Barriers to implementing infection prevention and control guidelines during crises: Experiences of health care professionals

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Background: Communicable disease crises can endanger the health care system and often require special guidelines. Understanding reasons for nonadherence to crisis guidelines is needed to improve crisis management. We identified and measured barriers and conditions for optimal adherence as perceived by 4 categories of health care professionals.
Methods: In-depth interviews were performed (n = 26) to develop a questionnaire for a cross-sectional survey of microbiologists (100% response), infection preventionists (74% response), public health physicians (96% response), and public health nurses (82% response). The groups were asked to appraise barriers encountered during 4 outbreaks (severe acute respiratory syndrome [SARS], *Clostridium difficile* ribotype 027, rubella, and avian influenza) according to a 5-point Likert scale. When at least 33% of the participants responded ''strongly agree,'' ''agree,'' or ''rather agree than disagree,'' a barrier was defined as ''often experienced.'' The common (''generic'') barriers were included in a univariate and multivariate model. Barriers specific to the various groups were studied as well.
Results: Crisis guidelines were found to have 4 generic barriers to adherence: (1) lack of imperative or precise wording, (2) lack of easily identifiable instructions specific to each profession, (3) lack of concrete performance targets, and (4) lack of timely and adequate guidance on personal protective equipment and other safety measures. The cross-sectional study also yielded profession-specific sets of often-experienced barriers.
Conclusion: To improve adherence to crisis guidelines, the generic barriers should be addressed when developing guidelines, irrespective of the infectious agent. Profession-specific barriers require profession-specific strategies to change attitudes, ensure organizational facilities, and provide an adequate setting for crisis management.
Key Words: Barriers; adherence; crises; outbreak management; infection control; guidelines.

In outbreak situations that endanger the health care system, outbreak control measures must be initiated promptly to prevent further transmission of the pathogen. In such situations, authoritative guidance is needed. Countries all over the world have established their own structures to disseminate outbreak control guidelines and, if necessary, put outbreak control systems in place. In a crisis, health care professionals with diverse backgrounds need to work quickly together to identify cases, perform laboratory diagnostics, trace contacts, and institute infection prevention and control measures as described in the outbreak control guidelines.[1] Optimal compliance with the guidelines, with timely and adequate outbreak control as final outcome, requires good adherence by professionals. Unfortunately, however, their adherence is often not optimal,[2-5] due to knowledge, attitudes, and behavior among professionals,[6,7] as well as to organizational and other factors. Guidelines are not always clear, and existing facilities are not always adequate or adaptable to the sudden intrusion of crisis measures. A systematic review conducted by Cabana et al[8] revealed a variety of barriers that hinder adherence. The authors provide a generic framework for exploring barriers in various settings. According to the authors, barriers to adherence include those related to the professionals, with a more cognitive (knowledge, awareness) or affective (attitude, motivation) component,

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those related to the guidelines (their content and target patient population), and those related to the environment (organization, social setting).[8] Many studies have looked at determinants of adherence to guidelines in the routine care of infectious disease,[9-14] but little is known about determinants of adherence to guidelines in crisis situations.[15,16]

Crisis situations differ significantly from routine communicable disease control, because health professionals must respond with prompt decisions, uniformity of action, and quick integration of new knowledge and skills. Furthermore, the context of crisis situations is complex, requiring optimal communication and cooperation between public health services and hospitals. A better understanding of the reasons for nonadherence of health care professionals in crises situations is needed to improve crisis management. Identification of generic and profession-specific barriers can lead to customized strategies designed to make guidelines work.

In this study, we assessed reasons for nonadherence (barriers) among key professionals in outbreak control in crisis situations: consultant microbiologists, infection preventionists, public health physicians, and public health nurses. We identified the generic and profession-specific priorities that need to be addressed to improve adherence to outbreak control guidelines.

METHODS

This cross-sectional study used questionnaires tailored to 4 groups: consultant microbiologists (M), infection preventionists (IP), public health physicians (PHP), and public health nurses (PHN). Each group's questionnaire was designed based on in-depth interviews with professionals in that group.

Questionnaire development

In-depth interviews lasting 1-1.5 hours were performed with 26 health care professionals (14 men and 12 women: M, n = 7; IP, n = 7; PHP, n = 6; PHN, n = 6). All had been actively involved in one or more of 4 recent crisis situations due to infectious outbreaks in The Netherlands: severe acute respiratory syndrome (SARS), *Clostridium difficile* ribotype 027, rubella, and avian influenza AI/H7N7.[17-20] The participants' working experience averaged 15 ± 4 years for Ms, 14 ± 8 for IPs, 15 ± 5 for PHPs, and 10 ± 3 for PHNs.

For each of the 4 crises, an overview of control measures issued by the national outbreak management team (OMT) was provided before our interviews to facilitate recall by the professionals. The professionals were then asked to identify barriers they had experienced during the outbreaks as to case finding, infection prevention and control, laboratory testing, and contact tracing. Sampling and interviewing continued until saturation was reached, that is, no new items were identified.

Conducted from January through March 2007 by 3 investigators (A.T., D.V., and F.W.), the interviews were audiotaped and transcribed verbatim. During the study, data collection was validated at intervals by discussion among the interviewers. The content of the tapes was analyzed by 2 investigators independently (A.T. and M.H.) to construct an overview. The investigators extracted the barriers and categorized them under 3 main headings, according to the validated framework to standardize obstacle reporting of Cabana et al[8]: ''knowledge/attitude,'' ''guidelines,'' and ''organization/social setting.'' Interviews elicited a different number of barriers for each profession: 37 items for Ms, 25 items for IPs, 30 items for PHPs, and 38 items for PHNs. Details are available on request.

Cross-sectional study

Using the barrier overviews, questionnaires were designed for each profession. These instruments requested a response to each listed barrier, using a 5-point asymmetric Likert scale (strongly agree, agree, rather agree than disagree, disagree, strongly disagree). The questionnaires were administered to the PHPs and PHNs at public health services (September-November 2007), IPs at hospitals (January-March 2008), and M in various settings (February-April 2008). To cover the entire country, we requested that questionnaires be returned by at least one PNP and PHN from each of 33 public health services and by at least one IP from each of 94 hospitals. Because most microbiologists work in practices serving more than one hospital and/or public health service, we selected a nationwide sample of 30 practices to complete the questionnaire.

Analysis

Data from questionnaires were analyzed using SPSS version 15 for Windows (SPSS Inc, Chicago, IL). For each barrier and for each profession, descriptive statistics were obtained. For the analysis of questionnaires, the answers given in the 5-point scale were dichotomized to enable division between ''yes'' (barrier experienced) = strongly agree/agree/rather agree than disagree with the proposed barrier and ''no'' (barrier not experienced) = disagree/strongly disagree. We considered a barrier to be ''often experienced'' when at least 33% of the participants had experienced it. These barriers were included in the final overviews.

Generic or common barriers were those recognized by at least 3 categories of professionals. These barriers were included in univariate and multivariate