

PATIENT SAFETY AND HEALTHCARE-ASSOCIATED INFECTIONS

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SUMMARY:

Healthcare-associated infections are infections caused by a wide variety of common and unusual bacteria, fungi, and viruses during the course of receiving medical care. Medical advances have brought lifesaving care to patients in need, yet many of those advances come with a risk of healthcare-associated infection. These infections related to medical care can be devastating and even deadly. As the ability to prevent healthcare-associated infections grows, these infections are increasingly unacceptable.

Recent successes in healthcare-associated infections elimination have been very encouraging. Examples include sustained reduction in central line-associated bloodstream infections by 70%, simply by ensuring adherence to available guidelines. Reductions have been demonstrated for other healthcare-associated infections as well, but, much more remains to be done.

Wherever patient care is provided, adherence to infection prevention guidelines is needed to ensure that all care is safe care. This includes traditional hospital settings as well as outpatient surgery centers, long-term care facilities, rehabilitation centers, and community clinics.

Key words: Healthcare-associated infections, Patient safety, World Alliance for Patient Safety, healthcare errors, Luxembourg declaration on Patient Safety, Global Patient Safety Challenge.

The health sector is a high-risk area because adverse events, arising from treatment rather than disease, can lead to death, serious damage, complications and patient suffering. Although many hospitals and healthcare settings have procedures in place to ensure patient safety, the health care sector still lags behind other industries and services that have introduced systematic safety processes.

A number of investigations from all over the world have underlined the need for and the possibility of reducing the number of adverse events in the health sector.

The health sector should be designed in a way that errors and adverse events are prevented, detected or contained so that serious errors are avoided and compliance with safety procedures is enhanced.

Health sector induced harm to patients imposes a heavy burden on society. Investment in patient safety

therefore has the potential to generate savings in expenditure coupled with an obvious benefit to patients.

Patient safety refers to mechanisms that prevent or mitigate patient harm stemming from healthcare processes. Patients' safety can be compromised due to medical errors, namely when patients receive wrong medication, are improperly treated, or when test results are incorrect or delayed. A major aspect to patient safety is the avoidance of healthcare-related infections.

The European Commission estimates that in the EU:

- 1 in 10 patients are affected by healthcare-related infections;
- 3 million deaths are caused by healthcare-related infections;
- 50,000 people die each year of healthcare-related infections.

In addition, almost half of all preventable adverse events in the EU are a consequence of medical errors. In 2006, the Directorate-General of Health and Consumer Protection launched Eurobarometer survey on medical errors. According to the Commission's Eurobarometer survey:

- 23% of all respondents have experienced a medical error in some form;
- 18% of all respondents have experienced a serious medical error in a local hospital (i.e. they have either suffered personally or have family members who have suffered one);
- 11% of all respondents have suffered from a serious medical error from a medicine that was prescribed.

The majority of respondents believe that medical errors are a prominent problem in Europe. Most Europeans trust professional healthcare workers, and attribute overall responsibility to national healthcare systems. Many of the respondents recognised that patients themselves play an important role with respect to avoiding medical errors. They believe that good communication channels between the healthcare worker and the patient is crucial.

Healthcare errors are more prevalent in countries that have weak healthcare systems. A lack of training of healthcare workers, time constraints on healthcare workers, and insufficient reporting and learning systems to prevent errors in the future, are the main causes of insufficient patient safety.

The World Health Organisation has launched a World Alliance for Patient Safety to tackle the global patient safety

challenge and avoid healthcare-associated infections. In order to prevent these, a high level of hygiene is essential, which includes:

- Clean hands;
- Clean practices;
- Clean products;
- Clean environment;
- Clean equipment.

In addition, there are a number of innovative technologies that increase patient safety:

- **Safety of blood transfusions:** in Europe, approximately 1.3 million blood platelet transfusions are performed annually. Despite the introduction of blood screening and testing measures, patients remain at risk of infection and transfusion-associated reactions because micro-organisms such as viruses, bacteria and parasites can be present in blood and blood products (and remain “invisible”). New medical technologies such as pathogen inactivation technologies have been developed that can considerably improve the safety of blood products.

- **Cross infections:** the “single use” medical devices have been developed in response to the need to avoid cross infection and thus to increase standards of care. These range from simple devices such as syringes, surgical drapes and surgical gowns to more complex technologies such as biopsy forceps and balloon catheters.

- **Use of safety features:** in general, the use of safety features including alarms, programs, automatic identification technology in medical equipment increases the safety of patients.

Infection in hospitals and other healthcare settings is a problem for health services around the world and is receiving considerable media and political attention. Health care interventions, although intended to benefit patients, may in some cases cause harm. Healthcare associated infection affects an estimated one in ten hospital patients each year. Infections caused by these agents are often difficult to treat due to antimicrobial resistance and difficult to eradicate from the health care environment and may spread to the community.

- Hospital-acquired infections are a major contributor to morbidity and mortality:

- o 1 out of 10 hospitalised patients in Europe contracts a nosocomial (hospital-acquired) infection,

- o 150 persons die in Europe every day due to a hospital acquired infection.

- Hospital acquired infections are a burden on Healthcare costs:

- o Annihilating the results of advanced and expensive medical treatment,

- o Increasing the length of hospital stay by 8 days on average per affected patient,

- o Thereby adding more than 10 million unnecessary

patient days in hospitals in Europe per year.

- An increasing proportion of bacteria have become unaffected by common antibiotic treatment regimens. This phenomenon is called “antimicrobial resistance”. Resistant strains are much more frequent among healthcare associated infections. They are difficult to treat, their treatment is very expensive and they result in a higher patient mortality than susceptible strains.

The most common problem strains are:

- o Methicillin Resistant Staph aureus (MRSA),

- o Vancomycin Resistant Enterococci (VRE) and

- o Enterobacteriaceae with an Extended Spectrum Beta Lactamase.

- Active surveillance cultures and screening is needed to prevent nosocomial infections. Detecting the unrecognized MRSA-colonised or VRE-colonised patients helps to prevent transmission and infections.

- An active infection control program of patients and personnel, including surveillance cultures, admission screening and contact isolation in addition to hygiene measures, has proven to significantly reduce both the number of infections and hospitalization costs.

- Active surveillance cultures to identify e.g. MRSA carriers are justified and efficient from a medical and economical standpoint, leading to significant cost savings for healthcare systems and society.

- Active surveillance programs are successful: e.g. The Netherlands, Denmark and Finland have succeeded in controlling healthcare-related infections and in stabilizing resistance rates.

Focus on patient safety leads to savings in treating patients exposed to adverse events and the consequential improved use of financial resources. In addition, savings are achieved in administration costs associated with complaints and applications for compensation. Most importantly, patient safety contributes to an increase in quality of life. In order to achieve this, the culture of safety can be improved significantly in various ways.

The 2005 Luxembourg declaration on Patient Safety recognizes that access to high quality healthcare is a key human right recognised and valued by the EU, its Institutions and the citizens of Europe. The “open method of coordination” for healthcare and long-term care proposed by the Commission provides a framework for Member States to exchange experience and to compare policies and performance.

Decision 2119/98/EC¹ of the European Parliament and of the Council established a Network for the epidemiological surveillance and control of communicable diseases in the

¹ Decision No 2119/98/EC of the European Parliament and of the Council of 24 September 1998 setting up a network for the epidemiological surveillance and control of communicable diseases in the Community, O.J. No L 268, 3.10.1998

Community and Decision 2000/96/EC² provided that surveillance of healthcare-related infections within this Community network will be performed by standardised collection and analysis of data in a way that will be determined when specific Community surveillance networks are put in place. Under the public health programme³ projects are financed addressing the problem of healthcare associated infections and preparing the establishment of such a Community surveillance network.

Healthcare-related infections prolong the suffering of the patients, increase health care costs and have other direct and indirect economic implications, such as loss of productivity and disability.

Although measurement of costs is difficult, the cost of hospital acquired infection is high, for example the UK National Audit Office estimated it at J1 billion per year for the UK. Costs will be different for other countries and will change with time, however the relative magnitudes will be similar. Overall in the European Union, it has been estimated that there are approximately 3 million healthcare associated infections and 50,000 attributable deaths per year. The US Institute of Medicine estimates that preventable adverse patient events, including hospital-acquired infections, are responsible for 44,000-98,000 deaths annually in the US at a cost of \$17-\$29 billion⁴.

Although healthcare-related infections is a multifaceted problem ways to control it are understood and assessment of the cost of control programmes shows major savings can be achieved. The Study on the Efficiency of Nosocomial Infection Control⁵ estimated that the cost of infection control teams was only 7% of the infection costs.

In Europe, some Member States like the UK and France have passed legislation that obliges hospitals to report publicly certain indicators related to healthcare-associated infections.

In the Netherlands, a Court ruling decided that data on incidence of healthcare-associated infections collected through a national surveillance system do not have to be made public. Surveillance of post-operative infections, however, is recognised as one of the quality indicators of hospitals and may be made public in the future.

Reported rates of healthcare-associated infections show large variations across the Member States of the European Union reflecting large differences in surveillance methodology, the functioning of the health services and the adoption of policies, guidelines and technologies. Therefore the interpretation of these figures has to be undertaken with great care and needs expert consultation. National surveillance systems, therefore, should be clear on regulation of data access and should comply with the data protection regulations and guarantee the confidentiality and security of data.

Confidential treatment of the identity of healthcare institutions participating to a surveillance network should be encouraged in order to foster the validity of reported data and to prevent possible misinterpretation of data. Serious efforts and resources are needed to improve reporting systems and make data more comparable.

Health care-associated infections affect hundreds of millions of people each year worldwide. No health-care system is spared. The WHO World Alliance for Patient Safety has chosen the prevention of health care-associated infection as the first Global Patient Safety Challenge. Success relies more on the willingness of human nature to change and accept changes than on systems and economic constraints.

² Commission Decision 2000/96/EC of 22 December 1999 on the communicable diseases to be progressively covered by the Community network under Decision No 2119/98/EC of the European Parliament and of the Council, O.J. No L 28, 3.2.2000

³ Decision No 1786/2002/EC of the European Parliament and of the Council of 23 September 2002 adopting a programme of Community action in the field of public health (2003-2008). O.J. No L 271, 9.10.2002

⁴ To Err Is Human: Building a Safer Health System (2000). Institute of medicine. Committee on quality of health care in America. National academy press. Washington, D.C.

⁵ Haley RW, Culver DH, White JW, et al. The efficacy of infection surveillance and control programs in preventing nosocomial infections in U.S. hospitals. *Am J Epidemiol* 1985;121:182-205

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