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DEPARTMENTS / DÉPARTEMENTS

Editor's Message

Welcome to the first issue of JCHLA/JABSC for 2016! This year, CHLA/ABSC celebrates its 40th Anniversary, and to mark the occasion, this issue features three columns that focus on different topics relating to the history and future of our Association and of our profession. Our colleagues from the Ottawa Valley Health Libraries Association/l'Association des bibliothèques de la santé de la vallée de l'Outaouais have brought together evidence from documents and interviews to paint a lively history of that chapter's 40 year history. Pam Morgan reflects on how collection development in the academic health sciences has changed over the years and provides some thought-provoking ideas on the future role of libraries in managing collections while serving the ever-changing needs of our users. Finally, Martin Morris and Blake Hawkins argue that health librarians should more fully engage with LGBTQ (lesbian, gay, bisexual, transgender, queer/questioning) health information and with potential LGBTQ users. These columns celebrate our achievements and challenge our profession to develop, an excellent demonstration of the diversity and energy that is present within our community. We hope that you will enjoy this issue, and that you will engage with the ideas and opinions expressed here to further develop our profession over the next 40 years!

Christie Hurrell
JCHLA/JABSC Editor-in-Chief
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Message de la rédaction

Nous vous souhaitons la bienvenue dans ce premier numéro de l'année 2016 du Journal de l'ABSC / CHLA. Cette année, l'ABSC / CHLA célèbre son 40e anniversaire de fondation, et à cette occasion, le présent numéro du Journal vous offre trois rubriques centrées sur différents sujets liés à l'historique et à l'avenir de notre Association et de notre profession. Nos collègues de l'Association des bibliothèques de la santé de la vallée de l'Outaouais / Ottawa Valley Health Libraries Association ont rassemblé des faits à partir de documents et d'entrevues qui nous présentent une image dynamique de l'historique que constituent ces 40 dernières années. Pam Morgan y décrit la façon dont le développement de collections au sein des facultés universitaires des sciences de la santé a changé au cours des ans, et nous lance quelques idées de réflexion sur le rôle futur des bibliothèques en ce qui concerne leur gestion tout en comblant les besoins en constante évolution de nos utilisateurs. Pour conclure, Martin Morris et Blake Hawkins nous font part de leur vision respective quant à la façon dont les bibliothécaires en santé devraient s'engager davantage à l'égard de la santé des LGLBT (communauté lesbienne, gaie, bisexuelle, transgenre, homosexuelle et intersexe) ainsi que des utilisateurs potentiels de cette communauté. Ces rubriques se veulent à la fois une célébration de nos réalisations et un défi lancé à notre profession en ce qui a trait au développement et à la démonstration de la diversité et de l'énergie que recèle notre propre collectivité. Nous espérons que vous aimerez ce numéro et que vous ferez vôtres les idées et opinions qui y sont exprimées, le tout dans une perspective d'évolution constante de notre profession au cours des quatre prochaines décennies!

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PROGRAM DESCRIPTION / DESCRIPTION DU PROGRAMME

A Curriculum for an Introductory Systematic Review Searching Workshop for Researchers

Sandy Campbell, Janice Yu Chen Kung, and Liz Dennett

Abstract: Systematic review searching is becoming an increasing part of the day-to-day work of health librarians. The University of Alberta John W. Scott Health Sciences Library offers a monthly three-hour "Introduction to Systematic Review Searching" workshop to researchers at the University of Alberta. Over the four years that the program has been offered, participants have completed evaluations at the end of each session. Based on these evaluations, the content and the delivery of the workshop have been refined, and the value of the sessions to the participants has been affirmed.

Introduction

Many libraries offer systematic review searching classes to both library staff and researchers. In 2014, Saleh et al. [1] reviewed the presence of systematic review searching in library school curricula, citing courses at the University of Pittsburgh, the University of Alberta, and Texas Woman's University. Conte et al. [2] recently described using a "flipped classroom" to teach systematic review searching methods to librarians. Although we are aware of search skills being offered as a part of broader systematic reviewing workshops, for example the University of Alberta's "Putting Evidence into Practice" [3] workshop, we are unaware of any published curricula for stand-alone systematic review searching workshops designed for the researcher audience.

Following is a description of an instructional program, "Introduction to Systematic Review Searching," a three-hour hands-on workshop that was offered at the University of Alberta 35 times between 2011 and 2015, and is currently being offered on a monthly basis. This program was developed as one of a number of workshops offered by the The University of Alberta John W. Scott Health Sciences Library (Scott Library) for continuing education credit approved by the Royal College of Physicians and Surgeons of Canada (RCPSC). This session is part of the "Information Skills for Health Professionals" program, a self-approved group-learning activity (a requirement of Section 1) as defined by the Maintenance of Certification program of the RCPSC [4]. To meet the requirement for credit, the workshops have to be taught in a medical facility, by a health librarian. They also have to have clear objectives advertised. Attendance sheets and evaluations are required and must be kept for possible inspection. Questions for the workshop evaluation form were defined by a local representative of the RCPSC. Most of the questions are designed to garner information of interest to the RCPSC; however, two open-ended questions elicited feedback that has been useful to the continued improvement of the workshop: "What changes will you make in your practice as a result of this session?" and "Comments and Suggestions." Information gleaned from the evaluations was used throughout the four years to continuously improve the workshop, and it also documents the ways in which participants describe the session changing their practice. Although the program was designed as part of the RCPSC program, participation was open to any member of the University of Alberta community. Participants were mainly from the health disciplines (Medicine and Dentistry, Pharmacy and Pharmaceutical Sciences, Nursing, Rehabilitation Medicine, and Public Health). In addition, significant numbers of participants were from Nutrition, Physical Education, and Educational Psychology.

Description

In accordance with the RCPSC requirements, the workshop was advertised through the University of Alberta's Student Workshops link and includes the following description of outcomes:

By the end of the session participants will be able to:

(1) Identify systematic reviews and distinguish them from other reviews,
(2) Recognize the breadth of resources required to execute a systematic review search,
(3) Develop a well-formulated search question and structure a search using the PICOS format,
(4) Know how to apply appropriate date, language and publication type limits,
(5) Document a search in a standardized form,

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(6) Understand the importance of peer-review of systematic review searches,
(7) Recognize the level of expert searching needed for a systematic review.

The workshop is restricted to 18 participants, limited by the size of the computer lab in which it is normally taught. The workshop is ideally conducted by three health sciences librarians, maintaining a 1:6 instructor-to-student ratio. Participants are expected to do advance reading, create a RefWorks account, and prepare a research question in advance of the class. The workshop employs a PowerPoint presentation, a live demonstration of database searches, and hands-on practice with worksheets and database searching. It also includes student-centred teaching practices such as discussion, learning groups, experiential activities, and independent research [5]. An outline of the five parts of Introduction to Systematic Review Searching program follows.

Part 1: Overview of systematic review searching

Part 1 begins with an overview of what a systematic review is, how it compares with other kinds of reviews, and the role of the search and search documentation in a systematic review. Participants review the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram [6] to understand the process of a systematic review.

Part 2: Defining the search question

In Part 2 participants move into two hands-on exercises. First they use a PICOS form (Figure 1) to parse out the concepts in the research that they have brought with them, and then they transfer the concepts into Boolean circles. With the Boolean circles worksheet (Figure 2), participants then build up synonyms. Through lecture, images, and practice, participants are introduced to the identification of searchable concepts, Boolean logic, and several issues related to synonyms including: close synonyms, variant endings, variant spellings, acronyms, homonyms, and broader and narrower terminology. During this time instructors circulate in the lab, speaking with each student to ensure that they receive help in developing their search terms.

Part 3: Systematic searching

Part 3 begins with a demonstration of systematic searching, usually in Ovid MEDLINE, during which the participants may follow along online, replicating the search as it is demonstrated. During this session the need for step-by-step construction of logical and replicable searches is emphasized. This is followed by 10–15 minutes of practice time on Ovid MEDLINE, during which students practice the search that they have described in their Boolean circles exercise.

Part 4: choosing resources and adapting searches to different databases

Part 4 begins with a PowerPoint-supported lecture that describes the kinds of sources searched during a systematic review search and the suite of databases available at the University of Alberta. The need to modify search strategies for different databases is reinforced. Several databases on different platforms (usually EBSCO CINAHL, SCOPUS, ProQuest Dissertations, and Theses Global) are also demonstrated, with opportunities between each demonstration for participants to try their searches on these platforms. Participants review the Peer Review of Electronic Search Strategies (PRESS) checklist [7] to consolidate their learning about search mechanics.

Fig. 1. PICOS form for therapy questions.

Well-Built Clinical Question: Therapy

PICOS	*Ask yourself:*	*Example:*
Population (patient)	How would I describe a group of patients similar to mine? (condition, age, gender, etc.)	
Intervention (drug, procedure, etc.)	Which main /new intervention am I considering?	
Comparison	What is the alternative to compare with the intervention? (placebo, standard of care, etc.)	
Outcome	What can I hope to accomplish, measure, improve, or affect?	
Study design	What study design would provide the best level of evidence for this question?	

Buckingham, Jeanette, Bruce Fisher and Duncan Saunders. *Evidence Based Medicine: Mini-Manual*. University of Alberta, 2007 http://www.library.ualberta.ca/uploads/HealthSciences/200717155.pdf

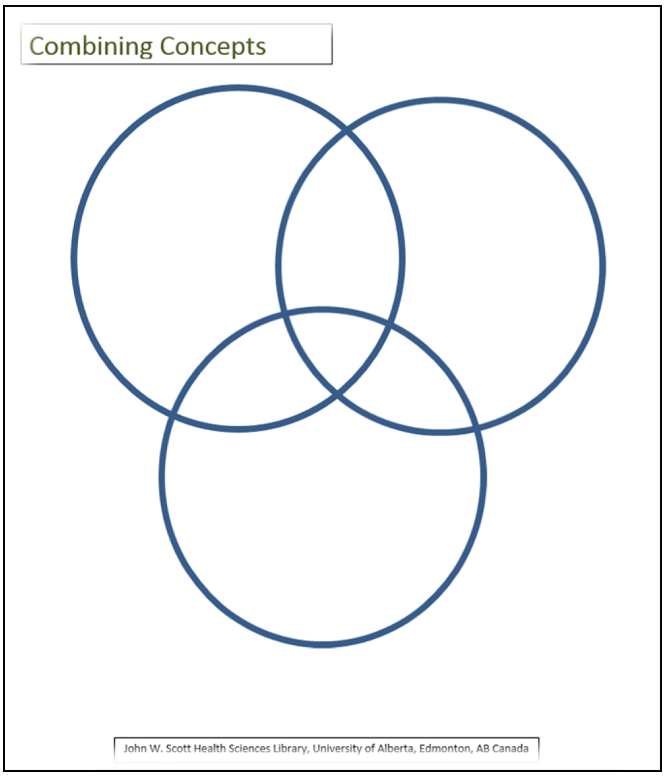
Part 5: Preparing a search methodology and search appendix

Part 5 reviews how to prepare the Search Methodology and Search Appendix sections for publication of a systematic review. A sample of a published search methods section from a systematic review is reviewed as a PowerPoint presentation. There is time available at this point for participants' questions that have not been answered during the session. The session concludes with distribution of evaluation questionnaires and certificates of attendance.

Results

Over the five years that this workshop has been offered, participants have returned 331 evaluation forms. Of the returned forms, 268 participants responded to the "Suggestions and Comments" question, whereas 263 forms contained responses to the question, "What changes will you make in your practice as a result of this session?" Of the comments received, many were simple notes of appreciation or approval, such as "Great job!," "Good session," or "Thanks. I learned a lot." However, others offered constructive criticism and suggestions for changes. Over successive sessions, we have used the suggestions and comments to improve the delivery and content of

Fig. 2. Boolean circles.



the workshop. From the responses to the "changes in practice" question, we get a sense of the impact of the session on the participants.

Improvements made to program delivery

Initially, the workshop was 1.5 hours, offered over a lunch hour. Participant comments and suggestions informed us that it was too short, so the session was lengthened to 3 hours, offered over a morning or an afternoon. We still routinely receive feedback that the session is too short, often requesting a day-long session, but we are also aware that many people cannot commit to a full day of training.

Initially the workshops were taught by two librarians; however, feedback from the evaluation forms revealed that the one-on-one support by the librarians during the hands-on parts of the workshop was one of the things that was most valued. Participants commented: "appreciated having multiple instructors in the class," "helpful to have more than one librarian present," and "individual assistance was very helpful." As a result, we now schedule three librarians for sessions in our usual 18 seat lab or maintain a 1:6 instructor-to-student ratio when we have larger sessions in other venues.

Improvements made to program content

After our early sessions, participant feedback alerted us to the fact that many participants needed to know more about systematic reviews, in general, and also that we were assuming too much knowledge about searching. Due to time constraints and availability of qualified instructors, we could not offer a full introduction to systematic reviews. To ensure the participants have a basic understanding of systematic reviews we began requiring advance reading in this area, specifically: The Institute of Medicine's *Standards for Systematic Reviews* [8], Grant and Booth's *A Typology of Reviews* [9], and Hemingway and Brereton's *What is a Systematic Review*? [10].

We also discerned, through the evaluations and through interacting with participants during the early workshops, that most had a very low level of knowledge about search mechanics. Most had little knowledge of Boolean search operators, structured searching, combining search sets, and using subject headings. As a result, after the first few workshops, we realized that we had to teach not just an introduction to systematic review searching, but an introduction to searching in general.

Because we had to increase the amount of time spent on basic search processes, we had to remove other content. Initially, in the 3-hour workshops, we had dedicated about half an hour to creating RefWorks accounts and demonstrating how to use RefWorks and Write-n-Cite. We now require participants to create a RefWorks account in advance and we point them to RefWorks and Write-n-Cite tutorials and the Library's RefWorks workshops. During the systematic review searching workshop, the RefWorks demonstration content is restricted to 2–5 minutes of PowerPoint presentation. Participants are encouraged to practice exporting to their accounts as they practice with the databases.

A further change that we made was to focus on basic search skills and reduce the amount of time searching multiple databases and platforms. Participants often comment that they wish there was more time for this in the session. Although we recognize that more practice time on a variety of databases and platforms would be desirable, it is more important that the participants learn the basics well. To compensate, in part, for this our hand-out package now includes search command charts or "cheat sheets," which list comparative commands across seven platforms for searching and for exporting and saving references. Finally, when we began teaching, we only provided proof of attendance certificates to members of the RCPSC, through which this program was approved for Continuing Medical Education credits. Other participants let us know that they also wanted certificates of attendance. Some countries require that their graduate students studying abroad send documentation of activities to their governments to ensure continued financial support. These students particularly valued the certificates as proof of attendance. We now distribute certificates, which are individually signed, to every participant who completes the workshop.

Impact on participants' practice

Of the 263 participants who responded to the question, "What changes will you make in your practice as a result of this session?" many reported positive impacts. No one reported negative impacts. To analyze these comments, we first grouped them according to themes. Their frequencies were tallied. Some participants expressed:

(1) having acquired a better understanding of the systematic review method ($n = 35$);
(2) having learned how to be more organized when conducting a review, for example in saving searches

for later replication or in documenting searches for publication ($n = 42$);
(3) knowing how to select appropriate databases ($n = 62$);
(4) learning how to execute a search in a systematic manner ($n = 72$);
(5) general improvements in search techniques or having acquired specific search skills such as using subject headings or truncation ($n = 76$);
(6) using the RefWorks citation manager was a change of practice ($n = 30$);
(7) feeling more "motivated" to undertake a systematic review ($n = 8$);
(8) feeling more "confident" or "brave" and "less stressed" in approaching systematic review projects ($n = 11$).

Although we do not test whether or not individual learning objectives have been met, the summary of responses shows that participants cited concepts related to many of our stated learning objectives, particularly those related to resources required to execute a systematic review search, formulating a question, and executing a structured search. The emotional changes, feeling more motivated and confident, were not part of our stated outcomes but are nonetheless indicators of the positive value of the workshop.

Discussion

The purpose of this program description is to give other librarians the opportunity to use and build upon the work that we have done. The evaluations from the workshop indicate that it is highly valued and participants stated that they expected that it would change their practice because they acquired practical skills and knowledge that they could take away and apply immediately. Although the workshop is staff-intensive, based on the participants' feedback, we believe that the one-on-one, point-of-need assistance is one of the key features that makes the workshop so valuable.

Workshop participants often indicate that they would like longer or additional workshops on other databases, advanced search skills, and other parts of the systematic review process such as data extraction and statistical analysis. Over the years the Library has offered several database specific or advanced searching classes with inconsistent levels of uptake. The teaching of the broader process of systematic reviewing requires a larger teaching team including trained systematic reviewers and biostatisticians as well as librarians. The "Introduction to Systematic Review Searching" workshop has been oversubscribed for much of the time that it has existed. There is almost always a waiting list for the monthly class. It clearly meets a need in our community, so we intend to continue offering it for the foreseeable future, improving and refining it based on participant feedback.

We believe that this workshop can be offered anywhere to any group, limited only by the availability of a computer lab, adequate numbers of staff who are expert searchers, and access to the appropriate databases. To that end, we have made our PowerPoint slides, a detailed Workshop Outline and our Workshop Handouts freely available on the University of Alberta's institutional repository, ERA [11–13].

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RESEARCH ARTICLE / ARTICLE DE RECHERCHE

Scholarly Sharing via Twitter: #icanhazpdf Requests for Health Sciences Literature[1]

Michelle Swab and Kristen Romme

Abstract: Introduction: Although requesting access to journal articles and books via colleagues and authors is a long-established academic practice, websites and social media platforms have broadened the scope and visibility of academic literature sharing among researchers. On Twitter, the #icanhazpdf hashtag has emerged as a way for researchers to request and obtain journal articles quickly and efficiently. This study analyzes use of the #icanhazpdf hashtag as a means of obtaining health sciences literature. **Methods:** RowFeeder software was used to monitor and aggregate #icanhazpdf requests between 1 February and 30 April 2015. This software records data such as Twitter handle, tweet content, tweeter location, date, and time. Tweets were hand-coded for the journal subject area, the requestor's geographic location, and the requestor's occupational sector. **Results:** There were 302 requests for health sciences literature during the study period. Many requests were made by users affiliated with a post-secondary academic institution (45%, $n = 136$). Very few requests were made by users located in Canada ($n = 15$). **Conclusion:** #icanhazpdf requests for health sciences literature account for a relatively small proportion of peer-to-peer article sharing activities when compared with other online platforms. Nevertheless, this study provides evidence that some faculty and students are choosing social media over the library as a means of obtaining health sciences literature. Examining peer-to-peer article sharing practices can provide insights into patron behaviour and expectations.

Introduction

The proportion of biomedical literature available through Open Access (OA) publishing models is increasing. In a 2013 survey study, Kurata et al. [1] found that the proportion of medical research articles available OA doubled between 2006 and 2010. However, many articles remain inaccessible to those without personal or institutional subscriptions to scholarly journals. In this environment, alternative article distribution channels that facilitate peer-to-peer sharing have emerged.

Researchers have long been able to bypass libraries and journal publishers by requesting research articles directly from article authors or colleagues, a practice Salo [2] terms "academic samizdat". Online environments have enabled new forms of this practice, allowing researchers to request articles from large networks of people on a variety of websites, discussion forums, and social media platforms.

The overall extent of article sharing is difficult to determine due to shifting online landscapes; some dedicated article sharing websites such as journalfire.com and scientificcommons.org are now defunct. In the meantime, other websites and tools have taken their place. In a 2005 paper, Wren [3] estimated that over one-third of high impact journal articles published in 2003 could be found on non-journal websites indexed by Google. Other studies have examined sharing on specific platforms. Masters [4] analyzed peer-to-peer article sharing on a website popular with medical professionals, and documented 5464 full-text article pdf postings in response to requests during a six-month period in 2008 [4]. One of the most extensive studies to date was conducted by Cabanac, who examined full-text content available on the Library Genesis (LibGen) platform. LibGen hosted over 25 million documents at the time of the study; 36% of all articles assigned a digital object identifier (DOI) were found to be available on the platform, with 71% of the content originating from massive paper uploads and 29% originating from crowd-sourced sites [5].

The growth of online peer-to-peer article sharing has a variety of implications for libraries. Greenhill and Wiebrand [6] argue that peer-to-peer article sharing serves as a "hidden competitor" for libraries. Similarly, England and Jones [7] remark that peer-to-peer article sharing "represents a worrying trend toward disintermediation of the library and negatively impacts the library's perceived relevance and value among students and faculty" [7].

Given the potential impacts of article sharing for health sciences libraries, it is important to understand how and

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why medical literature is being shared online. This paper investigates article requests via one particular method, the #icanhazpdf Twitter hashtag[3]. Specific research questions include:

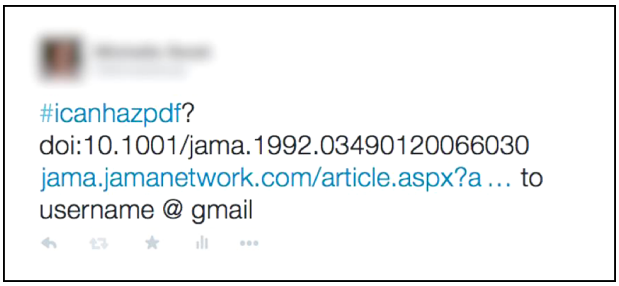
- How often is #icanhazpdf used to request health sciences literature?
- What types of health sciences literature are being requested?
- How do users identify requested literature (i.e., publisher URL, DOI, or citation information)?
- Where are requestors geographically located?
- What is the occupation or employment sector of #icanhazpdf tweeters requesting health sciences literature?
- Do article requestors have access to library resources and services?

Copyright and licensing issues surrounding peer-to-peer article sharing practices such as #icanhazpdf are complex and situational. In some instances, #icanhazpdf users may be in violation of copyright legislation or publisher licensing agreements, but those who use the hashtag may argue that this practice typically falls under fair use or fair dealing exceptions. To add to the confusion, some publishers permit one-to-one, private article sharing among colleagues [8]. Given the many competing viewpoints, a detailed examination of the intricacies of copyright legislation and publisher licensing in relation to #icanhazpdf is beyond the scope of this paper.

How does #icanhazpdf work?

San Francisco-based cognitive scientist Andrea Kuszewski first conceived of the #icanhazpdf hashtag in 2011 [9]. According to #icanhazpdf protocol, article requestors compose a tweet containing article information, their personal email address, and the #icanhazpdf hashtag (Figure 1). Other Twitter users fulfill requests by searching Twitter for the #icanhazpdf hashtag, accessing requested articles through institutional or personal subscriptions, and then emailing the article to the requestor. Once the request has been fulfilled, the requestor deletes the tweet. This procedure maintains anonymity for the article provider as he or she may infringe copyright or be in violation of licensing agreements.

Fig. 1. Sample tweet.



[3]#icanhazpdf Twitter feed is updated continuously and is available at https://twitter.com/#!/search?q=%23icanhazpdf.

Liu [10] notes that the hashtag was originally intended for science journalists, who typically lack access to the online library resources available to researchers at large universities; however, her research has demonstrated that academics and students use #icanhazpdf services more frequently than those in communication fields.

A 2015 paper by Gardner and Gardner [9] also provides a variety of insights into the use of #icanhazpdf. Of particular importance, their study found that 62% of requests were for articles from life sciences and biomedical journals. This paper further examines this particular category of requests.

Methods

As #icanhazpdf protocol dictates that tweets are deleted after the requested article is received, the social media monitoring service RowFeeder was used to capture and collect publicly available #icanhazpdf tweets. RowFeeder, which is a subscription service, records the Twitter username, the content of the tweet, the tweet URL, the user location (if supplied), and the date and time of the tweet [11]. Memorial University's Ethics Officer advised that ethics approval was not required for this research as individual #icanhazpdf users would not be identified.

RowFeeder recorded a total of 3962 tweets during the period 1 February to 30 April 2015. Many of the captured tweets were automated retweets by the Twitter bots hecanhazpdf and i_can_haz_PDF. Such tweets were excluded from the dataset, as were retweets by individuals. The remaining 1456 unique tweets were divided into two sets (Figure 2). Each author manually reviewed one set of tweets, coding each tweet with the following demographic information and request details: requestor's geographic region (if known); type of tweet (request or comment); type of material requested (article, book, etc.); how the requested item was described (citation, DOI, link to publisher, etc.); and subject of the requested item (health or non-health). Requests for health sciences literature were further coded with Scopus subject categories at the journal level. For example, a request for an article from *Nature Reviews Microbiology* was coded with the subject areas "Immunology and Microbiology" and "Medicine," which are the subject categories that Scopus assigns to the journal. If questions or uncertainty arose during the process of coding, both authors reviewed the tweet in question and came to a consensus.

Results

In total, there were 302 requests for health sciences literature using the #icanhazpdf Twitter hashtag between 1 February and 30 April 2015. Nearly all of the requests (99%, $n = 300$) were for journal articles. Of the two non-article requests, one was for a book and the other for grey literature.

Characteristics of requested articles

The 300 health sciences articles requested were from 232 different journals. Journals could be classified in more than one category; see Table 1 for the full list of subject areas for which articles were requested.

Fig. 2. Tweet inclusion flow chart.

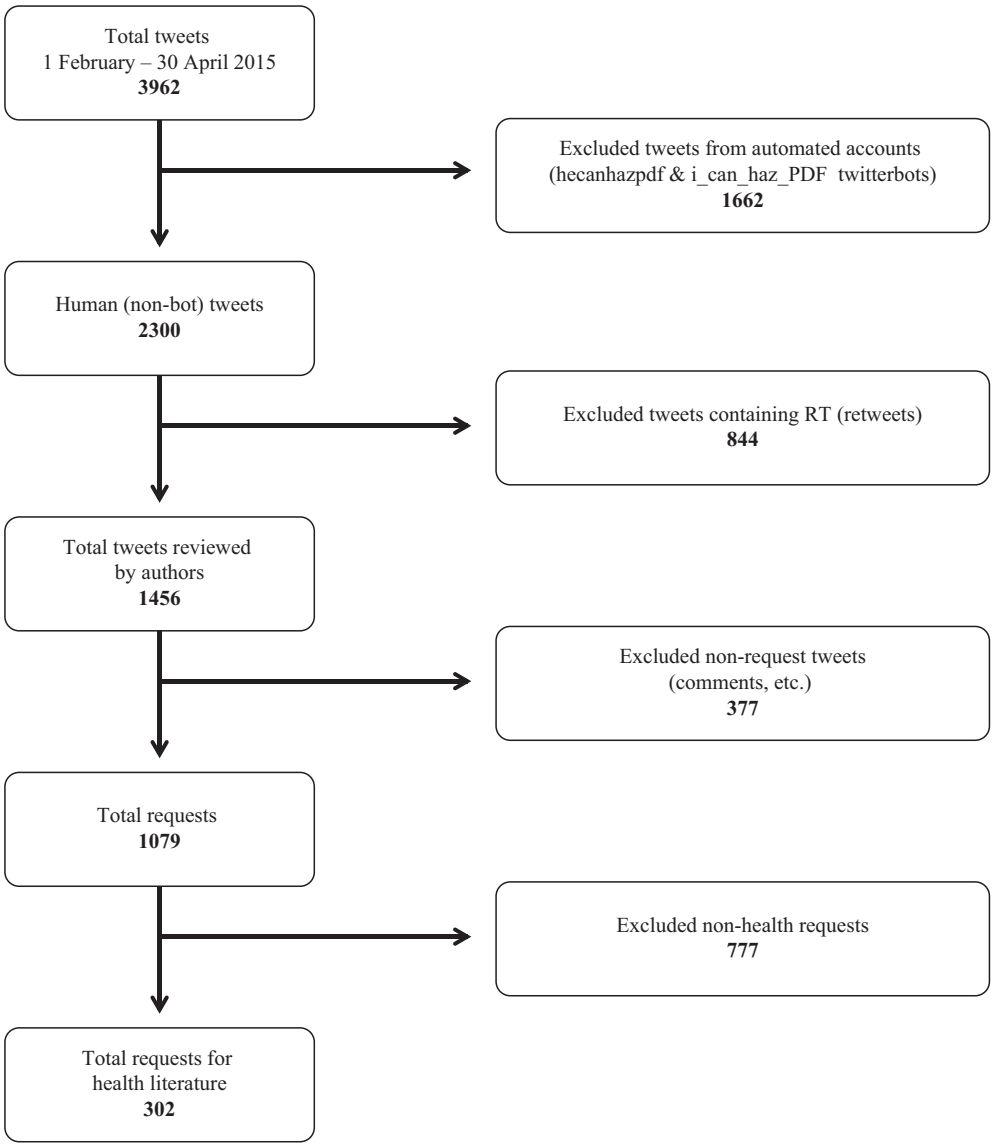


Table 1. Scopus subject category for unique journal titles.

Broad journal subject category	Number of journals*
Medicine	196
Nursing	14
Pharmacology	18
Immunology and microbiology	22
Health professions	5
Clinical psychology	2
Dentistry	1
Not indexed in Scopus	7

*Journal titles may be classified in more than one category.

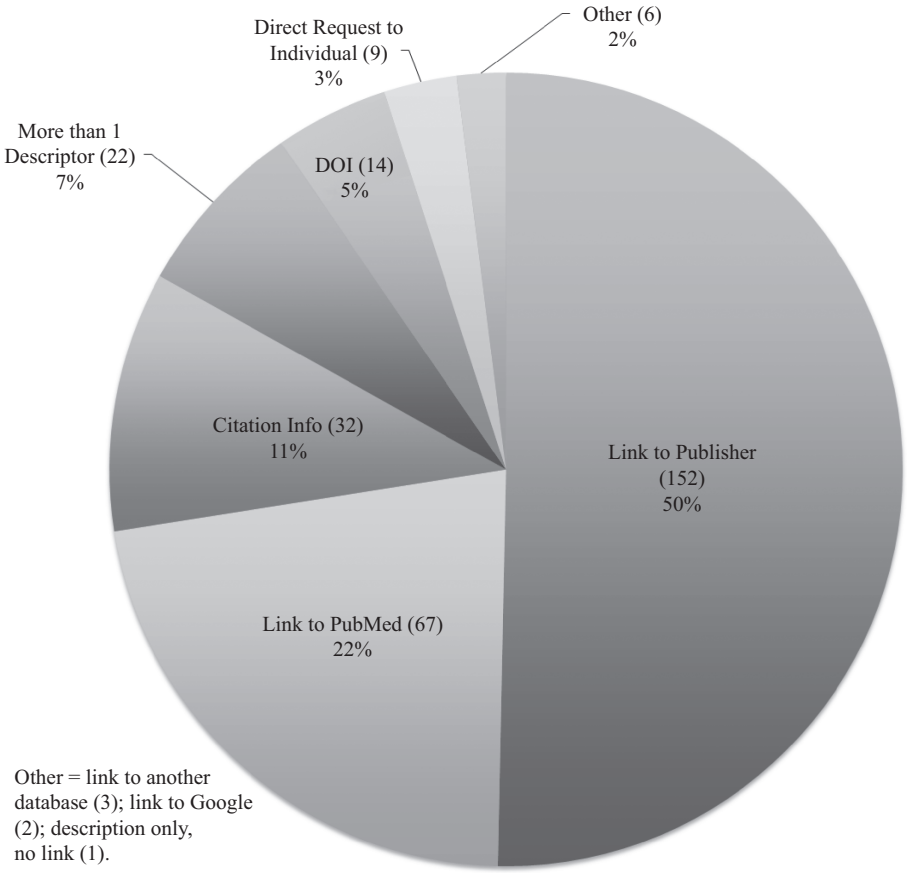
More than half of requestors (50.7%, $n = 152$) linked to the publisher's website as a means of identifying the article being requested (Figure 3). Linking to the PubMed record was the second most popular means of identification.

Characteristics of requestors

As shown in Table 2, our findings are consistent with Gardner and Gardner's [9] assertion that "#icanhazPDF is overwhelmingly an Anglophone phenomenon". The greatest proportion of requests came from the United Kingdom and Ireland (29.1%), followed by the United States (26.5%). There were comparatively few #icanhazpdf requests for health literature from Canada: only 15 requests in the 3 months of the study.

Many requests (45%, $n = 136$) came from Twitter users who were in some way affiliated with a post-secondary academic institution, according to the information provided in their Twitter profile. These requestors included faculty, academic researchers, students, and librarians. The number of requestors with academic affiliation may in fact be even greater, as academic affiliation could not be determined for over 38% ($n = 117$) of requestors (Table 3).

Fig. 3. Description of requested materials ($n = 302$).



Discussion

The overall number of requests for health sciences literature on Twitter using the #icanhazpdf hashtag during the three-month study period was low ($n = 302$) in comparison with requests for articles on a website for health professionals during a six-month period in 2008 as reported by Masters ($n = 6587$) [4]. Few #icanhazpdf requests for health sciences literature during the study period originated from Canadian Twitter users ($n = 15$). The low rate of #icanhazpdf use in Canada may be related to the low rate of Twitter adoption among Canadian health professionals and researchers. Only 9.2% of respondents in a November 2013 survey of Canadian Medical Association physicians reported using Twitter for professional purposes [12], and only 5% of faculty respondents reported Twitter use in a recent survey conducted at the University of Montreal's Faculty of Medicine [13].

In addition, there were few #icanhazpdf requests for articles from journals in the subject categories of pharmacology

Table 2. Requestor's geographic region.

	Number of tweets	Percent total
United Kingdom and Ireland	88	29.1%
United States	80	26.5%
Rest of Europe	58	19.2%
Canada	15	5.0%
Australia and New Zealand	11	3.6%
Asia	3	1.0%
Mexico, Central America, South America	2	0.7%
Africa	1	0.3%
Unknown	44	14.6%
Total	302	100.0%

Table 3. Requestor's employment sector.

	Number of tweets	Percent total
Academic (non-librarian)	85	28.1%
Student	41	13.6%
Journalist/writer/public relations	19	6.3%
Librarian	10	3.3%
Clinician	5	1.7%
Industry	5	1.7%
Nonprofit, patient organization	5	1.7%
Nonprofit, other	4	1.3%
Independent consultant	4	1.3%
Patient	3	1.0%
Government	3	1.0%
Teacher (non-post-secondary)	1	0.3%
Unknown	117	38.7%
Total	302	100.0%

($n = 18$), nursing ($n = 14$), clinical psychology ($n = 2$), and the health professions ($n = 5$). These results may again be related to rates of Twitter adoption among these professional groups. Studies report Twitter usage rates of less than 10% among pharmacy preceptors [14], undergraduate pharmacy students [15], and new graduate nurses [16].

Although originally envisioned for users without institutional library access, #icanhazpdf requests from user groups such as journalists, patient organizations, and patients were limited ($n = 27$). During the study period, 45% of requests ($n = 136$) were from Twitter users affiliated with a post-secondary academic institution such as faculty members, students, and librarians. If tweets from requestors with unknown affiliation are excluded, over 70% of requestors were affiliated with a post-secondary academic institution ($n = 136/185$). These results are consistent with earlier research by Liu [10]; the results of her 2013 study indicated that users from occupational groups with institutional library access made a majority of #icanhazpdf requests.

Faculty and student use of #icanhazpdf warrants further analysis in light of academic users' considerable access to library resources and services such as interlibrary loan. Although a full investigation of user motivations is not within the scope of this study, comments tweeted by #icanhazpdf users during the study period can provide some insights into this particular article sharing practice.

Evidence from a study conducted by Connaway et al. [17] suggests that convenience, including ease of use and speed, is "one of the primary criteria used for making choices during the information-seeking process". #icanhazpdf is fast, and users may retrieve the requested article within minutes. Several tweets compared the speed of #icanhazpdf to the speed of interlibrary loan services:

> Using #icanhazpdf has been so helpful and fast (only used a few times). Way faster than ILL requests
>
> Trying this b/c ILL is slow for what should be an EZ request
>
> Still haven't gotten paper 22 minutes after #icanhazpdf request. The Internet is so over.

#icanhazpdf is also relatively easy and convenient. Anyone with a Twitter account can use the hashtag to obtain articles quickly and without much effort. #icanhazpdf users do not need to remember (or even have) library login credentials. These sample tweets suggest that the convenience of #icanhazpdf is an important consideration for users:

> Can anyone help out with this oldie and save me a trip to the library?
>
> Working from home ... can anyone help – Journal of Medicinal Chemistry
>
> Dear #lazyweb, #icanhazpdf – pretty please?

Opportunities to connect with other researchers may serve as an additional motivating factor. In an ethnographic study, Veletsianos [18] observes that social media is "a place where scholars can congregate to share their work, ideas and experiences ... Through social media gatherings, distributed individuals build ties, bonds and solidarity, even when they may have not met each other face-to-face". A small number of #icanhazpdf requests included in the current study ($n = 9$) were direct replies to article links shared by other researchers. In such cases, an #icanhazpdf request may indicate shared interests around a particular article or topic, and may also foster connections between researchers. Sample tweets include:

> @researcher Nice abstract! Thanks for sharing. #icanhazpdf?
>
> @researcher pity it's behind a paywall. got a spare copy for me? #icanhazpdf?
>
> @researcher Looks great! But, #icanhazpdf?

In addition, use of the #icanhazpdf hashtag may also serve as a form of social protest and a sign of discontent with current academic publishing practices and economic systems. Dunn et al. [19] and Kroll [20] position peer-to-peer article sharing as an act of civil disobedience, and #icanhazpdf creator Andrea Kuszewski has recently stated that use of the hashtag is "not an aggressive act but it's just a way of saying things need to change" [21]. Veletsianos argues that article sharing among researchers exemplifies academic researcher values surrounding sharing and openness [18].

Limitations

A primary limitation of this study is its reliance on a convenience sample; results are not generalizable. The study sample is also potentially incomplete, as RowFeeder software cannot guarantee instantaneous tweet capture. In addition, the study relies on self-reported Twitter profile information, which may not be accurate. A further potential limitation is subjectivity in the authors' coding of tweets. While categorizing #icanhazpdf tweets according to characteristics such as geographic region and journal subject area was straightforward, classifying requestors' employment sector was somewhat subjective due to differences in academic ranks in North America, the United Kingdom, and Europe, as well as ambiguity in the information provided in requestors' Twitter profiles.

Although this study presents preliminary observations of #icanhazpdf user motivations as extrapolated from users' comments on Twitter, further research and analysis are recommended in this area. Although not within the scope of the present study, the copyright and licensing implications surrounding scholarly article sharing are another important area for further research and discussion.

Conclusion

The current study identified 302 requests for health sciences literature using the #icanhazpdf Twitter hashtag during a three-month period. The majority of requests were for articles from medical journals. The number of requests is not large, but health sciences librarians should be aware of #icanhazpdf as yet one more avenue of scholarly sharing.

Nearly half of the requests were made by individuals whose Twitter profiles indicated some affiliation with a

post-secondary academic institution. Such requests are evidence of users choosing social media over the library as a means of obtaining scholarly materials; librarians can and should examine the use of #icanhazpdf for the insights it provides into user behaviour.

As tweets in the current study suggest, individuals affiliated with post-secondary institutions may turn to Twitter to obtain health sciences literature for a variety of reasons. Researchers may appreciate the peer-to-peer connections fostered through #icanhazpdf requests, or may use this article retrieval method to signal discontent with current academic publishing models. #icanhazpdf users may also turn to Twitter for reasons relating to convenience, ease of use, speed, or even lack of knowledge of library services and processes. The #icanhazpdf phenomenon is thus a rich source of information for health sciences librarians—and indeed all academic librarians—who are seeking to understand patron behaviour and improve library services in the areas of scholarly communication, library instruction, and interlibrary loan.

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COLUMN / CHRONIQUE

Reflections on Turning 40: A Historical Review of the Ottawa Valley Health Libraries Association/ l'Association des bibliothèques de la santé de la vallée de l'Outaouais

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Introduction

The Ottawa Valley Health Libraries Association/ l'Association des bibliothèques de la santé de la vallée de l'Outaouais (OVHLA), originally founded in 1974 as the Ottawa–Hull Health Libraries Group (OHHLG), was one of the first Chapters of the Canadian Health Libraries Association/Association des bibliothèques de la santé du Canada (CHLA/ABSC). In 2015, OVHLA members embarked on a project to collect and preserve the Association's historical documents and to summarize and share its history. In addition to wanting to archive the Association's records and create a timeline of its key accomplishments, the current executive also wanted to review what made the Association work well in the past, to see how it has evolved over time, and to use this information to help chart a course for the future.

OVHLA History Project

The OVHLA History Project followed the examples of previous Chapter history projects from the Northern Alberta Health Libraries Association [1, 2] and the Manitoba Association of Health Information Providers [3]. A working group of OVHLA members used two approaches to gather information for this project: reviewing written historical records and conducting questionnaire-based interviews.

Past and present OVHLA members were solicited to contribute historical records. Minutes from meetings, Chapter reports, membership lists, treasurer records, and other documents were collated and reviewed. Issues of the *Journal of the Canadian Health Libraries Association* and *Bibliotheca Medica Canadiana* were also scanned to identify information relevant to OVHLA's history.

Questionnaire-based interviews were conducted via email with six past-presidents and one long-standing OVHLA member to gather their reflections. There were nine questions covering topics such as most memorable moments, the Association's evolution, and its main achievements and challenges.

Both the historical records and the interview responses were analyzed to develop a narrative review of OVHLA's significant moments and to identify important themes. What follows is a brief overview of the Association's origins and development (see Appendix A for a timeline of milestones in OVHLA's history). As well, the Association's activities and achievements are discussed in terms of four main themes: advocacy, resource sharing, professional development, and networking and socializing.

Origins of the OHHLG

On 6 November 1974, an informal meeting of librarians in the Ottawa–Hull area, organized by Mabel Brown and Ann Nevill, was held at the Ottawa Civic Hospital library. Thirteen staff members from ten different libraries attended. The main topics of discussion at the inaugural meeting were "the problem of coordinating monograph acquisitions in the area, and whether hospital libraries should be requested to lend heavily used books." Attendees agreed that continued meetings would be useful and decided to meet every two months. The first year was mostly spent fostering relationships and touring local health libraries. At the start of the second year in September 1975, attendees held a "re-organizational" meeting and began planning projects, electing their first Chair, Mabel Brown. Two years later in September 1977, they officially adopted the name OHHLG/ Groupe des bibliothèques de la santé d'Ottawa-Hull.

"Welcome Chapter Two!"

In January 1978, OHHLG members voted unanimously to apply for Chapter status with CHLA/ABSC. In anticipation,

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the Group's name was changed to the CHLA: Ottawa–Hull Chapter/ABSC: Section de l'Outaouais, a move that was not looked upon favourably by then-president of CHLA/ABSC, Mrs. M.A. Flower. In an August 1978 letter to then-OHHLG Chairman Maurice Alarie, Flower expressed her "difficulties" with the Group's choice to name themselves as a Chapter "before the fact" and suggested they readopt their OHHLG name.

To meet CHLA/ABSC requirements for Chapter status, the Group drafted the first version of its constitution and bylaws, which were approved in March 1978. The original purpose of the Group was "to promote, by means of cooperation and communication, the provision of quality library service in the health sciences throughout the Ottawa–Hull region" and "to support the activities of the parent organization and maintain contact and share information with other Chapters and the biomedical library community as a whole."

On 18 November 1978, Flower wrote a letter of acceptance to OHHLG Chairman Alarie, announcing: "Welcome Chapter Two! The future looks bright for all of us." According to the letter, she was "impressed again with the parallelism between the aims of [the] Group and the aims of the national Association." The Group was ceremoniously awarded official Chapter status at the 1979 CHLA/ABSC annual meeting in Ottawa, hosted by the new Chapter.

Name changes and formation of OVHLA

Two years after becoming a CHLA/ABSC Chapter, in September 1980, members heeded the advice of Flower and voted to change their name back to the original OHHLG name. That name was kept until 1988, when the Chapter made a slight naming revision, becoming the Ottawa–Hull Health Libraries Association (OHHLA).

In 1994, OHHLA merged with the inactive Ontario Hospital Association Region #9 Hospital Libraries Group. The two groups had always had a strong relationship: having similar regional boundaries, they shared many members, collaborated on continuing education (CE), and reported at each other's meetings on their activities. With the merger, the constitution and bylaws, which had been unchanged since May 1984, were reviewed and revised. Members chose a new name to reflect the merged group: Ottawa Valley Health Librarians Association/l'Association des bibliothèques de la santé de la vallée de l'Outaouais. Although the name has remained unchanged since then, the accuracy of its name has been questioned given the geographic range of its members (since 2006, some members from the inactive Kingston Area Health Libraries Association, including Bracken Health Sciences Library at Queen's University, have been members).

Membership and member engagement

As I recall, my stint as Chapter president was by acclamation, as it was hard to convince candidates to run at the time.

– Elizabeth Hawkins Brady (President 1985–1986, 1995–1997)

Despite the Association's long history and many accomplishments, low attendance at meetings and CE activities was a recurring theme in meeting minutes from all four decades. The minutes, and some comments from members interviewed, also reflected difficulties finding volunteers to fill executive positions. Lack of member involvement reached a critical point in 1983–1984, when the very existence of the OHHLG was in jeopardy. The absence of any volunteers for open executive positions led to a "survival meeting" at which the Group's future was at stake. At the March 1984 meeting, incoming CHLA/ABSC president David Crawford addressed OHHLG members, speaking about the advantages of maintaining a local Chapter. Following the talk, the Group held a vote on whether to continue and, if so, how. Members decided to carry on, but with modifications, including fewer annual meetings—two program meetings and one social meeting a year.

Since then, the issue of how to increase membership and to engage current members has remained an ongoing challenge. In particular, staff reductions and the closures of local health libraries have been a blow to Association membership. Past-president Deborah Scott-Douglas noted: "When I first joined the OVHLA, the Association was much larger and more active than it is today, reflecting the significant health science library community in Ottawa at the time. Sadly, over the years, many of these libraries have been downsized or closed."

Advocacy

The need to continually demonstrate the value and relevance of your collection and services both to the parent organization and the community at large [is] an issue that remains current today.

– Elizabeth Hawkins Brady (President 1985–1986, 1995–1997)

Amid budget constraints and library closures, the Association took on an advocacy role, speaking out against regional threats to health librarianship. The earliest example of this advocacy was March 1976, when a letter was written to the Ontario Ministry of Education to protest the rising cost of interlibrary loan borrowing. Since then, most of the Association's advocacy efforts have been directed toward fighting against library closures. Letters were written to protest library closures at the Canadian Hospital Association (1983), Ontario Hospital Association (1996), Canadian Nurses Association (1998), and Health Canada (2014).

Resource sharing

Budgets were always, and still are, an issue.

– Cathy MacLean (President 2007–2009)

Sharing resources between local libraries was another way the Association dealt with budget cuts. In 1979, for example, rising journal prices forced many local libraries to

downsize journal subscriptions. The University of Ottawa, one of the libraries that had to make cuts, was forced to cancel $18,000 worth of medical and scientific journals. Maurice Alarie, then director of the University's Vanier library, estimated that "the cost of medical and scientific journals [had] risen 244% over the past 10 years." OHHLG member libraries consulted with one another to ensure that journals proposed for cancellation would be available in at least one local library.

Resource sharing continued throughout the years in various forms, including reciprocal borrowing and lending among member institutions, a subcommittee for shared services among health libraries in Ottawa's Alta Vista district, and a subcommittee on local consumer health education resources in partnership with the Ottawa Public Library.

One challenge to resource sharing was the need to balance the inequality of access between larger and smaller libraries. How smaller libraries could use, without abusing, the services of larger libraries was discussed at a meeting in 1975. In 2001, with local libraries beginning to adopt DOCLINE, reciprocal agreements to guide interlibrary loans and balancing the workload among member libraries were again topics of debate.

Historically, one of the most important tools for sharing resources between members was the *Union List of Serials in Ottawa–Hull Hospital Libraries*. Creating this publication was one of the OHHLG's first activities, with the first edition produced in 1976. It was considered a "vital resource," especially for smaller libraries. In 1999, the first electronic version of the union list was made available via the Association's first website. With DOCLINE, generating and accessing the union list became much simpler. When an OVHLA DOCLINE code was established in 2003, a union list for local libraries could be generated automatically using SERHOLD data. With increased use of DOCLINE, and holdings becoming available online, the local union list of serials became less and less necessary.

Professional development

I think OVHLA has been fortunate to have some very experienced and forward-thinking members, several of whom have acted at a fairly senior level in shaping the Canadian health library landscape.

– Becky Skidmore (President 2001–2004)

Professional development, through informal knowledge sharing and CE, has always been a central activity of the Association. In its earlier years, the OHHLG/OHHLA had guest speakers at every meeting, ranging from CHLA/ABSC presidents, to the Librarian and Curator of Rare Books at Johns Hopkins University, to a panel of three local doctors discussing AIDS. Later, CE took the form of courses and presentations, including topics such as consumer health, "library applications of INTERNET," social media, and health information for immigrants and refugees. Significant CE activities in later years included a full day mini-conference in 2008, the development of a journal club in 2013, and an evening mini-symposium in 2015.

Several of the members interviewed highlighted hosting conferences as a rewarding accomplishment. The Chapter has hosted the CHLA/ABSC annual conference four times: 1979 (third annual meeting), 1989 (Capital Investments), 1998 (L'information, c'est CAPITALizing on information), and 2007 (Capitalizing on Health Partnerships). OVHLA has also twice co-hosted the Upstate New York and Ontario MLA Chapter (UNYOC) annual conference: 2004 in Ottawa (40 in 04: Energizing Resources, Services, and Our Environment) and 2012 in Cornwall (Building Bridges). These conferences were also an important source of revenue for OVHLA.

Hosting conferences, serving as executive members, and taking part in other Chapter activities were also ways for members to develop their leadership skills. Many members later took on leadership roles in CHLA/ABSC and other organizations. For example, several past members have served as president of CHLA/ABSC: founding OHHLG member Ann (Nevill) Manning (1981–1983), Beverly Brown (1993–1994), Jessie McGowan (2001–2002), Dianne Kharouba (2008–2009), and Lee-Anne Ufholz (2014–2015). Former OVHLA president Margaret Quirie also served as president of the Ontario Health Libraries Association (OHLA).

Additionally, four former members have been awarded Honourary Life Membership in CHLA/ABSC: Ann (Nevill) Manning (1990), Philippe Lemay (2001), Pat Johnston (2007), and Dianne Kharouba (2012).

Networking and socializing

OVHLA was most important to me when I was the sole librarian working in a research environment. The events were an important way for me to maintain a connection with my peers in the library world.

– Margaret Sampson (President 2009–2011)

Participation in the Association gave health librarians in the region a way to connect with one another, to share ideas, and to discuss common problems, all of which were of particular importance to solo librarians. It was also a way to gain exposure to different aspects of health librarianship: hospital, academic, federal, and government agency librarians mingled. Regular meetings kept members informed about staffing changes and important activities at member libraries. With advancements in technology, communication within the Association has changed; in-person meetings are fewer and a website, listserv, and Twitter account have been created.

The Association also facilitated networking opportunities with other library associations and collaborated to host events with CHLA/ABSC, the former OHA Region #9 Hospital Libraries Group, OHLA, and UNYOC.

Connecting with local colleagues was not strictly a professional matter; membership also provided an opportunity to socialize. Annual social events were formally introduced in 1984 and have included wine and cheese events, pub nights, and potlucks. Members developed friendships and supported each other on a personal as well as professional level. According to past-president Deborah Scott-Douglas: "More than anything, I have very happy memories of

the collegiality and support from the membership and the friendships that I developed with many of the members."

Conclusion

Reviewing OVHLA's historical records and conducting interviews with members has been a rewarding process of rediscovery and reflection for members involved in the OVHLA History Project. Looking to the future the Association's executive should focus on what made the OVHLA successful in the past: sharing resources and knowledge, developing professional and personal relationships with colleagues, collaborating with CHLA/ABSC and other library associations, and advocating on behalf of the value of health librarianship. These strengths helped OVHLA through the challenges of budget constraints, waning participation, changing technologies, and distance between members. In 2016, this description of OHHLG from the first *CHLA/ABSC Newsletter* from winter 1977 [4] still resonates:

> *We have never become a homogenous group, and we never will—but we have learned to appreciate the common denominator that links us, large and small: our effort to deliver scientific information quickly and accurately wherever needed… This willingness to communicate and cooperate has been our intangible reward.*

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Appendix A: OVHLA historical timeline

1974 First informal meeting.
1975 Mabel C. Brown elected as first Chair.
1976 First edition of *Union List of Serials in Ottawa–Hull Hospital Libraries* produced.
Henriette A. Schmidt nominated as the group's first secretary.
1977 Officially adopts the name Ottawa–Hull Health Libraries Group (OHHLG)/Groupe des bibliothèques de la santé d'Ottawa-Hull.
1978 Name changed to CHLA: Ottawa–Hull Chapter/ABSC: Section de l'Outaouais.
Constitution and bylaws drafted. Granted CHLA/ABSC chapter status.
1979 Hosts third annual CHLA/ABSC meeting in Ottawa June 13 and 14 (first time the meeting had a two-day program).
1980 Name changed back to OHHLG.
1982 Annual membership fee introduced ($10).
1984 "Survival" meeting, where future of Chapter is voted upon.
Decision to continue as a Chapter but with fewer meetings.
Revised constitution and bylaws.
Social events introduced.
1988 Name changed to Ottawa–Hull Health Libraries Association (OHHLA).
1989 Hosts 13th annual CHLA/ABSC meeting in Ottawa May 27–31 at the Château Laurier; theme is "Capital Investments."
1994 Amalgamation of the OHHLA and the Ontario Hospital Association Region #9 Hospital Libraries Group.
Name changed to Ottawa Valley Health Libraries Association/l'Association des bibliothèques de la santé de la vallée de l'Outaouais.
Constitution and bylaws revised.
1996 Granted CHLA/ABSC development fund to finance DOCLINE project.
1998 Hosts 22nd CHLA/ABSC conference in Hull June 5–10 at the Clarion Hotel; theme is "L'information, c'est CAPITALizing on information."
1999 Electronic version of the union list of serials made available on the Chapter's first website.
2000 Annual membership fee increased to $20.
2003 New executive position of Continuing Education Program Coordinator introduced.
OVHLA group code established in DOCLINE.
Union list automatically created using SERHOLD data.
2004 Joint UNYOC/OVHLA annual meeting held in Ottawa October 13–15 at the Delta Hotel; theme is "40 in 04: Energizing Resources, Services, and Our Environment."
OVHLA website revived and populated with content.
2006 Some members of the inactive Kingston Area Health Libraries Association, including Bracken Health Sciences Library from Queen's University, join the OVHLA.
2007 Hosts 31st annual CHLA/ABSC conference in Ottawa May 28–June 1 at the Lord Elgin Hotel/National Arts Centre; theme is "Capitalizing on Health Partnerships."
2008 Full day OVHLA mini-conference held on 28 November at the Royal Ottawa Hospital.
2011 Revision of constitution and bylaws; changes include limiting institutional membership privileges to two members of an institution, and a minimum of one meeting a year.
2012 Joint UNYOC/OVHLA annual meeting held at NAV Centre in Cornwall October 10–12; theme is "Building Bridges."
2013 Journal club launched.
2015 OVHLA mini-symposium held.

COLUMN / CHRONIQUE

Transforming Collections: Reflections on Challenges for Academic Health Libraries[1]

Pamela S. Morgan

Abstract: Libraries are continually challenged when it comes to the preservation and development of their collections, from ancient libraries and their collections of unique items to modern libraries with their large collections of mass-produced items. Beyond printing technology and resource availability, the challenges shaping collection development today include electronic resources, shifting publishing models, changing user expectations, and grim economic realities. This column discusses these challenges as they pertain to academic health libraries and reflects on the approaches that libraries are taking to address them.

Where are we now?

When libraries consisted entirely of print collections, each library purchased what was core to them and borrowed from one another to supplement their collections. When collections switched to electronic, user expectations also switched, particularly their definition of available. Instead of coming to the library, users expect the resources to be available to them at the click of a button, anytime and anywhere. Anything less has become a frustration. One service that libraries use to meet this "instantaneous" expectation is the desktop delivery of articles. The changes in copyright and, particularly within Canada, a shared document delivery system allow libraries to send articles directly to a user's email. Desktop delivery of articles has greatly improved turnaround times and appeased many users, but there are other options for desktop delivery besides traditional interlibrary loan (ILL) including pay-per-view (PPV) direct from the publisher. A much more expensive option, PPV does not appear sustainable as a replacement for licensed resources unless tightly controlled by targeting peripheral journals or the highly specialized titles required by a select few. Students and faculty have also found ways to bypass the library altogether. Technology is taking personal networking, such as emailing the author for a copy, to another level. For example, the "#icanhazpdf" twitter feed consists simply of requests from people for others to supply them with a copy of an article, regardless of the legality.

Although this works for articles, many academic libraries are using a patron-driven or demand-driven acquisition (PDA/DDA) model for electronic books. You can load an entire e-book collection into your discovery service and pay a short-term loan (STL) fee whenever someone uses the book, with "use" being strictly defined. After a certain number of STLs, the library must buy the book. Users do not need to know if the library owns the book, and collections librarians can leave the decision to users when debating the value of a particular title or choosing between two similar titles. Acquisitions departments, however, encounter difficulties as publishers constantly change prices for the book and the STLs without notice and they withdraw titles from PDA/DDA availability.

Resource discovery tools and the internet have increased a user's ability to identify materials they may want, but with the growth in publishing and the ease of searching, no library can afford either the dollars or the space to own everything that the user might come across. Libraries have always shared their collections. The benefits of resource sharing are easy to talk about—a shared virtual collection, sharing of the cost burden, and an ability to focus collections on specific needs and supplement with peripheral titles. However, there are limits to resource sharing beyond the time involved. Some licenses mention interlibrary loan in terms of "own country", if they allow it at all. Reciprocal arrangements between libraries to decrease turnaround time and ensure reliable access may risk opening the library to charges of collusion. There is no technical way for an academic library to lend its e-book to another library or even to a nonprimary patron such as a physician in an associated teaching hospital. Libraries with space issues have moved titles to off-site storage. However, it costs money not only to house resources but also to retrieve them from storage whether for your own patron or for another library. Finally, the more Big Deals or packages that

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libraries are involved with, particularly on the national consortia scale, the fewer resources are unique.

Besides ILL and consortia, there are other types of collaboration in which libraries must be involved. The more that education goes electronic, the more the library needs to develop its relationships with other departments in the university. These include computing communications departments, distance learning departments, instructional technology groups, copyright offices, research offices, and publishing divisions. And who is responsible for such matters as institutional repositories, digital archives, electronic theses, electronic reading lists, open journal systems, and open author funds? Clifford Lynch [1] said "So much of the new content is outside of the library and outside of the entire system of publishing that it is unclear how much responsibility the libraries can or should take for this material or how they should go about taking that responsibility" (p. 66).

On an external basis, libraries can develop collaborative efforts through the establishment of cooperative collection policies and the development of best practice guidelines such as the University of Alberta's statement on non-disclosure clauses [2]. We need to ask ourselves (and find the answers for) questions such as: Who is collecting comprehensively in an area and who is selective? Who is preserving the last print copy or the last electronic copy? Who has digitized it? Who is specializing in what area? Perhaps we first need to determine whether there still a need to "collect" to preserve a field of knowledge, or is the need simply to get what is needed by users? Libraries also need to build relationships with the vendors, to treat them as partners and not as adversaries. It is only through long-term relationships that libraries can hope for the flexibility to see them through the tough times. We also need to collaborate with publishers so they better understand academic publishing models, deal with new technologies, and work with libraries to benefit all.

Collection assessment is often overlooked, particularly when so much is tied into packages. One of the positives of the Big Deal [3] was that collections librarians no longer had to perform the labour-intensive task of selecting, reviewing, and weeding each and every title to which a library subscribed. Few libraries continued to undertake these time-consuming assessments. When time is at a premium, this is one thing that was easy to stop but has resulted in a scarcity of data that are now needed as libraries try to regain control over the collection.

The big problem with The Big Deal relates to budgets and inflation. Canadian libraries today consider themselves fortunate if they receive a flat budget. No library is getting annual 4%–10% increases in their materials budget, but publishers are increasing their prices this much every year, not accounting for exchange rates. There is simply no way for a library to keep up with the price increases. Libraries have already taken steps such as changing the percentage of spend on monographs versus serials, curtailing binding, cutting duplicates across branches, eliminating standing orders, cutting non-package resources, and perhaps even running deficits and using staffing vacancies to achieve zero-based budgeting—all to try and maintain the Big Deals.

The current Open Access (OA) model is just as unsustainable. In its conception, this idea had potential. The academics doing the research, the peer review, and the editorial work disseminate their research for free and their institutions do not have to pay to access it. However, in some ways this movement has been taken over by the publishers, with a variety of author fees now being levied. In the first three years of operation at Memorial University, the spend on the Open Access Author's Fund grew approximately 500%, with medical faculty being among the top users. These fees are often paid by the library out of existing materials budgets, limiting the flexibility of the library to strategically acquire resources.

Cancellations of Big Deals are tricky and bring back into play the concept of collaboration. Large multidisciplinary packages require cooperation across all disciplines to purchase them, and each discipline does its own assessment as to whether or not they are getting their money's worth. The problem with collaboration on a small scale within one institution—what happens if one discipline wants to cancel Package A and another wants to cancel Package B—becomes exponentially larger when expanded out to consortia deals and multi-institutional partnerships. As well, there may be a discount for subscribing to multiple packages from one provider, so cancelling one package simply increases the cost of the remaining packages. Publishers also bundle titles together into exclusive packages whereby the only way to get a specific title is to buy the entire package. They continue to add more resources to the packages, increasing the price. Publishers do not seem to understand that the number of additional resources is immaterial if a library does not have the money.

Decisions to cancel are fraught with minefields. Librarians must have some evidence behind their decisions, some unbiased criteria. However, usage statistics are only one factor in determining whether the library should subscribe to a title or not. This quantitative evidence must be balanced against the context. Terry Bucknell's paper entitled "Garbage in, gospel out: Twelve reasons why librarians should not accept cost-per-download figures at face value" [4] details why you need a caveat on usage statistics and highlights the need to balance quantitative and qualitative information. Even with this data, librarians will face the wrath of faculty members as favourite titles are cut. William Birdsall [5] noted in 1998 that it would not matter how much evidence you had, a faculty member would not accept it because of the implied criticism of their scholarship. His conclusion was that cancellations can only be dealt with through economic discussions with faculty.

Another group with whom communication is important is the administration within faculties of medicine. They have to understand the difference between a library purchasing a journal package and a laboratory purchasing a microscope. For libraries, monies are committed long before some budget decisions and by fiscal year-end, there is nothing left to cut. It may be a consortia deal that has been six months in negotiation, it may be a multi-year deal, it may be a vendor contract with a 60 day cancellation notice period; the timing of renewals is a factor—a library cannot defer renewing a subscription for a few months.

Where do we go from here?

I believe we will see smaller selective deals and increased individual selection on the journals side. Strong collaboration with faculty will need to be coupled with the librarians' judgement backed by usage statistics from both electronic platforms and document delivery. Package and individual purchases of e-books selected by librarians will continue to be balanced with PDA for the next few years, at least until the market and publishers gain more experience and PDA settles into a mature product. Whether it remains or falls by the wayside will not only depend on the publishers, but also on guidelines that libraries should and need to develop. Nonetheless, I think we will see a retreat from the movement to wholly virtual libraries back to stronger print collections—with the exception of mobile applications.

Collections across the country will no longer be as homogenous as they have become under the Big Deals, but they will develop strengths in certain areas. We will have a greater emphasis on unique materials that are local to the institution such as digital repositories, e-theses, learning objects banks, reading lists, datasets, and digitization of archives and special collections, and the library as the publisher or stakeholder for OA journals—essentially making unique collections that distinguish one library from another. As such, we will have increased emphasis on resource sharing.

There will still be a role for collections librarians. Although the actual selection of titles and liaison with faculty will be spread out, specialized collections librarians will be more involved in assessment, and libraries will continue to hire scholarly communication librarians to find ways to collect the academic output of the university through repositories and to encourage true OA models of "publishing."

In closing, there are a variety of collections dichotomies on which we can reflect. The discussion has turned from serials versus monographs format decisions into continuation order versus firm order decisions. Almost everything that the library now buys is a continuation or subscription, even a large portion of books and audio–visual material. The resources that are purchased outright are few. Becoming scarcer still is the stand-alone title, as many titles now are bundled into packages. For most libraries now, the bundle is an irritation at best and a straitjacket at worst. In addition, if resources are electronic, there may be ongoing costs attached in the form of maintenance fees for current and (or) perpetual access. Even print versus electronic is still an argument today. People want to be able to choose what suits them at a particular point in time. The container is merely the tool and people want to use whatever tool is most convenient and do not understand why the library restricts them to one or the other. Economics and licenses will dictate what a library can provide.

The question of who is selecting the materials, users versus librarians, sparks discussion as to how a balanced collection is maintained or whether it is even needed. This relates to the age-old debate of ownership versus access and the question of whether the library should own the material or rely on resource sharing. Do we need to collect for the future, for the enduring knowledge bestowed by collections, or do we simply provide what is needed at the time and hope it is available somewhere when next it is needed?

Today's focus on the article as the commodity introduces the dichotomy of collection development versus content development; if a library buys access to an article for one patron, how can they manage this content in the assumption that another patron will also be interested in the same content? Many born digital e-journals are publishing articles, identified by article numbers, and they not bundling the articles into volumes and issues.

OA versus PPV reflects a difference in access models and looks at who pays and when. Unless the faculty, caught in their own "publish or perish" dichotomy, take a stand it is unlikely that OA will succeed. Thus, the library is caught between author fees, author funds, research grants, and subscriptions. How can libraries obtain a share of the research monies that have been allocated for OA publishing to finance OA authors' funds? How can libraries best collect the research output of their researchers?

Academic librarians are faced with the additional challenge of research versus teaching; where should the bulk of the budget for an academic health library go? Students, who are the reason for the medical school to exist, rely on the library and have generally homogenous needs. Researchers bring in the money and have very specific needs in very concentrated topics, but they also have access to grants and collegial networks.

And so the overall responsibilities for collections, defined formerly as collection development, transforms into collection management, reflecting the depth and breadth of issues surrounding collections. No longer expert bibliographers selecting and weeding titles, collections work has grown to encompass licensing and negotiating, preservation, digitization, OA, and scholarly publishing. The library will continue to collect resources for its primary users, but the collection will not be aligned around the format or container. It will be focused on the discrete content, on managing the output of the institution, and in collaborative efforts to widely share the limited resources it is able to purchase or license.

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COLUMN / CHRONIQUE

Towards a New Specialization in Health Librarianship: LGBTQ Health

Martin Morris and Blake Wesley Hawkins

Introduction

In 1964, Canadian gay activist Jim Egan and Maclean's journalist Sidney Katz decided to kick-start a revolution [1]. Katz's two-part article "The Homosexual Next Door: A Sober Appraisal of a New Social Phenomenon," published by Maclean's in February and March of that year [2, 3], was the first positive portrayal of homosexuality to appear in the Canadian mass media [4]. Katz had worked closely with Egan on the milestone article, later recognised as lending critical mass to the nascent Canadian gay liberation movement. In the same year, Canada's first homophile organisation Association for Social Knowledge (ASK) was founded [5], and the gay community magazines *Two* and *Gay* were launched in Toronto [6].

There are various comprehensive accounts of the history of the struggle for LGBTQ (lesbian, gay, bisexual, transgender, queer/questioning) equality in Canada [7, 8], and the pages of *JCHLA/JABSC* are not the place to provide a further one. Indeed, readers of this article might be asking themselves what connection there is between Canadian gay activism and Canadian health librarianship. Our answer: because of a history of stigma and discrimination that may discourage them from accessing library services, LGBTQ health information seekers frequently have different information-seeking behaviours from their heterosexual peers. This includes LGBTQ health professionals [9, 10]. In our view, it is impossible to understand these differences in information-seeking behaviour, or to respond appropriately, without understanding the corresponding history of discrimination that many LGBTQ people have experienced.

The current context for LGBTQ people, with dramatic improvements in civil rights and in public opinion, would be unimaginable to an LGBTQ person from 1964. However, many challenges remain such as ongoing workplace discrimination [11] and barriers to healthcare [12]. Here, we argue that the time has come for medical librarianship to engage more fully with the area of LGBTQ health and with potential LGBTQ users through visible demonstrations of support, the development of specialized training, and through the broadening of the evidence base for this area of our profession.

A brief overview of LGBTQ health information from a Canadian perspective

Canadians have played a pioneering role in the study of the health information needs of LGBTQ people, focussing largely on consumer health information to members of the public. After an early bibliography of the AIDS crisis [13], Creelman and Harris [14] were the first to research the information needs of nonheterosexual people, specifically lesbians living in Toronto. Joyce and Schrader's [15] subsequent examination of gay men's perceptions of the library system in Edmonton is another early example of its kind. Participants in both studies cited the library as their top source for information on health and coming out, but also complained of a negative impression of the responsiveness of the library to their particular needs.

It is now well established that various aspects of a person's social identity can strongly influence that person's information-seeking behaviour and (or) use of library services and in many cases can discourage the person from accessing those services. This may be, for example, due to the person's ethnicity [16] or their sexual orientation [17]. Health Canada's 2001 report *Certain Circumstances* [18] noted that even though a good source of LGBTQ health information may be available, cultural or other barriers may prevent users from accessing them. In the case of LGBTQ people, such barriers include a concern that they will experience discrimination, that they will have to out themselves, or that they will experience heteronormative attitudes from a librarian who won't understand their specific information needs. Although many LGBTQ people can rely on the support of their community when negotiating these barriers, it has been recently demonstrated [19] that the same barriers can be more daunting for many men who have sex with men (MSM), who may prefer not to

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associate with the broader LGBTQ community due to an unwillingness to sexually identify as gay, homosexual, or bisexual; this information therefore has a higher "social cost" in the words of the author. Such people may therefore have only limited sources of information that they trust. A 2008 study into the information needs of Torontonians living with HIV/AIDS [20] demonstrates that people tend to seek information from sources they personally trust such as interpersonal sources and particularly from people who are like themselves.

The rise in electronic sources of information, and a lack of a physical location with a support network where LGBTQ people can talk about their personal concerns such as health, results in many going online to find information about different aspects of their health [21] or as a source of support that may be lacking at home or in their social circles. These networks may assume a long-term significance in the lives of LGBTQ people. However, as librarians are aware well beyond the confines of health librarianship, such online information seeking can be potentially problematic due to difficulties both in locating unbiased information and in adopting a critical attitude towards such information. A particularly pertinent example at the time of writing is pre-exposure prophylaxis (PrEP), a way for HIV-negative people to reduce their risk of infection by taking anti-HIV drugs on a regular basis. Although a favourable consensus on the use of PrEP is now rapidly developing within the LGBTQ community, it has been the subject of significant and often heated debate. Online information has been produced both by passionate PrEP advocates and by those who question whether PrEP is a responsible choice compared with condom use; as is common in such cases it can be difficult for many to locate reliable, neutral information without guidance.

The importance of libraries and librarians in the provision of consumer health information to LGBTQ people has long been recognised. During the early days of the AIDS crisis, J. Ingrid Lesley [22] made the following powerful observation:

> What can libraries do? The heart of the question is this: Can libraries and librarians save lives? We believe so, because today, and quite possibly for many years to come, the only prevention for AIDS is information. Not to supply information, steadily, openly, daily to all library patrons, children as well as adults, is tantamount to withholding the only vaccine available for AIDS.

However, despite the acknowledged importance of libraries in health information work and the existence of research into the use of library services by LGBTQ people, there is a very definite lack of scholarship regarding the LGBTQ population within health librarianship. We are aware of only three articles, written in the early 2000s, that aimed to cultivate awareness amongst health librarians about the unique health information needs of LGBTQ people and the challenges a health librarian might face in addressing these needs. Only one goes beyond consumer health to examine the information seeking of Canadian and American LGBTQ health professionals [9]. Flemming and Sullivant [23] discussed the availability of online guides for LGBTQ people at the start of the 21st century—we question whether such guides would have been practical for many patrons due to limited Internet access and the high cost of computer equipment at the time. The third discusses the politics and stigmatisation often related to being out as LGBTQ and the unique health challenges associated with their sexual orientation [24].

A manifesto for Canadian LGBTQ health librarianship

What can medical librarians do to demonstrate cultural competence and an openness and comfort with questions around LGBTQ health? In our view, the first step is to understand that despite the dramatically improved attitudes and civil rights now experienced by LGBTQ people in Canada, the struggle for LGBTQ equality is in fact far from over; many LGBTQ people continue to experience discrimination in their daily lives. This therefore has a significant impact on their information-seeking behaviour (i.e., the social cost). Within the context of healthcare, discrimination ranges from frequent and difficult to prove microaggressions to aggressive heteronormativity and systemic discrimination [25]. Some current examples include the refusal of Canadian Blood Services and Héma Québec to accept blood donations from men who have had sex with other men within the last five years [26], and the experiences of two-spirited people and transgender people of colour, who are not only at higher risk of violence [27, 28] but who also disproportionately experience discrimination and oppression when seeking healthcare [29, 30].

It has now been well demonstrated that these life experiences influence the decision of many LGBTQ people to seek healthcare from an LGBTQ health professional as they are considered to be very much less likely to behave in a discriminating or stigmatising way [31]. Fikar and Keith's research in 2004 [9], and a follow-up study conducted by one of the authors in 2014 [10], demonstrated that for similar reasons LGBTQ health professionals are considerably more likely to seek LGBTQ health information from a medical librarian who is also LGBTQ. With an understanding of this context, it becomes clear that anything medical libraries and librarians can do to demonstrate that they will welcome questions around LGBTQ health with understanding and without discrimination will be a step forward.

Medical librarians very much need options for training, which are currently lacking. We believe that the best way to develop this would be in collaboration with interested health professionals, perhaps through the modification of existing training already available to clinicians. Such training should cover the often complex language around sexual orientation and gender identity, an understanding of which is vital both in the framing of search strategies and in developing the rapport with the enquirer which is at the heart of every successful reference interview. Such training could take the form of Continuing Education modules at future Canadian Health Libraries Association/Association des bibliothèques de la santé du Canada (CHLA/ABSC) conferences, and it could also form part of the Medical

Library Association's Academy of Health Information Professionals (AHIP) program.

Respondents to both Fikar and Keith's study [9], and to that conducted by one of the authors [10], highlighted the strong desire for potential LGBTQ patrons of medical libraries to see visible signs the library is willing to engage with the area of LGBTQ health. We would like to see more medical libraries, both academic and hospital, develop publicly visible tools such as subject guides, display signs of support on the library website, and promote links to LGBTQ health literature and resources. Opportunities also exist to work with interested organisations, such as university Queer/LGBTQ support groups, who are usually very willing to help partners raise LGBTQ awareness in their workplaces; this then serves to benefit the entire university and broader community.

Finally, we would like to see CHLA/ABSC have a significant role in the development of this emerging specialization in health librarianship. An excellent way to achieve this would be through the establishment of a new special interest group, comparable to the MLA's LGBTQ group, which would act as a network for discussing the issues facing LGBTQ patrons. This could be a space for producing social networks to gather feedback from LGBTQ and non-LGBTQ librarians. We would also welcome a special edition of *JCHLA/JABSC* on LGBTQ health information, similar to its past and very successful edition on Aboriginal health. This would encourage further research and program descriptions in an area which very much needs this, and could also serve as an introduction the current context of LGBTQ health information.

At a time when medical research into the specific health needs of LGBTQ people is increasing rapidly, we believe that health librarianship finds itself at an exciting crossroads. At the MLA/CHLA Mosaic/Mosaïque conference this coming May, we will be holding a special panel discussion comprised of medical librarians interested in exploring this emerging area of the profession, in developing training and awareness tools for interested colleagues, and in collaborating on increasing the evidence base available to interested health librarians. All of these are necessary steps to ensure that health librarianship fully serves its LGBTQ patrons and all those who seek unbiased LGBTQ health information.

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BOOK REVIEW / CRITIQUE DE LIVRE

The Accidental Data Scientist: Big Data Applications and Opportunities for Librarians and Information Professionals. Amy Affelt 2015. 240 pp. Softbound. ISBN 978-1-57387-511-0. Regular Price USD$39.50. Available from: http://books.infotoday.com/books/Accidental-Data-Scientist.shtml#ixzz3x3c0RH00.

Data has become a hot topic in librarianship; conference meeting schedules are packed with presentations about data, articles and books are published about data at a rapidly increasing rate, and career opportunities for data librarians are becoming more common. As data becomes more popular, many librarians have been quick to respond to prove they have the skills necessary to be relevant in this area. One example of this is Amy Affelt's book *The Accidental Data Scientist.* Affelt is the Director of Database Research Worldwide at Compass Lexecon, a global economic consultancy. She writes and speaks frequently about "big data" in corporate contexts. This book takes a corporate approach to librarianship and data, explains the wide variety of tools that can be used in data science, and provides examples of working with data in industry settings to establish the librarian skill set as one well suited to this area.

As an academic health sciences librarian who provides data management education, develops data discovery tools, and collaborates on data projects with basic science and clinical researchers, I can attest that although *The Accidental Data Scientist* may be applicable to corporate librarianship, it does not translate well to an academic health sciences research setting.

Throughout the book Affelt outlines scenarios where librarians locate data for big companies and corporate firms to target advertising markets. For example, to establish librarians as "21st Century Librarians" working with data, Affelt highlights the skills of librarians as search experts, stating it is the librarian's responsibility to find external data for corporate stakeholders. For reference, external data can be defined as any public dataset that is available for free, via license, or for purchase (e.g., Canadian Census, Canadian Community Health Survey). Affelt claims it is the librarian's job to "determine which data is the best fit for a project" (p. 146), and to assess the "accuracy, consistency, reliability, completeness, timeliness, reason and validity" (p. 130) of this external data. This approach is hugely problematic in a biomedical environment. First, Affelt assumes that data analysis is a traditional skill of librarians, but these skills are really more aligned with the work of data analysts and statisticians. Second, librarians traditionally do not have the expertise to determine which datasets are most appropriate for analysis or use. This task should be left to the researchers, who are the experts in their field. To give an example from the health sciences, population health researchers use external datasets such as the census or national health surveys to identify populations and evaluate health outcomes. In this scenario, a population health researcher is far more knowledgeable about their research than a librarian would be and, therefore, more capable of making decisions about selecting relevant external data.

My concern is reaffirmed in a feature interview from the book with Kimberley Silk, a Data Librarian at the University of Toronto. Silk agrees that in her work it is best to leave the analysis and decision-making about what data to use up to the experts on her team. For health sciences librarians, we are more than capable of supporting the discovery of external data by pointing researchers to data sources such as Canada's Open Data Portal or building discovery tools for specific communities to find external datasets [1], but it is not our place to analyze data or decide what data is valuable, unless we have the subject expertise and authority to do so.

Due to the corporate nature of the book, Affelt also omits the topic of research data—data that is created, collected, or observed to produce original research results [2]. In biomedical research, research data can take the form of biospecimens, video recordings, images, software programs, algorithms, and even paper lab notebooks. It is during the collection of these types of data that health sciences librarians can play a significant role in managing that data. The omission of data management in *The Accidental Data Scientist* is surprising considering Affelt's goal is to prove the librarian's skill set is suited to data-specific professions. Librarians play a key role in information management on a regular basis; we make information discoverable, accessible, and understandable. This role is no different when it comes to managing research data and making it available to others. Our expertise in organizing information, assigning metadata, and providing access to information can all be applied to research data. To learn more about the role of libraries and research data management in the context of the health sciences, I recommend two valuable resources: *Research data management* [3] and *Research data management and the health sciences librarian* [4]; they provide a high-level overview of the role librarians can play in data management and highlight common issues biomedical researchers face when collecting data.

Finally, Affelt's liberal use of the buzzword "big data" is something I take issue with. The world of data is plagued with jargon that serves to obscure the discipline, rather than clarify it. Affelt acknowledges this fact, yet perpetuates the confusion by discussing big data's "many definitions" using examples from a historical search of the phrase in mainstream media. Examples of mainstream media's interpretations of big data include everything from social media data to smartphone data to financial market data. These examples are problematic because they do not explain why these types of data are considered big. Social media and smartphone data, for example, are not defined by their

"bigness"—this data can also be collected and analyzed in small quantities. My problem with Affelt's approach is that she never defines big data on her own terms, instead settling on a definition supplied by the Oxford English Dictionary even after devoting an entire chapter to its many interpretations. Without a clear definition of big data, Affelt does not lay the necessary groundwork to help the reader fully understand its meaning in the book's subsequent chapters.

The point that could have been made in the *The Accidental Data Scientist* is that data can come in many sizes: big or small. In the health sciences, a researcher could collect and analyze data from thousands of patients across multiple institutions or, conversely, produce a few spreadsheets of demographic data from a small cohort of study participants. Regardless of the size and type of data in the research environment, the term big data does not add value to the conversation. Speaking from personal experience, eliminating jargon when speaking with physicians and researchers about their data is the first step toward gaining credibility with them. Health sciences librarians should treat all the data they encounter as part of their work as simply that—data—and focus on their skills as information organizers, managers, and sharers when working in a data-driven environment.

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BOOK REVIEW / CRITIQUE DE LIVRE

Mobile Technologies for Every Library. Ann W. Gleason. Lanham, MD: Rowman and Littlefield; 2015. Softcover: 129 p. Price: USD$55. ISBN# 978-1-4422-4892-2. Available from: https://rowman.com/ISBN/9781442248915/Mobile-Technologies-for-Every-Library.

Mobile Technologies for Every Library provides an overview of mobile technologies for use with library resources and services, as well as in library operations. Mobile technologies have grown both in usage and capability over the past decade. Today, more internet traffic comes from mobile devices in Canada and the United States than from desktop computers, according to the comScore *Global Mobile Report* 2015. As mobile technology use increases, libraries have begun using these technologies to provide access to resources and services to mobile users. Libraries have also taken advantage of the new capabilities provided by mobile technologies, such as providing reference services via text message or a mobile-optimized website live chat.

In recent years, there have been a number of books published on the topic of mobile technologies in libraries, including *The Handheld Library: Mobile Technology and the Librarian* by Peters and Bell and *Using Mobile Technology to Deliver Library Services: A handbook* by Walsh. *Mobile Technologies for Every Library* provides some of the same content as other books on the topic, but also provides unique content specifically for health sciences libraries. With previous experience as the Associate Director of Resources and Systems and Head of Computer Systems at the University of Washington Health Sciences Library, Gleason has much experience with mobile and other technologies to inform her book.

The book includes 10 chapters and starts off by providing the reader with background information on the history of mobile technologies and an overview of mobile devices. Gleason goes on to cover topics such as making websites mobile friendly, and using mobile technologies in education, library instruction, and outreach. She finishes off by discussing the future of mobile technologies in her final chapter.

Gleason takes a health sciences library focus, which is expected given her background in health sciences libraries and that this is a Medical Library Association book. She draws on her experience at the University of Washington Health Sciences Library when discussing a number of programs, including "a pilot project to explore the use of tablet computers in the library" (p. 51). She also refers to resources from organizations such as the American Library Association and provides examples of programs from a variety of academic and public libraries, including Boston University, making the book relevant to other libraries.

This book is written for varying levels of experience with mobile technologies and the web. Gleason makes the effort not to assume previous knowledge or experience. For example, she explains how to move apps on an iPhone or iPad, something that would be familiar to most, but not all, readers. At the same time, she references best practice guidelines in designing mobile apps, research studies on online education, and numerous library outreach initiatives that would be of interest to those with previous knowledge and experience.

Gleason provides a fair amount of detail without overwhelming the reader. At the end of each chapter, she includes citations, as well as suggested resources and further reading, so as to maintain the flow of her writing within the chapter. She provides many examples from the library and information science, education, and health sciences literature throughout the book. In particular, in the chapter "Using Mobile Technology in Education," she delves into the benefits, barriers, and drawbacks of online education. Given the barriers and drawbacks that she mentions, I would have appreciated a more thorough discussion of when it is beneficial and advisable to engage in online education.

I was surprised to open the book and find it text heavy with only a handful of black and white graphics. Given the content of the book, I was expecting a presentation similar to Steve Krug's classic *Don't Make Me Think* with the text broken up by lots of colour graphics. The use of more photos, illustrations, and screenshots would have aided in explaining some very visual topics, such as mobile website layout, and helped to better carry the reader's attention. The charts in the first few chapters are difficult to read in grayscale.

I would recommend this book to anyone interested in improving or expanding the use of mobile technologies in their library. I already have one of the chapters flagged to share with my colleagues!

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PRODUCT REVIEW / CRITIQUE

Quetzal®

Product: Quetzal® Biomedical Search Engine—Basic, Professional, and Advanced versions.

Purpose: Web-based search engine designed to access the contents of PubMed and other health information sources with improved relevance.

URL: https://www.quetzal-search.info/.

Intended audience: Students, healthcare professionals, and biomedical researchers; target users vary depending on version.

Bottom line: The search results from the free version of Quetzal® Basic offer improved relevance over the results from similar searches in PubMed, but most of the helpful filtering and advanced features are only available through the subscription versions: Professional and Advanced. These features and the improved linguistic recognition of the search algorithm could make the cost worthwhile for researchers in areas of genetics and some of the bench science fields who are frustrated with the limitations of traditional search interfaces. The meta-search function retrieving results from more sources and the innovative filtering options of the subscription versions are unlikely to offset the expense for more experienced searchers who have the skills to optimize the functions and performance of existing database interfaces.

Review

Purpose

Clinical users of PubMed frequently comment that with either too few or too many results, they often get frustrated searching the literature. Quetzal® (v5.0.1, Quertle, Henderson, NV, http://www.quertle.com/) is a relative newcomer to the world of biomedical evidence search interfaces and aims to ease the searching woes of biomedical and health sciences professionals.

Product description

The search interface comes in various iterations: Basic (free), Professional ($9.90USD/month or $99USD/year), and Advanced ($99USD/month or $990USD/year). Registration of a personal account is required for all levels and users must log in to search. This review mainly covers the Basic version and refers to the functions of the subscription versions as appropriate. Quetzal® accesses the content of MEDLINE/PubMed licensed from the National Library of Medicine. In addition, results from other sources of biomedical and health services evidence, including patents, guidelines, grants, and TOXLINE entries, are retrieved through the subscription versions. Quetzal® searches the content with a patent pending search algorithm, Quantum Logic Linguistic™. Named after a colourful bird from South America to whom the Mayan and Aztec people attributed the delivery of wisdom, the goal of this product is to increase the relevance of the results and rank them more effectively for the user.

Intended audience and access

Quetzal® is designed for students, professionals, and researchers in health sciences and biomedicine. The versions are directed to various needs; Basic may suit infrequent searchers and junior learners, whereas clinical staff would be best served by the Professional level. Advanced is designed for the most sophisticated users who would want the breadth of coverage and features. For details on included features and functions see Figure 1.

The examples and demonstrations imply bench sciences as the target users; genetics, chemistry, and biochemistry are heavily featured and the developers come from molecular biology and toxicology backgrounds. Though the description claims the Advanced option is appropriate for information professionals, the benefits may not be as meaningful for expert searchers, as noted below.

Subscription prices are only provided for individuals, though an option for institutional licensing is available, with very general pricing parameters described on the website. Affiliation is confirmed via IP address, so access would be restricted to on-site only. This type of institutional access ignores the fact that affiliated users are likely to be working from home or off-site laboratories and research centres. There is no indication of remote authentication for institutional subscriptions.

Features

As noted in Figure 1, features and functions depend on version; the free Basic version has few search functions other than the underlying search algorithm and the Power Term™ that allows prefiltering of results by topic domain or class. The display includes two options for sorting (by relevance or date). An interesting feature is the Broader or Focused Results tabs (Figure 2), though it is unclear how these are determined.

The Professional and Advanced versions include features for limiting results, exporting citations, and saving searches, as well as a Journal Club option that allows private conversations (with encryption). Some of the subscription features that would be especially helpful for reducing nonrelevant results are the negative statement and key concept filters, access to and searching within (Advanced only) the full text of documents, and the ability to connect the citations to an institution's library subscriptions.

Platform and compatibility

Quetzal® is a web-based search interface that does not require any downloads. Quertle also has a licensable application program interface (API) and will consider partnerships to embed the API search functions. The Professional and

Fig. 1 Quetzal® features and version comparison.

Version Comparison		Quetzal® Basic	Quetzal® Professional	Quetzal® Advanced
Content Sources	PubMed	✓	✓	✓
	NIH Grant Applications	✗	✓	✓
	TOXLINE(RISKLINE & NTIS)	✗	✓	✓
	Biomedical News	✗	✓	✓
	PubMed Central Full-text	✗	✗	✓
	US Patents (Grants & Applications)	✗	✗	✓
	AHRQ Treatment Protocols	✗	✗	✓
	Full-text Search	✗	✗	✓
Search Technology	Quantum Logic Linguistic™ technology	✓	✓	✓
	Relevant results, not long lists you have to struggle through	✓	✓	✓
	Power Term™ category queries	✓	✓	✓
	Affiliation Searching	✗	✓	✓
Filtering	Publication Date	✓	✓	✓
	Publication Type	✓	✓	✓
	Also Containing	✗	✓	✓
	Not Containing	✗	✓	✓
	Key Concepts	✗	✓	✓
	Negative Statement - Show Only - Exclude	✗	✗	✓
Sharing & Communication	Direct link to your library subscriptions (when available)	✗	✓	✓
	Direct access to PDFs for most open access articles	✗	✓	✓
	Direct access to PDFs for patents	✗	✗	✓
	Save searches	✗	✓	✓
	Automatic email alerts	✗	✓	✓
	Journal Clubs (Private Discussions)	✗	✓	✓
	Export Results - Reference manager - Spreadsheet	✗	✓	✓
Security	Secure SSL Interface	✗	✓	✓
	Encryption of - Search History - Personal Notes - Journal Clubs	—	✓	✓
Cost (Individual Users)	Free Access	✓	-	-
	Ad free	✗	✓	✓
	Monthly Subscription	-	$9.90	$99

Advanced versions can export results using the RIS standardized file format for citations and the page may be harvested by Zotero's direct export.The system will work with library link resolvers for institutional subscriptions.

Comparison with similar products

The most obvious comparator products would be other MEDLINE search interfaces, particularly PubMed and OVID MEDLINE. Quetzal® results for test searches

Fig. 2. Search and results display: Focused and Broader tabs.

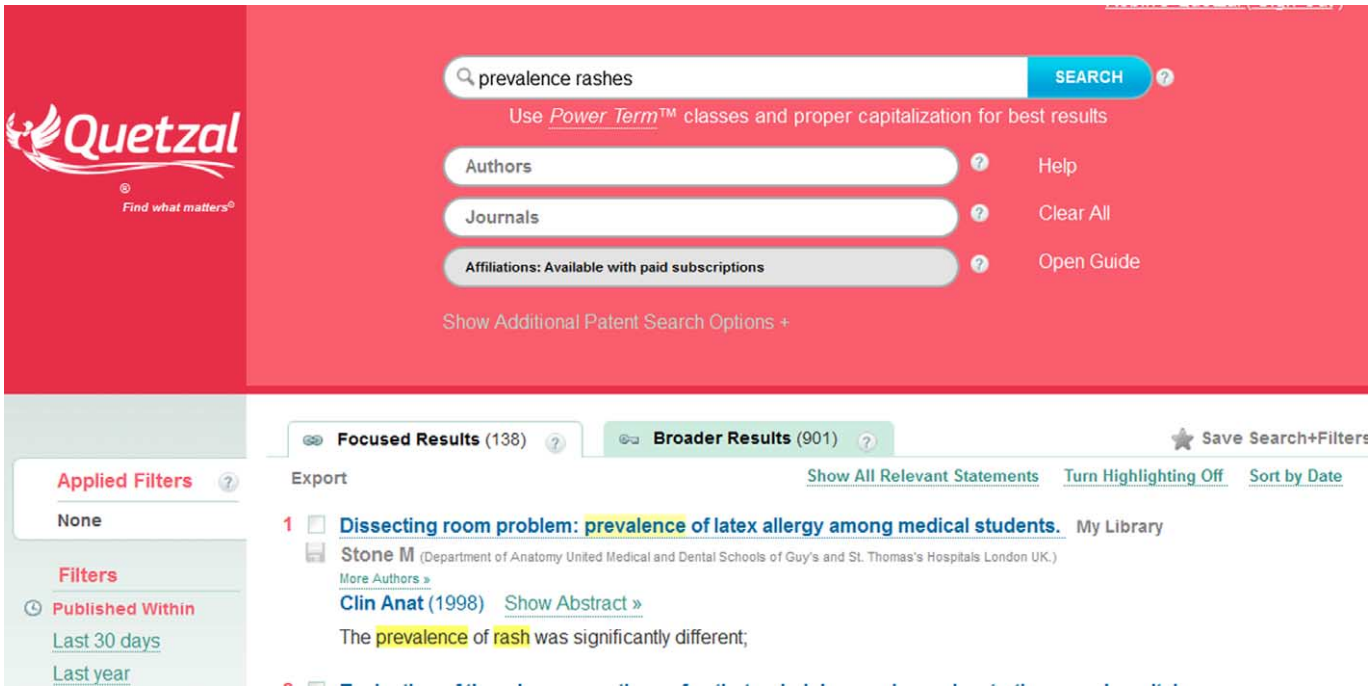
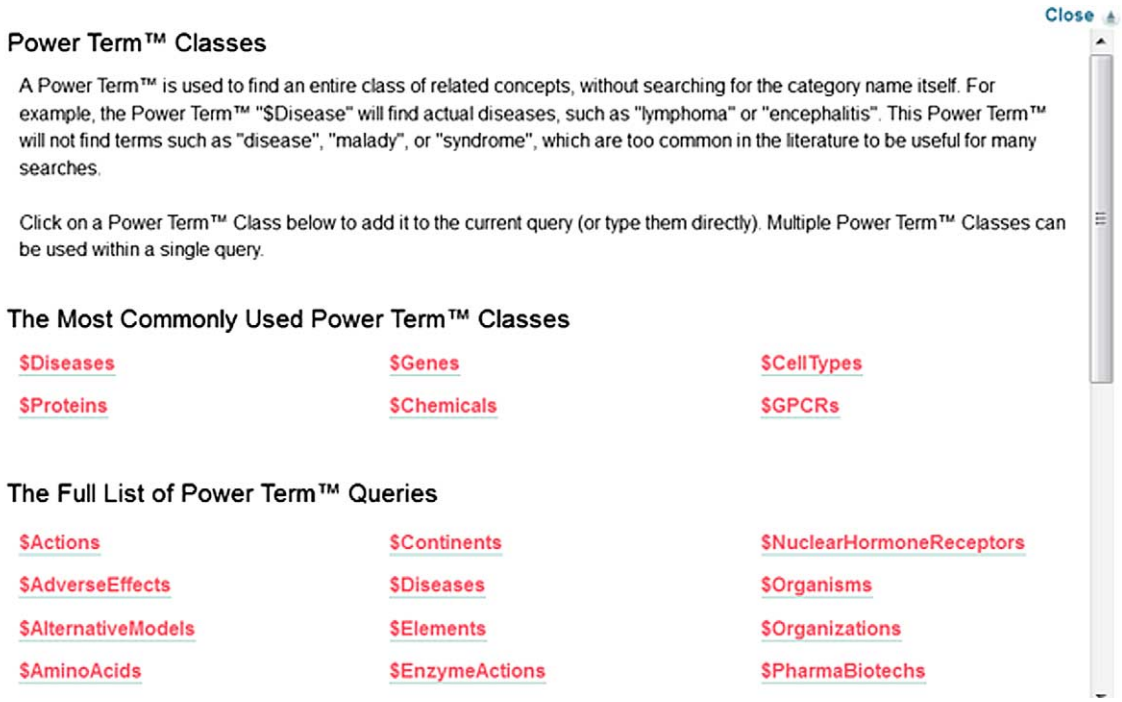


Fig. 3. Power Term™ description and commonly used Classes.



appear to have increased relevance compared with the same search in PubMed, but at the cost of transparency. As noted, the free version of Quetzal® lacks many of the functions that are expected of citation databases. No expert user would choose the limited function of the free Quetzal Basic when similar search results could be achieved by applying one's skills to the search functions in traditional databases. The meta-search function of the

Fig. 4. Results display: Highlighting.

MAIN OUTCOME MEASURES Use of *CAMs* for *VMS* and other menopausal symptoms (eg, arthralgia, depression and sleep disturbance), assessed using the Menopause-Specific Quality of Life questionnaire.

Matched in Text: evening primrose oil, treatment.

paid versions resembles that of the Turning Research into Practice (TRIP) database. TRIP recently reversed the decision to require users to login to access the search and filter functions based on user feedback since searchers, especially clinicians, strongly resist additional barriers to access. Quetzal® may receive similar push-back on this feature. In other ways, the filter by evidence type and coverage of guidelines and grey literature sources resembles TRIP.

Strengths

1. Integrated meta-search and filter options facilitates the identification of grey literature sources and other types of evidence.
2. The additional sources and search functions in the subscription versions appear to add useful types of evidence and ways to filter the results.
3. The capture of chemistry and genetic acronyms is improved, including traditional "stop words" such as NO (nitrous oxide).
4. The recognition of verbs in search strings improves relevance of results for background questions such as "sugar causes what?".
5. The use of Power Terms™ such as $Diseases or $Genes helps retrieve particular classes of evidence. Other examples can be found in Figure 3.
6. Developers appear responsive to user feedback and have made continuous improvements since releasing the search interface.
7. The context in which search terms appear in retrieved citations is highlighted (Figure 4).

Weaknesses

1. A login is required.
2. The display does not include month of publication.
3. Very few essential features are available in the free basic version, including: linkout function, exporting and saving options, advanced searching and most filtering functions, and access to full-text articles (not even open access or Pubmed Central articles).
4. The Advanced version is expensive ($990 USD/year for individuals) and is the only version to include all evidence sources and the more innovative Negative Statement filter option as well as other advanced features.
5. The recommended search approach is neither a natural language strategy, such as that used by Google, nor one based on Boolean operators (AND, OR), so users would need to get accustomed to a different search strategy that includes the Power Term™ syntax and strings of terms with no operators between them.
6. There is a lack of transparency regarding how the results are retrieved and ranked.

Conclusions

Although the relevance and filtering of the Quetzal® search results show promise, the restriction of these features to the fee-based versions makes a final appraisal challenging and ultimately limits access. Institutions or individuals in the current resource environment are unlikely to pay for another interface to search freely available health information. Organizations with information specialists to deliver training or conduct searches on existing databases would see even less added value from the investment. However, this product may be the perfect solution for a research institute without access to expert searchers and with limited time for training. The features and functions of the Professional and especially the Advanced versions may be ideal for cancer or genetics researchers needing highly relevant returns with low tolerance for the risk of missing important papers.

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PRODUCT REVIEW / CRITIQUE

Read by QxMD

Product: Read by QxMD.

Purpose: A mobile and web application (app) designed to bring personalized content to your device, making it easier to keep up to date with the latest medical research in your field.

URL: https://www.readbyqxmd.com.

Platform: Android, iPhone, iPad, web.

Intended audience: Healthcare professionals, residents, students.

Product description: Read by QxMD (Read) is a free app and web service that functions like a personalized current awareness service, used to quickly discover and access new research. Content personalization happens on two levels. Firstly, Read is interfaced with PubMed; new research is filtered based on selected keywords or journals, and is then "pushed" to the user in what looks like a personalized digital journal. Secondly, featured articles identified by algorithms are brought to your attention. Read aims to improve practice by providing healthcare professionals with a personalized experience connecting them to the latest medical literature as quickly as possible, while reducing information overload.

Cost and subscription: Read is free to download. You can create an account or sign in with Facebook. To access full text articles, you enter information for proxy access to your institutional library. An institutional premium edition is available for medical libraries and health organizations [1].

Main features

Follow journals

Read lets you select journals you want to follow. When following a journal, you are notified as soon as new content is added. New journals are integrated into Read regularly and journal preferences can be edited at any time.

Follow keywords

You can add simple terms or build more complex queries using Boolean operators, parentheses, phrase searching with quotes, truncation, or combining all of the above. You are notified when new articles containing the search terms become available.

Follow article collections

For each collection, you can view authors, number of papers, and how many followers each collection has. Collections are put together by QxMD and by individual users. Collection examples include: Essential Surgical Knowledge, Choosing Wisely, etc. You are able to view collection creators' profiles, professions, specialties, and institutions. You can also access other collections by the same creator or read their comments. Following collections can help discover content outside your usual sources.

Discover featured papers

Featured Papers is the key automatically personalized content option offered by Read. Articles are selected using algorithms with the claim "we think we can pick what people want to read" [2].

Be notified

Be notified by email or push notification alerts when new content becomes available (in print or digitally ahead of print). Notifications settings can be edited at any time.

Access full text articles

This is a feature Read is very proud of—being able to get full text articles with one tap via institutional subscriptions, or for free for open access articles. View all abstracts from subscription-based and open access journals, even if you do not have institutional access.

Annotate and collect your favourite articles

Full text articles can be annotated; you can highlight, underline, and take notes. Once annotated, the articles are saved to your list of favourites (the annotations are saved on your device). You can organize favourites in collections (Figure 1). Personal collections can be "published" to share with the Read community.

Read offline

Full text articles marked as favourites are saved on your device and are accessible for reading offline. In terms of storage space, an article of average length with colour figures will take up approximately 20MB.

Search PubMed

Read allows you to search MEDLINE via PubMed (Figure 2). Search results are personalized and can be sorted by relevance or by date.

Share

Articles can be shared on email, twitter, or Facebook.

Integration

Automatic one-tap access to full text PDFs is available for many universities and hospitals.

Privacy Policy

QxMD uses the personal information you provide when signing-up to personalize the delivered content. This information is also used to target advertising from third parties or for research purposes. Generally, advertisers will not have access to personally identifiable information. QxMD reserves the right to change its Privacy Policy at any time.

Fig. 1. Read offers an easy way to organize and save your personal collections.

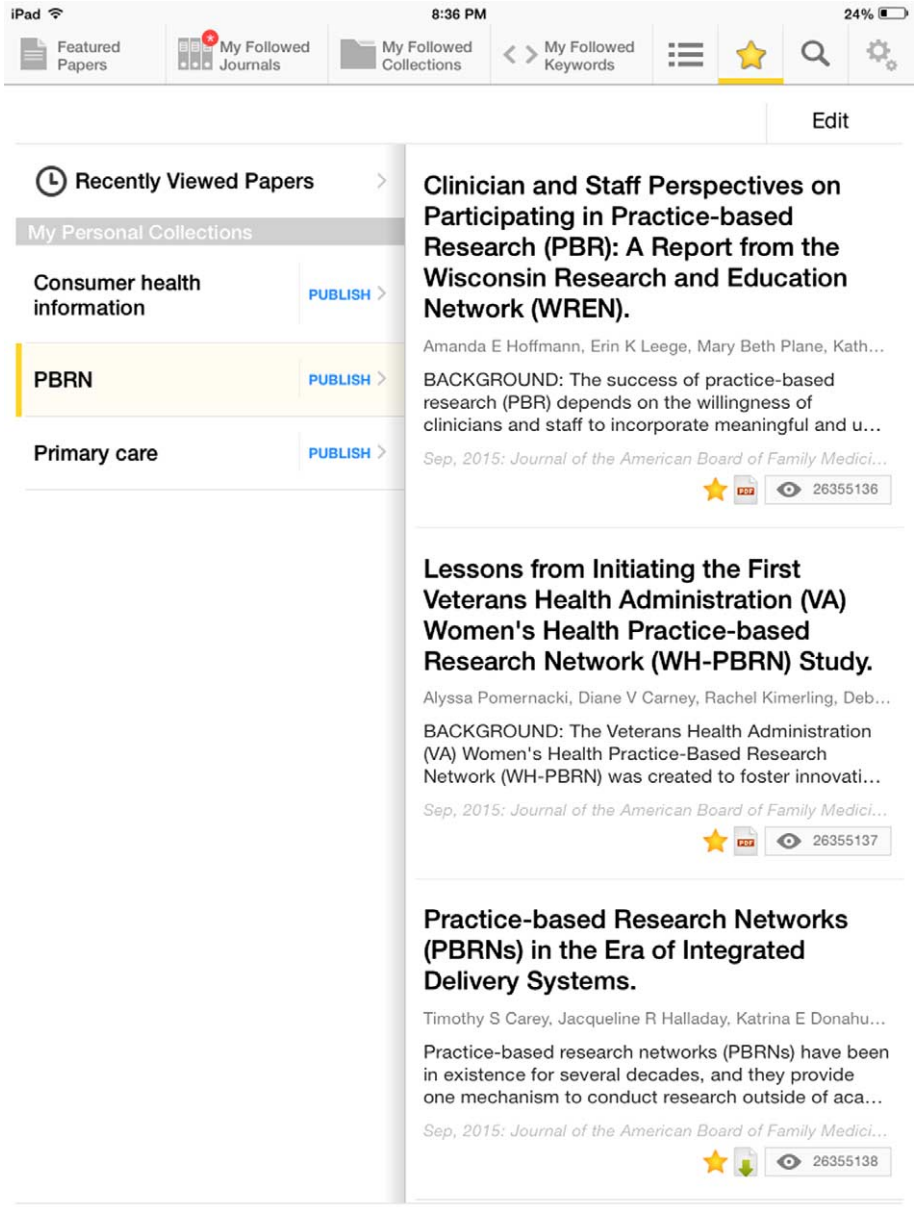


Fig. 2. Read's simple search box promising personalized results.

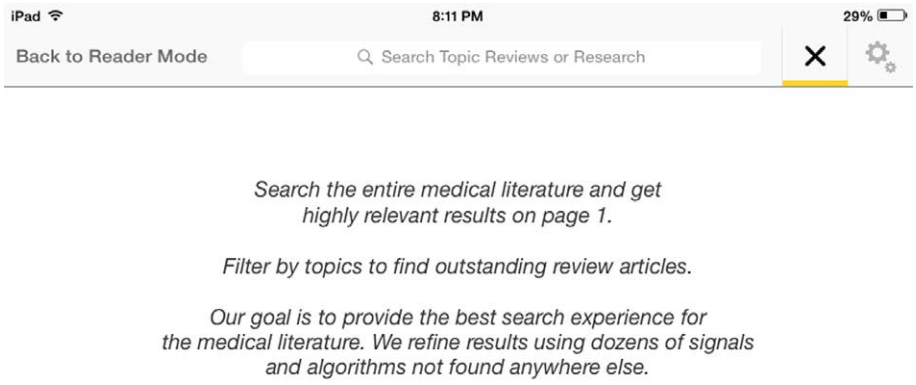
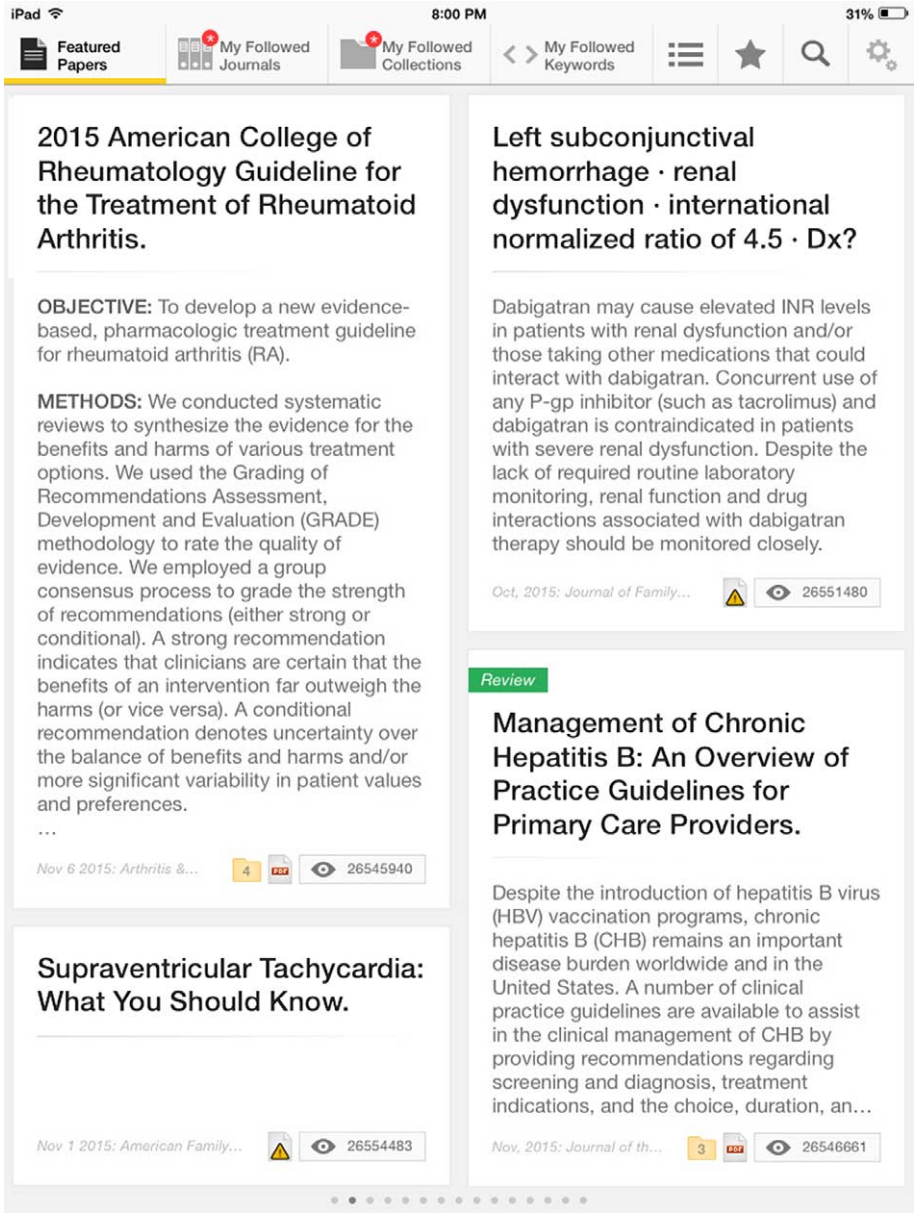


Fig. 3. Read's interface providing a personalized digital journal experience.



Strengths

Read's interface is clean and intuitive (Figure 3). You can quickly go through articles by scanning titles, authors, abstracts, journals, and publication dates. In addition, articles have labels such as reviews, editorials, RCTs. Read offers an easy way to follow journals, keywords, or collections, helping you to avoid missing relevant publications.

One tap is enough to access full text downloads via institutional proxy.

You can annotate PDFs and save collections of articles on your device for offline reading.

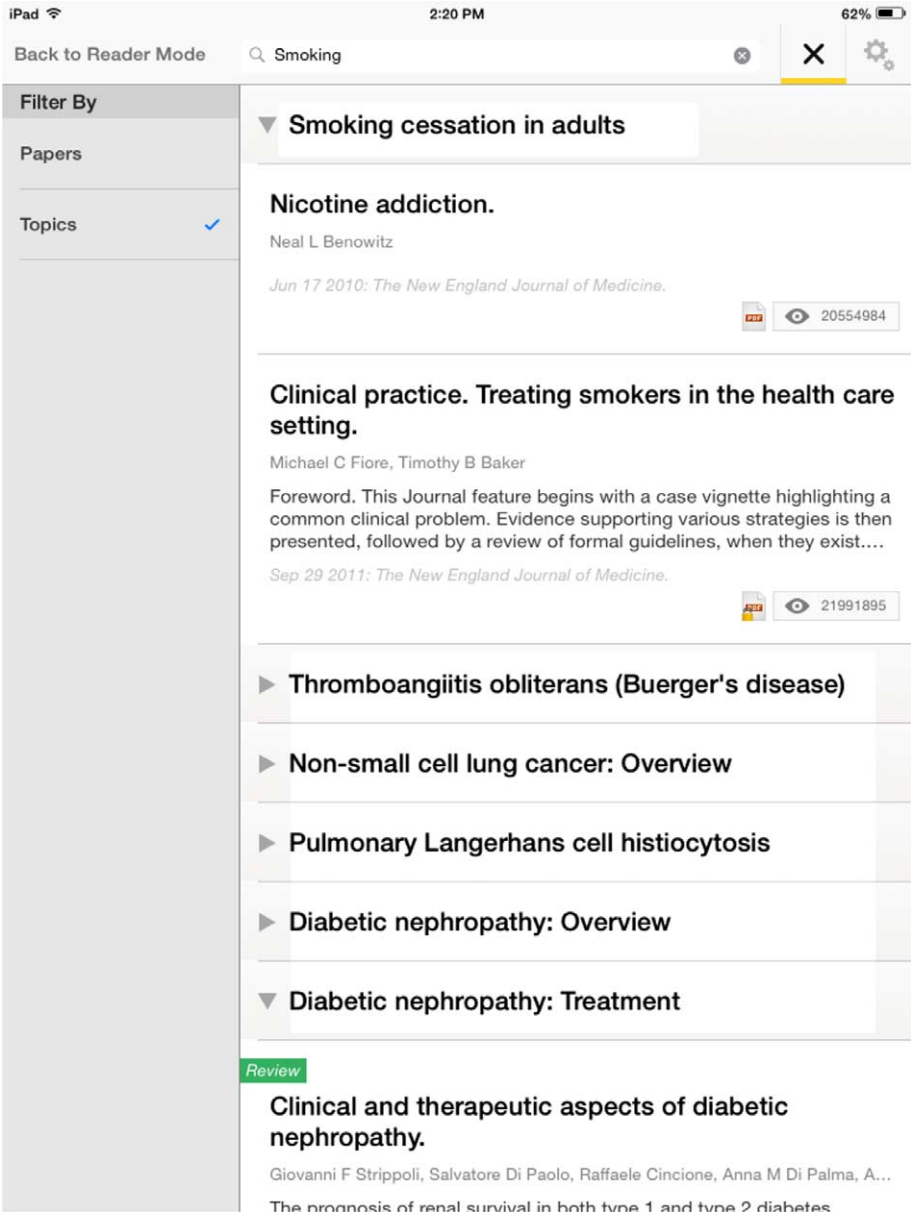
Read values social presence, making it possible to share and see what others are reading and saying about articles.

Weakneses

Although Read claims to be better than PubMed in terms of personalization, the search engine retrieves variable results (Figure 4). Owing to the personalization of search results, you may miss relevant articles.

Annotations are not synced with your account and are saved only on the device on which you made them. At the time of this review, annotation tools were not available on iPhone or on the web.

Fig. 4. Search results personalized by an algorithm.



This is meant to be a point-of-care tool for practicing health professionals. However, the volume of articles to scan remains high.

Conclusions

Read is a great app for browsing articles and following research trends. It provides one centralized place to discover abstracts with the possibility to annotate and save relevant papers in collections. It is easy to move between collections and open the desired paper with one tap. The collections are available across your devices, but the full text or annotations are not. Read does not always function consistently on iPad, iPhone, and the web. The app's best performance is on the tablet. Read is not a great searching tool; search results are not always reliable across devices and you may not want search results personalized by an algorithm. Finally, the volume of articles to scan is still high, and the evidence is not synthesized or pre-appraised, begging the question as to whether research articles are the best format to improve practice at the bedside.

Comparable apps

Similar medical apps designed to facilitate staying up to date with the latest literature are Docphin (https://www.docphin.com), Browzine (http://thirdiron.com), and DocNews (http://docnewsapp.com). Information on how Read compares with them is available at http://www.imedicalapps.com/2015/02/best-medical-apps-literature [3].

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