



## Developing Best Practices for Searching During Public Health Emergencies

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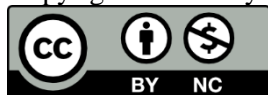
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### Abstract:

The Librarian Reserve Corps (LRC), an international volunteer network of over 140 health sciences librarians from 14 countries, was formed in March 2020 to respond to the information needs of the Global Outbreak Alert and Response Network (GOARN) during the COVID-19 pandemic. One key project area for the LRC, in coordination with the World Health Organization Library, was the facilitation of discussions among creators of COVID-19 literature collections, databases, and search portals, the main goal being the coordination of expertise to curate the best evidence during the pandemic. Discussants identified the need for best practices for searching during public health emergencies. LRC volunteers responded to that need with a qualitative research project on best practices for searching during public health emergencies. This paper will describe the methods and tools used to develop the statement; the preliminary findings from the qualitative research; lessons learned and future directions for this project.

**Keywords:** Systematic Reviews, Methodology, Qualitative Research, International Collaboration, Evidence Synthesis

## **Introduction**

Evidence-informed decisions are essential to effective public health emergency response. During the COVID-19 pandemic, librarians and information professionals, who have been called upon to find research to help support these decisions, encountered a rapid evolution of information needs; the proliferation of new resources; and the rapid publication of new evidence. Additionally, professionals needed to develop new and innovative ways to find publication types (e.g., preprints) not typically used in evidence synthesis and reference work in the biomedical field. Guidance for developing and reporting searches outside of emergency settings was too prescriptive to be adapted to the rapidly evolving nature of the pandemic. New and innovative approaches to searching the evidence and reporting the findings was needed to accommodate the fluidity and the rapidly-changing nature of the pandemic.

In response, the Librarian Reserve Corps (LRC), an international volunteer network of over 140 medical and public health librarians from 14 different countries, convened an expert panel to develop best practices for searching for evidence in a public health emergency. The LRC convened a series of discussions on literature searching challenges with evidence synthesis researchers, information professionals, and COVID-19 database creators. From those meetings, and with support from the literature, emerged best practice recommendations for finding evidence during public health emergencies. This paper is not the best practices paper but describes the process, methods, etc. of developing them.

## **Methods**

### *Research Design*

In developing the best practice recommendations, the authors used qualitative research methods, including expert panel discussions and written responses from the same panel. The best practices statement was informed by research on publication trends and literature searching during the pandemic and other public health emergencies.

### *Expert Panel Discussions*

On November 20, 2020, 15 information professionals, database creators and evidence synthesists, attended a virtual meeting with the authors to discuss the scope of the proposed recommendations and identify key organizations to be involved in their development. After that initial meeting, the authors developed a protocol inspired by the Delphi method and a preliminary project timeline and created shared folders and password-protected webpages to support the project. The authors identified further experts with experience in literature searching, knowledge synthesis and maintaining specialized COVID-19 databases. The authors also attended meetings with COVID-END (December 2020) and the WHO Evidence Collaborative on COVID-19 (May 2021), at which additional experts and peer reviewers were recruited.

From the minutes of these meetings, meta-research on COVID-19 publication trends, research describing literature searching during previous public health emergencies and guidance for searching in non-emergency situations, the authors developed six core elements to be addressed in the best practices statement: (1) Core Resources; (2) Search Strategies; (3)

Publication Types; (4) Transparency and Reproducibility; (5) Collaboration; and (6) Conducting Research.

The experts from the panel were surveyed (Wilson et. al. 2021a) on the core elements from December 2020 to February 2021 to ensure a common understanding of the statement scope and the specific elements (Brody et al. 2021). There were ten respondents, including academic librarians, government librarians, database creators, and clinical information specialists.

On February 24, 2021, the authors emailed each member of the expert panel guiding questions (Wilson et. al. 2021b) to elaborate and explore each element (Brody et al. 2021). The guiding questions reflected COVID-19 literature searching challenges as well as themes from the literature. Responses from nine experts were received at the beginning of March 2021. The authors reviewed the responses for common themes, areas of disagreement, and points for further clarification and elaboration. The LRC volunteers developed discussion questions to clarify points that were only vaguely described or around which experts shared conflicting viewpoints.

A series of six virtual meetings (one for each element) were scheduled with the authors and the expert panelists between April and June 2021 to discuss these follow-up questions (Brody et. al. 2021). The expert panelists were provided the follow-up questions prior to each meeting; those unable to attend the virtual meetings were invited to submit their responses via email. Five to eleven participants attended the virtual meetings.

Meetings were recorded with the expert panel's knowledge and consent and meeting minutes were transcribed by the authors. All meeting materials, including minutes and discussion questions, were posted on a password-protected webpage for all volunteers and expert panelists to review.

### *Writing the Statement*

The writing team for the best practices statement included two members of the LRC executive team, five LRC volunteers and two members of the expert panel. Each element contains recommendations and real-life examples of how these recommendations are practiced in the professional world. The format was modeled after the PRISMA 2020 explanation and elaboration document and PRISMA-S (Rethlefsen et al. 2021; O'Dea et al. 2021; Page et al. 2021). The statement was distributed to the panel of experts for peer-review and feedback in November 2021 and their suggestions were incorporated into the statement between December 2021 and January 2022.

### **Tools/Resources**

The development of the best practices statement involved the use of a number of virtual collaboration tools. The authors used traditional digital library products to share information and to manage the project. Springshare, LLC provided the LRC with access to LibGuides and LibWizard. Project materials for all participants were posted on the password-protected project LibGuide (Springshare 2021) to allow access. LibWizard (Springshare 2021) was used to survey experts on the core elements, collect recommended references and expert nominations, gather feedback on the final draft, and collect author information for

publication. Meetings were conducted using the video conferencing platform Webex (Webex by Cisco 2021), which allowed meetings to be recorded for later compilation of minutes.

Participants submitted written responses to the guiding questions using Box (Box 2021), a cloud-based content management system. Box was chosen to allow access for hospital librarians and others for whom the use of Google Drive was restricted. Box was again used for drafting the statement and the accompanying white paper. Feedback on these drafts was collected from reviewers using LibWizard. References for the paper were organized using the free, open-source reference management software Zotero (Corporation for Digital Scholarship 2021), which includes an integration with word processing software to simplify insertion of citations. Shared materials were posted to Open Science Framework (OSF) in July 2021 (Brody et al. 2021).

## **Skills**

The skills required to successfully undertake this project combined traditional librarian roles in literature searching with expertise in project management. Expert searching is a key skill of medical librarians, who have the necessary expertise to find and evaluate relevant evidence on public health emergencies (Friesen et al. 2015).

Most of the team members are also academic librarians, a group with a strong dedication to research and a particular interest in collaborative approaches (Hacker et al. 2020). This background proved essential in reviewing the literature on current and previous emergency responses in order to identify trends in research reporting and dissemination, and especially in applying findings from this review to the domain of public health.

Management of the statement development process also required skills outside of search expertise. The project involved development of guiding questions, summarizing responses and creating discussion points to elucidate further clarification on recommendations, and then using notes from the discussion series to development the recommendations. This process drew heavily on these qualitative research skills, as well as meeting facilitation skills to support a consensus-building process that moved from abstract elements to concrete recommendations.

In addition, given the scope of the project and the number of participants, the statement development called upon project management and planning as well as strong communication skills. These soft skills are not specific to librarianship but are key to supporting the successful conduct of research projects at this scale.

## **Conducting Research During a Public Health Emergency**

Conducting research during a public health emergency such as a global pandemic offers unique affordances as well as challenges to the research process. Convening a multinational expert panel was significantly assisted by the widespread use of virtual meetings driven by public health restrictions. It facilitated continued work on the statement even while many workplaces were shuttered and supported a unique blending of participants from different contexts. However, this digital participation also contributed to the problem of Zoom fatigue and information overload (Callaway 2021). It also limited the potential participation of those without reliable electricity and access to the Internet, which may reduce the utility of recommendations in lower-resourced contexts.

Despite the convenience offered by videoconferencing meetings and other virtual collaboration tools, conducting a large-scale project during a public health emergency imposed significant demands on time and energy, on top of work already being done to respond directly to information needs prompted by the pandemic. In addition to this project, volunteers from the LRC were engaged in other projects (Berg et al. 2021). In addition, participants were engaged in response efforts at their local institutions. This is on top of usual work and often coupled with reductions in workforce, diminished wellness and/or increased family responsibilities, resulting in significant limitations on research capacity (Rethlefsen et al. 2021).

Flexibility was preferred over prescribed research methodologies in order to respond efficiently to the rapidly evolving situation. Surveys, discussions, and writing were completed in less than 12 months. Consequently, the statement should be reviewed following the end of the current Public Health Emergency of International Concern and after the next health emergency.

### **Preliminary Results**

The statement aims to complement existing guidance to support evidence-based practice in emergency responses (Higgins 2019; Park et al. 2021). Best practices were developed using a semi-structured qualitative method combining professional expertise with evidence from the literature. Though the recommendations and examples arose from the COVID-19 pandemic, the underlying principles should remain relevant in future public health emergencies. The use of the six elements to group recommendations is intended to support high-quality, efficient searching to respond to an evolving public health situation.

Core resources include both traditional resources for information (such as Medline) as well as new and emerging resources – for example, specialized collections for COVID-19 such as LitCovid (Rubin et al. 2021). Recommendations for this element consider which and how many resources to search; how to evaluate databases, existing and new; and when / how frequently to re-evaluate resources. These recommendations also outline considerations for deciding on resource selection, which include balancing urgency and comprehensiveness of search, and the availability of personnel and financial resources.

Appropriate search strategy development allows retrieval of the best evidence. Recommendations for this element consider how to design, share and evaluate search strategies; the consequences of changing terminology, the evolution of subject headings, and automatic term mappings; and whether to use filters. The element did not address frequency of updating and re-running search strategies for living reviews or database maintenance.

Consideration of publication type allows non-peer-reviewed literature to be appropriately used and contextualized. Recommendations for this element consider how to monitor publication trends; which publication types to include in search and in what contexts; how to locate and distinguish non-peer-reviewed publication types; and how to monitor study results over time.

Transparent documentation of searches allows for the strategies to be trusted and reused. In the context of a public health emergency, researchers need to know the sources used and how they have been searched, have confidence that appropriate sources and strategies have been

used, ensure that no bias has been introduced, and rerun searches to update or validate a search. Recommendations for this element consider how to share information while maintaining the privacy of search requesters, as well as whether and how established reporting guidelines like PRISMA-S (Higgins 2019) and MECIR (Park et al. 2021) need to be adapted for emergency contexts.

Collaboration among information professionals, researchers, and decision makers can reduce duplication of effort while improving efficiency in information seeking. This approach avoids the need to reinvent the wheel in each jurisdiction and allows for best practices to be shared broadly, supporting evidence-based responses to current and future public health crises. Recommendations for this element consider how to rapidly share search strategies and review protocols; participation of information professionals in response efforts; how to foster collaboration among information professionals and creators of emergency-specific databases and collections; and how to foster collaboration across subject domains.

Information science research can support a more efficient response to emergencies. Recommendations for this element consider how to design, conduct, participate in and disseminate research. Specific types of information research addressed include the validation of search strategies, the evaluation of databases, and the assessment of comprehensiveness of search results and/or the utility of artificial intelligence and machine learning tools.

The recommendations are based on five principles to guide searching during public health emergencies: timeliness, openness, balance, preparedness, and responsiveness. Searchers need to consider the trade-offs of conducting more rapid searches to meet the urgent needs of decision makers, document strategies for transparency, use a combination of new and traditional tools, prepare for future emergencies, and maintain awareness to respond to current emergencies.

The draft statement and accompanying explanation and elaboration was shared with expert participants and reviewers in November 2021, with feedback to be incorporated into the final manuscript. The final version of the statement was redistributed to and approved by authors, expert panellists, and reviewers. The manuscript was submitted to an open access, PubMed-indexed journal that permits author archiving and preprints.

## **Future Directions / Trends**

The statement will provide recommendations for best practices for searching in the current COVID-19 information landscape. There is some anticipation that these practices will evolve during the current public health emergency and future emergencies. Additionally, while changes in technologies, opportunities, and other norms are expected to evolve, the underlying principles contained in the statement will remain relevant even as technologies and tools continue to evolve.

The statement also calls for additional research, training, and advocacy efforts. Research should continue to be conducted during and between emergencies to support librarians and information professionals. Some lines of research may include 1) qualitative research pertaining to licensing, citing, and reusing search strategies or 2) creation and validation of search filters. Additionally, educators can utilize the best practices in the design of curricula to support capacity-building. Recognizing that information professionals and infrastructure

are inadequately resources, the statement also calls for advocacy to support professionals, platforms, and other tools necessary in response efforts.

The current team has no plans to revise the statement, acknowledging the challenges faced and the demands on time, energy, and resources to complete this work. The statement should be reviewed after the official end of the current Public Health Emergency of International Concern as well as after the end of the next global health emergency, and/or as changes in information sharing policies and practices necessitate updates to the recommendations. Future iterations should involve consultation with a broader community of searchers, researchers, and decision makers. A complementary statement of best practices for databases and collections should be developed.

## **Lessons Learned**

Creating a best practices statement of this kind, and during an emergency situation, requires balancing patience with urgency. Developing a good product necessarily takes time, and a quick response is important lest it be out of date by the time it is prepared. Adhering to a clear timeline helps to ensure work proceeds, but, given the dynamic nature of the public health situation, flexibility is sometimes required to account for the workload being placed on collaborators.

Motivation is also a key factor, and one significantly impacted by the demands of the public health situation. Burnout among librarians is common given increasing workloads and requires mitigation (Anderson et al. 2021). It is also important for collaborators to balance serving the professional librarian community with their local communities and responsibilities.

In order to address these issues, collaboration is vital. Distributing work among project participants ensures that it can be done in a timely manner without overburdening any one individual. Just as searchers need not recreate the wheel when an information resource already exists to serve a particular need, a researcher need not attempt to do all of the work on a project. Asking for help is an important skill in managing workload. Additionally, asking for help with content – in this case, from expert participants and reviewers – brings in outside perspectives and improves the validity and applicability of the final product. Evidence-based information practice remains as important as ever, and so too are communities of practice and research relationships for informal and formal information sharing.

## **Acknowledgments**

We thank LRC volunteers and advisors and the co-authors of the Best Practices paper [under review]:

1. Margaret Sampson
2. Shaila Mensinkai
3. Jennifer Coffman
4. Cheryl Hamill
5. Emma Wilson
6. Mary Beth McAteer
7. Heather Staines

We are also thankful to Springshare LLC for providing the Librarian Reserve Corps with LibGuides and LibWizard



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