Protocol

Ewha Med J 2024;47(3):e41
https://doi.org/10.12771/emj.2024.e41
eISSN 2234-2591

Reporting Guidelines for Community Outbreak Investigation Reporting (G-CORE): protocol for guideline development

Wonyoung Jung[1], Sukhyun Ryu[2], So Yeon Ryu[3], Mina Ha[4], Bo Youl Choi[5], Soo Young Kim[1]

[1]Department of Family Medicine/Obesity and Metabolic Health Center, Kangdong Sacred Heart Hospital, Hallym University, Seoul, Korea
[2]Department of Preventive Medicine, Konyang University College of Medicine, Daejeon, Korea
[3]Department of Preventive Medicine, Chosun University Medical School, Gwangju, Korea
[4]Department of Preventive Medicine, College of Medicine, Dankook University, Cheonan, Korea
[5]Department of Preventive Medicine, Hanyang University College of Medicine, Seoul, Korea

Received May 23, 2024
Revised Jun 10, 2024
Accepted Jun 18, 2024

Corresponding author
Bo Youl Choi
Department of Preventive Medicine, Hanyang University College of Medicine, 222, Wangsimni-ro, Seongdong-gu, Seoul 04763, Korea
E-mail: bychoi@hanyang.ac.kr

Soo Young Kim
Department of Family Medicine/Obesity and Metabolic Health Center, Kangdong Sacred Heart Hospital, Hallym University, 150, Seongan-ro, Gangdong-gu, Seoul 05355, Korea
E-mail: hallymfm@gmail.com

Keywords
Outbreak report; Community intervention; Reporting guideline; Study protocol

Objectives: Outbreak reports are essential for documenting the spread of and responses to disease outbreaks. However, there is a lack of standardized reporting guidelines that encompass broader perspectives on outbreaks. We aimed to develop a universal reporting guideline applicable to diverse outbreak reports and community epidemic interventions, the "Guidelines for Community Outbreak Investigation Reporting (G-CORE)."

Methods: G-CORE is designed to address the challenges in documenting various outbreak scenarios, including infectious diseases and non-infectious environmental hazards. The development of G-CORE involved a structured process, including a comprehensive literature review of recent outbreak reports from leading journals and an analysis of existing reporting guidelines. The process also involved project registration with the EQUATOR Network and collaboration with experts in various fields. Following the initial drafting, an internal (team) review was conducted to evaluate the guidelines' robustness and relevance. Subsequently, the guidelines underwent revision based on feedback from external experts and potential users, including authors with experience in outbreak reporting. The project also includes plans for widespread dissemination and periodic revisions to adapt to developments and user feedback.

Results: G-CORE will provide a structured framework for reporting outbreak investigations, comprising a detailed checklist and Explanation & Elaboration documents.

Conclusion: G-CORE establishes a new standard in outbreak reporting, facilitating comprehensive, clear, and actionable public health communications. Its development marks a significant advance in the documentation and management of public health outbreaks.

Introduction

The 21st century has been marked by a series of significant infectious disease outbreaks, including severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), swine flu, coronavirus disease 2019 (COVID-19), and Mpox. In particular, the COVID-19

pandemic, along with its variants, has highlighted the importance of outbreak reports in public health management. Outbreak reports provide information on an outbreak's progression, the methodologies employed in an investigation, key findings, and public health implications, which are crucial for understanding and managing health crises. The reports elucidate the investigation rationale, symptoms or agents involved, time and place of occurrence, and affected individuals. Notably, outbreak reports are structured to present events and interventions in a sequential, narrative format. During the COVID-19 pandemic, these reports guided interventions at the community, national, and global levels, influenced policy-making, and demonstrated the significant impact of prompt and accurate information in controlling rapidly spreading infectious diseases.

The importance of outbreak reports is not limited to infectious diseases. They also play a vital role in managing non-infectious outbreaks, such as those resulting from environmental hazards or contaminated medical products. An example is an incident in The Gambia during June-September 2022, where children's medications contaminated with diethylene glycol caused acute kidney injury in young patients [1].

Existing reporting guidelines, such as Outbreak Reports and Intervention Studies Of Nosocomial Infection (ORION) [2], often fail to cover the full spectrum of public health emergencies. Reporting guidelines are defined as checklists, flow diagrams, or structured texts that serve as a comprehensive roadmap for authors to report specific types of research [3]. They are crucial tools for various groups, including peer reviewers, authors, and scientific journals. The last update to ORION in 2007 and its subsequent lack of revision indicates a gap in current reporting guidelines, underscoring the need for new, comprehensive reporting guidelines that address public health emergencies beyond nosocomial infections.

In response, we aimed to develop a novel reporting guideline, referred to as Guidelines for Community Outbreak Investigation Reporting (G-CORE). This guideline will provide a comprehensive framework for reporting a wide range of outbreak types. It extends beyond infections of nosocomial origin to include community-level outbreaks and non-infectious environmental hazards. The guideline development process involved an extensive literature review and expert consultations.

Methods

This project's methodology is aligned with the Enhancing the Quality and Transparency of Health Research (EQUATOR) Network standards [4]. The development of our reporting guideline has been officially registered on the EQUATOR Network website [5], ensuring adherence to their rigorous standards for health research transparency and quality. It was first named ORIOCE ("Guidelines for Transparent Reporting of Outbreak Reports and Intervention of Community Epidemics").

Research committee

The research committee is a consortium of experts from diverse fields, each chosen for their unique contributions to developing reporting guidelines. It includes experts in preventive medicine, whose focus on disease prevention and health promotion strategies is pivotal in shaping effective community-level interventions. Epidemiologists who are experienced in the patterns, causes, and effects of health conditions are included to provide a better understanding of the dynamics of community outbreaks. Methodologists, with their expertise

in research design and data analysis, ensure that the guidelines are grounded in scientifically robust principles. Family medicine practitioners offer a practical perspective on managing community health issues, making the guidelines pragmatic and applicable in real-world settings. Public health professionals offer a broader viewpoint on the implications of these guidelines, aligning them with comprehensive public health policies and practices. Lastly, the inclusion of journal editors ensures that the reporting guidelines meet the highest standards for clarity, transparency, and applicability. Through a synergistic blend of workshops, consultations, and collaborative planning, these professionals have integrated their diverse perspectives and expertise to establish a novel reporting guideline.

The research committee discussed the development process and agreed upon the following four steps: 1) literature review, 2) reviewing existing reporting guidelines, 3) development, and 4) ongoing updates and revisions.

Literature review

The literature review is a critical component of our methodology. A team reviewed manuscripts focused on outbreak reports published within the last 3 years in internationally recognized journals. We chose *Public Health Weekly Report* (PHWR), *Morbidity and Mortality Weekly Report* (MMWR), and *EuroSurveillance* for their significant contributions to the field, consistent publication of high-quality outbreak reports, and rich history of publishing extensive and detailed accounts of various outbreak investigations.

The manuscripts from these journals underwent a detailed examination to identify specific characteristics, research designs, and content elements integral to outbreak reporting. We cataloged and presented our findings in a structured format for a comprehensive representation of the data to elucidate the current trends and practices in outbreak reporting.

After the literature review, we held a meeting involving all team members to consolidate findings, discuss the differences and similarities in reporting styles across the selected journals, and identify any existing gaps in the literature. These discussions shaped the new reporting guidelines to ensure that they address the current needs and advance outbreak reporting standards in health research.

Reviewing existing reporting guidelines

This phase of the project involved a detailed examination and categorization of existing reporting guidelines, including a comprehensive analysis of the ORION statement. The primary objective of this review was to assess these guidelines for their relevance and applicability to outbreak reports, including in non-nosocomial settings, particularly in publications in prominent scientific journals.

The process involved evaluating each guideline to understand its structure, specific elements, and overall reporting approach for outbreaks and related health interventions. We focused on how these guidelines address the complexities inherent in outbreak reporting, such as the delineation of epidemiological methods, the presentation of results, and the discussion of public health implications.

Developing new reporting guidelines

The expert committee planned the drafting of G-CORE. This draft was constructed based on insights obtained from an extensive literature review and a detailed analysis of existing reporting guidelines. This approach ensured that the G-CORE guidelines are informed by current practices

and standards and reflect the latest understanding in the field. The inclusion of Explanation & Elaboration (E&E) documents is important, as it provides a detailed rationale for each guideline item. These documents, created through a systematic item-by-item analysis and enriched with expert insight, offer clarity and context, increasing the guidelines' usability and applicability. The committee's role was crucial in this phase. It was responsible for systematically generating guideline items and ensuring that each item is evidence-based and derived from the committee members' collective knowledge and the reviewed literature and existing guidelines. This collaborative process covered all critical aspects of outbreak reporting, prioritizing scientific accuracy, relevance, and practicality.

Subsequently, the initial draft of the guidelines, along with the E&E documents, underwent a series of revisions. This iterative refinement involved applying the draft guidelines and E&E documents to selected literature to test their applicability and effectiveness. The resulting feedback was critically analyzed, and the draft was modified accordingly. We also conducted internal (team) and external peer reviews, including experienced authors in outbreak reporting. The reviewer list included experts in infection, epidemiology, outbreak reporting, and environmental exposures. This collaborative approach ensured that G-CORE addresses real-world needs and maintains scientific integrity. It will involve a scoring system (0–9) enabling a quantitative evaluation of each component of the checklist, E&E documents, and free-text comments. This structured feedback will guide further revisions, ensuring the guidelines are both accurate and user-friendly.

Next, we developed the finalized version of the checklist and an explanatory manual. The checklist will provide a concise guide for researchers, while the manual will offer detailed explanations and examples in various outbreak scenarios. This methodical and evidence-based development approach ensures that the final guidelines are comprehensive, current, and practical.

Ongoing updates and revisions

In light of the dynamic nature of public health and the fluidity of outbreak scenarios, we are committed to regularly updating the G-CORE guidelines. This ongoing process is crucial, as it ensures that the guidelines remain relevant and effective in a field that constantly faces new challenges, scientific advancements, and emerging best practices.

To facilitate these updates, we will consistently monitor and revise the G-CORE guidelines to align with the latest public health and epidemiology developments. First, we will regularly solicit and integrate feedback from a diverse range of users, including researchers, public health practitioners, epidemiologists, and policymakers. This feedback will identify areas for improvement and enhancement, ensuring that the guidelines effectively meet the needs of users. In addition, we will update the guidelines based on new research methodologies, technological advancements, and evolving understandings of disease dynamics. As the field of outbreak reporting progresses, we will update G-CORE to include these new approaches. Lastly, recognizing that the user base of G-CORE may evolve, we will adapt the guidelines to cover a wide range of contexts and applications. This user-focused approach is vital to ensure that G-CORE remains practical and applicable across various public health scenarios.

We will document and share these updates through the EQUATOR Network, ensuring transparency and accessibility. G-CORE's active presence on the EQUATOR Network will result in a wider reach and more engagement with the global research community.

https://doi.org/10.12771/emj.2024.e41

Results

As of October 2023, the research team has made significant progress in developing a comprehensive reporting guideline for outbreak investigations. This effort is a direct result of the extensive literature review, including diverse outbreak reports from PHWR, MMWR, and *EuroSurveillance*. The review showed various approaches to documenting outbreaks of diseases such as COVID-19, tuberculosis, Mpox, and salmonella. It highlighted the need for a standardized reporting format that includes key elements such as pathogen identification, epidemiological methods, outbreak curves, transmission paths, and public health responses. Meanwhile, the team has been working on a detailed checklist and E&E documents. These tools will guide authors in clearly and consistently reporting outbreak investigations. The finalized versions of the checklist and E&E documents are expected to be published by December 2024.

Discussion

The development of our comprehensive reporting guideline, G-CORE, marks significant progress in addressing the challenges of outbreak reporting. This guideline will fill a gap in current reporting practices for both infectious and non-infectious public health emergencies.

The primary strength of G-CORE lies in its comprehensive nature. By encompassing a broad spectrum of outbreak scenarios, including those involving environmental hazards and medication-induced health conditions, it provides a versatile framework applicable to a variety of public health challenges. The inclusion of specific modules, such as seroepidemiology, molecular epidemiology, and environmental epidemiology, will further strengthen its applicability and relevance. Our emphasis on expert collaboration and literature review throughout the development process will ensure the transparent reporting of outbreak reports and emerging knowledge in the field.

The significance of reporting guidelines in the context of outbreak reports cannot be overstated, as it will provide a future reference for outbreak investigations and preventive or proactive measures. As a repository of vital information, these guidelines are instrumental in guiding responses to future public health emergencies. This is increasingly important as the frequency and diversity of outbreaks are on the rise. In summary, well-structured outbreak reports, guided by comprehensive guidelines, are crucial for improving public health.

However, this study has certain limitations. The rapid pace and unpredictable nature of outbreaks can exceed the guideline's applicability, especially when immediate action is prioritized over structured reporting. Moreover, the standardization of reporting across diverse outbreak types remains complex. Future updates to G-CORE will address these challenges. Regular revisions, informed by feedback from users and changes in the public health landscape, will help to maintain the guideline's relevance and utility. This process will ensure that G-CORE evolves with the ever-changing nature of public health emergencies.

Conclusions

G-CORE will increase the clarity, consistency, and comprehensiveness of outbreak reporting. Its development underscores the need for continual adaptation and improvement in public health reporting and highlights the collaborative effort required to effectively manage public health crises. As we look toward its publication in December 2024, we anticipate that G-CORE will play a crucial role in outbreak reporting and public health strategies.

https://doi.org/10.12771/emj.2024.e41

ORCID
Wonyoung Jung: https://orcid.org/0000-0003-4749-4637
Sukhyun Ryu: https://orcid.org/0000-0002-8915-8167
So Yeon Ryu: https://orcid.org/0000-0001-5006-1192
Mina Ha: https://orcid.org/0000-0003-1011-9446
Bo Youl Choi: https://orcid.org/0000-0003-0115-5736
Soo Young Kim: https://orcid.org/0000-0002-3205-9408

Authors' contributions
Project administration: Jung W, Ryu S, Choi BY, Kim SY
Conceptualization: Ryu S, Ha M, Choi BY, Kim SY
Methodology & data curation: Ryu S, Ha M
Funding acquisition: Kim SY
Writing - original draft: Jung W, Ryu S
Writing - review & editing: Jung W, Ryu S, Ryu SY, Ha M, Choi BY, Kim SY

Conflict of interest
No potential conflict of interest relevant to this article was reported.

Funding
This research was funded through the support of the Policy Research and Development Service Project (202305210001) from the Korea Disease Control and Prevention Agency.

Data availability
Not applicable.

Acknowledgments
We extend our gratitude to Ms. JiHye Kwon for her invaluable administrative assistance.

Supplementary materials
Not applicable.

References

1. Bastani P, Jammeh A, Lamar F, Malenfant JH, Adewuyi P, Cavanaugh AM, et al. Acute kidney injury among children likely associated with diethylene glycol-contaminated medications: the Gambia, June-September 2022. *MMWR Morb Mortal Wkly Rep* 2023;72(9):217-222. https://doi.org/10.15585/mmwr.mm7209a1
2. Stone SP, Cooper BS, Kibbler CC, Cookson BD, Roberts JA, Medley GF, et al. The ORION statement: guidelines for transparent reporting of outbreak reports and intervention studies of nosocomial infection. *Lancet Infect Dis* 2007;7(4):282-288. https://doi.org/10.1016/s1473-3099(07)70082-8
3. Kim SY. Reporting guidelines. *Korean J Fam Med* 2009;30(1):62. https://doi.org/10.4082/kjfm.2009.30.1.62
4. The EQUATOR Network. How to develop a reporting guideline [Internet]. Oxford (UK): The EQUATOR Network; c2018 [cited 2023 Nov 11]. Available from: https://www.equator-

network.org/toolkits/developing-a-reporting-guideline/
5. The EQUATOR Network. ORIOCE: guidelines for transparent reporting of outbreak reports and intervention of community epidemics [Internet]. Oxford (UK): The EQUATOR Network; c2023 [cited 2023 Nov 11]. Available from: https://www.equator-network.org/library/reporting-guidelines-under-development/reporting-guidelines-under-development-for-other-study-designs/#ORIOCE