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Overcoming the obstacles of implementing infection prevention and control guidelines.

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Abstract

Reasons for a successful or unsuccessful implementation of infection prevention and control (IPC) guidelines are often multiple and interconnected. This article reviews key elements from the national to the individual level that contribute to the success of the implementation of IPC measures and give perspectives of improvement. Governance approaches, modes of communication and formats of guidelines are discussed in view to improve collaboration and transparency among actors. The culture on IPC influences practices and vary according to countries, specialties or health care providers. We describe important contextual aspects such as relationships between actors and resources and behavioural features including professional background or experience. Behaviour change techniques providing goal-setting, feedback and action planning have proved effective in mobilising participants and may be key to trigger social movements of implementation. The leadership of international societies to coordinate actions at international, national and institutional levels using multidisciplinary approaches and fostering collaboration among clinical microbiology, infectious diseases and IPC will be essential for success.
Introduction

The scientific knowledge on infection prevention and control (IPC) has increased during the last decade and led to the publication of many IPC recommendations and guidelines at national, European, and international levels. Despite such guidance, healthcare associated infections (HCAI) still remain a major public health concern (1).

There are many barriers before printed evidence-based clinical guidance translates into improvement in the quality of patient care. A recent Cochrane review found printed educational materials when used alone to generally lead to only modest improvements in professional practice (2). Coercive implementation of recommendations using regulatory approaches assumes that the behaviour of healthcare professionals (HCP) will be congruent with recommendations. This is however rarely the case in practice (3). The regulatory approach has improved IPC practices, but rapidly reached its limits and several unintended effects have been revealed (4).

Implementation of and compliance with recommendations varies among European countries, hospitals and wards (1). Wide variation is observed both with regard to process indicators, such as appropriate perioperative antimicrobial prophylaxis, and outcome indicators, such as the proportion of meticillin-resistant Staphylococcus aureus (MRSA) (5,6).

Five factors contribute to the implementation of health services innovations: intervention characteristics (e.g., evidence strength and quality), outer setting (e.g., patient needs and resources), inner setting (e.g., culture, leadership engagement), characteristics of the individuals involved, and the process of implementation (e.g., plan, evaluate, and reflect) (7).

The social, cultural, and organisational factors that might affect behaviour are rarely taken into account for translation of strategies into practice (8). This may well be one of the reasons why it remains a challenge to optimise IPC.
Reasons for successful or unsuccessful implementation of guidelines are often multiple and interconnected. They may be found in the guidelines themselves, in the implementation process or in local organisational determinants.

In this article we focus on determinants about the implementation of IPC guidelines, and analyse and discuss relevant aspects. We review the principles of governance, surveillance and communication at the national level, cultural, organisational and individual aspects at the local level.

**Key determinants of IPC implementation at the national level**

*Shaping guidelines and recommendations*

Dozens of guidelines related to IPC are now available to HCP. As an example, we identified 15 international guidelines, produced by various international groups and countries from 2003 to 2014, to prevent transmission of multidrug-resistant organisms (MDRO) in health care (9,10). These documents often have disagreements that create confusion about what exactly should be implemented for controlling MDROs.

One major issue is that most recommendations usually present the level and strength of evidence rather than ranking the relative importance of preventive measures. Therefore, IPC and HCPs meet difficulties to prioritise, more particularly for measures not connected with high-quality evidence but still likely to be critical for an effective preventive strategy (e.g. wearing operating masks in surgery). To overcome these difficulties, the Society of Hospital Epidemiology of America (SHEA) compendium recently proposed two levels of
recommendations, i.e. basic practices to be adopted in all healthcare facilities and special approaches to be considered if basic practices fail to be effective (11). Moreover, the European Committee on Infection Control (EUCIC) was created under the aegis of the ESCMID to develop tools and guidelines with practical relevance. The use of behavioural bundles can also help to prioritise what is most important (12).

Adjust governance approaches

Different governance approaches have implicitly or explicitly been adopted for IPC. The traditional way of governance is hierarchical. Regional committees coordinated by national health authorities have been effective, e.g. in controlling MRSA C. difficile, or resistant Enterobacteriaceae (CRE) in several European countries (13–15). Regardless of where the initiatives begins, coordination and collaboration is needed between the national and facility levels.

When there are several levels of healthcare initiative in large countries, such as national, federal or regional levels, e.g. USA, Italy or Germany, there may be more challenges in implementing coordinated actions. New mechanisms of governance have been designed to avoid mistrust or fearfulness, to decentralise actions and cope with the increased complexity of societies (16). In modern IPC governance, partnerships are promoted and participation of HCPs and patients encouraged, with the purpose of democratising decision-making and foster accountability via mutual collaboration (17). In such multi-stakeholder governance, leaders should help HCPs and patients to create and achieve shared goals, mixing regulation and persuasion.
Accurate use of surveillance systems and indicators

National surveillance networks are critical to offer tools for the surveillance of HCAI and process indicators. Based on the principle that HCAI surveillance should form the cornerstone of IPC, these networks are necessary for helping implementing guidelines at the local level and reduce HCAI rates (18). The role for prevention of feedback of HCAI rates for benchmark or the local use of HCAI rates over time is unknown. However, surveillance *per se* allows starting a collaborative effort between IPC personnel and clinical staff for prevention and implementing recommendations.

Reporting HCAI quality indicators against benchmarks create motivation and competition but it is not clear to what extent it adds to implementation success (19). Gaming with definitions and diagnostics, particularly when penalties are attributed, may be the result of a strategy based on public reporting of HCAI.

Communication and new technology

Many modes of communication (e.g. websites, social media, games, think-tanks…) have emerged in recent decades to increase HCP and patient knowledge and empowered in the quality of care processes. Addressing health literacy constitute a necessary skill for patient involvement (20). Patients have rapidly adopted these supports which have become essential in a process of good governance. Considering this movement, health authorities have created e-governance to deliver health care services using high-speed transfer of information and data, and to increase transparency and measure public satisfaction. Transparency is important to build trust and get the users’ collaboration. The use of social web may empower people and
facilitate multiway communications and engagements between and among government agencies, patients and HCPs (21).

New technologies to monitor practices by automated surveillance systems have also been developed. The use of technical facilitators may help HCPs to comply with recommendations especially if providing comfort and being simple to adopt (22). Outcomes might however be mitigated depending on the technology, the data interpretation, and the feedback mechanism (23).

**Key determinants of IPC implementation on the institutional level**

*In the national context*

The variation in HCAI rates across countries, hospitals and specialties underscores the potential influence of the culture on IPC (24). People hold different ideas about health, causes of disease, labelling of illness, prevention and treatment modalities. These ideas shape both the expectations and the behaviour of professionals in hospitals. Such ideas are further shaped and reinforced through local (organisational) culture, e.g. within specialties or health care provider organisations.

Based on a model of cultural dimensions of a society, it was suggested that two of the six Hofstede’s cultural dimensions, i.e. power distance and uncertainty avoidance were critical for IPC behaviour (25). Concepts of “uncertainty avoidance” (i.e., unwillingness to accept uncertainty and risks) and “power distance” (i.e., willingness to accept that power is unevenly distributed) have been described as the reasons for cultural influences. Scores measuring these two dimensions were correlated with high level of MRSA across European
countries (26) or or unjustified antibiotic prophylaxis (25). Although correlation does not imply causality, it is believed that countries with low power distance and low uncertainty avoidance scores exhibit better risk management for prevention.

An intervention successful in one country may fail in another if local organisational factors and behavioural-specific determinants are not considered (27). Irrespective of country, a positive local organisational culture is likely a key component for any successful IPC program (28).

In the institutional context

Organisational obstacles may influence IPC implementation. Many different hospital disciplines are typically involved in IPC making collaboration, coordination, communication, teamwork, and efficient care logistics essential. Fragmentation of practice may lead to diluted responsibilities and reduced patient safety (29). Social influence and the networks through which it operates, the encouragement or inhibition from the organisation, the messy, stop-start, and difficult-to-research process of assimilation and routinization predict the successful adoption of innovation (30).

Leadership has been repeatedly identified as core component of successful multimodal strategies (31). Delegated leadership encourages ownership and is perceived favourably by frontline HCPs. Senior frontline leadership providing resources and reinforcement is often considered important in day-to-day duties. This mix of top down and devolved approaches seem key for changes in IPC implementation (16).

There is a well-established discourse on the potential role and benefits of involving patients in shaping healthcare service design and delivery through consultation, followed by feedback and evaluation to improve services (32). Patients may have a potentially important
role in promoting good IPC and in evaluating performance. Moreover, involvement of patients in decision making around their own individual treatment plans can result in enhanced self-management, and better health outcomes (33). HCPs may however view involvement of patients in IPC practices as unrealistic (34).

Resources is another important element for successful implementation of IPC. In an era of financial constraints, budgets devoted to direct patient’s care can be preferred to prevention. Critical resources include materials, staffing levels and structural resources (single room beds) (1).

In the individual context

The professional background or experience of HCPs can influence IPC-practice beliefs (35). Many characteristics of individual professionals might influence the decision to implement guidelines, creating differences in behaviour (36). Disagreement with guidelines or with specific recommendations, a lack of outcome expectancy, a lack of self-efficacy expectations, and a lack of motivation might all lead to suboptimal patient safety.

Education and training represent important component for accurate implementation of recommendations. However, they should be used as part of a multimodal intervention team and be task oriented, with emphasis on bedside-teaching and simulation-based training (28).

Moreover, the recipient of IPC measures is a HCP whose main professional activity is not devoted to IPC, e.g. surgical technique for a surgeon. IPC recommendations may be perceived as secondary as compared to the main professional activity.

Principles of behavioural and social science and commercial marketing have been used to persuade a target group to adopt behaviours that are beneficial to health. The social
Marketing approach has been extensively used to change public health behaviours (e.g., to promote non-smoking) and has recently gained ground within IPC (37).

Behaviour change techniques have been successful in several IPC fields by providing goal-setting, feedback and action planning. A first example is interventions to improve hand hygiene, with the use of “actionable feedback” (38). This model emphasises that feedback should be timely, individualised, non-punitive and customised. A second example of quality improvement through actionable feedback is the Michigan Keystone Project, which achieved significant reduction in central line associated bloodstream infections, ventilated associated pneumoniae and the study established a comprehensive safety programme (39). Behavioural factors were also identified participating to the success of the intervention (27). The use of checklist to remind participants about the care bundle elements may have stimulated a culture change, increasing safety as a priority for the participating clinical teams. Interestingly, the same design implemented in the UK gave unsuccessful results in most participating ICUs (27). This experience underlines the requirement to mobilise participants in a social movement of implementation by developing the sense of ownership and community around the innovation.

Conclusion

International guidelines may facilitate instituting quality standards across all countries. Local determinants and cultural dimension, however, will have profound influence on implementation and must be carefully considered when adapting recommendations. Leadership and coordinated actions at national and facility levels using multidisciplinary
approaches will be essential for success. The passive presence of written guidelines will not suffice for successful IPC.

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