

## Increasing state public health professionals' proficiency in using PubMed

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**Objective:** The paper provides an overview of a strategy to increase utilization of online bibliographic databases by public health workers.

**Methods:** A web-based survey of professional staff in the Montana Department of Public Health and Human Services was conducted to assess their use of and interest in training in online bibliographic databases. Based on the findings from the assessment, the department, in collaboration with the state university, provided brief ninety-minute training sessions for interested staff on the use of PubMed.

**Results:** Seventy of 115 (61%) of staff completed the survey. Only 39% of staff reported using an online bibliographic database to conduct a literature search in the past year, and only 10% (n=7) reported having ever received any training in their use. Perceived proficiency with the use of PubMed was higher upon completion of the brief training. The majority of training participants (n=27) indicated that they were very likely to use PubMed in the next year to search the literature.

**Conclusions:** A collaboratively designed training can increase public health workers' proficiency in and intentions of using online bibliographic databases.

### Highlights

- A web-based assessment of Montana public health workers identified a lack of training in and use of online bibliographic databases and an interest in receiving training in their use.
- Brief training in the use of online bibliographic databases increased state public health workers' self-assessed proficiency in and intentions of using these resources.

### Implications


- Low-cost strategies, such as inexpensive web-survey tools, to assess staff needs and brief training sessions for public health workers were effective in increasing public health workers' self-assessed proficiency in using online bibliographic databases.
- Collaboration between state health departments and universities to design and provide relevant training in the use of online bibliographic databases is an effective approach to addressing public health workers' skills in using these resources.

## INTRODUCTION

Electronic information systems, such as the online bibliographic databases available through the National Library of Medicine and other components of the Na-

tional Institutes of Health, are useful resources for public health professionals to find relevant data and information for public health practice. Public health professionals can utilize these resources to identify evidence-based strategies for specific topics, program planning and development, surveillance and evaluation, and current issues in the field of public health [1]. Use of these information resources has been recognized as an important component of public health infrastructure: the *Healthy People 2010* plan for the United States includes an objective related to the use of electronic information systems for public health practice [2].

A survey of public health professionals conducted in 1997 in ten Midwestern states found, however, that less than one-fifth of respondents used electronic information systems such as MEDLINE and that two-thirds of respondents were interested in receiving training [3]. A National Library of Medicine-funded assessment conducted among public health professionals in Tennessee in 1999 found low utilization of electronic information systems for public health practice [4]. To address these kinds of issues, among others, the National Library of Medicine, the Centers for Disease Control and Prevention, the Association of State and Territorial Health Officials, the National Association of County and City Health Officials, and others formed the "Partners in Information Access for the Public Health Workforce" (Partners) [5-7]. The goal of this partnership was to provide training and support for state and local public health officials in the use of currently available information resources applicable to public health. Despite the successes of the Partners projects, a recent literature review found a continued need for coordinated and accessible information to meet the needs of the public health workforce [8].

 Supplemental Table 2 and Appendixes A and B are available with the online version of this journal.

Few recent assessments have been conducted to identify whether public health professionals have received training in the use of electronic information systems and whether public health professionals have increased use of these systems in their current practice [9, 10]. To assess the use of electronic information resources among Montana public health professionals, the Division of Public Health and Safety at the Montana Department of Public Health and Human Services and faculty from the Montana State University State Libraries and Department of Microbiology conducted a survey of public health program staff to evaluate their current utilization of electronic information systems, as well as interest in training. Based on survey results, brief training sessions with a goal of increasing the awareness and use of these resources among public health staff were held.

## METHODS

### Assessment of state public health professional needs

Using SurveyMonkey.com, an anonymous, voluntary web-based survey of public health professionals ( $n=115$ ) in the Montana Department of Public Health and Human Services, Division of Public Health and Safety, was conducted between September 11, 2006, and September 22, 2006. This division includes bureaus that focus on chronic and communicable disease prevention and control, maternal and child health, public health and environmental laboratories, and public health systems improvement and emergency preparedness. Division employees who provide administrative or fiscal support were excluded.

The thirteen-item survey (Appendix A online) included questions assessing the use of online bibliographic databases to conduct literature searches in the past year, frequency of use in the past year, specific databases used, respondents' perceived proficiency in conducting literature searches, types of articles most frequently sought, and previous training in the use of online databases. Respondents who indicated that they had not used an online database were asked to indicate their reasons for not using them. All respondents were also asked if they would be interested in receiving training in the use of online bibliographic databases.

The survey was pilot-tested by four members of the division staff: two who had previous experience using online bibliographic databases and two who did not have previous experience using these resources. Revisions to the survey were made based on their comments. An email from the division administrator was sent to each staff member describing the purpose of the survey and including a link to it. A follow-up email was sent to each staff member to promote completion of the survey one week later. Data analyses were conducted using SPSS, version 14.0.

### Brief training in the use of online bibliographic databases

Following administration of the survey, the division provided three ninety-minute training sessions in the

use of PubMed for interested staff. The trainings targeted increasing staff skills in the use of PubMed, because this was the most frequently used online bibliographic database identified by staff. The didactic component of the training (thirty minutes) reviewed basic search strategies such as identifying key questions to answer prior to performing a literature search, utilizing Medical Subject Headings (MeSH), and limiting searches (including the use of Boolean operators). This portion also explored numerous PubMed features such as single citation searching, related links, free text articles, and article ordering through Loansome Doc. The remainder of the training provided hands-on opportunities for participants to conduct literature searches and order articles using the concepts learned through first portion of the training.

Following the training session, participants completed an evaluation (Appendix B online), which assessed both success in meeting the stated learning objectives and the participants' overall satisfaction with the training. Participants were also asked to indicate whether they had used PubMed in the past year, rate their proficiency in using PubMed prior to and after completing the training, and indicate how likely they were to use PubMed in the next year. Professional staff were invited via email to attend one of the three training sessions. No attendance incentives were provided.

## RESULTS

### Findings from the assessment

Seventy (61%) of 115 staff members completed the survey. Over one-third of respondents (39%,  $n=27$ ) indicated that they used an online bibliographic database to search the literature in the past year (Table 1). The majority of these respondents were searching for review articles ( $n=20$ ) and articles regarding evidence-based practices ( $n=11$ ) for a specific topic, while fewer respondents were searching for articles regarding epidemiology ( $n=12$ ) or clinical guidelines ( $n=11$ ). Of respondents using a database in the past year, the vast majority (96%,  $n=26$ ) reported using PubMed, while fewer had used Medscape, PsycINFO, or CINAHL. The majority of respondents who had used one of these resources felt they were somewhat proficient in their use ( $n=15$ ), while fewer felt they were not very proficient ( $n=7$ ), not very proficient at all ( $n=1$ ), or very proficient ( $n=2$ ).

Forty-three respondents (61%,  $n=43$ ) indicated they had not used a database to search the literature in the past year. The most frequent reasons for not using these resources were lack of knowledge that they were available, lack of training, no need to conduct searches as part of work, or lack of time (Table 1).

Among all respondents, only 10% ( $n=7$ ) reported having had any training in using an online bibliographic database. Over two-thirds of respondents (69%,  $n=48$ ) indicated they were interested in such training, 10% ( $n=7$ ) were not interested in training, and 21% ( $n=15$ ) were not sure if they were interested in training.

**Table 1**  
Assessment of utilization of online bibliographic databases by Montana health department staff

Utilization of online bibliographic databases (OBDs)	% (n/Total number)
Used OBD to conduct a literature search (past year)	39 (27/70)
Number of times used OBD in past year	
1-5 times	56 (15/27)
6-10 times	19 (5/27)
More than 10 times	26 (7/27)
Types of articles searched for	
Epidemiology or surveillance	44 (12/27)
Review articles	74 (20/27)
Evidence-based practices	41 (11/27)
Clinical guidelines	41 (11/27)
OBDs used in the past year	
PubMed	96 (26/27)
Medscape	33 (9/27)
PsycINFO	11 (3/27)
CINAHL	4 (1/27)
Self-rated proficiency using OBDs	
Very proficient	8 (2/27)
Somewhat proficient	57 (15/27)
Not very proficient	26 (7/27)
Not proficient at all	4 (1/27)
Not sure	4 (1/27)
Ever received training in the use of OBDs	10 (7/70)
Interested in receiving training to use OBDs	69 (48/70)
Reasons for not using OBDs	
No training	47 (20/43)
No time	21 (9/43)
Unsatisfactory results	2 (1/43)
Not needed for my work	26 (11/43)
Did not know it was available	49 (21/43)

### Evaluation of the training in the use of online bibliographic databases

Thirty-one division staff members participated in the voluntary training sessions (27%). Overall participant rating of satisfaction with the training and achievement of learning objectives was high (mean satisfaction score for each=4.6, scale: 1=poor and 5=excellent) (Table 2 online). Perceived proficiency with the use of PubMed was higher upon completion of the training, with 6 participants rating themselves as somewhat or very proficient prior to training and 28 rating themselves as somewhat or very proficient following training. Additionally, the majority of training participants (87%, n=27) indicated that they were very likely to use PubMed in the next year to search the literature.

### CONCLUSIONS

This study's findings suggested that less than half of Montana state public health professionals surveyed had used an electronic information system in the past year to conduct a literature search, and few had ever received training in using these resources. Additionally, few respondents who had used an electronic information system in the past year believed they were very proficient in using these resources to conduct literature searches. Most respondents who had not used an electronic information system in the past year either

did not know these systems were available or did not have adequate training to use them. After completing a brief hands-on training session, staff felt that they were very likely to use these systems in the next year and that their skills in using these systems improved.

These baseline assessment findings were comparable to those reported by Hollander and Martin, in which less than one-fifth of public health professionals in Midwestern states had ever used MEDLINE, but over two-thirds of respondents were interested in receiving training on using this resource [3]. One limitation of the present assessment was that only public health staff from the Montana Department of Public Health and Human Services were surveyed. Use of online bibliographic databases might vary considerably among public health professionals in other state and local health departments. However, previous reports assessing the use of these systems among state and local public health professionals in Midwestern states, Tennessee, and Kansas suggested that the use of these systems was relatively low [3, 4, 10]. A limitation of the training evaluation was that only participants' self-perceived proficiency and intentions to use online bibliographic databases were assessed, not their actual use of these resources.

This study's findings suggest that state public health professionals are interested in receiving training in the use of electronic information systems for public health practice. Unique features of this project were using a low-cost strategy, such as an inexpensive web-survey tool, to assess staff needs and providing brief training sessions for public health workers in a rural state. Similar to this experience, previous reports from other rural states have described successful collaborations between state and local health departments and academic institutions to provide training for staff in the use of electronic information systems [9, 10].

In addition, brief training sessions in the use of electronic information systems (one to eight hours in length) for health professionals and medical students have been shown to improve skills in conducting literature searches and would likely be an effective strategy for public health professionals [11, 12]. The division also supports an annual week-long public health training institute for state and local health department professionals that includes courses on key public health issues (e.g., epidemiology, public health law, program evaluation). A half-day session on using electronic public health information systems has been integrated into this institute. The division also plans to continue to provide ongoing training to professional staff regarding the use of electronic public health information systems to maintain and improve staff members' skills in using these valuable resources.

A number of lessons were learned via the project. First, participation in the training was voluntary, and only 27% of eligible professional staff participated. Alternative strategies to increase staff participation in these trainings include making participation mandatory and expanding the number of times that these trainings are offered. Second, prior to the training, the project team requested that participants bring specific

topic areas of interest on which they would like to conduct a literature search. During the training, time was allotted for individuals and small groups to conduct literature searches with the help of the course faculty. This hands-on practice was well received. Third, the project evaluation clearly indicated that the staff members who participated in the training appreciated the opportunity to learn and indicated that their skills had improved. Finally, the collaboration with the university faculty, who have expertise in teaching and using these electronic information systems, was very helpful.

This project promoted information use among a sample of Montana public health officials and adds to the body of literature addressing information needs and use among this population. Librarians and public health professionals in other settings may benefit from incorporating techniques, such as interinstitutional collaboration and focused hands-on training, into future outreach with the public health community.

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