
Models for the organisation of hospital infection control and prevention programmes

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ABSTRACT

Hospital infection control is an essential part of infectious disease management and must be firmly structured and professionally organised. Prevention, limitation and eradication of nosocomial infections requires specific expertise not fully provided by clinical microbiologists and/or infectious disease consultants. Therefore, dedicated infection control physicians and nurses are essential. The basic components for successful hospital infection control include: (1) personnel and supporting resources proportional to size, complexity and estimated risk of the population served; (2) trained hospital infection control practitioners; and (3) the necessary structure to implement changes in medical, nursing and logistical organisation. The identification of areas of concern, provision of written policies and education still constitute the backbone of infection control. The infection control team must propose priorities and necessary resources, objectives, development methods, implementation and follow-up. The strategic approach must be discussed and approved by the infection control committee, comprising the hospital administrator(s), medical and nursing directors, a microbiologist, a hospital pharmacist and a delegation of clinicians. Follow-up of the projects is regularly presented to the committee by the infection control team. To what extent may evolution in the organisation of hospital infection control contribute to the optimisation of allocated resources and fulfilment of these objectives? From the Belgian experience, we conclude that structural changes represent an essential incentive. The impact of changes is greater when they are directed by the national authorities, providing resources and imposing new standards. Recommendations for staffing must consider not only the number of beds but also the objectives, complexity and characteristics of the patient population.

Keywords Control, infection, model, organisation, structure

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INTRODUCTION

Firmly structured and professionally organised infection control constitutes the most important tool for limiting the massive medical and economic burden of nosocomial infections. This necessitates an increasing number of infection control practitioners and supporting resources, standards of practice, correct identification of essential functions and an optimal structure of infection control in the hospital organisation. We describe the evolution in the structure and organisation of hospital infection control in Belgium since 1980, in order to identify to what extent this may contrib-

ute to the optimisation of allocated resources and to the fulfilment of the objectives of hospital infection control for the next decade. Recent changes in regulations, organisation and mentality should guarantee a better quality of care and decrease the incidence of nosocomial infections in Belgium.

THE IMPORTANCE OF HOSPITAL INFECTION CONTROL

Hospital infection control can be considered as an essential part in a triptych of infectious disease management. The real economic and medical burden of nosocomial infections is difficult to estimate, but it is considered to be massive in industrialised countries [1–3]. It is estimated that more than 75 000 nosocomial infections occur in Belgium each year [4], contributing to the deaths

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of more than 3000 patients and being directly responsible for death in at least 10% of these cases.

North American studies have demonstrated that implementing infection control can lower infection rates by 30% [5,6]. However, to achieve this, infection control must be firmly structured and professionally organised.

The evolution in the understanding of nosocomial infections has been tremendous in the last 25 years, but even so, the demands upon infection control practitioners have been increasing accordingly. It has become apparent that broader management (i.e., prevention, limitation and eradication) of nosocomial infections requires specific expertise not fully provided by clinical microbiologists and/or infectious disease consultants. Therefore, dedicated infection control physicians and nurses are now essential in the medical and operational management of our hospitals.

REQUIREMENTS FOR HOSPITAL INFECTION CONTROL

Recently published literature indicates [7] some of the basic components for successful hospital infection control; most frequently, the increasing need for personnel and supporting resources proportional to size, complexity and estimated risk of the population served is identified. Second, the need for – and standards expected from – trained hospital infection control practitioners, as well as the correct identification of essential functions, seems to be directly related to outcome improvement.

Last, but not least, hospital infection control must be thoroughly structured in order to enable the implementation of changes in medical, nursing and logistic organisation. We focus here on the evolution in the structure and organisation of hospital infection control in Belgium since 1980, in order to identify to what extent this may contribute to the optimisation of allocated resources and to the fulfilment of the objectives of hospital infection control for the next decade.

ORGANISING THE STRUCTURE OF HOSPITAL INFECTION CONTROL AT THE INSTITUTIONAL LEVEL

Although the earliest legislation dates from 1964, the official organisation of infection control in Belgian hospitals started in 1975, when the authorities imposed upon the hospitals the establishment of an infection control committee (Table 1). However, a concrete description of the role of these committees was published only 10 years later. In 1989, a royal decree identified the responsibilities of the infection control physician, and the standards for training of infection control nurses, and a list of necessary activities was drawn up for the infection control practitioners and the committee. Moreover, financial resources were provided, covering, at least in part, the salaries of the infection control practitioners. This decree represented the real booster for hospital infection control activities in Belgium. Over the next 10 years, problems such as methicillin-resistant *Staphylococcus aureus* and isolation policies were increasingly dealt with in most hospitals

Year	Regulation
1963	Accreditation of hospitals based upon minimal requirements
1974–1975	Introduction of infection control as a requirement for accreditation in Belgian hospitals
1985	Regulation of the infection control committee
1988	Responsibilities of infection control physician, nurse and committee defined. Financial resources for (part of) salaries provided
1997	Additional incentive for national surveillance programmes
1998	Mandatory reporting in Flanders of (certain) nosocomial infection rates as quality indicators
2002	Mandatory participation of hospital infection control practitioners in regional platforms for hospital infection control. Establishment of the Federal platform for coordination of hospital infection control

Table 1. Belgian regulations influencing infection control in Belgium since 1960

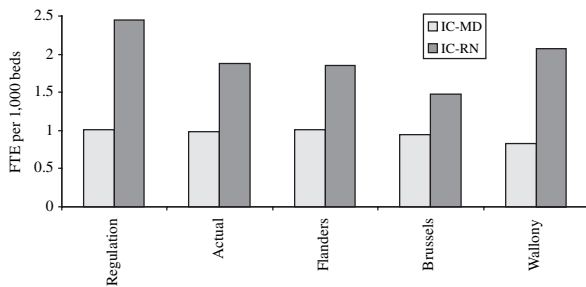


Figure 1. Prescribed and actual Full Time Equivalents of infection control practitioners and regional variation in Belgium in 2002. Adapted from reference 8

by trained nurses and physicians, elaborating programmes to the best of their knowledge and growing experience.

In 1997, the authorities created a new incentive by allocating additional resources to hospitals participating in national nosocomial infection surveillance programmes.

However, at the beginning of the new millennium, a national inquiry [8] indicated that the quality of organisation of infection control was quite variable from one institution to another, especially in those hospitals where infection control practitioners could only spend a small proportion of their professional time in infection control. The study demonstrated that 62% of the infection control nurses have responsibilities other than infection control: 37% of them have responsibility for other administrative tasks, 15% have responsibility in the purchase of disposables, 9% in quality assurance, 6% as head nurses and 2% as regular nurses.

Moreover, the minimum number of full-time equivalent nurses and physicians as prescribed by law (2.5 full-time equivalents of infection control nurses per 1000 beds and one full-time equivalent infection control physician) is not always provided. Figure 1 shows that regional variations are important, indicating the need to appoint more nurses in the Brussels region.

ORGANISING THE STRUCTURE OF HOSPITAL INFECTION CONTROL AT THE REGIONAL AND NATIONAL LEVELS

In the 1990s, infection control was being organised on a regional interhospital basis in two Belgian provinces. These regional platforms comprise infection control physicians and nurses from

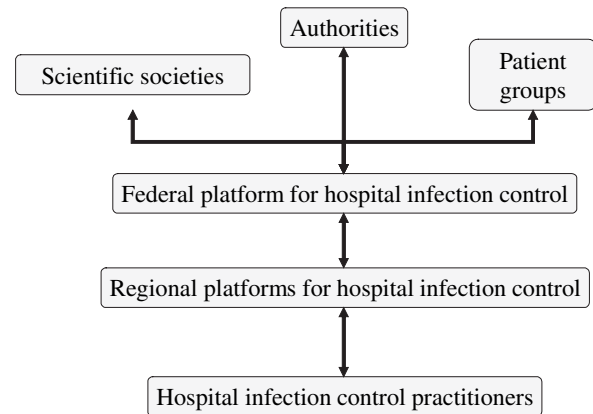


Figure 2. Communication between hospital infection control partners in Belgium

ten to 20 hospitals from the same province, not only sharing experiences but also working synergistically on definite projects to be implemented in their respective hospitals. This new structure emphasises standardisation and synergy, and enables smaller hospitals to concentrate on implementation rather than on the development of infection control projects.

Understanding the possibilities of the regional platforms, the authorities imposed this structure upon all Belgian hospitals in 2002. From then on, taking part in one of the nine regional platforms for hospital hygiene was mandatory for each hospital in order to obtain financial resources for infection control. Moreover, a national platform for hospital hygiene was created; this includes a delegated infection control physician and nurses from the nine regional platforms. This national structure (Fig. 2), serving as an interface between the field workers in infection control and the authorities, has proven to be an enormous incentive; communication between all levels of infection control practitioners enables quick response to new problems as well as the development of national priorities and understanding.

On the other hand, there was a growing need to reorganise infection control within the hospitals in order to optimise the function of infection control and its integration in the decision processes of the healthcare institutions.

PRIORITIES FOR INFECTION CONTROL PRACTITIONERS

The above-mentioned study [8] also demonstrated that the tasks carried out by Belgian infection

1988	Proposal 2004
Implement/survey: Aseptic techniques Decontamination/sterilisation Cleaning/laundry Surgery ward and pathology Isolation of contaminated patients (Re)construction	Development, implementation and monitoring the strategy for standard and isolation precautions throughout the entire organisation
Registration of nosocomial infections Surveillance/detection of: Sources of contamination Contaminated carriers Hospital environment	Surveillance of nosocomial infections Development and implementation of outbreak management
Education and training of HCWs	Follow-up of infection control aspects in logistical hospital activities Implementation of national guidelines on infection control Exchange information and experience within the regional platforms for infection control

HCW, healthcare worker.

Table 2. Legal responsibilities of infection control committees in Belgian hospitals as defined in 1988 compared with proposals for 2004

control practitioners do not always have a great impact on the incidence of nosocomial infections. This was partially because some activities of infection control practitioners, described in the Decree of 1988, do not relate to the problems faced today. In order to re-prioritise projects and activities, the national platform redefined the minimal tasks for which infection control practitioners should have responsibility in their institution, as shown in Table 2.

THE INFECTION CONTROL TEAM AS A KEY FACTOR FOR THE SUCCESSFUL CONTROL OF NOSOCOMIAL INFECTIONS

An infection control team, with the task of identifying areas of concern, providing written policies, and educating and advising throughout the hospital organisation, constitutes the backbone of infection control. Professionalism implies adequate training, standardisation in the approach, cost-benefit-based decisions, continuous quality improvement-based project management and operational autonomy. The structure described in the royal decree of 1989 was not designed accordingly, and therefore needed to be adapted. In 2003–2004, the national platform for hospital hygiene developed and proposed a strategic plan for the reorganisation of hospital

infection control in Belgium. The key features in the proposed changes are the focus on teamwork, operational autonomy and project-driven approaches of the infection control practitioners in every Belgian hospital.

According to the new structure (Fig. 3), the infection control team takes direct responsibility in infection control projects and advises the medical director of the hospital in order to implement the necessary steps. The infection control team must investigate, develop and propose priorities, and must determine the necessary resources, objectives and methods for development, implementation and follow-up. The proposed strategic approach must be discussed with and approved by the infection control committee, in a forum comprising the hospital administrator(s), medical and nursing directors, a microbiologist, a hospital pharmacist, and a delegation of clinicians. Follow-up of the projects should be presented by the infection control team to the committee on a regular basis.

CONCLUSION

From the Belgian experience, we can conclude that structural changes represent an essential incentive for the development of infection control in hospitals. The impact of these changes is incomparably higher when they are directed by

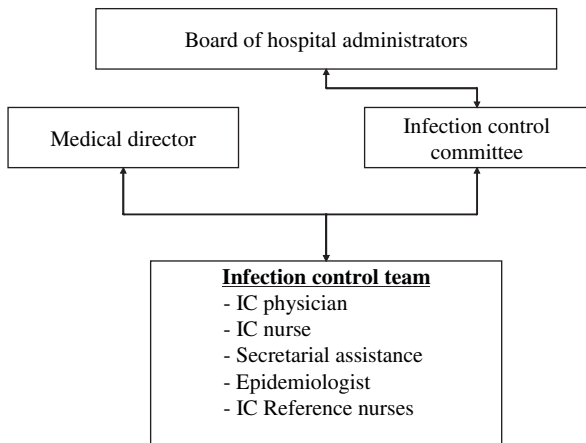


Figure 3. Proposed structure of organisation of infection control in Belgian hospitals, 2004

the national authorities, providing resources and imposing new standards. Recommendations for staffing must not only consider the number of occupied beds but also include the programme objectives, the complexity of the healthcare institution, and characteristics of the patient population.

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