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Working towards the informationist

Kathleen B. Oliver and Nancy K. Roderer

Current information is a critical component of good healthcare. In this article we offer a definition of a new health professional, the ‘informationist’, whose function it is to ensure evidence-based health practice. We describe the literature and discussions that led to the proposal of this new role, and offer a description of the steps being taken to further elaborate this career. In particular, we describe efforts at Johns Hopkins to train informationists and informaticists and to offer services that lead to the integration of these and other information professionals into clinical care, public health and research.

Keywords

health sciences informatics, informationist, information services, interprofessional relations, librarians, professional role

Introduction

Current information is a critical component of good healthcare. In this article we offer a definition of a new health professional, the ‘informationist’, whose function it is to ensure evidence-based health practice. We describe the literature and discussions that led to the proposal of this new role, and offer a description of the steps being taken to further elaborate this career. In particular, we describe efforts at Johns Hopkins to train informationists and informaticists and to offer services that lead to the integration of these and other information professionals into clinical care, public health and research.

What is an informationist?

Over 30 years ago, Gertrude Lamb published an article that pointed to the gap that can exist between the published clinical literature and the knowledge that individual physicians bring to bear on a patient’s care [1, 2]. As a result of her work in this area, she

established the first clinical librarian program at the University of Missouri–Kansas City School of Medicine in 1971. In the 1990s, Nunzia Giuse and her colleagues at Vanderbilt University Medical Center assumed, and continue to hold, a leadership position in re-defining the clinical librarian's role, implementing innovative practice with trauma teams and evaluating progress in meeting their stated goals, including acceptability by clinicians and demonstrated competencies of medical librarians [3–6].

In 2000, Davidoff and Florance [7, 8] expressed concern about inadequate inclusion of new knowledge from the published literature in clinical decision-making, and they called for the development of a new professional to address this gap. They cited four reasons why, in their opinion, physicians do not routinely search the literature: (1) information is dispersed throughout a vast array of journals, textbooks, and monographs, some of which are not indexed; (2) electronic indexing of information is inexact, and the techniques of searching are difficult and not always intuitive to the uninitiated; (3) most physicians do not acquire adequate library skills or data searching techniques during their training, and those skills that are learned are forgotten if not continually honed; and (4) searching for and selecting relevant journal articles can take hours of their precious time. The approach that Davidoff and Florance proposed to address these clinical realities was the development of a 'national program, modeled on the experience of clinical librarianship, to train, credential, and pay for the services of information specialists'. These informationists, as they have been called, would be cross-trained specialists who have specific content knowledge, could provide in-depth information services, and would be uniquely qualified to apply their expertise to domain-specific information problem-solving [9].

The name, the role, and even the need for such information specialists are topics currently under debate in the literature. Whether the informationist is really a new professional category or just a new word for a clinical librarian; whether the informationist can be seen as naturally evolving from the clinical librarian's historical role; and what might be the distinguishing characteristics of the informationist are just some of the questions being put forward [7, 8, 10–18].

Models for the application of evidence-based answers to questions arising in clinical practice have been tested internationally as well. In 2002, Trisha Greenhalgh and colleagues [19] described and compared two models of 'informaticist' service, 'one more academically rigorous with a research component and little personal contact with practitioners and the other based in a general practice and one that took a more flexible, facilitative approach'.

In April 2002, the US National Library of Medicine hosted a national conference to explore the concept of the informationist and to define the informationist's role in both clinical and research contexts [20]. At that conference, biomedical researcher Steven Desiderio MD, one of Welch's Library users, offered his vision of a role for the informationist in basic research. Similarly, Jennifer Lyon of Vanderbilt and others have described roles for this professional in the fields of science and medicine, which, because of advances in genetics, are data-intensive [21].

Less attention has been given to the role of the informationist in the public health setting. There seems to be a growing need for research into roles that combine the unique attributes of public health expertise (e.g. the focus on a population versus an individual as represented by the disease surveillance responsibilities of the CDC, the drive to advance prevention, and the need to evaluate programs and activities) with library and information science and technology expertise. In 2003, Robert Swain and colleagues [22] reported an

early attempt to test a team role for information professionals in public health at a training exercise for bioterrorism preparedness and response at the US Centers for Disease Control and Prevention (CDC). For the training exercise, Swain demonstrated strategies to meet the needs of public health professionals working in the field, with all its associated information retrieval and connectivity challenges.

Steps towards formalizing this career

In fall 2003, the US National Library of Medicine (NLM) announced funding for a new fellowship to train information professionals called 'informationists' [23]. In their request for proposals (RFP), the NLM drew on discussions in the literature and professional forums to define the informationist:

Informationists are information specialists who have received graduate training and practical experience that provides them with disciplinary background both in medical or biological sciences and in information sciences/informatics. Their cross training provides informationists with a unique perspective on the acquisition, synthesis and application of information to problem solving and program development in their chosen area.

Applicant eligibility requirements called for a PhD in a health-related discipline or professional health or information credentials. The RFP requested that applicants design a training curriculum, in partnership with a sponsoring institution, to address needed domain knowledge and meet the cross-training goals of the training fellowship.

Four different types of informationist roles were defined in NLM's request for proposals:

- clinical informationist – to work in healthcare delivery and clinical research
- research informationist – to work in biomedical research, research administration, or scientific curation
- public health informationist – to work in public health at the national, regional or local level
- consumer health informationist – to work with the general public or patients on health information issues.

Training information professionals at Johns Hopkins: defining and building competencies and skills for informaticists and informationists

The informaticist

In 2001 the Johns Hopkins Division of Health Sciences Informatics (DHSI) received funding to offer an NLM informatics training program. This program is designed to train health professionals – nurses, physicians, public health practitioners, basic biomedical researchers, librarians and computer scientists – in an interdisciplinary program of health sciences informatics. Health sciences informatics research involves innovations in the understanding of the information needs of, the designs and technology for, the deployment of, and the evaluation of information management in the health sciences. The goal of the training curriculum for informatics is:

●●●●● Health Informatics Journal 12 (1)

- to achieve a baseline level of competency in health sciences informatics
- to assimilate the fundamentals of health sciences informatics research
- to develop proficiency in one or more defined areas of health sciences informatics
- to increase knowledge of fields related to health sciences informatics, such as computer science, biostatistics, and evaluation methodology
- to observe and participate in collaborative research and development activities in health sciences informatics
- to complete a health sciences informatics research experience that includes proposal development, project execution, data evaluation, and reporting of results.

While the NLM-funded training program at Hopkins, as elsewhere, is focused on the development of informatics researchers, it also provides an MS degree program which trains both researchers and practitioners in the field. Practitioners may play a variety of roles, but the most common is to be involved in the design and development of health information systems.

The informationist

Building on (1) its commitment to train information professionals through the above-mentioned training grant in informatics, and (2) in response to the need expressed in NLM's fellowship and in the professional literature for another cross-trained information professional, the Welch Medical Library and Division of Health Sciences Informatics at Johns Hopkins began to take steps to define competencies and skills and train a new professional: the 'informationist'.

In 2003 a small working group began to meet at Johns Hopkins and discuss the nature of 'informationists' or 'information specialists in context' as team-based information professionals. As a part of the discussion, the group sought to define attributes of the profession. While the informationists' work would to some degree be defined by the context for which they were trained and in which they worked, the group agreed that there were some attributes common to all contexts. These professionals would bring the following to health science teams and decision-making:

- collaborative information services that bring the evidence or findings from peer-reviewed literature to inform decisions or address questions
- relevant electronic resources and information management software
- customized information training for the team
- customized technology solutions to improve access to the newest evidence with bearing on the healthcare, research or services provided by the team.

These discussions also included an implied role of the informationist in solving some information management and access issues, triaging with institutional players who are critical to information functions. This role would include (1) identifying the knowledge domains that contribute to the health services information enterprise, (2) triaging with those in the enterprise who have a role in the information function in question, (3) getting buy-in to the problem analysis, and (4) working with these individuals towards obtaining a solution to the information problem. Institutional players in any problem solution might include

decision-makers, library administrators and staff, patient advocates, and technology staff, including those responsible for security.

Early Hopkins efforts to train 'informationists'

In 2005 the Welch Library received funding from the NLM to sponsor informationist training fellowships for two health science library professionals, one in clinical medicine and the other in public health with a focus on international emergency response field operations, specifically the Centers for Disease Control and Prevention's Global AIDS Program. The current clinical informationist fellow is in the process of developing a knowledge base of clinical questions that is integrated with relevant information resources, and the public health informationist fellow is at present identifying information needs and potential solutions to address those needs, at international CDC field sites.

As discussed earlier, the curriculum of each fellow is determined by the professional training that individual brings to the fellowship. The goal for these first informationist trainees is not so much to develop their information management and retrieval skills, because to a large extent they already have training and experience with these, but rather to add to their expertise and skills a knowledge of public health or medicine and the ability to critically appraise and present evidence from the literature. The training fellowship curriculum will supplement their acquisition of domain knowledge with skills in data extraction, data evaluation, and data presentation. An informationist trained in these knowledge domains will be equipped to facilitate evidence-based health practice.

Informaticists versus informationists: convergence or divergence?

Based on preliminary observation, training of informatics professionals and informationists has some similarities but also subtle differences shaped by the individual, professional functions and career goals.

The informationist works to bring evidence to the point of decision-making through information retrieval, evaluation and presentation skills. Ultimately, the work of the informationist, like that of the informatics professional, may involve a systems evaluation and the development of technology (and to a lesser extent software applications); these will be used to make the application of evidence to decision-making more efficient and effective. For example, the clinical informationist has designed a project that will supplement his academic medical coursework. He will develop a knowledge base of clinical questions integrated with relevant information resources. Similarly, the public health informationist will supplement his coursework in the core disciplines of public health – epidemiology, biostatistics and evaluation – with a project that will, in all likelihood, involve technology and how it can be used to improve access to information and evidence for AIDS workers in low-connectivity international settings.

Informaticians with their research and knowledge management focus and informationists with their evidence retrieval, analysis and application focus share some common approaches and interests. We have found that some crossover in the coursework and seminars for informatics and informationist fellows, and the interaction that results from that overlap, is beneficial for both groups of trainees [24].

Establishing relationships: liaison librarians

We view the informationist role as a key component of the library profession of the future and are approaching the transition that this requires on several fronts. In recent years, the Welch Library has begun to lay the groundwork for a more integrated role for information professionals by establishing a liaison program.

Given their current preference for electronically accessed information, users no longer need to come to the library to find information. As a result, the Welch Library liaison program was designed to seek out users where they access information and to engage them as partners in developing library resources and services. All public service librarians at Welch are assigned to departments, schools and other functional units on the medical campus. They have training and experience in health sciences librarianship and are able to offer services that support the academic and research goals of their assigned groups. Basic outreach services include reference services, literature searching, troubleshooting collection access, orientation, new service alerts, one-on-one and small group instruction, and collaboration around new services and collection building. Issues affecting the research of faculty are addressed through this organization.

Liaison librarians are encouraged to pursue professional development in subjects related to their departments. For example, the health sciences librarian assigned to the basic science departments took courses in molecular biology and updates that knowledge through offerings from the National Center for Biotechnology Information (NCBI). Another liaison librarian, seeking to find ways to serve committees that review research involving human subjects (institutional review boards, IRBs), has completed two courses in the ethical aspects of research involving patients and other volunteers. Two librarians who led an effort to convert a print population research library to a digital collection with liaison services have completed coursework in demography.

A recent example of how the liaison program has been enlisted to serve the academic community is related to the need to inform faculty about the issues regarding scholarly communication. These issues encompass all of the clinical and basic science departments because the members of these departments are all involved in research and publication. Welch Liaison librarians developed a website with a tool to inform authors of open access options when selecting a journal in which to publish their research. On the website, they also offered authors examples of language that could be used to modify the journal's publication agreements so they might retain some rights over their intellectual property. The librarians have also systematically sought opportunities to present open access issues to the faculty through monthly faculty meetings. An open access conference funded by the NLM and jointly sponsored by librarians from both Johns Hopkins and University of Maryland at Baltimore in April 2005 offered a forum for discussion of the issues.

Developing a stronger presence in the biomedical enterprise: touchdown suites

One structural approach that the Welch has taken to facilitate outreach services involving development and deployment of team-based informationists has been to collaborate with departments and centres in the creation of 'touchdown' suites – small library facilities or collaborative virtual spaces distributed around the campus, where librarians and library users can interact in the users' own environment [9].

The word 'touchdown', chosen by an architectural team in designing a plan for Welch's future, is meant to convey a sense of mobility. Librarians 'touch down' in the spaces to meet briefly with users; they then continue to circulate through the adjacent halls, laboratories, classrooms, and clinics. The touchdown offers a base close to users that encourages encounters, both planned and casual, with librarians. The first touchdown suites focused on population sciences, basic research, and oncology. We anticipate adding more touchdowns, and at the time of this writing three more are in the exploratory stage of development [9]. We will evaluate this concept as we proceed, and are especially interested in the questions of how many library professionals and how many touchdown suites, and their locations, will be optimal.

Conclusion: the importance of collaboration

We have found through training, project, and service initiatives that the very presence of information expertise in clinical and research settings has contributed to the discussion and testing of new models for information access, management and delivery. The projects and initiatives described at Johns Hopkins have led to enduring professional relationships among librarians, informatics and informationist fellows, and the clients they serve. These relationships, and the consequent expansion of specific domain knowledge among the participating professionals, have laid the groundwork for successful future collaborations. We see a future in which information professionals and other health professionals will work together to care for patients, to conduct research and to ensure the public's health in the most informed way possible. Johns Hopkins is working to realize that future by contributing to the development of professionals who are trained to meet these health information needs in the present and into the future.

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