



Implementing Infection Control Guidelines: Barriers and Facilitators

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Abstract

1. Introduction

Each year, many health care professionals are involved in the control of infectious disease crises, including acute infectious disease outbreaks, acts of bioterrorism, and resulting or accompanying fear or panic. For these crises, specific guidelines have been drawn up that are to be implemented at the time of a specific threat. The effectiveness of these measures largely depends on the general level of infection prevention and control (IPC) in standard care. During crises, however, the control of infectious diseases is complicated by changes in the number, type, and contact patterns of patients, travelers, probands, or other groups at increased risk of infection; by changed case definitions of the disease that need to be made public; and by changed recommendations for precautionary measures. Moreover, crises pose



an extra burden on the time of care professionals and may lead to or stem from additional undue attention in the media or criticism by professional organizations

Methods

Preparedness for cross-border infectious disease outbreaks, particularly those linked to air travel, is crucial in controlling the spread of dangerous pathogens. Despite their importance, consistently adhering to infection control measures over time proves challenging. Utilizing the Systems Engineering Initiative for Patient Safety (SEIPS) model, this study investigated barriers and facilitators to following infection control guidelines during the 2009 H1N1 pandemic. Epidemiological studies included identifying index cases and the first confirmed secondarily infected SARS case. Semi-structured interviews with 22 healthcare providers at a Cambodian hospital during a 2013 H5N1 outbreak revealed failures in the passive surveillance system. Active case finding for contact tracing was not executed after identifying SARS case 1 (S1), resulting in the virus leaking to a MERS case (M1). Observations indicated deficiencies in triage training and IPC in triage rooms. Findings emphasized the need for tailored public health measures in Cambodian healthcare settings based on the transmission modes of pathogens. Additionally, Post End Exposures Prophylaxis (PEP) was effectively delivered via aid posts, while OPD delivery faced delays. (Timen et al., 2010)(Kenzie et al., 2018)

Conclusion

In conclusion, a discrepancy of opinion was found regarding the infection prevention control adherence in specific risk situations related to contact with body fluids and control of visitors of suspected cases. The guidelines for PP were well followed by the professionals of Brazil, this study was confirmed by the impressions registered on the spot during the visits. Some points were perceived, which show the discrepancies between the professionals and the guidelines and can be perceived as the main findings. Professionals and control measures were perceived. The preparation and distribution methods of the guidelines also reached a high level of consensus. In this regard, 80% believe that copying guidelines and sending them to the managers are an efficient form of dissemination of the guidelines. Microbiologists also reported higher adherence to control measures under alerting by the national OMT (83%) and receipt of personal guidelines (86%). Scientific basis of the measures remains a crucial aspect. Intervention by the OMT is perceived as required, particularly when preventability of the disease remains unknown. Follow-up and (if necessary after the failure of adherence) readjustment of guidelines are seen as needed, for example on observance of certain measures outside the laboratory outside working hours. Establishment of adequate control of outbreaks in hospitals requires a combined coordinated effort by the hospital and the public health service (PHS) during regular periods to ensure familiarity of care providers with outbreak



control and diagnostic guidelines, the capacity to rapidly implement appropriate infection control measures, and the ability to recognize and report suspect cases. In addition, it is important to plan in advance the response of the microbiological laboratory to suspected cases, to maintain standby protocols for additional testing, and to assure rapid communication of the results to the attending clinician. Similarly, the laboratory of the hospital should provide the microbiological characterisation of the pathogen, including information on antibiotic susceptibility. For preparedness it is important to anticipate the availability of disposable PPE and to plan the organization of care services. Regarding barriers, intervention by the OMT based on clear reference settings is seen as particularly helpful. IPs positively evaluated cohorting measures, vis-a-vis non-adherence by other code-colleagues. The cohorting cases are perceived as most successful. Recommendations by the OMT triggered intervention by the hospital. IPs urged the OMT to focus mostly in advance on the availability and placement of adequate cohorting and isolation facilities. IPs urged the OMT to equally and immediately ensure prompt dissemination of uniform, easily comprehensible and clear guidelines to all local hospitals. IPs underscore the need for a leading role by microbiologists in the implementation of guidelines by hospital clinicians. Personalised and easily understandable copy of the guidelines to all care settings should be received simultaneously to mass-distribution. There is an agreement that guidelines should be immediately adjusted by the OMT on new developments, including the identification of the micro-organism. Unpredictability of the crisis is acknowledged and IPs emphasized the perceived need for follow-up until it is confirmed the ending of the crisis. IPs perceived a critical lack of follow-up in this respect. Benchmark incidents outside the hospital setting are perceived as a strong driving force behind the seeking of information and immediate implementation of the measures. Refusals to fill in suspect cases by physicians outside the laboratory lead to non-adherence. (Timen et al., 2010)

2. Understanding Infection Control Guidelines

An outbreak of human monkeypox in the United Kingdom generated a wealth of inquiry in the medical community. The scientific committee of the national outbreak management team detailed the investigation and its recommendations. As part of the exploration, focus group discussions and/or interviews with unofficially key functionaries in the public and in clinical settings were conducted. These individuals were microbiologists, isolation nurses and public health physicians who are expected to play a crucial role in the distribution and implementation of infection prevention and control guidelines during a future outbreak of emerging infections.

United Kingdom infections were not bioterrorism-related. Human monkeypox is caused by the monkeypox virus, a virus closely related to variola, which was eradicated through vaccination in the late 1970s. The monkeypox virus was believed to have only sporadically



infected humans. Consequently, the medical community in the United Kingdom did not have clinical experience, diagnostic procedures and infection control guidelines for this agent. In this context, 17 individuals, mainly healthy workers in England who had entered into close contact with two recorded confirmed cases, were placed in hospital isolation and were followed up daily by contact-tracing field units. Analysis is focused on the direct observations and experiences noted by microbiologists, hospital infection teams, and public health functionaries, including physicians in communicable disease control, with the distribution and attachment to these guidelines.

3. Barriers to Implementing Infection Control Guidelines

Introduction. Infection prevention and control guidelines have been developed in various countries aiming to highlight essential control measures in the event of (re-) emerging high consequence infectious diseases. In order for these guidelines to be actually adopted by micro-biologists, hospital-based infection prevention specialists (IPS) and public health professionals (PHPs), it is important to understand the perceived barriers and facilitating factors. Presently, little research is available on this topic. Insights on how such response measures are actually used in practice could be useful for policy makers in the bio-safety and health care sector who aim to (better) prepare for this eventuality. With the threat of a possible influenza pandemic, improvement in uptake of the above guidelines is required. This study aimed to quantify barriers to adherence to such guidelines as experienced by the before mentioned target groups of health care workers during man-made, emerging, or re-emerging infectious disease crises. To explore the content to the guidelines and reasons for adherence to or deviation from these and to define barriers and facilitators for implementation, a programme of in-depth interviews was conducted with a focus on the before-mentioned target groups. Insights from the qualitative research were used to develop checklists of thematic categories that were transformed into structured questionnaire items. The questionnaires were sent to national groupings of the before-mentioned target groups. The response frequencies were calculated and a predictive model for guideline uptake was developed.

1. Background. In the event of (re-)emerging high consequence infectious diseases, health care professionals are required to use personal protective equipment (PPE), adhere to strict safe handling procedures (medical waste, linen, and dead bodies) and apply other infection control measures in various care settings. Infection prevention and control guidelines have been developed in various countries and by the World Health Organization, each time aiming to highlight essential measures. However, many incidents could occur where such recommended measures are not followed. For improvement, it would be helpful to understand the perceived barriers to adoption of the guidelines (Timen et al., 2010). Where the existing scientific literature is drastically limited, the purpose here is to extend the researchers' understanding of such perceived barriers. To this study, the term "guidelines" is



operationalized in a broader sense to include all types of written, unwritten, or unarticulated recommendations on infection prevention and control that health care professionals are supposed to follow. On the other hand, ‘adherence’ is defined as compliance with the guidelines, or, following them as closely as circumstances and professional judgment allow. What exactly is prescribed in the guidelines, and the characteristics of health care professionals that comply (or do not comply) with these, are open empirical questions within this study’s perspective.

3.1. Lack of Resources

The professional quality discipline elements initialized on the Global Bio-Risk Advisory Council (GBAC) response and what expected professions view ten defining the bio-risk discipline is stated in table 13 is repeated here because of the sum “terminology barrier” in randomized sentences. The sample text used for predictions of the kept-in index is repeated here while data is “verbatim”. “Barriers to infection prevention and control can be divided into patient-related, setting-related, infrastructure-related, process-related, knowledge-related, and staff-related barriers” followed by “23,23,8,14,15,19 domains”. The 37 barriers of the patient-related, setting-related, infrastructure-related, process-related, knowledge-related, and staff-related barriers experienced or predicted by health care professionals (HCPs) (HCPs from the infection prevention and control (IPC) profession were HCPs who actually work in the IPC departments, units, or programs, which means that they are the persons concerned with the development, implementation, monitoring, and evaluation of guidelines in this area and not clinicians, nurses, or other HCPs who may implement the guidelines but are not responsible for them); the 12 facilitators; and the experiences and views of the expected or desired communicative connectivity features (early and direct alerts, hierarchy and shared alerts, unscheduled contact with experts and flexible tailored advice, a trusted guidance source, personal equipment and vaccine packs, reusable visors, specific hands-on disinfection instructions, standardized medical kits and a reliable supply of protective and diagnostic goods) are listed in Appendix 1 (Timen et al., 2010). Global infection prevention gaps, needs, and utilization of educational resources: A cross-sectional assessment is initialized with the identification of ten terms that may encapsulate topics of interest in an unknown body of text. Text in which these terms appear and some surrounding context may be used to train a statistical, probabilistic model. This model may then be used to identify passages in new text that are likely to discuss topics that fit the original terms of interest. To this end, an open-access text body is needed, the classifiers that will be most promising for this task need to be defined, the classification terms must be descriptively defined, and the strategies for disseminating outcomes must be reviewed.



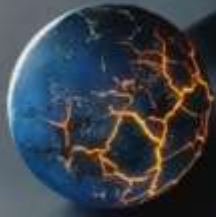
3.2. Resistance to Change

Nurses see a guideline and realise that using the guideline would require them to change behaviour. For example, this could mean that if a patient with a medical history of falls was not given preventive measures to safeguard against future falls, the nurse could be acting in accordance with their typical practice, perhaps learned over time. However, this would not be consistent with methods in the guideline and, therefore, changes to practice would be required for the nurse to act in compliance with the guideline (SL Koh et al., 2008). Practitioners, including nurses, may encounter a wide variety of barriers to adoption of guideline recommendations after reviewing scientific evidence. These may be due to the guideline itself (e.g. complexity or ambiguity of the guideline), features of the patient (e.g. co-morbidity or non-adherence by the patient), or social and environmental factors (e.g. lack of facilities or resources within the setting). To translate empirical knowledge into practice and instigate clinical practices conducive to patient outcomes, behavioural changes need to be effected in the provider delivered care beyond the practitioner's direct control (e.g. written institution policies and the acquisition of facilities). Adherence to guidelines, then, necessitate changes that can occur beyond that which a single practitioner can achieve and influence. Context factors were most commonly cited as a barrier to implementing the guideline recommendations. These factors included lack of equipment, insufficient staff, lack of supporting staff, or the lack of opinion leaders (Timen et al., 2010).

4. Facilitators of Implementing Infection Control Guidelines

This article documents the development, piloting, and application of an observational tool to retrospectively analyze the content of discussions to identify guideline-based or consistent, potential averted cases. Between August 2009 and February 2011, 50 observed discussions on isolation precautions were audio-recorded. Post-discussion questionnaires assessed components of the TDF and evaluated practitioners' beliefs about specific case scenarios. A four-step coding scheme was developed to identify averted cases, based on: 1) whether the case scenarios described a situation in which infection control guidelines were not being followed and the patient acquired an HAI; 2) whether the discussion content identified any factors that could have hypothetically averted the HAI; 3) and 4) whether these factors were: a) tools/strategies of infection control, and b) specific categories of the COM-B. Compatibility between the emergent themes/factors identified via observational analysis and those identified via post-discussion surveys, as well as the internal logic of each averted case, were further scrutinized to affirm case validation. Forty-nine of the 50 cases were deemed valid.

A total of 51 valid averted cases were identified across the 49 discussions (mean: 1.04 per discussion). Thus, a majority of discussions were successful in identifying an instance of a



hypothetical HAI, and subsequently, strategies specific to infection control that could have mitigated this risk. Of the 51 averted cases, 48 were determined through the observational analysis, 30 through the survey analysis, and 27 through both. Findings nonetheless provide insight into common breakdowns in infection control practices and underscore the multitude and variety of knowledge and tools needed to adhere strictly to guidelines.

4.1. Education and Training Programs

Environmental Services Workers (ESWs) are important members of the patient care team but are seldom integrated into the infection prevention and environmental hygiene care team. Yet they are often on the front-line of direct and indirect patient care. Thus, the education and training of ESW is essential to increasing their knowledge and skills concerning best practices for environmental hygiene with the goal to reduce Healthcare-Associated Infections. Barriers to education and training of EWS are discussed in the current lack of standardization of such training programs. A 5-topic education and training program delivered to ESW at 5 of the study hospitals is described. The efficacy of the Clean-Trace system in evaluating the effectiveness of training is also discussed.

The release and implementation of Infection Prevention and Control policies and guidelines by health departments have become increasingly important following the Novel Coronavirus outbreak. Despite IPC guidelines and policies being available, several gaps are often identified in training and knowledge levels when it comes to supporting effective implementation. This might be due to changes in guidelines, staff turnover, lack of resources, or competing priorities of healthcare workers. Other reasons are documented such as implementation and monitoring being time-consuming, especially in resource-restricted settings; poor IPC compliance often results due to inadequate training of staff or reluctance to practise transmission-based precautions because of discomfort, excessive workload, and lack of understanding; the training of staff can be complex; new initiatives can be seen as an additional burden. To address these challenges, nominating a dedicated Infection Prevention Control person, allocating appropriate resources, and investing in effective training are recommended.

4.2. Leadership Support

Clinical guidelines on infection prevention and control provide evidence-based recommendations to healthcare professionals to reduce the transmission of infections in healthcare settings. The successful implementation of guidelines, however, can be challenging for healthcare professionals. To date, few studies have explored the perspective of healthcare staff on a national programme of guidelines. This research explores this using a qualitative approach, focusing on the key non-adherence barriers to those guidelines on hand hygiene, patients in single room isolation, sterile medical devices, use of antibiotics, invasive



devices and environmental cleaning and on the strategies to improve their implementation. Semi-structured interviews and focus groups were conducted with healthcare staff from five Irish Health Service Executive departments. Qualitative data was transcribed, anonymised and analysed using thematic analysis. Leadership is a key component for infection prevention and control and, consequently, can play an important role in the implementation of guidelines on healthcare-associated infections (Hegarty et al., 2019). The aim of this research is to explore the leadership perspective on these guidelines. It explores this using a qualitative approach with a focus on hand hygiene, peripheral venous catheter related infections, urinary catheter related infections, and patients in single room isolation. Semi-structured interviews took place with 21 leaders in one health care organisation, and the data was analysed using thematic analysis. The research is a contribution to scientific understanding of these guidelines by identifying a non-awareness of the guidelines, the complexity of guidelines, specific ward characteristics and barriers to the implementation of each guideline.

5. Conclusion and Recommendations

This study has provided background on the level of knowledge and practice of IPPC guidelines, and the institutional arrangements in place by the Gombe State Hospital. It has also discussed the barriers to the implementation of IPPC guidelines as per the health care workers. However, in many African countries, there is dearth of data relating to health care-associated infections, their health impact, the size of the problem and what can be done to prevent them. Also, it contends that the available data is weak since it is mainly circumstantial and from studies assessing the overall cost of health care-associated infections (Gichuhi et al., 2015).

The cross-sectional study of the level of the implementation of the infection prevention and patient safety guidelines by the health care workers is the first of its kind in the area of Democratic Republic of Congo. The study findings suggest that the level of the implementation of IPPC guidelines is suboptimal. There has been a call for participation and strengthening of the basic health care units' surveillance system in this 10th strategic objective of the Global Program for the Implementation of the International Health Regulation. In addition to understanding the existing standards of infection risk at the basic levels, systems and measures that are context-specific and routinely employed by the communities to identify and respond to unusual risks, were also recommended to be strengthened.

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