
New measures for new roles: defining and measuring the current practices of health sciences librarians

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The roles of academic health sciences librarians are continually evolving as librarians initiate new programs and services in response to developments in computer technology and user demands. However, statistics currently collected by libraries do not accurately reflect or measure these new roles. It is essential for librarians to document, measure, and evaluate these new activities to continue to meet the needs of users and to ensure the viability of their professional role. To determine what new measures should be compiled, the authors examined current statistics, user demands, professional literature, and current activities of librarians as reported in abstracts of poster sessions at Medical Library Association annual meetings. Three new categories of services to be measured are proposed. The first, *consultation*, groups activities such as quality filtering and individual point-of-need instruction. The second, *outreach*, includes activities such as working as liaisons, participating in grand rounds or morning report, and providing continuing education. The third area, *Web authoring*, encompasses activities such as designing Web pages, creating online tutorials, and developing new products. Adding these three measures to those already being collected will provide a more accurate and complete depiction of the services offered by academic health sciences librarians.

INTRODUCTION

The continuing evolution of computer technology has accelerated the rate of change in information-seeking behavior, especially in the health sciences. As a result, librarians seek to adapt their behavior, resources, and services to better serve their clientele and define their own professional roles. While librarians have continually redefined and changed their roles, the measures by which librarians report and evaluate their activities have not sufficiently changed to reflect these new realities. Measurement of these activities must also change.

Library measurement has been defined as “the collection and analysis of objective data describing library performance on which evaluation judgments can be

based” [1]. Measurements can be quantitative (how many, how often) or qualitative (how effective). Libraries use this data to determine operational policies, to account for staff time, to allocate resources, to justify services, and to demonstrate to parent organizations the effectiveness of their operations. These data are also powerful planning tools. Measurements enable library administrators to see emerging trends, to anticipate new user needs, to argue for additional resources necessary to meet these new demands, and to prepare staff for new roles and responsibilities [2]. Additionally, libraries share statistical measures of common interest. These can be used to compare libraries with one another and to provide a description of general trends in the library community.

Among academic health sciences libraries, the An-

nual Statistics of Medical School Libraries in the United States and Canada serves as a tool for measuring and evaluating library services. Compiled and published by the Association of Academic Health Sciences Libraries (AAHSL) since 1978, the *Annual Statistics* provide comparative data on significant characteristics of collections, expenditures, personnel, and services in academic health sciences libraries [3].

However, as noted by Herson and Altman, new modes of information delivery mean that traditional counts of productivity underestimate the actual volume of work performed. "New issues, such as those related to distance education, use of library World Wide Web sites, and partnership and consortium arrangements for gaining access to 'virtual library' collections, make it clear that volumes of business are deceptive measures—ones becoming more complex to gauge" [4].

In his 2000 report to the AAHSL membership "The AAHSL *Annual Statistics*: Future Directions," editor Shedlock posed a critical set of questions about the data presented in the *Annual Statistics*. "What are the major strategic directions, roles or functions in which AAHSL libraries will be engaged and for which information will be needed? What data are [libraries] collecting that reflect the changing or new roles of the library and its staff?" [5].

This paper will examine the changing role of health sciences libraries and librarians and make recommendations for new measurements that more accurately reflect the services currently offered by health sciences librarians. To determine what new measures should be compiled, four areas will be examined: current statistics, user needs, professional library literature, and current activities of librarians.

CURRENT STATISTICS

Current statistics reveal trends showing which services are experiencing increased use and which are becoming less relevant. Those showing increased use suggest areas for further study.

In 1992, Leatherbury and Lyders analyzed ten years (1980–89) of AAHSL *Annual Statistics* to identify trends in library use, services, and expenditures [6]. They showed that during these years the gate count (the number of persons entering the library) remained fairly constant but that collection use grew, fueled chiefly by an increased inhouse use of materials. Most interestingly, their study showed that activity at the reference desk had increased some 60% between 1980 and 1989. During the same period, librarian-mediated database searching showed a rapid decline, especially in the last third of the decade. The authors attributed this to increased end-user searching through locally mounted tape or CD-ROM databases and the availability of local area networks.

An analysis of data for the most recent ten years of the AAHSL *Annual Statistics* (1990–2000) shows clear evidence that academic health sciences libraries are moving into a new information environment. Most striking is the growth of electronic resources. In 1996, the first year that such data were available, AAHSL libraries reported spending an average of 5.75% of their resources budget on electronic resources. By 1999, this amount had increased to 10%. Moreover in 1997, the average number of electronic journals reported was seventy-three. By 2000, this number had increased to 768. These figures document the change in collections as libraries move toward the virtual library, where databases, indexes to the literature, and full-text books and journals become accessible to the user from any computer at home, in offices, or in clinics.

This move represents a fundamental shift in the nature of what libraries do but has only begun to be reflected in library use statistics. Gate count has remained constant over the ten-year period, but in 2000 there was a noticeable decrease of 7%. It is too early to tell, however, if this figure represents a permanent trend. On the other hand, circulation, another indicator of onsite library use, has been steadily declining over the last five years (Figure 1).

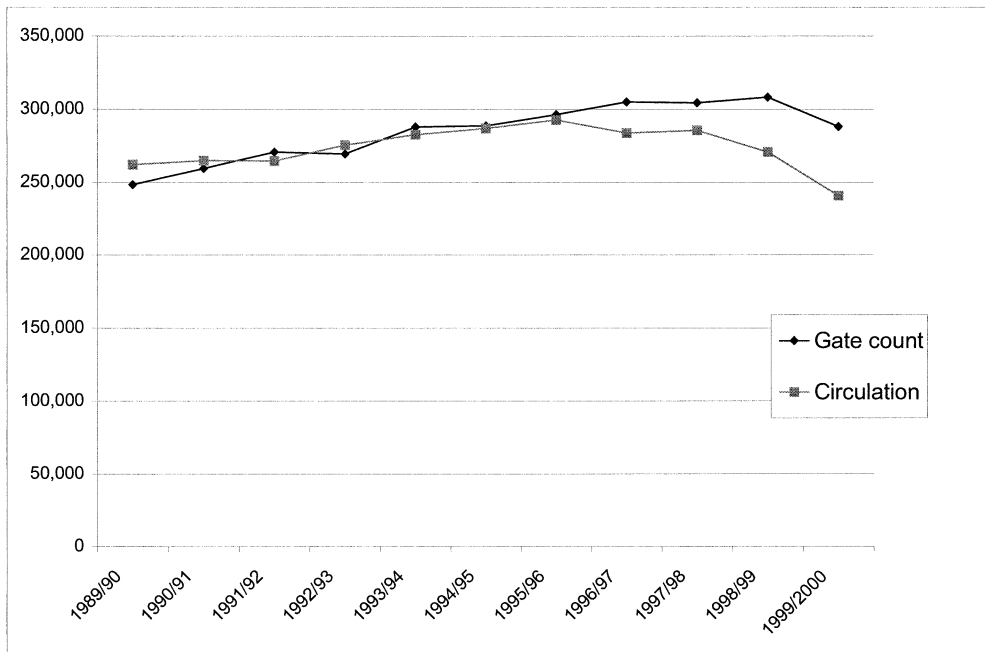
In terms of library services, the AAHSL *Annual Statistics* reveal a few additional trends. Mediated searching, which Leatherbury and Lyders noted declining in the 1980s, ceased being reported after 1992, because the numbers were insignificant. On the other hand, educational services showed a steady increase over the ten-year period. The average number of education sessions has doubled since the beginning of the decade, increasing from 74 in 1990 to 143 in 2000 (Figure 2). Attendance at these sessions has shown a similar growth pattern (Figure 3). These data support the argument put forth by Tenopir that the use of electronic products increases the need for user instruction [7].

The AAHSL *Annual Statistics* showed that the number of reference queries has remained fairly constant over the past decade. However, in 2000, there was a sharp decrease, as the average number of reference queries declined by 16% (Figure 4).

The figures reported by the AAHSL *Annual Statistics* were corroborated by data collected by the Association for Research Libraries (ARL) [8]. Service trends in ARL libraries for the period 1991 to 1999 showed an increase in the number of group presentations and participants in group presentations but a decline in reference transactions. Circulation increased steadily during the first half of the decade, but recent figures showed a decline from the peak reached in 1995 (Table 1).

While some of these usage statistics may show decreases, librarians' perceptions are that their workloads have actually gone up. Tenopir attributes this to

Figure 1
Association of Academic Health Sciences Libraries (AAHSL) library use, 1990–2000



several factors [9]. She notes that technologies allow librarians to do more and provide more information to patrons. As a result, questions take longer to answer as librarians explore and teach varied resources. Additionally, librarians are finding that patrons are de-

manding point-of-use instruction, which takes more time than traditional reference.

Several questions then arise. Are the ways academic health sciences librarians keep reference statistics adequate to reflect this perceived trend? Are the percep-

Figure 2
AAHSL education sessions, 1990–2000

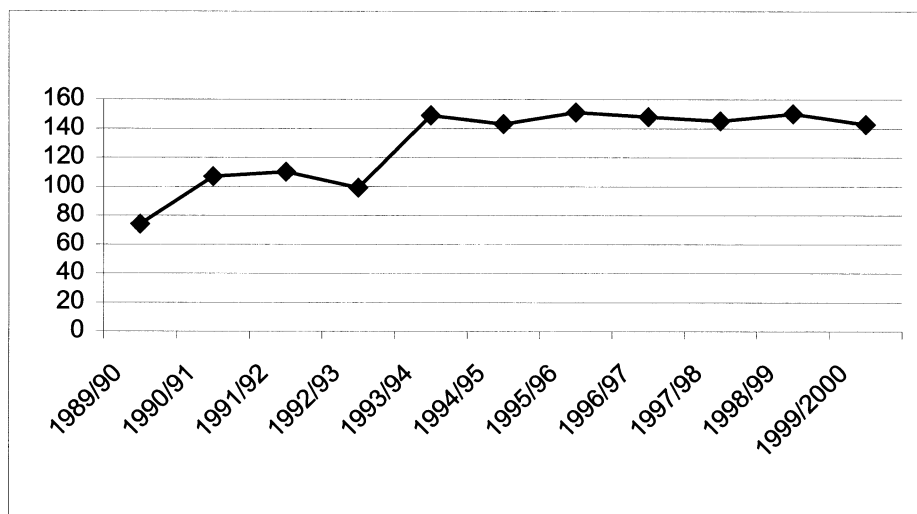
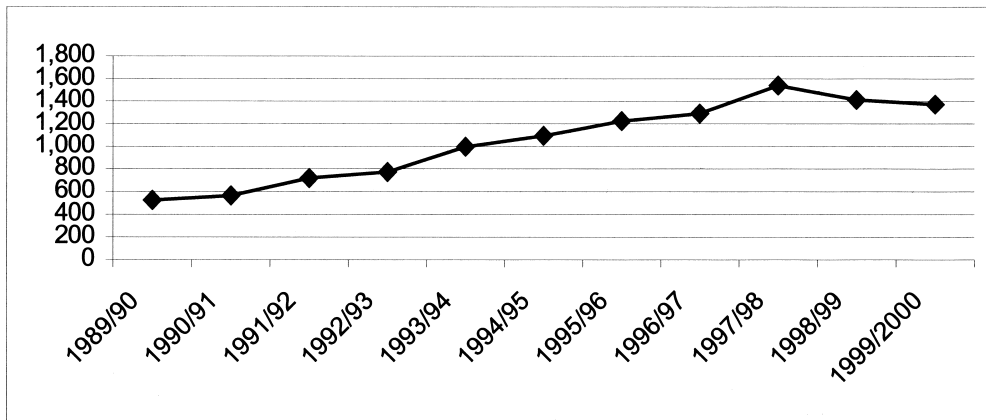


Figure 3
AAHSL education attendance



tions of librarians accurate? Are current statistical indicators valid to measure the varied activities that librarians now feel called on to perform?

USER NEEDS

A second way to determine what areas to measure is to examine authoritative statements of major groups that health sciences libraries serve.

In the 1984 report of the Project Panel on the General Professional Education of the Physician (GPEP) and College Preparation for Medicine, medical educators from the Association of American Medical Colleges (AAMC) made a number of recommendations about involving libraries in medical education [10]. Among these was a call to incorporate information-seeking skills into the curriculum to promote independent

learning and problem solving. While instruction in library use was not unknown prior to this document, having been reported as early as 1937 [11], it was far from a universal practice. A 1975 survey of U.S. academic health sciences libraries revealed that 18% of fered students some type of instruction on library use [12]. By 1996, ten years after the publication of the GPEP report, a similar survey found that the number of academic health sciences libraries offering formal library instruction had increased to 75% [13].

A similar emphasis on the role of libraries in medical education was echoed in the 1999 report of the Medical School Objectives Project (MSOP) established by AAMC. The report set forth a number of learning objectives to guide medical schools in establishing goals for their own programs. The report recommended that each medical school graduate demonstrate "the

Figure 4
AAHSL reference queries

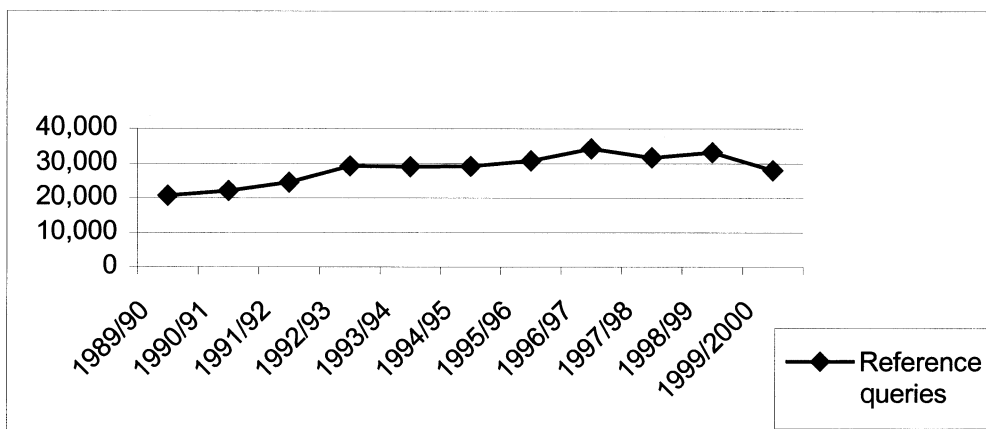


Table 1
Service trends in Association of Research Libraries (ARL) libraries, 1991–99

Year	Group presentations	Participants in group presentations	Reference transactions	Total circulation
1991	512	7,151	131,441	501,128
1992	535	7,383	132,574	536,039
1993	620	7,752	139,044	559,383
1994	569	7,936	152,706	570,671
1995	683	8,527	149,326	575,731
1996	713	8,449	157,275	556,658
1997	731	9,124	154,668	519,954
1998	722	9,511	132,850	497,286
1999	714	9,426	128,696	503,853
Average annual percent change	4.2%	3.5%	-0.3%	0.1%

ability to retrieve (from electronic databases and other resources), manage, and utilize biomedical information for solving problems and making decisions that are relevant to the care of individuals and populations." It furthermore recommended that each medical school graduate demonstrate "an understanding of the need to engage in lifelong learning to stay abreast of relevant scientific advances" [14]. Librarians play key roles in both of these activities.

In the early 1990s, evidence-based medicine (EBM) introduced a new paradigm for medical practice [15]. EBM stresses the examination of evidence from clinical research as the basis for clinical decision making. EBM involves converting information needs into focused questions, efficiently searching the medical literature for the best evidence with which to answer the questions, critically appraising the evidence for validity and clinical usefulness, applying the results in clinical practice, and evaluating performance of the evidence in clinical application. EBM brings clinical librarians into full participation in the problem-solving process. It expands the role of the librarian from defining the question and searching for relevant articles, to include critically appraising the literature in terms of study design, statistical analysis, and applicability to the individual patient. Librarians become integral members of patient care teams.

More recently, Davidoff and Florance reiterated this concept. They have issued a call for a new health professional that they call the informationist. Informationists—schooled with a "core of basic medical concepts, principles of clinical epidemiology, biostatistics, critical appraisal, and information management"—would function as members of health care teams, providing information at the point of care. While not necessarily defined as librarians, informationists would learn "the practical, working skills of retrieving, synthesizing, and presenting medical information and the skills of

functioning in a clinical care team" [16]. These skills are remarkably similar to ones proposed in the health sciences library literature.

PROFESSIONAL LIBRARY LITERATURE

A third resource to consult concerning new activities to be measured is the professional writings of health sciences librarians and other library professional groups.

Two years prior to the publication of the informationist article, Giuse proposed that librarians prepare to function in a manner similar to that of informationists. Her description of skills needed by medical librarians in the future anticipated those called for by Davidoff and Florance. She argued that librarians should "seek instruction in the techniques of clinical trials, including randomization and blinding techniques; they should study the tenets of evidence-based medicine; they should consult with subject experts and clinicians who can evaluate and support their filtering and interpretation skills" [17]. Her recommendation, that the final information product should be a synthesis of the information found and appraised, was the same as that proposed by Davidoff and Florance.

Calls for quality filtering and synthesis abound in the library literature before this time as well. As early as 1989, Anderson advocated rejecting the librarians' traditional reference role. In the Janet Doe Lecture delivered at the annual Medical Library Association (MLA) meeting, Anderson called for an expansion of the limited role of the health sciences librarian. Anderson found inadequate the idea of referring patrons to bibliographic sources or even of gathering citations or sources for patrons where librarians did "not evaluate, analyze, and synthesize them to deliver the information the user actually seeks" [18]. She was not alone in her views. A study by Kuller et al. showed that librarians could effectively serve a quality-filtering function in the clinical environment and concluded that librarians "should consider extending quality filtering activities to other arenas" [19]. Nagle, in reporting on quality initiatives in health sciences libraries, emphasized that the increase in value of information for clinicians, educators, and researchers was due largely to the quality filtering done by librarians [20].

Professional library groups, as well as individuals, have produced guidelines for planning and evaluating libraries and their services. One such effort to deal with the "accelerating revolution" due to new technologies was the Joint Task Force of the Association of Academic Health Sciences Library Directors (AAHSLD) and MLA. In 1987, this group produced *Challenge to Action: Planning and Evaluation Guidelines for Academic Health Sciences Libraries*. This document recognized that "pressure is increasing to organize, filter and synthesize information, and to develop systems

which bring information to users at their points of need" [21].

Another role that has evolved for health sciences librarians over the past decade is outreach. This includes expanding services to the library's primary clientele as well as initiating services to patrons not traditionally served by the library. While outreach incorporates a broad range of programs, these programs all share a common theme: that librarians must reach out beyond the traditional library structure. MLA's education policy statement explicitly states that "the librarian's role in the institution is no longer restricted to the library" [22].

One form of outreach is continuing education (CE) programs for health professionals. The *Bulletin of the Medical Library Association (BMLA)* found this subject to be of such importance that a symposium on librarians' roles in CE comprised a large part of the April 1990 issue [23]. CE requires tailoring educational programs to meet the specific individual needs of practicing health care professionals and, as Messerle notes, often involves "taking the librarian and library service to the user's worksite" [24].

In academic medical libraries, liaison programs are another way in which librarians reach out to faculty in the various colleges that libraries serve. Liaison programs introduce faculty members to new library resources and services, promote faculty participation in collection development, nurture collaborative activities and partnerships between library and teaching faculty, and foster coordinated communication between libraries and individual departments [25, 26]. Effective liaison programs require that librarians meet faculty in their offices, attend faculty and department meetings, and participate in institutional curriculum committees.

Projects designed to meet the information needs of health care professionals and consumers outside of one's own institution are yet another form of outreach. An advisory panel on outreach, established by the National Library of Medicine (NLM) Board of Regents in 1988, recommended that NLM review its partnership with the U.S. medical library network and redirect its grants program to emphasize outreach.

The NLM Board of Regents' 1989 *Long Range Plan Improving Health Professionals' Access to Information* noted that many health professionals were unaffiliated with a medical library and did not have "ready and timely access to the vital health information they need." The first of its recommended actions was to place the emphasis of the Regional Medical Library Program "to bring biomedical information resources within easy reach of all health professionals, especially those individuals in areas that do not currently have direct access" [27]. Librarians have responded to this call with a multitude of outreach projects to both rural and inner city health professionals. A symposium edited by Dorsch and Pifalo in the October 2000 issue of

BMLA traced the growth of outreach activities of health sciences librarians and concluded that outreach efforts to underserved health professionals and consumers must be sustained to achieve equity in information access [28].

Meeting the health information needs of consumers has long been a goal of the health sciences library profession as evidenced by the establishment of the Consumer and Patient Health Information Section (CA-PHIS) of MLA in 1984. *BMLA* has also devoted considerable attention to the related topics of consumer health and patient education. In 1996, CAPHIS issued a policy statement that identified potential roles for librarians in these two areas [29]. In addressing the specific role of the medical school-based consumer health information service, La Rocco noted just how complex and time consuming this service can be. "Medical school-based consumer health librarians serve less as brokers of information and more as mediators . . . the layman is more dependent on the librarian for assistance" [30].

NLM has also recognized the importance of supporting the information needs of health care consumers. Among the objectives in the NLM's *Long Range Plan 2000-2005* are "to assist those providing health information to the public . . . [and] to establish partnerships for helping and training the public to seek, evaluate, and use reliable information sources" [31].

A further new role open to librarians is that of designing new reference tools, databases, Web interfaces, and electronic teaching tools. In 1995, Matheson postulated that organizations "who are able to apply knowledge to create knowledge and to organize it to produce knowledge" would flourish [32]. This theme also occurs in MLA's educational policy statement:

The health sciences librarian not only provides specific support to the institution by using new technologies to organize, synthesize and filter information for scholarly, clinical and institutional decision making, but also plays a critical role in the investigation and study of information storage, organization, use and application in education, patient care, and the generation of new knowledge. [33]

Funk, executive director of MLA, reiterated this theme in 1998, exhorting librarians to redefine their position in the world of information. She concluded that "health sciences librarians must be able to convert information into knowledge for the clients they serve . . . and be significant partners in managing institutional information networks. Health sciences librarians must also create these databases and networks" [34].

CURRENT ACTIVITIES OF LIBRARIANS

A fourth area to study in determining what activities should be measured and reported in health sciences

library statistics is descriptions of actual activities in which librarians engage.

One good indicator is the poster sessions presented at MLA each year. Poster sessions are an established vehicle for presenting works in progress, describing library projects, and sharing success stories and ideas with colleagues from other institutions.

An informal survey of the poster session abstracts for the most recent four years revealed some interesting patterns. In each of these years, poster presentations tended to be grouped around similar themes: collection development, including selecting and evaluating databases; administrative and organizational issues, including topics such as public relations, building projects, and staffing; and instructional services, including assessing needs, teaching users to retrieve and manage information, integrating library instruction into the curriculum, and supporting distance education. In each year, however, the most popular theme revolved around Web design projects. Poster presentations included topics such as using Web portals, building customized Web pages, developing virtual library tours, building of database-driven Websites, and so on.

Another popular theme for poster sessions in recent years was outreach and liaison services. In 1999 and again in 2000, approximately 15% of the poster presentations described some sort of outreach or liaison program, either to primary users, through initiatives such as participation in grand rounds and liaison programs, or to the surrounding community, particularly in NLM-funded outreach projects. These presentations showed that medical librarians have responded to the needs articulated by the medical community and to the challenges issued by their professional organizations.

DISCUSSION

The new initiatives discussed in the preceding sections demand much time and effort, yet they are not included in the "traditional" activities reported in surveys of library services. They are not accounted for in the data on user transactions or educational presentations that libraries and institutions use in assessing their services.

By failing to measure and document the new activities in which they engage, librarians run the danger of losing these as part of the recognized province of their profession. MLA's educational policy statement recognizes at the outset that information handling, once the province of librarians, is now claimed by an array of new professional specialties. It stresses the importance of health sciences librarians understanding the new environment:

Though there is little doubt that changes in the health infor-

mation environment presage significant change in the roles of health information professionals and in the knowledge and skills expected of them, librarians may be blindsided unless they understand the new environment's strategic impact on the profession. Already, according to the Council on Library Resources, "at the heart of many of the present problems facing librarians and library education is the failure to describe the profession and its present role in terms that are compelling, expansive, and accurate." [35]

Bradley explores the same issue in the context of the "expert work" of librarians. She contends that concepts of information are cultural facts that can and do change. The challenge for librarians is to redefine and communicate their place in this new environment. While defending traditional library roles is important, "we should also be actively formulating and competing for our evolving jurisdictions" [36]. Measuring and reporting librarians' activities in these "evolving jurisdictions" is one way of claiming them.

For measurements to be useful as comparative data over time and among different libraries, they must have several characteristics. The activities must be definable, measurable, and common to the libraries within the given cohort. Also, they must consume sufficient time to warrant their measurement. For that reason, the activities described above have been distilled into three large areas where measurements need to be developed.

■ *Consultation:* This category includes activities such as quality filtering, in-depth consultation appointments to assist users in research projects, and one-on-one instruction on use of library resources. Point-of-need instruction is currently an unreported figure, because it does not accurately fit in either the "reference" or the "instruction" category. It is usually unscheduled and is more demanding in terms of time needed on the part of the librarian than answering a typical reference query.

■ *Outreach:* Activities in this category include participating in grand rounds or morning report, performing liaison work such as attending faculty meetings, and engaging in CE and other training efforts for practicing health professionals. It also encompasses outreach projects to non-primary clientele, such as community organizations, unaffiliated health professionals, and public libraries, as well as the grant-writing activities that often precede such projects.

■ *Web Authoring:* This category includes the range of activities involved in creating Web-based services, such as designing Web pages, creating tutorials, developing pathfinders, and participating in the development of new products.

While this paper has chosen to focus on identifying and defining specific new activities to measure, this represents only one approach to the issue. A number of other initiatives are also exploring new ways to assess library service. The ARL E-metrics Project, for ex-

ample, is directed toward developing statistics and performance measures that describe the use and users of electronic resources and services [37]. Other approaches focus on assessing service quality and customer satisfaction. As part of its New Measures Initiative, ARL has identified eight areas where new measures could be used to better describe and assess library operations and value: ease and breadth of access, user satisfaction, library impact on teaching and learning, library impact on research, cost effectiveness of library operations and services, library facilities and space, market penetration, and organizational capacity ability [38]. LibQUAL+, an ARL project undertaken to define and measure library service quality across institutions, is developing a survey tool designed to measure library users' perceptions of service quality and to identify gaps between desired, perceived, and minimum expectations of service [39]. These initiatives all represent complementary approaches toward more accurately describing and assessing library use.

CONCLUSION

Librarians have been engaged in redefining their roles both in the literature and in practice for a number of years. They have developed new programs and services in response to changing technologies and new demands. Now, new tools must be developed to accurately measure and evaluate these services. This is essential if librarians are to continue to meet the needs of library users and to ensure the viability of their professional role in the evolving information environment.

This paper has proposed three new categories of services to be measured: consultation, outreach, and Web authoring. The authors of this paper invite further comments on this proposal. All health sciences librarian concerned with future of the profession have a stake in the outcome of these deliberations.

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