American Journal of Infection Control 40 (2012) 667-9

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Practice forum

Journal Club: A venue to advance evidence-based infection prevention practice

Mary Lou Manning PhD, CRNP, CIC [a,*], James Davis BSN, CCRN, CIC [b]

[a] Thomas Jefferson University, Jefferson School of Nursing, Philadelphia, PA
[b] ECRI Institute, Plymouth Meeting, PA

Key Words:
Critical review
Journal review
Best practice
Research implementation

Journal Clubs are a well-recognized strategy used by clinicians to critique and keep up to date with relevant literature. This article provides an example of an assessment of an article appearing in this issue of the *American Journal of Infection Control* titled, "US School/Academic Institution Disaster and Pandemic Preparedness and Seasonal Influenza Vaccination Among School Nurses."

In response to the exploding demand for infection preventionists' (IPs) expertise, the Association for Professionals in Infection Control and Epidemiology, Inc (APIC), recently released an IP competency model.[1] The model, applicable across all practice settings and career stages, reinforces the importance of patient safety, professional standards, and the Certification Board of Infection Control and Epidemiology core competencies. It includes the 4 interrelated, developmental domains of leadership, infection prevention and control, technology, and performance improvement/implementation science. The model suggests that the practice of infection prevention, across all domains, requires the understanding, application, and integration of current scientific literature. One approach to help IPs share current knowledge and translate it into evidence-based practice is Journal Clubs.

Journal Clubs are a well-recognized strategy used by clinicians to critique and keep up to date with relevant literature.[2] They date back to 1875 when Sir William Osler organized a group of physicians to share educational resources and review research articles for the purpose of medical education. Today, Journal Clubs usually refer to a gathering of interested people with a common clinical specialty, for the review of current health-related literature and critical discussion regarding the clinical application of the results.[2] Such a forum provides the opportunity to fulfill a variety of purposes including the following: increase knowledge on the subject being discussed, improve literature evaluation skills, improve understanding of statistical methods, translate research findings into clinical practice, or simply to facilitate the review of a specific research study and discuss the implications for clinical practice.[3,4] Regardless of purpose, an article critique guide should be used to evaluate the manuscript(s). The guide should include critical evaluation of an article's background and significance, methods, results, discussion/conclusions, and clinical significance. Table 1 provides a general guide to critique Journal Club articles.[5]

Below, we provide an example of an assessment of an article appearing in this issue of the *American Journal of Infection Control* (AJIC) titled, "US School/Academic Institution Disaster and Pandemic Preparedness and Seasonal Influenza Vaccination Among School Nurses."[6] This could be used in a traditional face-to-face Journal Club experience. Additionally, virtual on-line Journal Clubs and structured critical appraisal of articles appearing in peer-review journals are also emerging.[3,4] We encourage IPs to use Journal Clubs to help them critically analyze research in order to implement evidence-based infection prevention practice.

JOURNAL CLUB

This Journal Club article examines the study from Rebmann et al[6] designed to assess the preparedness of US schools and academic institutions' current readiness to respond to a disaster, focusing on preparedness for infectious disease disaster such as bioterrorism, pandemics, and outbreaks of infectious diseases. Included as part of their assessment, the authors[6] looked at seasonal influenza vaccination among school nurses. Furthermore, the body of literature presented to date in regard to disaster and pandemic preparedness has dealt with public health and health care environments; this article adds to the literature by explicitly examining the preparedness of US schools in response to disaster.

* Address correspondence to Mary Lou Manning, PhD, CRNP, CIC, Associate Professor, Thomas Jefferson University, Jefferson School of Nursing, Philadelphia, PA 19107.
E-mail address: marylouman@gmail.com (M.L. Manning).

Conflicts of interest: None to report.

0196-6553/$36.00 - Copyright © 2012 by the Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.ajic.2012.07.001

Table 1
Journal Club article critique guide

Background and significance
- Is the purpose of the study/problem statement clearly identified?
- Does the research question or hypothesis clearly state the population being studied and the intervention being proposed?
- Is the literature review logically organized? Does it offer a balanced appraisal of the literature? Does the content relate directly to the research problem? Are the references current and from reputable journals?
- Do the aims and objectives reflect the information presented in the literature review?
- Has a conceptual or theoretical framework been identified? Is it appropriate?
- Are all the terms, theories and concepts clearly defined?

Methods
- Is the study design clearly identified? Is it appropriate?
- Are the study procedures clearly identified? Are they appropriate? How were data collected? Was the instrument valid and reliable? Was an intervention used? Is it clearly described? Is it appropriate?
- Is the sample population (subjects) clearly defined? How were they selected? Is the sample of adequate size? Were the inclusion/exclusion criteria specified? How representative is the sample?
- Was institutional review board approval obtained?
- How were the data analyzed? Are the selected statistical tests appropriate? Were the results significant?

Results
- What were the findings of the study? Are they presented in a clear and understandable manner?
- Did the authors explain or interpret the results?

Discussion/conclusions
- Are the study findings linked back to the literature review?
- What are the study strengths and limitations? Were they identified?
- Does the study contribute to the body of knowledge?

Clinical significance
- What were the implications of this study to the practice of infection prevention?

The authors[6] pose 2 essential questions to conduct their assessment. What is the current state of US schools and academic institutions readiness to respond to an infectious disease disaster? What is currently known about the uptake of vaccination for influenza among US school nurses? To answer these critical questions, Rebmann et al[6] administered a survey to US school nurses between the months of May and July 2011. The authors[6] recruited subjects from a variety of sources including the following: state school nurses associations, state departments of education, and through individual searches of school Web sites. The survey was available in an online format. Because this was an Internet survey, a modified Dillman's tailored design method was utilized. Two recruitment e-mails were sent at specified intervals, and Internet links were utilized to access the survey.

METHODS

The survey was created by the authors[6] utilizing a variety of sources. The Centers for Disease Control and Prevention recommendations and surveys from other studies that looked specifically at school disaster preparedness were used to form questions by the research team. Creating a unique or individual tool may be desirable especially when there is very little research addressing a topic such as school related pandemic preparedness. Content validity was assessed by an independent review of 10 US pandemic preparedness researchers. The content validity index for each question was scored, and none were below 0.80. Furthermore, the authors[6] piloted the survey via administration to 20 St. Louis area school nurses and incorporated their feedback. The final survey consisted of demographic data and content questions with most responses indicated as a yes or no. Temporal stability was assessed via a test-retest procedure spanning 2 weeks, inclusive of 57 school nurses from across the United States. The questionnaire had a correlation coefficient varying from 0.84 to 0.96, indicating good stability.

Descriptive statistics were computed for each question that measured a school's plan to function as a point of dispensing and for questions that relate to the components of disaster and pandemic preparedness. To compare rates of mandating influenza vaccination across school employee types, the authors[6] employed Fisher exact tests, and χ^2 tests were used to determine the differences between public and private sector schools in regard to stockpiling of infection prevention and control supplies. Linear regression was then utilized to describe factors related to higher school pandemic preparedness scores. The authors[6] note the use of the Statistical Package for the Social Sciences (SPSS Inc, Chicago, IL) version 19.0 for all analyses. The authors[6] state they have obtained Institutional Review Board approval from the Saint Lewis University.

RESULTS

Overall, 1,997 school nurses from 26 states completed the survey, thereby yielding a response rate of 21.9%. Pandemic preparedness scores ranged between 0 and 10, with the average falling at 4.3. Interestingly, 73.7% of respondents reported receiving the influenza vaccine for the 2010/2011 season, and 2.2% reported their school or district had a mandatory vaccination policy.

The authors[6] identified several determinants of school pandemic preparedness:

- Plans to be a point of dispensing for future pandemics;
- having experienced multiple student or employee hospitalizations/deaths related to the H1N1 pandemic;
- having a lead nurse complete the survey; and
- having the school nurse study participant be a member of the school disaster planning committee.

The authors[6] point out that the majority of schools included in the survey has a written disaster plan; however, this study suggests that most schools are ill prepared to deal with a disaster involving a biologic than any other type of event. This includes having necessary supplies, having a thoroughly drilled plan, and having a relationship with regional or local response agencies in the event of a disaster. Furthermore, many schools within this study do not train their staff on their disaster plan. It was also noted that less than half of schools surveyed reported participating in a community syndromic surveillance program.

DISCUSSION

The authors[6] readily identify both the strengths and weaknesses related to their study. They note that this is the first study to venture outside the current literature that primarily focuses on the single child medical emergency model. Their research instead focuses on the ability of the school system to respond to disasters involving large groups. Therefore, the lack of literature on this topic would make their study novel from an emergency pandemic preparedness standpoint. The authors[6] also state that there is strength to their study related to the use of a national sample. Weaknesses identified by the authors[6] include potential nonresponder bias, under-representation of nurses who cover college and university settings, and a low response rate in some states, which could limit the generalizability of the study. It is important to note that the authors[6] realize this work is the beginning of research into the state of US school preparedness for pandemic events.

This article may suffer from a perceived limitation because of a low response rate, as well as the pilot survey only being tested by a geographically similar group. Furthermore, the vehicle for the survey was online only, potentially hindering those without the technology or skills to participate. However, this study provides a valuable snapshot

of the current perceptions of school nurses and the presumed state of affairs in relation to pandemic preparedness in US schools. Despite the US Department of Education mandate[7] that all schools have an all-hazards emergency management program, one must question the mandate's effectiveness, given the results of this study.

The authors[6] point out that the majority of the schools have a written disaster plan but do not demonstrate the ability to equip, train, or implement the plan. Having a written plan may meet the requirement of a mandate, but there will need to be dedicated resources to accomplish desired outcomes. Along parallel lines, IPs have experienced similar struggles when it comes to balancing job-related duties, mandates, and limited resources. For example, a survey of Society of Healthcare Epidemiology of America members found that hospital epidemiology and infection prevention and control departments experienced an increase in responsibilities and scope, while, in many instances, resources were below levels recommended by expert panels in the peer-reviewed literature.[8] Therefore, perhaps the experiences of the IP can provide valuable insight and consultation to the school sector.

APIC's white paper on the role of the IP in emergency management specifies that IP "input is needed when developing facility and *community emergency management plans*."[9] It seems that this may be an opportunity for infection prevention that has been largely under developed. Furthermore, APIC calls for IPs to become "active in many issues surrounding emergency management [including vaccination] that have potential policy implications, especially those involving creation of new standards and recommendations related to infection prevention during a mass casualty incident. Healthcare policy development needs to take place during emergency management planning."[9]

The authors[6] of the reviewed paper call for IPs to become more active in disaster planning at the school level; however, it would seem that it may be more effective to begin by becoming involved in policy, standards formation, and recommendations that would aide in the effectiveness of planning and help assign needed resources to schools.

Of course, more research needs to be conducted; the authors[6] have potentially scratched the surface of a largely unmet need in the community. However, the implications of this research warrant the attention of our profession.

References

1. Murphy DM, Hanchett M, Olmsted RN, Farber MR, Lee TB, Hass JP, et al. Competency in infection prevention: a conceptual approach to guide current and future practice. Am J Infect Control 2012;40:296-303.
2. Deenadayalan Y, Grimmer-Somers K, Prior M, Kumar S. How to run an effective journal club: a systematic review. J Eval Clin Pract 2008;14:898-911.
3. Berger J, Hardin HK, Topp R. Implementing a virtual journal club in a clinical nursing setting. J Nurs Staff Dev 2011;27:116-20.
4. Millichap JJ, Goldstein JL. Neurology journal club. Neurology 2011;77:915-7.
5. Coughlan M, Cronin P, Ryan F. Step-by-step guide to critiquing research. Part 1: quantitative research. Br J Nurs 2007;16:658-63.
6. Rebmann T, Elliott MB, Reddick D, Swick ZD. US school/academic institution disaster and pandemic preparedness and seasonal influenza vaccination among school nurses. Am J Infect Control 2012;40:584-9.
7. US Department of Education. Practical information on crisis planning: a guide for schools and communities. Available from: http://www.ed.gov/admins/lead/safety/emergencyplan/crisisplanning.pdf. Accessed July 3, 2012.
8. Wright SB, Ostrowsky B, Fishman N, Deloney VM, Mermel L, Perl TM. Expanding roles of healthcare epidemiology and infection control in spite of limited resources and compensation. Infect Control Hosp Epidemiol 2010;31:127-32.
9. Rebmann T. APIC state of the art report: the role of the infection preventionist in emergency management. Am J Infect Control 2009;37:271-81.