Conducting a user-centered information needs assessment: the Via Christi Libraries' experience* EC

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Purpose: The research sought to provide evidence to support the development of a long-term strategy for the Via Christi Regional Medical Center Libraries.

Methods: An information needs assessment was conducted in a large medical center serving approximately 5,900 physicians, clinicians, and nonclinical staff in 4 sites in 1 Midwestern city. Quantitative and qualitative data from 1,295 self-reporting surveys, 75 telephone interviews, and 2 focus groups were collected and analyzed to address 2 questions: how could the libraries best serve their patrons, given realistic limitations on time, resources, and personnel, and how could the libraries best help their institution improve patient care and outcomes?

Results: Clinicians emphasized the need for "just in time" information accessible at the point of care. Library nonusers emphasized the need to market library services and resources. Both clinical and nonclinical respondents emphasized the need for information services customized to their professional information needs, preferences, and patterns of use. Specific information needs in the organization were identified.

Discussion/Conclusions: The results of this three-part, user-centered information needs assessment were used to develop an evidence-based strategic plan. The findings confirmed the importance of promoting library services in the organization and suggested expanded, collaborative roles for hospital librarians.

INTRODUCTION

Standard 6 of the Medical Library Association's "Standards for Hospital Libraries 2002 with 2004 Revisions" [1] calls for librarians to perform ongoing assessment of the organization's knowledge-based information needs and to base planning on the results of assessment findings. Properly designed assessments of library performance assist library decision makers in evaluating the quality of provided services, as well as in allocating scarce resources most effectively [2]. Assessments that take into account the views of library users and nonusers can also guide the strategic direction of the library [3]. This paper describes the process of planning, implementing, and analyzing a formal needs assessment process to inform one library's strategic planning initiative.

BACKGROUND

Via Christi Regional Medical Center (VCRMC) in Wichita, Kansas, was created through the merger of two large acute care hospitals in 1995 and currently comprises four sites providing acute care, mental health services, and rehabilitation services. In cooperation with the Kansas University School of Medicine, the medical center now operates the second largest

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Highlights

- The use of multiple data collection instruments in a qualitative study provides complementary perspectives that can enhance credibility of data analysis.
- Clinicians value the provision of "just in time" information services available at the point of patient care.

Implications

- Librarians can use needs assessment findings to make evidence-based decisions about the allocation of key library services and resources.
- Opportunities exist for hospital librarians to design and deliver sophisticated information services aimed at specific professional groups in the organization.
- Collaborative work on multidisciplinary teams in the hospital offers librarians additional opportunities to share their professional expertise in meaningful ways.

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family practice residency training program in the United States as well as programs in general and orthopedic surgery, internal medicine, anesthesiology, psychiatry, and osteopathic medicine.

At present, the Via Christi Libraries reside on the St. Francis and St. Joseph campuses. Three full-time medical librarians, one full-time assistant librarian, and one part-time library specialist provide information services to all physicians and VCRMC employees. As the medical center has expanded, the librarians have been challenged by the need to provide information services to more people at more locations. Providing electronic access to information resources was one way of responding to this challenge. In 2003, the VCRMC

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Table 1
Needs assessment timeline

Date	Activities
December 1, 2004	Public announcement of funding support from the National Network of Libraries of Medicine Mid-Continental Region/University of Utah
January 28, 2005	Contract to project consultant
January–April 2005	Meetings between Via Christi Regional Medical Center librarians and consultant to share information, clarify goals, and develop plan of action
May–July 2005	Self-reporting surveys disseminated and collected
July 2005	Telephone surveys conducted
October 6, 2005	Two focus groups conducted
December 14, 2005	Consultant report submitted

librarians launched a Web page that provided access to various electronic databases, full-text online journals, and the libraries' online catalog. Access to the Website resulted in a marked increase in utilization of electronic library resources. Increases in utilization were accompanied, however, by increased costs and the simultaneous explosion of electronic information resources available on the market.

In 2004, the librarians participated in a day-long retreat to discuss challenges facing the libraries, considering the following questions:

- Should changes be made in the allocation of print versus electronic resources?
- What would those changes cost in relation to potential benefits?
- Should the libraries adopt a marketing plan to attract potential users?
- Should they explore other means of obtaining the funds necessary to support expanded services?

Following this discussion, the librarians agreed on the need for a strategic plan to address these and other issues. They also agreed that a thorough needs assessment was critical to the strategic plan's validity.

The librarians hired a consultant, a faculty member from the Emporia State University School of Library and Information Management who had worked as a hospital librarian for eleven years and whose doctoral dissertation examined the physician curbside consultation [4], to oversee the project.

The needs assessment addressed two overarching questions. First, how could the libraries best serve their patrons, given realistic limitations on time, resources, and personnel? Second, given these limitations, how could the libraries best help the medical center improve patient care and outcomes?

METHODS

The project timeline is shown in Table 1. During the four-month initial phase of the project, the Via Christi librarians, the project consultant, and the Via Christi Foundation grants coordinator clarified the project goals and developed a plan of action. Using models created by the consultant to guide their discussion, the librarians delineated their potential customer base and geographic service area. They also collected and discussed data on services provided, utilization of library resources, types of information requested, and other relevant activities.

Data collection instruments

As suggested by Lincoln and Guba [5], triangulation—in this case, the use of three different instruments for data collection, including a self-reporting survey, telephone interviews, and focus groups—was employed to ensure credibility of the study findings.

Self-reporting survey

The project consultant used information gained during preliminary discussions with the librarians to draft the first of several iterations of the self-reporting survey. The librarians reviewed each draft and provided feedback until agreement was reached on a version to pilot test with selected users. The pilot test was conducted with six representative library users to determine the clarity and ease of use of the survey. The project consultant used feedback from the pilot test respondents and the librarians who administered the survey to arrive at the final draft (Appendix A).

The self-reporting survey began with an initial set of questions dealing with the respondent's profession or position, computer use, information search habits, and frequency of library use. At that point, branching was used to route respondents to two different sections of the survey: one for those who had used at least one of the Via Christi Libraries within the past six months and one for those who had not used the libraries during that time (nonusers). A combination of question formats was used, including checklists, scales, and requests for narrative responses. At the end of the survey, all respondents were asked to respond to the open-ended question, ''What else should the Via Christi librarians know to better align library services to your information needs and expectations?''

Two versions of the survey were created, one print and one Web-based. Each version took approximately six minutes to complete. The print surveys and informed consent forms were distributed by the Via Christi librarians during presentations at medical center meetings and during a number of appearances in the cafeterias of the various hospital campuses. The Web-based self-reporting survey, which included an online version of the informed consent form, was created using the commercial version of SurveyMonkey. The Web-based survey was disseminated via a link placed on the medical center intranet site.

Telephone interviews

Data collected from the self-reporting surveys were employed to identify issues warranting further investigation. The project consultant used these considerations to identify questions to be asked in the telephone surveys (Appendix B), which was scripted into SurveyMonkey. Two surveyors employed to conduct the telephone interviews used the Web-based software to structure each call and record the responses as they were provided. The telephone survey took approximately five minutes to administer. It was pilot-tested with five respondents to ensure clarity and ease of use and then administered to the remaining seventy respondents.

Focus group interviews

Data from both the self-reporting surveys and telephone interviews were used to create questions asked during the focus group interviews (Appendix C). Instead of repeating the same questions, however, the consultant asked respondents to ''dream big.'' The purpose of doing so was to elicit different, perhaps innovative perspectives that the librarians and the consultant might not have considered. Two one-hour focus groups were conducted, one with nine physicians and one with nine clinical and administrative personnel.

Respondents

During preliminary discussions, the librarians determined that the needs assessment should involve as many existing and potential library users as possible. The target population, therefore, included approximately 900 physicians and residents working at VCRMC as well as approximately 5,000 medical center staff, both clinical and nonclinical.

Librarians employed multiple organizational communication venues—including the medical center's inhouse newsletter, poster displays, intranet, and email messages—to inform physicians and VCRMC staff about the needs assessment, including its purpose, funding, and potential impact on library services.

In keeping with VCRMC institutional guidelines, the Via Christi grants coordinator reviewed and approved the data collection methods. The grants coordinator also created the informed consent form completed by each needs assessment respondent. Signed forms were collected and filed separately from the collected data to maintain respondent anonymity.

A section of the informed consent form included an invitation to volunteer for the telephone interview, a focus group, or both activities. Of the 1,295 respondents who completed the self-reporting survey, 232 agreed to participate in the telephone interview, 59 agreed to participate in a focus group and 36 volunteered to participate in either a telephone interview or a focus group. The names of those respondents willing to participate in a telephone interview were randomly organized in a calling list and contacted in that order until the goal of completing 75 interviews was reached.

Finding a sufficient number of focus group participants proved more difficult. A number of respondents who initially volunteered to participate later declined. Another complicating factor involved scheduling the two focus group meetings at times that would work for the respondents. To fill the two focus groups, librarians recruited respondents in person, by electronic mail, and by telephone.

All respondents received a token of appreciation for their participation. Those who completed the print survey received a pen with the Via Christi Libraries logo and Web address, a free soda, a cookie, and a chance to register for a $50 grand prize gift certificate. Those who completed the Web-based survey were offered a similar prize, redeemable at any of the libraries upon providing a ''secret word'' included at the end of the survey. Telephone survey respondents were offered a cafeteria food coupon and a tape measure. Focus group participants received refreshments and two movie passes.

Data analysis

Quantifiable data collected from the self-reporting surveys were tabulated and entered into an Excel spreadsheet, which made it possible to query, display, and examine data from a number of perspectives. As discussed by Miles and Huberman [6], detailed analysis of the distribution of data from each perspective revealed which elements occurred often, which appeared significant, and which seemed to go together. The results of each Excel query provided a different perspective from which to identify frequencies, relationships, themes, and patterns.

A similar, inductive process was to used analyze narrative data drawn from the self-reporting surveys, the telephone interviews, and the focus groups. The consultant used procedures outlined by Lincoln and Guba [5] and Miles and Huberman [6] to categorize, code, and interpret the data. The process began with close examination of narrative responses collected from the self-reporting surveys to identify elements that appeared with some frequency as well as anomalies, elements that did not seem to fit with the rest of the data. Clusters of data that emerged from this detailed examination were organized into broad categories (i.e., time, online information resources, library services in general, repackaging services, user preferences, audiovisual equipment and use, and patient education) and then into subcategories. Next, the coded data were displayed in a series of matrices to reveal relationships—elements that occurred together with some frequency. Narrative data from the telephone interviews and the focus group discussions were analyzed in the same manner.

RESULTS

Self-reporting survey

From a potential pool of approximately 5,900 respondents, 1,295 (22%) completed the self-reporting survey. In some instances, more or less than 1,295 responses were provided in answer to survey questions. Some

Table 2
Frequency of use of library services reported by 541 respondents identified as library users

Library service	Frequency of use				
	Daily	Weekly	Monthly	Quarterly	Never
Literature search by a librarian	6	10	46	178	231
Assistance in locating information, either online or in the library	11	37	92	238	117
Assistance in obtaining copies of journal articles	8	19	73	235	162
Orientation to the use of electronic or print resources available through the libraries	7	13	34	146	268
Recommended links to search engines, other libraries, and personal digital assistant (PDA) resources	11	32	57	131	240
Computer/Internet access	79	67	49	91	190
Access to print journals	13	54	95	182	141
Access to books (e.g., handbooks, clinical texts, encyclopedias, dictionaries)	18	49	104	202	111
Audiovisual equipment or services	9	20	62	160	239
Study space	9	24	41	88	303
Other services	8	8	13	62	163

respondents checked more than 1 response on the written survey, and others skipped questions. In a few instances, Internet survey respondents who received browser error messages resubmitted their original responses. Numbers and percentages are therefore based on the total number of responses to the question at hand.

All respondents were asked to answer questions dealing with their profession or position, computer use, online database searching preferences, and frequency of library use. When asked their profession or position, 158 (12% of 1,316 responses) identified themselves as physicians, residents, interns, or physician assistants; 403 (31%) as nurses or nursing students; 550 (42%) as professionals or personnel in other clinical areas; and 205 (15%) as nonclinical personnel. When asked if they had access to a computer with an Internet connection, only 48 respondents (4% of 1,314 responses) indicated no convenient access either at work or home, and 861 (65%) indicated access both at home and work. In regard to searching online databases, 869 (66% of 1,307 responses) said they searched online databases for themselves rather than asking anyone else to do so; 53 (4%) asked a librarian to search on their behalf; 50 (4%) asked someone other than a librarian to search on their behalf; and 335 (26%) indicated that they did not search online databases at all.

At this point in the self-reporting survey, respondents were branched in 1 of 2 directions. When asked if they had visited any one of the Via Christi Libraries in the past 6 months, 541 (41% of 1,313 responses) respondents (identified for the purposes of this study as ''library users'') said that they had visited at least 1 of the libraries during that time and were routed to questions related to their use of library services. The remaining 772 respondents, who reported that they had not or did not recall visiting a Via Christi library within the past 6 months (identified for the purposes of this study as ''library nonusers''), were routed to questions related to their information needs.

Respondents who identified themselves as library users were asked to respond to questions about the frequency of their use of library services and resources. Table 2 summarizes responses to a question about frequency of library visits, and Table 3 includes responses to a question about frequency of the use of online resources. When asked how they first learned about the resources and services provided by the Via Christi Libraries, 102 library users (23% of 445 responses) reported that they learned about what was available by visiting one or more of the libraries; 88 (20%) reported that they had first learned about the libraries and library services during an orientation session or a staff meeting; and 71 (16%) reported that

Table 3
Frequency of use of online resources reported by 541 respondents identified as library users

Online resource	Frequency of use				
	Daily	Weekly	Monthly	Quarterly	Never
UpToDate	26	52	40	54	142
MEDLINE (via Ebscohost, PubMed, or another source)	26	87	104	91	72
CINAHL	4	27	46	56	225
Cochrane Database of Systematic Reviews	3	16	28	41	260
Health Business Fulltext Elite database	2	10	24	31	281
Proquest Nursing Database	2	14	26	39	266
PsycINFO database	2	10	16	31	289
International Pharmaceutical Abstracts	2	6	23	38	275
American Dietetic Association Nutrition Manual	3	14	22	48	260
Via Christi online catalog of holdings	5	38	60	102	154
Via Christi A-to-Z Journal Title List (electronic full text and print journal holdings)	8	52	66	111	131

Table 4
Reasons for not visiting a library or using the libraries' Website reported by 772 respondents identified as library nonusers

Reasons for not visiting library or using libraries Website	Number of responses (n = 1,455)
No time to do so	235
No convenient access to a computer with Internet access	4
Did not know full range of library services available	384
Library hours not convenient	66
Library location not convenient	45
Library resources not relevant to work-related information needs	56
Not needed, use information resources available from another organization (e.g., clinic, office, university library)	75
Not needed, use information resources available on the Internet	225
Not needed, use information available from colleagues and/or supervisors	118
Did not know library services or resources were available	171
Other	56

Note: Respondents were asked to check as many reasons as applied.

they had become acquainted with library resources and services by visiting the Via Christi Libraries Web page. Other sources of this information, in descending order of those reported, included a colleague or supervisor (47 responses, 11%), a brochure or newsletter (45 responses, 10%), a presentation by one of the library staff (36 responses, 8%), or another source (27 responses, 6%). The remaining respondents did not recall how they had first learned about the Via Christi Libraries. When library users were asked how the libraries could better align services to the respondent's information needs and expectations, they most frequently cited the need for increased promotion of library services and resources.

Reasons cited by the 772 respondents who reported that they either had not visited or did not recall visiting one of the Via Christi Libraries within the past six months (library nonusers) are shown in Table 4. Respondents were asked to check as many reasons as applied. Of 1,455 responses received, the most frequently cited reasons involved lack of knowledge about the range of available library services, lack of time, belief that information resources were available on the Internet, and lack of knowledge that library services or resources were available. Narrative responses to an open-ended question about how library services could better meet respondent information needs and expectations expanded on some of the reasons associated with not using library services and resources. For example, one respondent replied, ''I'm not sure [of] the library services that are available, so cannot answer that question adequately.'' Another responded, ''You cannot correct the issue. Work load would have to change to allow time to look up information on the job as needed.''

Telephone interviews

Of the 75 telephone interview respondents, 2 identified themselves as physicians, 43 as clinical staff, and 30 as nonclinical staff. When asked to think about their information needs during the previous 2 or 3 weeks, 12 of the 75 respondents (16%) indicated that they had needed information that they could not find in time for it to be useful. When asked about the impact of not having the needed information in a timely way, 6

reported a direct impact on the quality of patient care, 6 reported an indirect impact on the quality of patient care, 7 reported a loss of time spent on the search for information, and 3 reported the loss of potential revenue. Eight reported other negative impacts, including not being as prepared as possible, a resulting lack of knowledge, loss of time, and frustration.

When asked how library services could be made more useful to them, respondents suggested making the Internet resources more accessible, publicizing what was available in the library, teaching how to access library services and resources, providing notices of new publications and resources, making computer research easier, and having library materials available on the clinical floor.

Focus group interviews

Responses during the physician focus group indicated that physicians wanted quick, efficient access to quality-filtered patient care information. Some physicians reported that they preferred to access information online, others preferred to access information in print form, and some reported that they were comfortable with both formats. Those who preferred to access information electronically wanted to be mobile as they did so. Some physicians expressed interest in working with the librarians to develop their online skills and organize their electronic documents.

During the focus group with clinical and nonclinical VCRMC personnel, clinicians expressed concern about the need for quality-filtered patient care information and efficient access to patient education materials. Participants in this focus group emphasized the need for information at the point of care, particularly because floor nurses are pressed for time and unable to leave the floor to visit the library. A number of respondents expressed frustration at difficulties related to accessing full-text information quickly and efficiently.

Participants in both focus groups expressed interest in collaborating with the Via Christi librarians to develop customized, innovative solutions to existing, system-wide information needs. Possible collaborative activities included designing, developing, and implementing a ''just-in-time'' audiovisual review of an upcoming procedure at the scrub sink for surgeons and

their residents; customized interfaces to information contained on the libraries' Website and available over the Internet (e.g., information resources and strategies designed specifically for cardiovascular nurses); selective dissemination of information (SDI) searches customized to individual practitioners or to practitioner groups and disseminated on a regular basis; and shared work by physicians, nurses, other clinicians, and the librarians in creating an electronic repository of approved patient education information available from hospital workstations.

DISCUSSION

In a classic article on the work of information professionals, Mason wrote that the goal was ''to get the right information from the right source to the right client at the right time in the form most suitable for the use to which it is to be put and at a cost that is justified by its use'' [7]. The findings of this needs assessment corroborated this near-mantra for library services. According to respondents, the ''right'' information was accurate and applicable to the need at hand, while the ''right'' source was one that was both reliable and readily accessible.

Although they reported that they used the Internet and online resources because they were readily available, respondents acknowledged that their search strategies were not always effective and that ''Googling'' health information does not necessarily result in quality-filtered information. In terms of the source's format, the findings indicated that the print and electronic resources provided by the libraries appeared to reflect the diversity of their customers' information seeking and use preferences. Although a number of respondents spoke strongly about the importance of having physical access to library resources and to professional interaction with the librarians, a number stressed the need for timely electronic access to information as they moved through their hospital duties. Taken as a whole, the findings suggest that the preference for print versus online resources was not necessarily tied to user age, clinical specialty, or degree of commitment. More often, the choice of format had to do with convenient access to available resources and the knowledge and skills necessary to negotiate existing information systems to find relevant, quality-filtered information in the time allowed. Information that was not available when it was needed was simply not useful, a finding that has been reported in previous studies [8–10].

The Via Christi respondents also indicated a preference for library services and resources that are customized to their discipline's information needs and uses, echoing Mason's construct of the ''right client'' [7]. Gruppen reported similar findings in a study of physician information seeking [11], pointing out that information needs, preferences, and patterns of seeking and use differ significantly among individual physicians. Gruppen suggested that health sciences libraries conduct market research for the purpose of customizing information services to specific clientele.

The Via Christi study assessed the information needs of physicians, clinicians, and nonclinical hospital staff. Although the impact of library information services was not a focus of the study, telephone interview respondents reported negative impacts when they were not able to locate information within the time allowed. This finding corroborated a number of previous studies on the impact of hospital library information services on clinical care [12–14]. It also corroborated Cuddy's study [15] of the impact of information services on both clinical and nonclinical library users. Given the importance of evidence-based decision making in all areas of a health care organization, the impact of library services on nonclinical hospital activities appears to warrant further investigation.

The use of open-ended questions in this study resulted in an unanticipated finding. At the beginning of the needs assessment process, the Via Christi librarians expected respondents to report what library resources and services they preferred and how the librarians could best deliver these resources and services. What they did not anticipate was discovering the extent to which respondents wanted to increase their professional, collaborative interactions with the librarians. Projects reported by Haigh [16] and Klein-Fedyshin et al. [17] offer examples of the value of this type of multidisciplinary collaboration. However, as Lyon et al. [18] concluded in their study of collaborations in bioinformatics work, librarian visibility is critical to identifying and building productive collaborative projects.

An apparent lack of visibility of the Via Christi Libraries was, in fact, a significant issue. The needs assessment indicated that those respondents who used the libraries and interacted with the librarians held them in high regard. However, of the 772 respondents identified as library nonusers, 384 (50%) cited lack of knowledge of the library services available as a reason why they had not used either the libraries or the libraries' Website, and 171 reported that they did not know that library services were available at all. These and related responses indicated a need for increased visibility and promotion of library services and resources. In a sense, this work has already begun. By encouraging all physicians and VCRMC staff to participate in the needs assessment and by promoting it aggressively via in-person, electronic, and print venues, the librarians raised awareness of the resources and services available. The strategic plan developed after the needs assessment outlines a number of strategies for continuing to address this information deficit.

Support for the strategic plan

Although a process was in place to collect data and report on the use of library resources and services, these routine information-gathering methods did not yield the kind of evidence necessary to support developing a strategic plan that was both realistic and visionary. The needs assessment was designed and implemented to provide that evidence. Following data analysis, the consultant generated a list of formal recommendations (Table 5).

Table 5
Consultant's recommendations in response to primary needs assessment questions

Question 1. How can the Via Christi librarians best serve their patrons, given realistic limitations on time, resources, and personnel?

Recommendation 1: Keep doing what is already being done.	Analysis of the data indicated that current users of the Via Christi Libraries and library services were generally satisfied. Users spoke very highly of the librarians' professional and interpersonal skills.
Recommendation 2: Streamline library resources. Keep the ones people can and do use.	It may be more important to identify and invest in fewer resources and to maximize their use through face-to-face and online tutorials than to have more resources than can be supported well enough to ensure their effective use. Small controlled trials of the use of specific resources should be conducted before making decisions on what to keep and what to eliminate.
Recommendation 3: Recruit advisory groups from key stakeholder groups and ask for their ideas. Make use of their advice and report back to them on the success of these efforts.	The nature of these interactions must be customized to the particular time and format most appropriate to each group (e.g., email exchanges using private mail addresses or email discussion lists, face-to-face conversations during already established meetings, early morning hours, shift change hours).

Question 2. Given these limitations, how can the Via Christi Libraries best assist the medical center in terms of improving patient care and outcomes?

Recommendation 4: Create specific service profiles to represent various levels of library services available.	Consider the creation of specific service profiles, basing the development of the profiles on the Via Christi statement of purpose, to provide "quality healthcare for all, especially those in need." The statement of purpose suggests that the libraries deliver the best-level resources and services to those "closest to the needle," regardless of the facility from which they are working or the type of access they require (print or online).
Recommendation 5: Market library services to those able to make use of them.	Marketing includes all of the activities involved in moving resources and services from the source to the end user, including conducting research to discover what the user needs, packaging resources and services in ways that make sense to them, and promoting resources and services effectively and efficiently.
Recommendation 6: Collaborate with key stakeholders in the organization for the purpose of developing innovative, "doable" solutions to existing, system-wide information needs. Pursue additional funding to support these activities.	Although they valued traditional library services, respondents valued the librarians' abilities in terms of analysis, synthesis, and evaluation and want them to contribute their expertise on multidisciplinary collaborative initiatives.

The strategic planning process was conducted by the librarians in a series of seven half-day retreats that included brainstorming, revising the libraries' mission statement to better reflect the findings and recommendations of the needs assessment, and developing objectives to accomplish the consultant's recommendations, adopted as goals. As discussions continued, the librarians broadened the goals further. When consensus was reached on the content of the goals, one of the librarians revised the wording of the document to reflect a common voice. The final draft of the strategic plan was completed in April 2006 and reviewed and approved by VCRMC's chief executive officer in May.

As approved, the strategic plan consists of six goals. Each goal is supported by a set of objectives, together with specific strategies for achieving each objective. An evaluative objective identified for each goal specifies the means by which activities can be assessed. Key elements of the strategic plan include a commitment to adapt and expand library information services as warranted by changes in the health care environment, development of customized service patterns, collaborative initiatives undertaken with key stakeholders across the medical center to meet system-wide goals, strengthened communication channels, promotion of library services to all entities in the system, a plan for the effective utilization and enhancement of financial resources, and an outline of the means by which the libraries will demonstrate service value to the VCRMC administration.

Lessons learned

Use of multiple data collection instruments increased the credibility of the study findings [5] and provided different, complementary points of view from which

to examine participant responses. Each instrument also invited respondents to provide narrative, unstructured answers to questions about how library services and resources could better address their information needs. The resulting responses provided fresh, sometimes unanticipated perspectives from which to view library resources and services. On the other hand, conducting such a complex needs assessment and promoting it across the entire medical center consumed a great deal of time. An estimated 250 hours of library staff time was spent on the project, most of it involving promotional activities.

Because one of the project objectives was to reach as many VCRMC physicians, residents, and staff members as possible, creating and disseminating the self-reporting survey in two formats, print and electronic, proved a useful strategy. The commercial version of SurveyMonkey, the online survey software chosen for the task, worked well with the branching technique necessary to query library users and library nonusers, both together and separately. On the other hand, translating the print document to a comparable Web-based document was challenging, particularly with regard to the online informed consent information.

Offering incentives to study respondents encouraged both library users and nonusers to participate. Distributing the print surveys in hospital cafeterias was particularly effective, because respondents generally completed their surveys and received their incentives at that time. Those who responded to the Web-based survey were required to visit the library to collect their incentives. Respondents who worked late shifts were therefore not always able to do so. Prior to the survey, the librarians anticipated a potential problem—that the incentives might motivate some respon-

dents to complete more than one self-reporting survey—but it did not materialize. Because library staff distributed the incentives in person, they were able to verify that this did not occur.

Finally, it proved useful to use SurveyMonkey to script the telephone interviews. The professional callers conducting the interviews were able to use the script to structure the conversations and to input data during each call. The collected data were monitored throughout the process, and the cumulated data were readily available for analysis.

Limitations of the study

The interpretations that can be drawn from this study have limitations. First, respondents for this investigation volunteered to participate and did not constitute a representative or random sample. It should be noted, however, that the results of the self-reporting survey included approximately 20% of the targeted population. Second, comments made by respondents indicated that the act of publicizing and implementing the needs assessment affected their knowledge about the libraries and their services. That is, the very act of asking people about library services heightened the profile of the Via Christi Libraries. Because data collection took place over a period of several months, respondent perceptions may have shifted considerably. No attempt was made to create a control group, so it was impossible to measure the extent of the shift. Third, discrepancies occurred in the numbers of responses to the self-reporting survey because participants could select more than one answer or skip questions. In some instances, respondents using the Web-based self-reporting survey received error messages from their browsers when they attempted to submit their responses. When they resubmitted their answers, the software counted both the first and second sets of responses. To account for these circumstances, respondent numbers and percentages were reported together with the total number of responses received for a given question. Finally, only 2 physicians participated in the telephone interviews, thus data collected from the telephone interviews cannot be considered to represent more than their individual responses. This limitation was ameliorated in part by the participation of 104 physicians and 51 residents or interns in the self-reporting survey and 9 physicians in 1 of the 2 focus groups.

CONCLUSIONS

Findings from the Via Christi Libraries' needs assessment provided the evidence necessary to develop a user-centered strategic plan. In her 1994 Janet Doe Lecture, Matheson [19] called attention to a statement by O'Donnell [20], who asserted that in the twenty-first century, ''the library will cease to be a warehouse and become instead a software system.'' Matheson expanded on the idea of library as software system, contending that just one institutional system would not be enough. Instead, each discipline would require its own system—one that was ''best suited to its knowledge representation and problem-solving needs.'' The findings from the Via Christi Libraries' needs assessment indicated both a warehouse and customized variations of a software system were needed by center staff. They wanted the library as a place to find and use print resources, but they also wanted the librarians to provide information services tailored to specific disciplines in the health system. Despite some concerns in the field of library and information science about disintermediation—end users bypassing librarians and librarians to gain direct access to information—the results of this study suggested that in some instances, the roles of hospital librarians might be evolving in a more positive direction—expanding rather than contracting.

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APPENDIX A

Self-reporting survey questions (print format)

Are we meeting your information needs? Your responses to this survey will help the professional staff of the Via Christi Libraries to deliver services and resources that further the mission of the Via Christi Health System by meeting your information needs and expectations. Thank you—we appreciate and value your input.

1. Please check the category that best describes your profession or position.
   ____ Physician
   ____ Resident/intern
   ____ Physician assistant
   ____ Therapist (OT, PT, RT)
   ____ Pharmacist
   ____ Technician (radiology, lab, pharmacy)
   ____ Nonclinical administrator/manager
   ____ Nursing administrator
   ____ Advanced registered nurse practitioner
   ____ Staff nurse/floor nurse
   ____ Nurse-educator
   ____ Nursing student
   ____ Dietician
   ____ Other clinical position (please specify)
   ____ Other nonclinical position (please specify)
2. Do you have convenient access to a computer with an Internet connection?
   ____ Yes, at work
   ____ Yes, at home
   ____ Yes, at work and at home
   ____ No convenient access
3. Do you search online databases (e.g., MEDLINE, CINAHL, UpToDate) for answers to your information needs?
   ____ Yes, I search myself
   ____ Not personally, but I do ask a librarian to search on my behalf
   ____ Not personally, but I do ask someone else (e.g., an assistant, technician, or student) to search on my behalf
   ____ No, I do not search online databases
4. Have you visited one of the Via Christi Libraries within the past six months?
   ____ Yes
   ____ No
   ____ Do not recall

If you answered yes to question 4, please continue with the next question. If you answered no or do not recall to question 4, please skip ahead to question 6.

5. How often do you use the following Via Christi library services? (Daily, Weekly, Monthly, Quarterly, Never)
   ____ Literature search by a librarian
   ____ Assistance in locating information, either online or in the library
   ____ Assistance in obtaining copies of journal articles
   ____ Orientation to the use of electronic or print resources available through the libraries
   ____ Recommended links to search engines, other libraries, and PDA resources
   ____ Computer/Internet access
   ____ Access to print journals
   ____ Access to books (e.g., handbooks, clinical texts, encyclopedias, dictionaries)
   ____ Audiovisual equipment or services
   ____ Study space
   ____ Other services (please identify in spaces below):
6. Have you visited the Via Christi Libraries Website within the past six months?
   ____ Yes
   ____ No
   ____ Do not recall

If you answered yes to question 6, please continue with the next question. If you answered no or do not recall, please skip to question #10 and continue with the survey.

7. Please respond to the following statements about the usability of the Via Christi Libraries Website
(Strongly disagree   1 2 3 4 5   Strongly agree):
   ____ Information available on the Website made it clear what services and resources are available from the Via Christi Libraries.
   ____ The content of the Website is up-to-date.
   ____ Information and resources available from the Website generally answer my information needs.
   ____ The design of the Website is well organized and clear, making it easy to navigate the site.
   ____ The size and style of letters used on the Website make it difficult to read.
   ____ Links within the Website are current and working.
   ____ Graphics used are appropriate for the purpose.
   ____ The overall look of the Website is attractive and attention getting.
8. How often do you use the following online resources? (Daily, Weekly, Monthly, Quarterly, Never)
   ____ UpToDate
   ____ MEDLINE (via Ebscohost, PubMed, or another source)
   ____ CINAHL
   ____ Cochrane Database of Systematic Reviews
   ____ Health Business Fulltext Elite database
   ____ Proquest Nursing Database
   ____ PsycINFO database
   ____ International Pharmaceutical Abstracts
   ____ American Dietetic Association Nutrition Manual
   ____ Via Christi online catalog of holdings
   ____ Via Christi A-to-Z Journal Title List (electronic full text and print journal holdings)
9. How did you first learn about the resources and services provided by the Via Christi Libraries?
   ____ During an orientation session or a staff meeting
   ____ During a presentation by one of the library staff
   ____ From a brochure or a newsletter (such as Via Christi This Week)
   ____ From the Via Christi Libraries Web page
   ____ From visiting one or more of the libraries
   ____ From a colleague or supervisor
   ____ From another source (please specify)
   ____ Do not recall

If you have visited one of the Via Christi Libraries *or* have used the Via Christi Libraries Website within the past six months, please skip ahead to question #11.

10. If you have *not* visited one of the Via Christi Libraries or used the libraries' Website within the past six months, what are your reasons for not doing so? Please check all that apply.
   ____ No time to do so
   ____ No convenient access to a computer with Internet access
   ____ Did not know full range of library services available
   ____ Library hours not convenient
   ____ Library location not convenient
   ____ Library resources not relevant to work-related information needs
   ____ Not needed, use information resources available from another organization (e.g., clinic, office, university library)
   ____ Not needed, use information resources available on the Internet
   ____ Not needed, use information available from colleagues and/or supervisors
   ____ Did not know library services or resources were available
   ____ Other (please specify)

11. What else should the Via Christi librarians know to better align library services to your information needs and expectations?

APPENDIX B

Telephone survey questions

1. Would you describe the work you do at Via Christi as clinical or nonclinical? _____
[Branching]
Response: Clinical
2. What type of clinical work do you do? _____
Response: Nonclinical
3. In what area or department do you work? _____
4. What type of work do you do? _____
All respondents:
5. Please think back over the past few weeks. During that period, did you need information that you could not find in time for it to be useful?
____ Yes
____ No
[Branching]
Response: Yes
3. Please describe the question or kind of information you needed.
4. What was the impact of your not having the information? Was there:
____ A direct impact on the quality of patient care?
____ An indirect impact on the quality of patient care?
____ A loss of time spent on your information search?
____ A loss of possible revenue (yours or the institutions)?
____ Any other negative impact? (if yes, identify negative impact) _____
All respondents:
5. Speaking more generally, what type or types of information do you frequently find yourself looking for over the course of a work day?
6. When you need information of the type that you have just described, do you use Via Christi library services to find what you need?
____ Yes
____ No
[Branching]
Response: Yes
7. What type of library services do you find most useful for the type of information needs you have mentioned?
____ Print resources available in the library
____ Information available from the libraries' Website
____ Working with one of the librarians to locate information
____ Another type of service (please specify)
Response: No
8. Why is it that you do not use the Via Christi Libraries to meet your information needs?
9. What could we do to make library services more useful to you?

APPENDIX C

Focus group questions

1. Think about the work ahead of you this week. What kinds of information are you going to need? Where and by what means are you going to access that information?
2. What are your frustrations in using library services?
3. What are the best communications channels for making your group aware of library services?
4. Looking ahead to the next three to five years: if there were no limitations on the hospital library services you could have access to, what would those services look like? Dream big.
5. What else should the hospital librarians know so that they can be most useful to you?