



Clinical Case-Conference Blogs: Integrating Clinical Librarians to Enhance Resident Education and Enforce ACGME Competencies

Brendan P. Lovasik¹ · John P. Haydek² · Hannah Rutledge³ · Emily Lawson⁴ · D. Susie Buchter⁵ · Keith A. Delman¹ · Daniel D. Dressler²

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Abstract

Resident conferences are primary educational endeavors for trainees and faculty alike. We describe the development of collaborative clinician-librarian educational blogs within the Internal Medicine (2009), Pediatrics (2012), and General Surgery (2018) residency programs. Clinical librarians attended resident conferences and generated evidence-based blog posts based on learning topics and clinical questions encountered during the conferences. In the decade since introduction of the blogs, this partnership has resulted in over 2000 blog posts and generated over 1800 individual views per month. The development of a clinical librarian-managed blog serves as a relevant resource for promoting evidence-based practices within a case-based learning curriculum, engages interdisciplinary collaboration through existing resources, and is generalizable across various clinical practice disciplines and trainees.

Keywords Evidence-based practice · Web logs · Clinical librarians

Background

Resident learning conferences focused on clinical case presentations represent a cornerstone of graduate medical education. Through these conferences, residents are challenged to anchor learning on experiential case-based principles, become actively involved in exploring evidence,

investigate weaknesses in the delivery of medical care, and develop principles of medical professionalism and accountability to patients. These goals fully encapsulate the objectives of the Accreditation Council for Graduate Medical Education (ACGME) Outcome Project and the six General Competencies.

One significant barrier to reinforcing Medical Knowledge and Practice-Based Learning and Improvement (PBLI) competencies during teaching conferences is the rapid pace of discussion and the potential for discussions to stray away from the subject in question, at times inadvertently leaving clinical questions unresolved.¹ Resident physicians generate two questions for every three patients seen, and up to 70% of trainees' clinical questions are not pursued or answered [1, 2]. Fifty-five percent of attending physicians are unable to answer their own clinical questions within 7 days owing to lack of time to conduct a search, inability to locate pertinent information, and perceptions that existing published research would not sufficiently provide answers [3]. Resident trainees have identified several barriers to practicing evidence-based medicine (EBM), including difficulty phrasing clinical questions and lack of awareness, access, and skills in searching medical information resources [1]. In light of these factors, the quality of the educational case-conferences

BPL and JH have contributed equally to the study and should be considered co-first authors.

✉ Daniel D. Dressler
ddressl@emory.edu

Brendan P. Lovasik
brendan.p.lovasik@emory.edu

- ¹ Department of Surgery, Emory University School of Medicine, Atlanta, GA, USA
- ² Department of Medicine, Emory University School of Medicine, Atlanta, GA, USA
- ³ Biomedical Library, University of Pennsylvania, Philadelphia, PA, USA
- ⁴ Woodruff Health Sciences Library, Emory University, Atlanta, GA, USA
- ⁵ Department of Pediatrics, Emory University School of Medicine, Atlanta, GA, USA

and their contribution to the learning process are essential to ensure that maximum benefit of the conference is realized.

In considering the challenges of collecting evidence to support clinical decision-making, specialists in clinical information retrieval and evidence collection—clinical librarians—are available in many training institutions; however, their expertise is rarely utilized to its full capability [4–6]. In response to the increased focus on evidence-based clinical decision-making, residency programs and clinical librarians have found a natural partnership. For example, where physicians found answers to 40% of their clinical questions, clinical librarians were able to provide answers for 95% of these questions [7].

Unanswered questions represent lost opportunities to identify and address trainee knowledge gaps, and actively locating and disseminating relevant, current evidence better supports trainee education. We hypothesized that trainees' time limitations and limited familiarity with medical literature resources presented opportunity to engage case conference learning by connecting the valued discussions within case presentations with structured evidence-based practices using the expertise of our clinical librarians. In order to complement and augment the educational value of case-based conferences within the Departments of Medicine, Pediatrics, and General Surgery residency training programs, we developed individual web logs ("blogs") for each program that integrate the specialized expertise and resources of clinical librarians towards answering trainees' high-impact clinical questions.

Activity

This clinician-clinical librarian blog partnership was developed at a university-affiliated, ACGME-accredited, large academic healthcare institution and the affiliated pediatric healthcare system. Each residency program selected conferences for clinician-librarian collaboration based upon character and content of the conferences. Clinical librarians partnered with residency leadership to provide searching support at selected case-conferences beginning in 2009 through present. During the course of the usual case conferences, trainees and faculty ask clinical questions that deserve searching for evidence to guide clinical practice. Following each conference, the clinical librarian discusses with the conference leader (either faculty, trainee, or both) to review relevant clinical questions arising from the conference that would be beneficial topics to incorporate into the blog. The clinical librarian then independently performs a directed literature search and generates a blog entry for that topic. Review of the blog by students and residents was entirely voluntary and did not fulfill any additional educational credit or requirements.

All blogs are hosted through a free, open-source blog-hosting platform, with blog entries archived in chronologic order to allow review of past and recent postings. Topics are categorized according to both content areas and corresponding MeSH terms (Medical Subject Headings, as designated by the National Library of Medicine) to index posts with similar subjects within the blog's "catalog" of entries.

Participation of the clinical librarians in resident conferences was supported by the University's Health Sciences Center Library and Children's Healthcare of Atlanta with no additional financial obligations to the residency programs.

Results

Blog posts included summaries of available evidence, critical appraisals of seminal studies, and reviews of evidence-based guidelines, all framed in the context of the clinical patient-based case (Supplemental Fig. 1). Each specialty-specific blog has its unique target focus and methods for summarizing the literature. The characteristics of each blog and utilization statistics are displayed in Table 1.

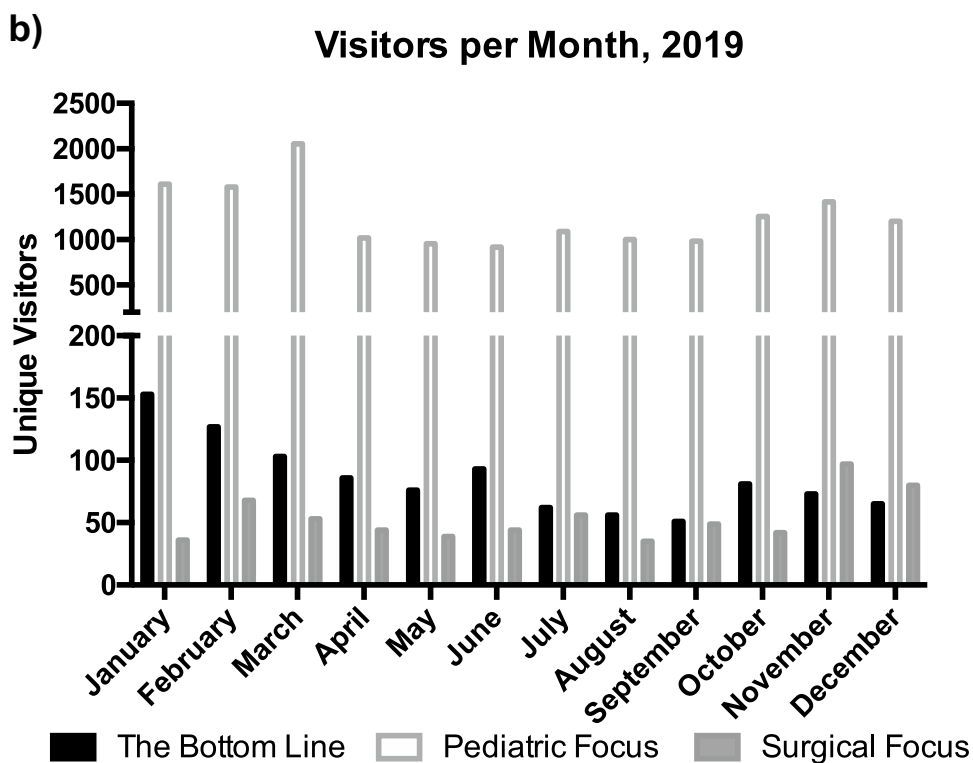
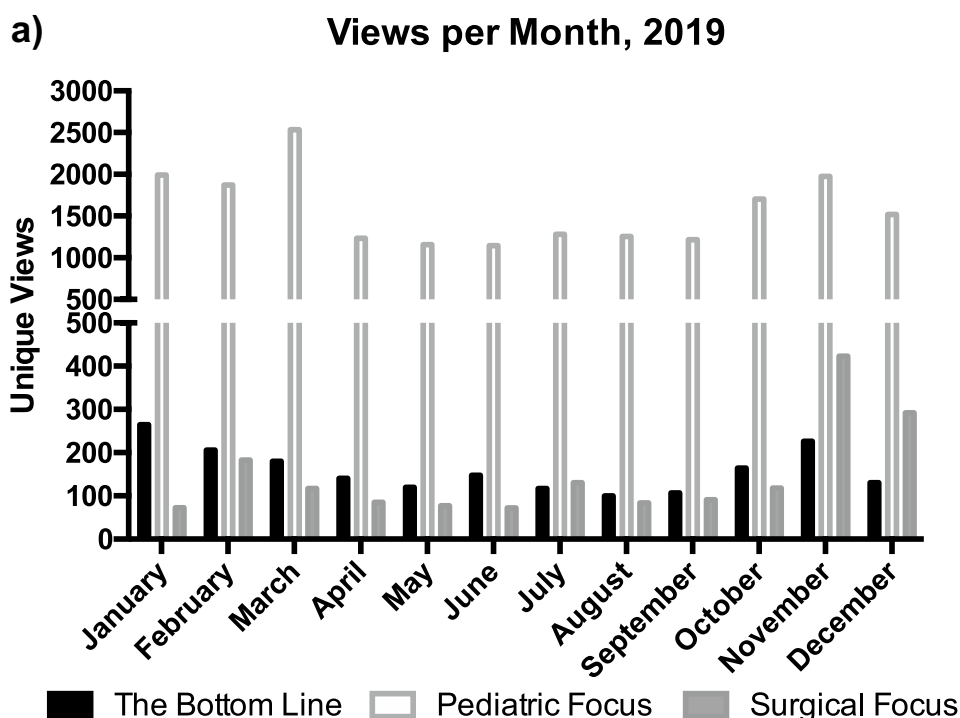
Internal Medicine: "The Bottom Line"

In 2008, clinical librarians and leadership within the Internal Medicine Residency Program worked closely to create a blog (<https://emorymedicine.wordpress.com/>) that could capture and disseminate clinical questions and the evidence-based literature that answered the questions posed at resident case conferences. This blog originally started with one clinical librarian attending case conferences at one location every week; it has grown to involve as many as four clinical librarians attending various conferences at four clinical sites. High priority was placed on the succinct, quick read of the answers to clinical questions, hence "The Bottom Line."

Pediatrics: "Pediatric Focus"

Pediatric Focus (<https://pediatricfocus.wordpress.com/>) was created in 2012 as a collaborative effort between the pediatric hospitalists, chief residents, and the clinical librarian at the Egleston campus of Children's Healthcare of Atlanta. The clinical librarian attends Morning Report 2–3 times per week; topics chosen for the blog vary from best practice inquiries about diagnosis and management of common pediatric illnesses to overviews of infrequently seen conditions. A secondary aim of Pediatric Focus was to direct residents to additional literature relevant to the topic, supporting the tenets of EBM.

Fig. 1 Blog utilization for calendar year 2019 for the three clinical librarian-managed blogs, stratified by number of page views **a)** and unique individual visitors **b)**



General Surgery: "Surgical Focus"

The most recent of the three blogs is hosted by the General Surgery residency program. Surgical Focus (www.emorysurgicalfocus.wordpress.com) was created in October

2018 by the clinical librarian service, a senior surgery resident, the faculty lead for the M&M conference and the residency program director to better achieve the objectives of the M&M conference related to EBM. The librarian generates an individual evidence-based blog post with a

Table 1 Setting and statistics for the three residency program blogs

	Internal medicine: “The bottom line”	Pediatrics: “Pediatric focus”	General surgery: “Surgical focus”
Launch year	2009	2012	2018
Style/Literature presentation	Succinct summary	Collection of relevant articles	Review and synopsis
Departmental conferences	<ul style="list-style-type: none"> • Departmental grand rounds • Morning report • Morbidity and mortality • Case conferences • Faculty lecture 	<ul style="list-style-type: none"> • Departmental grand rounds • Morning report • Noon conference 	<ul style="list-style-type: none"> • Departmental grand rounds • Morbidity and mortality • Resident teaching conference • Faculty lecture
Current conferences supported by clinical librarians (frequency per week)	Morning report (3) Case conferences (4)	Morning report (3)	Morbidity and mortality (1) Grand rounds (1)
Distribution	<ul style="list-style-type: none"> • Departmental website • Department e-Newsletter 	<ul style="list-style-type: none"> • Departmental website • Program social media 	<ul style="list-style-type: none"> • Weekly newsletter
Number of posts*	1482	550	177
Number of individual page views*	39,546	106,929	3134
Number of unique visitors*	11,197	80,197	1023

*As of April 28, 2020

review and synopsis of the evidence—in contrast with the other two blogs, these posts are longer, and each post reads as a mini-review of topics from the conference.

Blog Utilization and Statistics

Blog utilization for calendar year 2019 for the three clinical librarian-managed blogs, stratified by number of views and individual visitors, is shown in Fig. 1. As evidenced by the high volume of individual views and visitors, all three of the blogs rapidly gained readership within a year of its inception. Blog utilization by calendar year for the three clinical librarian-managed blogs is shown in Supplemental Fig. 2, the Pediatric Focus blog generated the highest volume of views, reaching over 26,000 individual views in 2018.

Discussion

We report the development of a novel educational collaboration that incorporates the specialized services of clinical librarian-managed blogs in residency education curricula. These blogs document topics central to the practice of Internal Medicine, Pediatrics, and General Surgery and focus on disseminating key educational information derived from clinical questions posed during resident case conferences. Our clinical librarians offer real-time capture of questions occurring within case conferences, reducing the amount of often-experienced unanswered questions due to workload, time constraints, forgetfulness, or limited searching skillset. Further, our conference blogs support the educational activities of the case conferences, foster an environment of open and evidence-based clinical

inquiry, and serve as archives of learner-initiated clinical questions. We found this clinician-librarian interdisciplinary collaboration to be generalizable across multiple graduate medical education training programs.

A summary of the perceived benefits, challenges, and requisites of our experience implementing this collaborative blog initiative (identified informally by each stakeholder) is shown in Table 2. Benefits identified by trainees included targeted answers to clinical questions that otherwise may have gone unanswered and the use of the blog as an additional resource for in-training exam preparations. Benefits identified by program directors included reinforcement of the ACGME Core Competencies, particularly the Core Competency of PBLI, its sub-competencies, and milestones. For the Internal Medicine residency program, these blog posts were integrated with their EBM curriculum, encouraging residents to determine whether posted studies should influence their diagnosis and treatment plans. In the Pediatrics program, the program director has used problem-based learning presentations and associated evidence-based blog post content as part of resident assessments; the faculty evaluations of these presentations are used by the Clinical Competency Committees to assess Milestones placement. Through these evidence-based blogs, trainees were encouraged to efficiently evaluate their patient care practices in the midst of—and often relating to differences of opinion in—daily medical practice.

In addition to their educational value for trainees, clinical librarians may represent an area for institutional quality improvement. One study on the impact of clinical librarians reported a 70% reduction in costs to the hospital, 68% reduction in charges to the patient, and 65% shorter hospital stay among patients for whom clinical librarian

Table 2 Benefits, challenges, and requisites for the residents, program leadership, and the clinical librarians in creation of the blog (identified informally by each group)**Resident benefits**

- Facilitate trainee development
- Encourage self-informed assessment and self-directed learning
- Increase awareness of connection to library services and resources

Faculty/Program director benefits

- Promotes ACGME Core Competencies
- Catalogues discussions in perpetuity for ACGME site visits
- Development of new research questions and quality improvement practices
- Dissemination of best practices
- Access to off-site conference discussions

Librarian Benefits

- Enhanced communication and clinician awareness of clinical librarian services and resources, fostering collaboration with faculty and residents
- Increased ability to better tailor a clinical query due to the context of the whole patient case
- Gains a greater understanding of medical education processes, requirements, and priorities

Challenges

- Clinical librarian learning curve in medical specialty topics
- Librarian time commitment: approximately 3–4 h of librarian time per week, per blog (1 h attending case conference, 1–2 h searching literature, 1 h to create/post content); may limit scalability and levels of content
- Promoting trainee readership; optimizing communication channels to increase blog usage

Requisites

- Having a clinical/medical librarian available for regular participation to ensure new content is posted weekly
- Librarian proficient in, or able to acquire proficiency in, using online blog platforms

evidence-based input was used [8]. A UK study reported that clinical librarians helped to reduce organizational costs and improved patient and staff safety [5]. These effects have also been reported within resident education conferences: inclusion of clinical librarians in resident morning report sessions was associated with a 20% reduction in length of stay and 34% reduction in institutional costs per case [9].

The clinical librarian-managed blogs have several unique strengths. This innovative trainee-librarian partnership includes a multi-departmental, multidisciplinary collaboration across three of the largest residency programs at our institution. We report the first published description of a clinical librarian-managed blog as a medical education intervention. This intervention highlights the expertise of clinical librarians, such as conducting comprehensive literature searches, providing current and relevant content, and applying indexing principles to the blogs. More general services that clinical librarians provide to support graduate medical education include customized training on efficient and effective database searching, bibliographic management, and research and publication assistance. This educational innovation demonstrates that interdisciplinary collaboration of physician trainees (and leadership support) with expert medical librarian staff can augment learning within accepted and valued educational venues, and are generalizable within and across different residency training programs.

The noteworthy readership volume of the Pediatric Focus blog highlights two of the blog's strengths—its format of high-yield review of general principles, and perhaps more importantly, its publicity and circulation to the Children's Healthcare community beyond solely the trainees. With the recent implementation of Google Analytics in our blogs, more detailed user data will be captured to elucidate usage patterns and ways to disseminate to broader audiences.

These results can help develop alternative teaching methods to improve and capture the educational value of case conferences. Early survey results demonstrate that the Surgical Focus blog increased resident interaction with the literature, provided knowledge that residents would otherwise not receive through standard readings, and influenced trainee clinical practice and test preparations [10]. A universal survey to evaluate improvements to the user experiences for the three clinical evidence blogs is forthcoming. Future directions include distribution of a survey to other ACGME programs to assess their clinical librarian capabilities, which would allow for multi-institutional collaboration. Further, we are developing an institution-specific smartphone application that will “push” notifications to residents when a new post is available on their subscribed blogs and promote engagement by allowing trainees to submit clinical questions to be answered on future blog posts.

Conclusion

Our multi-departmental, multi-hospital, interdisciplinary clinical librarian-physician collaboration producing clinical conference-associated blogs serves as a valued resource for promoting, reinforcing and integrating the ACGME Core Competencies within existing educational curricula and resident conferences. Further expansion of these resources into other departments' training programs and into other institutions may further engender information sharing among trainees and provide an evidence-based complement to each program's core curriculum.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s40670-021-01229-7>.

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References

- Green ML, Ruff TR. Why do residents fail to answer their clinical questions? A qualitative study of barriers to practicing evidence-based medicine. *Acad Med*. 2005;80(2):176–82.
- Ely EW, Meade MO, Haponik EF, et al. Mechanical ventilator weaning protocols driven by nonphysician health-care professionals: evidence-based clinical practice guidelines. *Chest*. 2001;120(6 Suppl):454S–463S.
- Cheng GY. A study of clinical questions posed by hospital clinicians. *J Med Libr Assoc*. 2004;92(4):445–58.
- Bradley DR, Rana GK, Lypson ML, Hamstra SJ. A centralized practice-based learning and improvement curriculum for residents and fellows: a collaboration of health sciences librarians and graduate medical education administration. *J Med Libr Assoc*. 2010;98(2):175–8.
- Brettle A, Maden M, Payne C. The impact of clinical librarian services on patients and health care organisations. *Health Info Libr J*. 2016;33(2):100–20.
- Dodson S, Gleason AW. Web 2.0 support for residents' and fellows' patient care and educational needs. *Med Ref Serv Q*. 2011;30(2):95–101.
- Fozi K, Teng CL, Krishnan R, Shajahan Y. A study of clinical questions in primary care. *Med J Malaysia*. 2000;55(4):486–92.
- Klein MS, Ross FV, Adams DL, Gilbert CM. Effect of online literature searching on length of stay and patient care costs. *Acad Med*. 1994;69(6):489–95.
- Banks DE, Shi R, Timm DF, et al. Decreased hospital length of stay associated with presentation of cases at morning report with librarian support. *J Med Libr Assoc*. 2007;95(4):381–7.
- Lovasik BP, Rutledge H, Lawson E, Maithel SK, Delman KA. Development of a surgical evidence blog at morbidity and mortality conferences: integrating clinical librarians to enhance resident education. *J Surg Educ*. 2020;77(5):1069–75.

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