to defend themselves against drugs intended to kill them.

Patients who are infected with drug-resistant infections are more likely to develop complications and are up to three times more likely to die from the infection. About two thirds of the 671,689 infections with antibiotic resistant bacteria in Europe are HAIs. Treating HAIs requires extensive use of antimicrobials, which contributes to increasing AMR in healthcare settings. Therefore, it is critical to focus on HAI prevention including the implementation of comprehensive programmes and simple interventions, easy to comply with by healthcare professionals, patients and citizens.

The ultimate aim of preventing SSIs is to protect and promote patient safety while decreasing the rate and burden of infections, especially those due to AMR bacteria. The inability to develop a surveillance system for SSI will make routine medical procedures and operations dangerous or ineffective. On the contrary, if actions are taken, the threat of drug-resistant infections will be minimised, saving millions of lives and safeguarding the scientific achievements of the last century for future generations.

PREVENTING AND MANAGING INFECTIONS ACROSS THE SURGICAL PATHWAY

Similar to any other healthcare-associated infections, SSIs are largely avoidable and up to one-half can generally be prevented through the successful implementation of clinical practice guidelines. The first-ever global guidelines for the prevention of SSIs were published on November 3, 2016, which were updated in some parts and published in a new edition in December 2018.

In the meantime national guidelines and protocols have been adopted at the national and local level.

In order to take a picture of the existing gaps between current medical practices and evidence-based guidelines, we decided to use the 2016 WHO guidelines for the prevention of SSI as the benchmark for research.

Health First Europe believes that understanding the level of implementation of the main preventive measures is necessary to set up effective public health policy and implement targeted infection prevention and control protocols. The data collected in our report shows striking gaps between evidence-based measures suggested by official guidelines and current medical practice in European hospitals, raising a serious concern for the safety of European patients.

To prevent and manage infections across the surgical pathway, it is necessary to implement a holistic and multilevel strategy. This should include system change, training, education, monitoring, surveillance, evaluation and communications for awareness raising.

This Insight Report aims to draw attention to the need to change practices in order to save lives. Therefore, we have developed 5 policy asks for the European policy makers to reduce the incidence of SSI in Europe:

- Creating a European Framework on HAI prevention and control
- Harmonising evidence-based guidelines and protocols
- Expanding ECDC's role to ensure observation, surveillance and data gathering.
- Facilitating guidelines, implementation and adherence
- Developing a European curriculum for infection prevention

Last but not least, it is necessary to facilitate the exchange and scaling up of best practices at all levels and put in place reward systems to promote excellence in quality of care and patient safety.

THE PREVALENCE OF SURGICAL SITE INFECTIONS IN EUROPE

Surgical site infections (SSIs) are infections occurring within 30 days of a surgical procedure (or up to one year after surgery in patients receiving implants) and affecting either the incision or deep tissue at the operation site.[1] Despite recent advances in prevention, SSIs threaten the lives of millions of patients each year and represent a serious clinical problem as they are associated with substantial mortality and morbidity and impose severe demands on healthcare resources.[2]

Before the mid-19th Century, the majority of surgical patients developed SSI. The process began with an "irritative fever," followed by purulent drainage from the incision as well as sepsis and death. The face of surgery changed radically when the 'father of modern surgery'[3] Joseph Lister, in the late 1860s, introduced the principles of antisepsis, decreasing patient suffering by reducing postoperative infectious morbidity substantially. Since then, advances in surgical techniques, including better haemostasis, conservation of an adequate blood supply, hypothermia prevention, atraumatic tissue handling, and infection control practices such as better operating room ventilation, sterilization methods, and the use of antimicrobial prophylaxis, have continued to decrease SSI. However, SSIs remain a substantial cause of morbidity and death, possibly because of the emergence of antibiotic-resistant micro-organisms among larger numbers of elderly surgical patients or those with a variety of chronic and immunocompromising conditions, and greater use of prosthetic implants and organ transplantation.[4]

> *"According to the European Centre for Disease Prevention and Control (ECDC) surgical site infections (SSIs) are among the most common healthcare-associated infections (HAIs).*

According to the European Centre for Disease Prevention and Control (ECDC)[5] surgical site infections (SSIs) are among the most common healthcare-associated infections (HAIs).[6] They are associated with longer post-operative hospital stays, additional surgical procedures, treatment in intensive care units and higher mortality.

The ECDC issued a report last October 2019 which constitutes the most up-to-date source of information on the incidence of SSIs in the EU/EEA. Even though the number of reporting in EU/EEA countries decreased in 2017 compared with 2015– 2016, the number of reported operations still increased for several types of procedures. In 2017, 10,149 SSIs were reported from a total of 648,512 surgical procedures.[7]

The percentage of SSIs varied from 0.5% to 10.1%, depending on the type of surgical procedure. The incidence density of in-hospital SSIs per 1,000 post-operative patient-days varied from 0.1 to 5.7, depending on the type of surgical procedure.

From 2014 to 2017, a statistically significant increasing trend was observed for both the percentage of SSIs and the incidence density of in-hospital SSIs following laparoscopic cholecystectomy (CHOL).[8]

18.3%
of all HAIs in Europe

800,000
SSIs in Europe

In Europe, over
16,000
deaths annually[9]

The development of an SSI causes a substantial increase in the clinical and economic burden of surgery. The financial burden of surgery is increased due to the direct costs incurred by prolonged hospitalisation of the patient, diagnostic tests, and treatment. Certain patients may also require reoperation[10] after the contraction of an SSI, which is associated with considerable additional costs.[11] The length of hospitalisation is more than twice as long for patients with an SSI relative to uninfected patients. SSIs may therefore represent an opportunity cost to hospitals by displacing hospital resources that would otherwise be spent elsewhere, as well as delaying subsequent patients' surgery. Following discharge from hospital, SSI patients may also rely on healthcare from other community care services, which will further contribute to the economic burden of infection.

SSIs negatively impact patient physical and mental health. Increased patient morbidity,[12] mortality, and loss of earnings during recovery are some of the indirect costs associated with infection. Intangible costs may also be incurred by the patient, such as pain and anxiety. In addition, patients may experience delayed wound healing[13] and be more susceptible to secondary complications, such as bacteraemia.[14] Distress may also be caused to the patient and family members if the patient is absent from home and work for a prolonged period.[15]

Indeed, Broex et al. demonstrated that in European hospitals patients who develop an SSI constitute a financial burden approximately double that of patients who do not develop an SSI. The same review also reported that the length of hospitalization was more than twice as long for patients with an SSI relative to uninfected patients. EUR 1.5 billion-19 billion: total annual extra cost to health systems.

A recent study[16] from 2017, analysed the data related to the burden of surgical site infection in the 'big five' European nations (France, Germany, Italy, Spain, the UK) and it shows:

Cost of SSI in Europe up to
€19billion[17]

France **Additional Cost: €17,434**

French patients who developed an SSI constitute a total per-patient medical cost €17,434 higher than those patients who did not develop an SSI.

Germany **Additional Cost: €22,900**

The development of an SSI was associated with additional total medical costs of €22,900, relative to uninfected patients.

Italy **Additional Cost: €32,000**

The development of an SSI was associated with additional total medical costs of €32,000, relative to uninfected patients.

Spain **Additional Cost: €10,232**

The development of an SSI was associated with additional total medical costs of: $10,232 relative to uninfected patients.

UK **Additional Cost: €11,766**

Patients who contracted an SSI constituted an additional healthcare financial burden of £10,523 per patient.

REDUCING SURGICAL SITE INFECTIONS INCIDENCE TO CURB THE ANTI-MICROBIAL RESISTANCE IMPACT

Surgical Site Infection prevention is critical to tackle anti-microbial resistance. Antibiotics are a vital part of modern medicine but their overuse and inappropriate use in humans and animals has brought about one of the most urgent global health challenges of our time. In fact, antimicrobial resistance represents a severe crisis, causing an estimated 700,000 deaths around the world each year. Across Europe, AMR is responsible for about 33,000 deaths each year and costs about 1.1 billion Euros to the health care systems of EU/EEA countries.[3] OECD projections[19] indicate that AMR will keep growing in the EU/EEA, from about 17% of infections with AMR in 2015 to 19% in 2030. Also, the growing resistance to the second-line and third-line antibiotics is an extremely worrying scenario, as it means that we are exhausting our antibiotics armoury.

Antimicrobial resistance threatens to undermine many advances in the medical field particularly in surgery where bacterial growth is highly common. Modern medicine is built on the ability of antibiotics to prevent or cure infections[20] but with the growing incidence of AMR added to a dry pipeline,[21] this can lead to a loss of many advantages in surgical procedures enabled by antimicrobials[22] and a soaring rate of surgical site infections (SSI). The issues of AMR and SSI are part of the same vicious circle.

As any Healthcare-associated infection, SSIs are often caused by antibiotic-resistant organisms. SSI treatment has become very complex and challenging due to antibiotic resistance (AMR), the pathogens' adaptive ability to defend themselves against drugs intended to kill them.

Patients who are infected with drug- resistant infections are more likely to develop complications and are up to three times more likely to die from the infection[23]. About two thirds of the 671,689 infections with antibiotic resistant bacteria in Europe are HAIs. Treating HAIs requires extensive use of antimicrobials which contributes to increasing AMR in healthcare settings. Therefore, it is critical to focus on HAI prevention which includes the implementation of comprehensive programmes and simple interventions that are easy to comply with by healthcare professionals, patients and citizens.

The ultimate aim of preventing SSIs is to protect and promote patient safety while decreasing the rate and burden of infections, especially those due to AMR bacteria. The inability to develop a surveillance system for SSI will make routine medical procedures and operations more dangerous or ineffective. On the contrary, if actions are taken, the threat of drug-resistant infections will be minimised, saving millions of lives and safeguarding the scientific achievements of the last century for future generations.

GUIDELINES FOR PREVENTING AND MANAGING INFECTIONS ACROSS THE SURGICAL PATHWAY

Similar to any other healthcare-associated infections, SSIs are largely avoidable and up to one-half can generally be prevented through the successful implementation of clinical practice guidelines.

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The first-ever global guidelines for the prevention of SSIs were published on November 3, 2016, which were updated in some parts and published in a new edition in December 2018. The 2016 WHO Global guidelines for the prevention of SSI are evidence-based guidelines which include systematic reviews of current practices and present additional information in support of actions to improve infection prevention. The guidelines include 13 recommendations for the preoperative period and 16 for preventing infections during and after surgery.

At the same time national and international guidelines such as those from The National Institute for Health and Care Excellence (NICE NG125 2019), The Clinical Practice Guide for Surgical Patient Safety of the National Health System in Spain (2010), the ECDC Systematic review and evidence-based guidance on perioperative antibiotic prophylaxis (2013), the Canadian Patient Safety Institute Guideline (2014) and the CDC guidelines are already in place. All these guidelines are supported by different levels of evidence generating. Common and harmonised guidelines have not been developed in Europe.

In order to take a picture of the current existing gaps between medical practices and evidence-based guidelines, we decided to use as benchmark for research the 2016 WHO guidelines for the prevention of SSI.

SURGICAL SITE INFECTION PREVENTION RECOMMENDATIONS

World Health Organization

PREOPERATIVE PERIOD

PATIENT, CLINICAL AND SUPPORT STAFF AND SURGICAL TEAM ACTIONS

INFECTION PREVENTION AND CONTROL (IPC) TEAM

	ACTION	SUPPORTED BY
Patient bathes or showers prior to surgery with either plain or antimicrobial soap	PATIENT	SURGICAL TEAM AT PREOPERATIVE CONSULTATION
Use 2% mupirocin decolonization in known nasal carriers of *Staphylococcus aureus* in cardiac and orthopaedic surgery *(consider for other surgeries)*	WARD NURSE	DOCTOR, PHARMACY
Do NOT remove patient hair, or if absolutely necessary, remove with a clipper, do not shave	SURGICAL TEAM	PATIENT INFORMATION AND EDUCATION
Administer surgical antibiotic prophylaxis in the 120 minutes preceding surgical incision *(depending on the type of operation and the half life of the antibiotic)*	ANAESTHETIST (OR OTHER IN SURGICAL TEAM)	IPC TEAM/PHARMACY
Prepare hands for surgery by scrubbing, using the correct technique with a suitable antimicrobial soap and water OR an alcohol-based handrub *(before donning sterile gloves)*	SURGEON	PHARMACY/ PROCUREMENT

SURGICAL SITE INFECTION PREVENTION RECOMMENDATIONS

World Health Organization

INFECTION PREVENTION AND CONTROL (IPC) TEAM

PREOPERATIVE PERIOD

PATIENT, CLINICAL AND SUPPORT STAFF AND SURGICAL TEAM ACTIONS

	ACTION	SUPPORTED BY
Carry out mechanical bowel preparation always combined with administering preoperative oral antibiotics in adult patients undergoing elective colorectal surgery	SURGICAL TEAM	PHARMACY/ PROCUREMENT
Consider administering oral or enteral multiple nutrient-enhanced formulas in underweight patients *(undergoing major surgical operations)*	SURGICAL TEAM	PHARMACY/PROCUREMENT AND CLINICAL STAFF
Do NOT discontinue immunosuppressive medication	SURGICAL AND WARD TEAM	PHARMACY AND CLINICAL STAFF
Clean and sterilize/decontaminate surgical instruments and other equipment	SURGICAL TEAM	PROCUREMENT/ STERILIZATION UNIT
Clean and prepare operating room environment	CLEANING STAFF	SURGICAL TEAM

SURGICAL SITE INFECTION PREVENTION RECOMMENDATIONS

World Health Organization

INFECTION PREVENTION AND CONTROL (IPC) TEAM

INTRAOPERATIVE PERIOD

SURGICAL TEAM ACTIONS

	ACTION	SUPPORTED BY
Do NOT use laminar airflow ventilation systems *(not beneficial for patients undergoing total arthroplasty surgery)*	SURGICAL TEAM	PROCUREMENT/ESTATES AND MAINTENANCE STAFF
Use either disposable sterile non-woven or reusable sterile woven drapes and surgical gowns	SURGICAL TEAM	PROCUREMENT/ STERILIZATION UNIT
Do NOT use plastic adhesive incise drapes *(neither those with nor those without antimicrobial properties)*	SURGICAL TEAM	PROCUREMENT
Use alcohol-based solution containing chlorhexidine gluconate for skin preparation	SURGICAL TEAM	PHARMACY/ PROCUREMENT
Do NOT use antimicrobial sealants after surgical site skin preparation	SURGICAL TEAM	PROCUREMENT
Administer 80% fraction of inspired oxygen (FiO_2) *(in adults undergoing general anaesthesia with endotracheal intubation)*	SURGICAL TEAM	ESTATES AND MAINTENANCE STAFF
Consider using a warming device	SURGICAL TEAM	PROCUREMENT
Consider using a protocol for intensive blood glucose control *(for both diabetic and non-diabetic adult patients)*	SURGICAL TEAM	CLINICAL STAFF

SURGICAL SITE INFECTION PREVENTION RECOMMENDATIONS

World Health Organization

INFECTION PREVENTION AND CONTROL (IPC) TEAM

INTRAOPERATIVE PERIOD

SURGICAL TEAM ACTIONS

	ACTION	SUPPORTED BY
Consider using goal-directed therapy	SURGICAL TEAM	PROCUREMENT
Consider irrigating incisional wound with an aqueous povidone iodine solution before closure *(in clean and clean-contaminated wounds)*	SURGICAL TEAM	PROCUREMENT
Do NOT perform antibiotic wound irrigation	SURGICAL TEAM	PROCUREMENT
Consider using wound protector devices *(in clean-contaminated, contaminated and dirty abdominal procedures)*	SURGICAL TEAM	PROCUREMENT
Consider prophylactic negative pressure wound therapy *(primarily in closed surgical incisions in high-risk wounds)*	SURGICAL TEAM	PROCUREMENT
Consider using triclosan-coated sutures	SURGICAL TEAM	PROCUREMENT
Maintain asepsis and discipline in the operating room	SURGICAL TEAM	CLINICAL STAFF

SURGICAL SITE INFECTION PREVENTION RECOMMENDATIONS

World Health Organization

INFECTION PREVENTION AND CONTROL (IPC) TEAM

POSTOPERATIVE PERIOD

SURGICAL TEAM, CLINICAL STAFF ACTIONS

	ACTION	SUPPORTED BY
Do NOT prolong surgical antibiotic prophylaxis in the postoperative period	CLINICAL STAFF	SURGEON; PHARMACY AND POLICY (STOPPING DELIVERY)
Do NOT continue surgical antibiotic prophylaxis due to the presence of a drain **Remove wound drain when clinically indicated**	SURGICAL TEAM AND CLINICAL STAFF	ANTIBIOTIC POLICY IN PLACE
Administer 80% FiO_2 for 2–6 hours post-op	WARD NURSE	DOCTOR PRESCRIPTION (AND PROTOCOL IN PLACE), ESTATES/MAINTENANCE STAFF
Evaluate and manage wound appropriately, including cleansing, dressing and care, according to the given wound situation	CLINICAL STAFF	DOCTOR REVIEW
Do NOT use advanced dressings of any sort *(use standard dressings instead)*	WARD NURSE	PROCUREMENT AND SURGICAL TEAM

ASSESSING THE LEVEL OF IMPLEMENTATION OF WHO GUIDELINES

Understanding the level of implementation of the main preventive measures is necessary to set up effective public health policy and implementing targeted infection prevention and control protocols. Therefore, Health First Europe decided to launch in April 2019 a pan-European survey assessing the gap between evidence and clinical practice in preventing SSIs.

An online survey (through the platform Survey Monkey) was designed based on the 29 points of WHO Recommendation.

A broad range of recommendations from simple precautions such as ensuring that patients bathe or shower before surgery and the best way for surgical teams to clean their hands, to guidance on when to use antibiotics to prevent infections, what disinfectants to use before incision, and which sutures to use, was selected. HFE based this choice on the level of evidence supporting a single recommendation and the potential possibility to implement this practice in any type of surgery.

We approached national associations representing surgeons, consultants, nurses, hospital managers working in the public and private healthcare settings. For capacity reasons, we had to focus on 5 countries: Germany, Italy, UK, Spain and France. We received over 1000 replies allowing us to get a broad picture of the current situation on SSI prevention and control.

This Report does not aim to formulate new clinical recommendations, but the only scope is draw attention to the need to change practices in order to save lives.

PREOPERATIVE MEASURES

PREOPERATIVE BATHING

Preoperative whole-body bathing or showering is considered good clinical practice to make the skin as clean as possible prior to surgery in order to reduce the bacterial load, especially at the site of incision. When considering the available evidence, the most relevant question is whether preoperative bathing or showering with an antimicrobial soap is more effective than plain soap to reduce SSI.[24]

WHO recommendation
It is a good practice for patients to bath or shower prior to the surgery.

Do you recommend a preoperative bath or shower to your patients?

Yes	100%	51%	85%	94.5%	81%
No	0%	49%	15%	5.5%	19%

Where do you recommend a preoperative bath or shower for your patients?

A bath at home	4.8%	4.1%	17.5%	0.3%	14.5%
A bath at the hospital	1.2%	6.1%	6.2%	0.9%	0%
A shower at home	49.2%	16.3%	34%	30.9%	57%
A shower at the hospital	44.8%	24.5%	27%	62.5%	9.5%
Nowhere	0%	49%	15.3%	5.4%	19%

OPTIMAL TIMING FOR PREOPERATIVE SURGICAL ANTIBIOTIC PROPHYLAXIS (SAP)

WHO recommendation
The panel recommends the administration of SAP with 120 minutes before incision.

SAP refers to the prevention of infectious complications by administering an effective antimicrobial agent prior to exposure to contamination during surgery. Successful SAP requires delivery of the antimicrobial agent in effective concentrations to the operative site before contamination occurs.[25]

Do you administrate surgical antibiotic prophylaxis (SAP) within 120 minutes before the incision?					
Yes	84%	55.5%	89%	81.2%	87%
No	16%	44.5%	11%	18.8%	13%

HAIR REMOVAL

WHO recommendation
Patients undergoing any surgical procedure, hair should be either not be removed or, if absolutely necessary, it should be removed only with a clipper.

Removal of hair from the intended site of surgical incision has traditionally been part of the routine preoperative preparation of patients undergoing surgery. Hair has been associated with a lack of cleanliness and the potential to cause SSI. According to the most recent evidence, hair removal seems to increase the risk of SSI by causing microscopic trauma of the skin. To minimize the potential of skin trauma, the use of clippers instead of razors has been proposed for preoperative hair removal.[26]

Do you recommend hair removal from the surgical field?					
Yes, the same day of the operation	24%	35.3%	38%	69.6%	27%
Yes, the day before the operation	30.2%	29.4%	35%	24.3%	2.1%
No	30.2%	33.3%	25%	2.3%	24.2%
Other (please specify)	15.6%	2%	2%	3.8%	16.6%

SURGICAL SITE PREPARATION

Surgical site preparation refers to the preoperative treatment of the intact skin of the patient within the operating room. Preparation includes not only the immediate site of the intended surgical incision, but also a broader area of the patient's skin, and usually takes place when the patient is already positioned on the operating table. The aim of this procedure is to reduce the microbial load on the patient's skin as much as possible before incising the skin barrier. Protocols for skin preparation are in place in all our targeted countries to ensure the highest level of patient safety.

WHO recommendation
The panel recommends alcohol-based antiseptic solutions based on chlorhexidine gluconate (CHG) for surgical site skin preparation.

However, there is an absolute lack of harmonisation and consistency regarding the agents to be used, application techniques.

Is there a hospital policy on skin preparation?					
Yes	95.5%	90.4%	76%	87.1%	78%
No	5%	9.6%	24%	12.9%	22%

What type of product is used for the patient skin antisepsis?					
Chlorhexidine gluconate	4.8%	16.3%	40.7%	57.2%	56%
Povidone iodine	49.5%	26.5%	50.3%	23.3%	13%
An alcoholic solution	32.5%	47%	6.8%	7.8%	5.3%
An aqueous solution	0%	0%	1.1%	10.6%	0%
Other (please specify)	13.2%	10.2%	1.1%	1.1%	26%

What method of skin antisepsis do you use?					
Multiple-use bottles	62%	53%	51.5%	75.86%	71.4%
Single use bottles	38%	47%	48.5%	24.14%	28.6%

What patient skin antisepsis application method do you use?					
Gauze or reusable brush	60.2%	73.4%	62.9%	87.41%	48.6%
Single-use applicator	39.8%	26.5%	37.2	12.59%	51.4%

What is the number of applications of the skin antisepsis product?					
1	13%	4%	28%	51.23%	44%
2	81.1%	20.4%	51.5%	37.67%	41.4%
More than 3	6%	75.5%	20.5%	11.1%	14.6%

How do you manage skin drying?					
Allow spontaneous drying	93.5%	85.4%	45%	62.9%	91%
Dry with towels	6.5%	14.6%	55%	37.1%	9%

SURGICAL HAND PREPARATION

The purpose of routine hand hygiene in patient care is to remove dirt, organic material and reduce microbial contamination from transient flora. In contrast to hygienic hand hygiene through handwash or handrub, surgical hand preparation must eliminate the transient flora and reduce the resident flora. In addition, it should inhibit the growth of bacteria under the gloved hand. The aim of this preventive measure is to reduce the release of skin bacteria from the hands of the surgical team to the open wound for the duration of the procedure, particularly in the case of an unnoticed puncture of the surgical glove.[27]

Surgical hand preparation is performed in all our target countries, there is a certain degree of variation on the type of product used for the preparation.

WHO recommendation

Surgical hand preparation should be peformed by scrubbing with either a suitable antimicrobial soap and water or using a suitable alcohol-based handrub before wearing sterile gloves.

What product do you use for the first hand preparation of the day?					
Antiseptic soap	25.5%	48%	92%	88.08%	76.5%
Alcohol solutions	31.1%	52%	6%	9.81%	20.5%
Other products (please specify)	43.4%	0%	2%	1.75%	3%

What product do you use for the successive procedures of the day?					
Antiseptic soap	7.5%	24.4%	84%	62.04%	60%
Alcohol solutions	87.5%	70.7%	15%	36.34%	33.3%
Other products (please specify)	5%	4.9%	1%	1.62%	6.7%

INTRAOPERATIVE MEASURES

MAINTAINING NORMAL BODY TEMPERATURE (NORMOTHERMIA)

WHO recommendation

The use of warming devices in the operating room and during the surgical procedure for patient body warming with the purpose of reducing SSI.

Hypothermia (or low body temperature) is defined as a core temperature below 36° and is common during and after major surgical procedures lasting more than two hours. It is unclear how the maintenance of normothermia in the core body compartment might reduce the incidence of SSI. Some of the current health care bundles and guidelines recommend that body temperature be maintained above 35.5-36° during the perioperative period, although there is no consensus among these recommendations for the lower limit or optimal timing for normothermia.[28]

Do you use methods to maintain patient normothermia?					
Yes	95.2%	98%	89%	84.3%	82.8%
No	4.8%	2%	11%	15.7%	17.2%

ANTIMICROBIAL-COATED SUTURES WITH SURGICAL ANTIBIOTIC PROPHYLAXIS

WHO recommendation

The use of triclosan-coated sutures for the purpose of reducing the risk of SSI, independently of the type of surgery.

Surgical suture material is used to adequately adapt the wound edges and thus it is in direct contact with the wound itself. To prevent microbial colonization of the suture material in operative incisions, sutures with antibacterial activity have been developed. Several trials have shown that the use of triclosan-coated sutures leads to a reduction of the number of bacteria in vitro and also of wound infections in animal and clinical studies. Of note, this effect is not confined to any particular tissue or organ system.[29]

The use of triclosan-coated sutures is very limited in Italy, Germany, while respondents from UK and France preferred not to reply these questions raising high concern about awareness of antimicrobial-coated sutures as a tool to reduce SSI.

Do you use triclosan-coated sutures for the purpose of reducing the risk of SSI?					
Yes	3.3%	26%	17.57%	12.4%	9.7%
No	20%	55.5%	50.98%	48%	27.3%
Skipped	76.67%	18.5%	31.45%	38.6%	63%

POSTOPERATIVE MEASURES

SURGICAL ANTIBIOTIC PROPHYLAXIS (SAP) PROLONGATION

WHO recommendation
The panel recommends against the prolongation of SAP after completion of the operation for the purpose of preventing SSI.

The preventive effect of the routine use of SAP prior to non-clean and implant surgery has long been recognized. However, the benefit of continuing SAP after completion of the procedure is unclear. While current guidelines recommend a maximum postoperative SAP duration of 24 hours, increasing evidence shows that there may be non-inferiority of a single preoperative dose (and possible additional intraoperative doses according to the duration of the operation). Despite this, surgeons still have a tendency to routinely continue SAP up to several days after surgery.[30]

Based on the data collected, there is no clarity on the value of surgical antibiotic prophylaxis after completion of the operation.

A similar issue was reported by the ECDC PPS which shows similar prolongations of surgical prophylaxis relatively recently in a number of countries.[31]

Another interesting element is that there is no clarity as for the value of surgical antibiotic prophylaxis (SAP) after completion of the operation in most countries.

Do you recommend prolonging surgical antibiotic prophylaxis (SAP) after completion of the operation?

Yes	15%	22.7%	52.5%	52.4%	38%
No	85%	77.3%	47.5%	47.5%	62%

THE LACK OF HARMONISATION ON SURGICAL SITE INFECTIONS PREVENTION IN EUROPE

Healthcare professionals are committed to prevent surgical site infections and the large majority of our respondents rated SSI prevention as a 'very important issue'. Hospital policy or protocol for prevention of Surgical Site Infection are clearly in place in European hospitals, but there is no consensus on the measures to be implemented (not even in the same hospital, surgical speciality within the hospital, region and country). At the same time, it is necessary to mention that the lack of European guidelines and the existence of national ones doesn't facilitate the use of harmonised and evidence based practices to prevent SSIs.

There is no consensus on the measures to be implemented

As highlighted by below experts, it is possible to prevent SSI but the striking gaps between evidence-based measures suggested by official guidelines and actual medical practice in European hospitals represent a serious concern for the safety of European patients'. As highlighted by our experts:

Surgical site surveillance and audit are essential to reducing surgical site infections. Current variation between hospitals and even individual surgeons allows for considerable improvement if best practice guidelines were agreed and followed. National guidelines for prevention of surgical infection, including antimicrobial prophylaxis, are produced by the National Institute for Health and Care Excellence. Individual hospitals monitor compliance with these guidelines and governance structures are responsible. WHO guidelines are also widely quoted. A national surgical site surveillance scheme is administered by Public Health England and provides regular feedback to chief executives and surgical directors. However, the number of operations included in this surveillance varies widely according to local resource. Compliance with best practice guidelines is subject to the custom and practice of the surgeon, for example, continued prophylactic antibiotic after the operation is common in some specialties, despite the lack of evidence of benefit. The survey in this report demonstrates a significant proportion of UK surgeons not ensuring antibiotic prophylaxis is within 120 minutes before the start of surgery, removing skin preparation solution with towels and not using antimicrobial sutures. Education and behaviour change are critical, and surgeons need to be persuaded that compliance with guidelines is in the best interests of their patients.

PROF. PETER WILSON
Member of the Council of the Healthcare Infection Society

Postoperative infections continue to be the most common complication among patients undergoing any type of surgery, and can represent up to 25% of hospital-acquired infections globally. The development of a surgical site infection (SSI) causes a substantial increase in the economic burden of surgery, due to prolonged hospitalisation, associated morbidity, diagnostic tests, and treatment.

More than fifty specific measures with the potential to reduce SSI rate have been investigated, but they have shown a varying grade of efficacy and have different levels of adoption among the surgical community. Periodically, national and international health organizations analyse the evidence of these proposed preventative measures and grade it in the form of clinical practice guidelines. These guidelines should be the translation distillation of all this knowledge into recommendations based on systematic reviews and meta-analysis, and their dissemination should improve outcomes and infection rates in a uniform way among hospitals and among surgeons. However, the level of awareness of and compliance with preventative protocols for SSI seems to be highly variable, as gaining acceptance and compliance requires substantial individual, cultural and organizational changes.

Surgeons are often identified as being key factors in non-compliance; some being unable to change personal and professional behaviour to comply with protocols and checklists.

In several studies, our group found a low level of awareness about some preventative measures. Overall, our results suggest that gaps in the translation of best evidence into actual practice in the prevention of SSI in surgery are persistent, even within academic environments. Understanding the level of implementation of preventative measures and the level of awareness of the providers on the available scientific evidence is crucial. Therefore, many areas for improvement have been detected to be addressed by health organizations.

We believe it is necessary for scientific societies and regulators to reiterate measures that contribute to SSI prevention, while discouraging the use of others that are unnecessary or even detrimental. A concerted effort by the surgical community will be needed to increase adherence to evidence-based SSI prevention practices. Implementation policies must concentrate not only on the professionals, but also on the context in which they perform.

DR. JOSEP M BADIA
President, Spanish Observatory of Infection in Surgery

CAN SURGICAL SITE INFECTION BE PREVENTED IN YOUR COUNTRY? HOW?

Despite clear evidence and guidelines to direct SSI prevention strategies, in Italy compliance is uniformly poor. Italian surgical societies in recent years are becoming aware of the problem and at the last national congresses they have designated sessions concerning infections in surgery to improve knowledge among Italian surgeons. In particular, ACOI (Italian Hospital Surgeons Association) in the last two years has set up a multidisciplinary task force organizing several meetings throughout the national territory (from north to south) in order to implement knowledge and awareness on the prevention of SSIs among Italian surgeons. The last meeting was held by webinar and all regional delegates were involved aiming to spread awareness at regional level and to identify structure and process indicators to be investigated regarding the prevention of SSIs in the next future.

DO YOU HAVE IN PLACE ANY NATIONAL GUIDELINES OR PROTOCOLS TO PREVENT AND REDUCE SSI?

Both the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have published guidelines for the prevention of SSIs. In Italy some regional agency have recently updated local guidelines, however they all refer to the statements of the WHO Global Guidelines.

WHAT ARE THE MAIN BARRIERS TO REDUCE SSI?

Appropriate infection prevention and management measures should be integral to good clinical practice and standards of care. However, both infection prevention and management measures among surgeons are often inadequate and a great gap exists between the best evidence and clinical practice across the surgical pathway. In hospitals, cultural, contextual, and behavioral determinants influence clinical practice and improving behaviour in infection prevention and management remains a challenge.

PROF. PIERLUIGI MARINI
Presidente Nazionale, Associazione Chirurghi Ospedalieri Italiani

A MULTI-LEVEL APPROACH TO PREVENT AND REDUCE THE BURDEN OF SSI

To prevent and manage infections across the surgical pathway, it is necessary to implement a holistic and multilevel strategy. This should include system change, training, education, monitoring, evaluation and communications for awareness raising.

NEED FOR CLEAR GUIDELINES AND PROTOCOL FOR IMPLEMENTATION

Coordinated and standardized guidelines and protocols can assist the multi-disciplinary efforts to reduce SSI within the unique practices of a given institution. The dissemination of standardised evidence-based recommendations can improve infection rates consistently among hospitals. Ideally, a group of core measures with high level of evidence and which are highly recommended by most guidelines could be identified and should be recommend for all surgical procedures.

WAYS TO IMPROVE COORDINATION AND GUIDELINES IMPLEMENTATION

How to coordinate and standardise guidelines and protocols in Europe? In 2016 World Health Organization (WHO) published the Global guidelines for the prevention of surgical site infection. They are evidence-based guidelines including systematic reviews presenting additional information in support of actions to improve practice. They range from simple precautions such as ensuring that patients bathe or shower before surgery, appropriate way for surgical teams to clean their hands, guidance on when to use prophylactic antibiotics, which disinfectants to use before incision, and which sutures to use. These very well-done guidelines could be easily standardized across Europe.

HOW TO ENSURE THE HIGHEST LEVEL OF GUIDELINES IMPLEMENTATION?

Despite evidence supporting the effectiveness of best practice, many clinicians fail to implement it, and evidence-based processes and practices that are known to optimize prevention and management of infections tend to be underused in routine practice.

On an individual level, healthcare workers should have the necessary knowledge, skills, and abilities to implement best practices. Increasing their knowledge may influence their perceptions and motivate them to change behavior. Education and training represent an important component for accurate implementation of recommendations. Education of all health professionals in preventing and managing SSIs should begin at undergraduate level and be consolidated with further training throughout the postgraduate years.

Peer-to-peer role modeling, and champions on an interpersonal level have shown to positively influence implementation of best practices too. Many clinicians use educational materials or didactic continuing medical education sessions to keep up-to-date. However, these strategies might not be very effective in changing practice, unless education is interactive and continuous, and includes discussion of evidence, local consensus, feedback on performance (by peers), making personal and group learning plans, etc.

Identifying a local opinion leader to serve as a champion may be important because the "champion" may integrate best clinical practices and drive colleagues in changing behaviors, working on a day to day basis, and promoting a culture in which infection prevention and control is of high importance.

Finally, organizational obstacles may influence best practice implementation. Many different hospital disciplines are typically involved in infection process across the surgical pathway, making collaboration, coordination, communication, teamwork and efficient care logistics essential.

Infection prevention and control, antimicrobial stewardship and correct approach to surgical infections cannot be performed independently and requires interdependent and coordinated action across multiple and overlapping disciplines and clinical settings.

WHICH ACTIONS SHOULD BE ADOPTED AT THE POLICY LEVEL TO REDUCE THE GAPS BETWEEN EVIDENCE AND PRACTICES TO PREVENT SSI?

Effective infection prevention and control requires constant action at all levels of the health system, including policymakers, facility managers, health workers and those who access health services. Policymakers increasingly should be focused on identifying policy mechanisms to reduce the numbers of infections that may result from patients' stays in hospitals and other health care facilities. It may be important to promote clear and compelling messages regarding the cost of inaction on infection prevention and control. This should include the generation of additional evidence on the economic cost of antimicrobial resistance strictly related to healthcare-associated infections. These types of economic-based arguments can be particularly convincing for policymakers and can help them better understand the value of investments in infection prevention and control.

DR. MASSIMO SARTELLI
Acting Director, Global Alliance for infections in Surgery

TURNING RECCOMANDATIONS INTO PRACTICE

The WHO implementation guidance notes examples of current practice against the WHO SSI prevention guideline recommendations and considers all settings, both upper and low-middle income countries (LMICs) which means it'll be valid for all Europe.

Identifying the related problem that needs to be addressed if the recommendation is not being consistently and reliably applied, and, breaking down the steps required to make an improvement applying the key elements which are summarized as 'build it', 'teach it', 'check it', 'sell it' and 'live it' will be a good start.

'Build it' consider what infrastructure, equipment, supplies and other resources (including human) are required to implement the intervention and the dedicated budget. Does the physical environment influence health worker behaviour? How can ergonomics and human factors approaches facilitate adoption of the intervention? Are certain types of health workers needed to implement the intervention?

'Teach it' consider who needs to be trained. What type of training should be used to ensure that the right health workers will be engaged to ensure the intervention will be implemented in line with evidence-based policies, and how frequently? Does the facility have trainers, training aids, and the necessary equipment to achieve what is needed? 'Check it' consider how you can identify the gaps in IPC practices or other indicators in your setting to allow you to prioritize your intervention. How can you be sure that the intervention is being implemented correctly and safely, including at the bedside? Are there methods in place to observe or track practices, including against the associated training that has been delivered? How and when will feedback on practices be given to the target audience and managers? A practical example: when implementing SSI interventions, the use of key tools are important considerations, such as surveillance data collection forms and the WHO surgical safety checklist (adapted to local conditions).

'Sell it' consider how are you promoting an intervention to ensure that there are cues to action at the point of care and messages are reinforced to health workers and patients? Do you have capacity/ funding to develop promotional messages and materials?

'Live it' consider if there is demonstrable support for the intervention at every level of the health system? For example, do senior managers provide funding for equipment and other resources? Are they willing to be champions and role models for IPC and safe surgery improvement? Are clinical teams involved in co-developing or adapting the intervention? Are they empowered and do they feel ownership and the need for accountability?

Implementation and improvement are challenging; it takes time and it takes understanding of this relatively new science being applied in the Infection Prevention and Control (IPC) and surgical communities, which have often focused on the more 'technical' side of problems presented by avoidable infections, e.g. working primarily on surveillance. While there have been a range of IPC guidance documents and tools published by global organizations and national governments, the implementation and evaluation of approaches and tools continues to be both outstanding and a challenge. Approaches need to include joined up working and learning between IPC and surgical communities ultimately facilitating sustainable change in IPC, patient safety, and global surgery. If real improvements are to be achieved, based on WHO workforce recommendations, IPC programs including the staff to execute these must be a priority going forward. In addition, quality NSOAPs should embrace aspects of evidence based IPC and SSI recommendations.

DR. KEMAL RASA
President, Surgical Infection Society Europe

A SYSTEM SHIFT TOWARDS THE ADOPTION OF PREVENTIVE APPROACH IN HEALTHCARE

Ensuring that the health care facilities have the necessary infrastructure and resources in place to allow for steps to be taken to prevent SSI on the known modifiable risk factors. The right infrastructure and available resources can streamline interventions for consistent delivery of care and make execution easier and safer.

CHALLENGING TO IMPLEMENT A PREVENTIVE APPROACH IN HEALTHCARE

The present report by Health First Europe brings together important survey evidence demonstrating the need for a new approach in infection control with regard to surgical site infections (SSI). The report sets out the main parameters of change in implementing surgical pathways and formulates clear criteria why policy makers need to take note of this issue seeking a wider harmonised European approach. In my opinion, a preventive approach is key to effectively addressing the considerable resources needed to reduce attendant morbidity rates of SSIs. This however requires a holistic method of implementing evidence based guidelines through shared learning strategies across hospital providers in Europe. A European wide strategy has to take into account the challenges of changing health system cultures that may be resistant to innovation and how to scale up preventative procedures in a field that has often been reluctant to change.

Health First Europe's report clearly identifies the difficult task ahead of institutionalising a safety first culture amongst all practitioners, emphasising the interaction of various components of implementing effective targeted infection control protocols, starting with education and training, through to monitoring outcomes and progress and rounding it off with evaluative assessments of the impact of new innovative protocol and evidence based clinical practice. I believe that the report of Health First Europe makes a critical contribution to the important debate as to how we can improve SSIs across Europe harnessing the power of shared learning.

DR. AXEL KAEHNE
President, European Health Management Association

WHAT ARE THE CURRENT CHALLENGES TO IMPLEMENT AN INFECTION PREVENTION APPROACH ON EUROPEAN HEALTHCARE SYSTEMS?

All hospitals and all caregivers are engaged. But how to implement a global quality and safety culture based on outcomes? And how to manage actions in European healthcare systems? Most often, severe adverse events are difficult to report because problems tend to remain secret and there might be legal issues involved, limiting reporting and analysis. To have a clear understanding of the situation so that we can strive to improve, we must break the silence and European comparison on global performance could be a solution. Without any restrictions, a collaborative process across borders might help to develop a concerted approach. What are the results in other Member States? Using significant indicators matching my own activity, where do I stand as far as my surgical site infection is concerned? With general data coming from a wide European hospital range, all professionals could easily be made aware of their individual performance. A positive approach can emerge from European data.

HOW TO OVERCOME THESE CHALLENGES? SHORT AND LONG-TERM SOLUTIONS

We need a common culture regarding health outcomes. We must agree to publish, to diffuse and to analyze our activity. For adverse event reporting, Initial training matters but an everyday attention is required. Short-term solution is to involve all health professionals including surgical teams using facilitators, but a long-term solution must be based on benchmarking in all European hospitals to assess local evaluation and to observe the global situation. A collaborative process in the EU27 would be a win-win attitude for professionals and patients, limiting surgical site infections. UEHP is one of the network able to impulse a culture of change, using review and publication at European level.

DR. PAUL GARASSUS
President, European Union of Private Hospitals

INSTITUTIONALISE A SAFETY CULTURE

A culture of safety within health care is an essential component in improving overall health care quality and in lowering the incidence of SSIs.

Building a "culture of safety" encompasses[32] key features as a blame-free environment where individuals are able to report errors or near misses without fear of reprimand or punishment; encouragement of collaboration across ranks and disciplines to seek solutions to patient safety problems; organizational commitment of resources to address safety concerns. When surgical units are transparent and willing to discuss errors that occur in order to prevent them from reoccurring, patient outcomes should improve.

To achieve sustained improvements in safety culture and influence clinical practice, it is necessary to influence workforce behaviors by changing its determinant. It is not an easy challenge and requires a multi-level work at the individual, inter-personal, institutional, community and administrative levels. Healthcare workers needs to be fully aware of the issue and connected risks. Clinicians are more likely to comply with guidelines when they have been involved in developing the recommendations. One way to engage health professionals in guideline development and implementation is to translate practice recommendations into a protocol or pathway that specifies and coordinates responsibilities and timing for particular actions among a multidisciplinary team. There is now a substantial body of evidence that effective teamwork in health care contributes to improved quality of care.[33]

Guidelines needs to be clear. Tools such as room briefings, a preoperative checklist and good role models can facilitate the acceptance of new protocols and improving human behavior. Infection control professionals play key roles in the identification and prevention of nosocomial infections. They act as observers, educators and, ultimately, should become agents of change. Changing behaviour and shifting social norms at multiple levels through the HCW community are among the key challenges of infection control today.[34]

THE ROLE OF PATIENTS IN PROMOTING A "SAFETY CULTURE" IN EUROPE

Patients have evolved considerably in recent years thanks to improved access to information and education, which means that they are no longer just the "end users" in healthcare, but also active participants. As such, they can play an important role in promoting a "safety culture" in European healthcare settings. To reach this aim patient education is key for two reasons: it promotes correct behavior and fosters collaboration between patients and HCPs, the advantage of which has already been highlighted in chronic care, where the positive alliance between patient and HCP leads to better health outcomes and increased patient satisfaction. The same concept can be applied to develop a "safety culture": educated patients understand why they have to follow certain rules and collaborate with HCPs in helping to detect potential problems for the benefit of all.

To make sure that patients understand the value of infection prevention measures it is of great importance to communicate them in a patient-friendly way and possibly include patients in some co-creation initiatives or protocol reviews to activate their engagement and develop a culture of collective responsibility. If I understand the value of infection prevention measures and help to fine-tune them in patient-friendly terms, or help communicate them to my peers I feel part of the game and take responsibility for it, rather than just being the passive recipient of protocols.

PAOLA KRUGER
Patient Advocate, The European Patients' Academy on Therapeutic Innovation (EUPATI)

A HARMONISED TRAINING AND EDUCATION SYSTEM FOR HEALTHCARE PROFESSIONALS

Education is crucial in improving healthcare workers' behaviour towards HAIs. Effective prevention and management of SSI is a process requiring a fundamental understanding of the evolving relationship between inappropriate prevention, management and prevalence of infections.

Education of all health professionals in preventing HAIs should begin at the undergraduate level and be consolidated with further training throughout the postgraduate years. Hospitals are responsible for educating clinical staff about infection prevention and control programs. Active education techniques, such as academic detailing, consensus building sessions and educational workshops, should be implemented in each hospital worldwide according to its own resources.

Surgeons should be involved in guidelines development and their implementation should translate practice recommendations into a protocol or pathway that specifies and coordinates responsibilities and timing for particular actions among a multidisciplinary team.[35]

WHAT IS THE ROLE OF HEALTHCARE PROFESSIONAL TRAINING AND EDUCATION TO PREVENT HAI?

HCP training and education is essential in HAI prevention for different reasons, especially in surgical facilities where the cares are based on specific protocol and the environment is strictly submitted to regulation and control. First, on individual basis, the knowledge of basic concepts of infection risk and prevention help to better understand the usefulness of control measures and their application in the field according to care circumstances. Second, education in HAI prevention is very important to help organizing safe cares, since a surgical multidisciplinary team has to know how to use standardized protocols, to communicate, and to have team leadership.

HCP categories are involved in HAI prevention at the different steps of surgical cares both at the ward and hospital levels. Education and training should be adapted to the different activities and competencies of HCP. For instance, since the surgeons have fundamental knowledge in asepsis and antisepsia required for surgical procedures they might have less frequently particular expertise in SSI diagnosis.

Anesthesiologists have a key role to deliver antibiotic prophylaxis as well as treatment which needs regular updates for antibiotic use. Therefore, both medical doctor specialists have to follow ongoing updates in clinical microbiology and infectious diseases. In the pre-operative period, nurses are supposed to have knowledge and skills on skin preparation and disinfection, but experience proves that sustained education and regular practice assessments are needed and have to be endorsed by the hospital institution. The role of hospital epidemiologists and IT experts are also crucial to help the healthcare staff to improve their skills in infection control and organize feedback of surveillance data.

HOW TO IMPROVE THE CURRENT EDUCATIONAL SYSTEM IN FRANCE?

In France, education and training programmes of HCP have been set up for at least three decades. So far infection control in healthcare settings has made tremendous progress, specifically in surgical settings. This is mostly due to a better understanding of standard guidelines with the support of IC teams. We have specialists in infection control, a complete core competency guideline[36], and a specific track for IC doctors. The COVID outbreak revealed several flaws in the knowledge of basic infection control measures of our HCP. Efforts should be made in the next few years to substantially enhance courses on infection control at university school of medicine, and school of nursings including general tracks and specialized tracks. In addition, post-graduate education and ongoing training are crucial, especially for surgeons and nurses. The use of interactive and new technologies could help for implementing the educational programme.

PROF. DR. PASCAL ASTAGNEAU
Teaching hygiene at the faculty of medicine, Sorbonne University,
and head of the Centre for prevention of healthcare-associated infections, Paris, France

SURVEILLANCE

Surveillance is a key component in the prevention of healthcare-associated infections and an important tool for monitoring the effectiveness of prevention and control measures.[37]

Having in place surveillance systems is key to monitor trends in communicable diseases over time and across Member States to assess the present situation, respond to rises above warning thresholds and facilitate appropriate evidence-based actions. The collection and analysis of monitoring data serve to identify vulnerabilities in the system. This is the basis for organizational improvement, risk reduction, and damage control.

Particularly in surgical care, SSI surveillance provides feedback to surgical teams on the HAIs risks patients are exposed to. Cooperation of surgical teams in surveillance efforts is crucial to make visible to them the effect on patients' care, if they have confidence in the methods being used. Thus, it is important for surgeons to comprehend the opportunities of the surveillance process for surgical care improvements.[38]

Several programmes have been launched at the European level to foster infection surveillance.[39] In the period 2000-2002 harmonised methods for the surveillance of SSIs were developed by the Hospitals in Europe Link for Infection Control through Surveillance (HELICS) project, funded by the European Commission's Directorate-General for Health and Consumers (DG SANCO), and progressively implemented in a few EU Member States.

Since 2005 to 2008, the Improving Patient Safety in Europe (IPSE) project, also funded by DG SANCO of the European Commission, continued the coordination and development of existing national initiatives on surveillance of HAIs, including SSIs, and other approaches to support infection prevention and control in European hospitals.

In 2008 SSI surveillance move to the European Centre for Disease Prevention and Control (ECDC) under the ECDC-coordinated HAI-Net.

The first ECDC protocol for surveillance of SSIs on the HAI-Net extranet, on the TESSy website and distributes it to National Focal Points in EU/EEA countries was published in 2010.

In 2011-2012, the ECDC initiated the first European point prevalence survey (PPS) of healthcare-associated infections (HCAIs) in addition to targeted surveillance of the incidence of specific types of HCAI such as surgical site infections.

OUR POLICY ASKS FOR EUROPEAN POLICY MAKERS

OUR POLICY ASKS FOR EUROPEAN POLICY MAKERS

This Insight Report aims to draw attention to the need to change practices in order to save lives. Therefore, we have developed 5 policy asks for European policy makers to reduce the incidence of SSI in Europe:

1

Creating a European Framework on HAI prevention and control

Within a broader European legislative framework on infection prevention and control, it is necessary to build consensus around evidence-based guidelines such as the one from WHO and define clear protocols to prevent SSI.

2

Harmonising evidence-based guidelines and protocols

The European Commission should facilitate the creation of an Expert Forum to adopt evidence-based guidelines (such as the WHO Guidelines) and to support their implementation across Europe. It is necessary to foster scientific associations' involvement into inter-sectoral training of HAI prevention and control. At the same time, it is necessary to include recommendations on HAI reduction in the European Semester as a policy tool to motivate national progress on HAI prevention and control; to design future EU funding opportunities and conditionalities to boost national policy and implementation capacity.

3

Expanding ECDC's role to ensure observation, surveillance and data gathering

It is important to foster ECDC's role to identify, assess and communicate current and emerging threats to human health posed by infectious diseases. Surveillance data regarding infections are a key element of any prevention programme. Data can be used to assess the extent, escalation and status of infections, to examine, scan and monitor trends of infection rates, inform alert programs, and improve performance, strategy and competence development.

It is necessary to ensure standardised reporting and data comparability across the EU through the use of common (externally quality-assured) diagnostic and typing methods, case definitions, metadata and reporting protocols. The next challenge is to move gradually from disease surveillance systems based on notifications by healthcare professionals to systems that make direct use of healthcare data.

4

Facilitating guidelines implementation and adherence

Implementation of guidelines and their associated tools require careful dissemination and clear implementation strategies. The creation of instructions and standardised safety checklist can increase surgical procedure safety, reinforce accepted safety practices and promote better communication and work among the surgical team.

Having in place standardised quality indicators, together with an increased focus on evidence-based medicine and international recommendations, can provide valuable information for improving the safety profile of healthcare assistance and for a more effective and efficient use of available resources.

5

Developing a European curriculum for infection prevention

The European Commission should support Member States in developing harmonised education and training standards on infection prevention and control as part of their national healthcare professional curricula. These training standards should consider the current learning tools developed by ECDC and WHO (e.g. the WHO surgical checklist and guidelines on the prevention of surgical site infections). Education of all health professionals in preventing HAIs should begin at undergraduate level and be consolidated with further training throughout the postgraduate years. Hospitals should have the means and tools to educate clinical staff about infection prevention and control programs.

Last but not least, it is necessary to facilitate the exchange and scaling up of best practices at all levels and put in place reward systems to promote excellence in quality of care and patient safety.

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ABOUT HEALTH FIRST EUROPE

Health First Europe is a non-profit, non-commercial alliance of patients, healthcare workers, academics, healthcare experts and the medical technology industry. We are joining forces to transform health care through innovative solutions. Since we believe that every European citizen should benefit from the best medical treatments available, we aim to ensure that equitable access to modern, innovative and reliable health care solutions is seen as a vital investment in the future of Europe. Our alliance was born in 2004 thanks to commitment of our co-Patrons and our members to build truly patient-centred healthcare systems in Europe.

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