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# **Transforming the present — discovering the future: the University of Pittsburgh's NLM grant on education and training of health sciences librarians\***

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Background: The University of Pittsburgh was awarded a grant by the National Library of Medicine to study the education and training needs of present and future medical librarians and health information specialists through a collaboration of the university's School of Information Sciences and Health Sciences Library System. Goals and objectives for the year-long project included (1) assessment of education and training needs of medical librarians, (2) development of a master of library science curriculum and an internship program that would prepare graduates to take leadership roles in medical librarianship or information management, (3) development of continuing education programs for medical librarians in different formats, and (4) development of targeted recruitment efforts to attract minority group members and individuals with undergraduate science majors. The importance of this project, present practice, and success factors for programs seeking excellence in the preparation of health sciences information professionals are reviewed. A needs assessment involving a national advisory panel and a follow-up study of individuals who have participated in previous specialized training programs in health sciences

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information, compared with a peer group of medical librarians who did not participate in such programs, is described. This paper presents the goals and objectives of the project, describes the methods used, and outlines a curriculum, continuing education initiatives, and recruitment activities.

The University of Pittsburgh, under the leadership of its senior vice chancellor for the health sciences and with the direct involvement of the Department of Library and Information Science in the School of Information Sciences (SIS) and the Health Science Library System (HSLS), formed a consortium to investigate and plan a program that would address the educational and training needs of present and future medical librarians and health information specialists. This consortium began a three-pronged initiative to position the University of Pittsburgh as a national center of excellence for the education of health sciences information specialists and medical librarians.

## GOALS AND OBJECTIVES

During the one-year project funded by the National Library of Medicine (NLM), a revised curriculum for a master's degree program in the field of health sciences information was planned and implemented. A program of continuing education offerings that would attract lifelong learners from the world of medical library practice was also planned and implemented, and a recruitment campaign was designed to bring more persons of color and individuals with a life sciences background into the field of health sciences librarianship.

The specific objectives of the project were

- to assess the needs and concerns of individuals practicing in the medical library community regarding education and training for medical librarians;
- to develop a master of library science (M.L.S.) curriculum and internship program that would focus on preparing students to take a leadership role in the rapidly evolving field of health sciences librarianship and information management;
- to develop a formal continuing education program for mid-career medical librarians that could be delivered in both short-course and degree formats;
- to develop a targeted recruitment effort that would attract both African Americans and Native Americans, as well as individuals with a science or computer science major in their undergraduate programs.

## IMPORTANCE OF THIS PROJECT

The evolving role of health sciences information specialists and medical librarians has been documented

in a number of essays [1-7]. The changing nature of medical information, in particular its literature and knowledge-based information, has also been documented [8-9]. The consensus is that it is imperative that graduates of any forward-looking library and information science (LIS) program be better equipped to take on a variety of new roles.

Librarians may find themselves in demand as teachers of information-management skills and trainers, particularly for students of the health professions; as clinical specialists in an expanded version of current Clinical Medical Librarian programs; as technology-transfer officers for telemedicine and virtual-reality applications; as consultants to health care providers with complex information-management problems; as health educators for consumers, patients, and families; as preservation and conservation specialists and records-management experts; as resource builders for World Wide Web and digital materials; or as managers of integrated information services in health care institutions.

These LIS-trained individuals will work in both traditional and new settings, including health care conglomerates that combine hospitals with long-term-care facilities and health maintenance organizations, as well as in academic medical centers that have committed themselves to an integrated information-management environment. These individuals may also find positions on the faculties in health profession schools, in the pharmaceutical, insurance, technology, and publishing industries, and in elementary and secondary schools and patient-education sites. There will be a need for such individuals to work in public information service centers such as public libraries and social service agencies, and as independent information brokers in the fee-for-service practice of providing health information. Some of these professionals may in fact be "librarians without libraries," whose careers revolve around health care providers who contract with them for information services.

A number of new professional issues arise for these individuals, including questions of licensure, accreditation, and certification; mandated continuing education; the need to stay abreast of technological change and research on information issues within the field of health care. There is an increased awareness of the need to cooperate and work on health care teams with medical informaticists, registered records administra-

tors, pharmacists, nurse educators, social workers, hospital administrators, and other information professionals.

Among the new skills that these professionals must master are concepts and practices in adult education; technology-transfer skills; medical languages, including specialized terminology and jargon; and an understanding of legal, economic, and governmental practice. Perhaps of paramount importance, however, is the necessity to develop good professional links to fellow health information professionals in medical centers and to faculties in the health sciences. This interdisciplinary cooperation is the hallmark of successful change in LIS education for the changing world of the health sciences. Interdisciplinarity and team work are now the watchwords of good clinical care, so interdisciplinary efforts in the education of health information professionals are now necessary. Without such links, traditional medical librarianship will become increasingly irrelevant to the health sciences and may be perceived as a luxurious anachronism in a time of health care cost containment. If, however, health information professionals and those who educate them adapt their programs and skills to meet the needs of the changing health care workplace, the role that they play in information management will be significant.

## PRESENT PRACTICE

At present, the most typical preparation for a career in health information is to earn a graduate degree from a library and information science program accredited by the American Library Association, preferably a program that offers a specialization or focused group of courses in medical library work. This preparation is similar to the program followed by someone seeking credentials for special librarianship in general, but includes elective coursework in the literatures of medicine and science; computer applications in the management, storage, and retrieval of information; and specialized library management. An optional internship or field experience in a medical information setting may also be characteristic of this preparation.

The knowledge base in medicine, the language of health care, the unique needs of users from the community of medical practice, and the rapidly changing aspects of information technology in health care all mandate that medical librarians and health sciences information specialists be educated in new and different ways. The traditional health sciences bibliography course and a medical library management class will not be enough. In addition to developing LIS coursework with emphases that match the research and clinical needs of medical center personnel, LIS students must be encouraged to take courses in schools

that teach the health professions, not only for the content but also for collegial networking with those who will become their clients. Rigorous internships or cooperative field placements, and post-master's residency or associate programs must also be devised and expanded so that LIS students can participate in real-world settings where health sciences information is used daily in innovative ways. In 1993 and again in 1995, participants in the MEDLIB-L electronic conference were queried about the variety of coursework and experiences that they viewed as important for new entrants into the field of medical librarianship. The results of the 1995 survey are shown in Appendix A.

With respect to continuing education (CE) initiatives, most activity is currently clustered around the provision of half- or whole-day CE courses coordinated by the Medical Library Association, or the provision of short courses of no more than a week in length, which are sponsored by academic departments of library and information science. Sponsored journal club experiments have been moderately successful in linking small groups of practitioners for discussion of current issues or specialized concerns. Attendance at regional and national library or informatics association conferences has also provided continuing education for those library staff able to afford to attend such meetings.

In the area of recruitment of persons of color and individuals with a life sciences or a computer science background, very little hard evidence exists on which to base an assumption about present practice. The LIS programs associated with historically black colleges and universities have not had regular course offerings or specializations in health sciences information [10]; minority-identified individuals typically come into the professional LIS education programs because they have worked in a non-professional position in a medical library and realize that the acquisition of the professional degree is requisite to career growth. Information on the percentage of minority students enrolled in LIS programs is gathered annually by the Association of Library and Information Science Education [11], but these data do not indicate how many of these individuals are pursuing degrees with a focus on health sciences librarianship. Similarly, the data collected annually in the *Library Journal* survey on placement and starting salaries are not detailed enough to indicate the numbers of new minority graduates who are entering medical libraries [12].

Undergraduate science majors, similarly, stumble into careers in health sciences librarianship when they discover that other or more traditional avenues—medical school or a Ph.D. program, laboratory work or technician positions—are not career paths that appeal to them. Some individuals choose librarianship after spending some time as clinical health

care providers, particularly nurses who want to leave clinical service but remain in a health care profession. Studies decrying the absence of science specialists in academic and special library positions have been done [13-15], and a number of pieces discussing the difficulty that medical library administrators have in hiring new M.L.S. graduates with a science degree have been published [16-19]. These materials are descriptive of the problem, but do not offer any practical strategies or solutions.

## NEEDS ASSESSMENT

A needs assessment process, specifically designed to tap into the expertise of an internal and external advisory panel, was undertaken. The panelists were chosen to represent the myriad stakeholders whose interests must underlie all planning efforts, including librarians, clinicians, library and information science educators, researchers, health educators, and administrators. Together, they represented the various groups who have a vested interest in the issues inherent in the education and training of health sciences information specialists and medical librarians. Each brought a store of experience and knowledge that informed the discussions on curriculum design, recruitment, and lifelong learning. A roster of the Advisory Panel members appears in Appendix B.

The Advisory Panel communicated through a closed electronic discussion list, and the panel met in Pittsburgh midway through the project period. The panel and the project investigators discussed at length the future of the health sciences information professions, the specific curricular needs that should be met by formal graduate study, the structure of internships, recruitment of a new generation of information professionals, and the delivery of continuing education for medical librarians. The outcome of the project team's own knowledge, the input from the Advisory Panel, and the results of a follow-up research project aided in the planning process.

A major needs assessment initiative was a formal research study undertaken to clarify the status of an aspect of health sciences information work that has not been formally documented to date. The survey was a follow-up study of approximately 250 individuals who have participated in any one of several specialized training programs in health sciences information work during the last two decades, together with a peer group of practicing medical librarians who did not participate in such programs. The follow-up study was aimed at those individuals who were part of one of the following programs: the National Library of Medicine (NLM) Library Associates Program; the NLM Woods Hole Medical Informatics short course program (librarian participants only); the NLM/Council on Library Resources Library Admin-

istration interns; the Research Library Residency program at the University of Illinois (medical library fellows only); the Research Library Residency program at the University of Michigan (medical library fellows only); graduates of the Case Western Reserve University National Institutes of Health (NIH)-funded M.S.L.S. program; graduates of the University of California at Los Angeles NIH-funded M.S.L.S. program; graduates of the Rosary College M.L.S. program who took the Medical Library Association CE course sequence; graduates of the University of Pittsburgh School of Information Science who concentrated in medical librarianship, 1975 to 1995; Ph.D. graduates from LIS and related doctoral programs whose dissertations were on health sciences information or medical library topics, 1983 to 1995 [20].

The questionnaire asked these individuals about their career paths, lifelong learning and continuing education needs, and perceptions of the evolving role of medical librarians and health sciences information specialists, and their recommendations for curricular change in LIS education. In addition, several questions about how individual medical information specialists were themselves recruited to the field were included. This study attempted to ascertain

1. if these individuals are themselves representative of the target population of persons of color and persons with a science background,
2. whether their participation in a specialized training program gave them a salary and placement advantage in professional practice,
3. whether their career paths have been markedly different than those of others who did not participate in such programs, and
4. whether their lifelong learning needs are different than those of more traditionally trained individuals.

The responses of these individuals were compared with those from a stratified sample of medical librarians who did not participate in such specialized programs, which was drawn randomly from the memberships of the Hospital Libraries Section of the Medical Library Association; the Medical School Libraries Section of the Medical Library Association; the Nursing and Allied Health Resources Section of the Medical Library Association; the Medical Informatics Section of the Medical Library Association; the Association of Academic Health Science Library Directors; the SIG MED group of the American Society for Information Science; and the Biological Sciences Section of the Special Libraries Association.

Some follow-up studies, salary surveys, and local CE needs assessments had been done [21-26], but none specifically addressed the impact of specialized education for health sciences librarianship as opposed to other fields. Local and regional CE needs assessments are common, but only the preparatory work for the MLA's *Platform for Change* [27] provided a na-

tionally oriented continuing education needs assessment.

The study (whose findings are to be reported separately) yielded a profile of the medical library practitioner as well as a needs assessment for continuing education. The findings also influenced both the development of curriculum in the SIS and the content of the internship developed at the HSLs.

## CURRICULUM

The University of Pittsburgh SIS already offered a more focused M.L.S. program in information technology and health information than many other ALA-accredited programs available from the University of Pittsburgh; its curriculum was nonetheless scrutinized to ensure that students pursuing an M.L.S. with a health information focus take full advantage of the opportunities for training in information technology, and for development of knowledge in science and medicine.

The Department of Library and Information Science identified health sciences information as a priority area for growth in its most recent strategic planning document [28]. The department revised its core program, and provided additional elective time for M.L.S. students to pursue a specialization. Specific units that focus on the MeSH and the NLM classifications, and on issues in indexing the biomedical literature, were added to the revised core courses. A course on patient and consumer health information is proposed for the spring or summer term of 1997. This brought to four the elective courses specifically in health sciences in the department: the others are Health Sciences Information Sources and Services, Introduction to Medical Informatics, and Resources and Services for Special Populations: The Aging and Geriatrics. A continuing emphasis on encouraging students to take six graduate credits in other schools such as the university's Graduate School of Public Health or the School of Health and Rehabilitation Sciences is also necessary. The addition to the curriculum of a required Professional Experience course that will culminate in a specific research paper, portfolio, or field experience in the last term of M.L.S. study will also be a target opportunity for M.L.S. students in medical librarianship, particularly for those who may do an internship in the Health Sciences Library System.

The project team also investigated new methods for professional education, and in particular the use of problem-based learning. This new approach to professional education is transforming medical education. Many of its features—the biomedical problem, small group tutorials, student-directed learning, and the multidisciplinary team approach to education—offer genuine promise for the transformation of LIS

education as well. The University of Pittsburgh School of Medicine has implemented a new problem-based curriculum, entitled "Physicians in Two Thousand" (PITT), with the active participation of HSLs librarians [29–30]. Opportunities may exist to bring M.L.S. students and library interns together with medical students for joint teaching and learning in the area of information management.

The development of the required formal internship or field placement was also vital. Internships provide exposure to the working health care environment, as well as opportunities to master specific skills and applied knowledge. These are indispensable complements to classroom education. The internship experience also encourages students to develop teamwork skills and explore new roles.

During the planning year, there were three interns working in HSLs, each of whom represented a different model. From these experiences, guidelines for various types or models of internship activities were developed for use in applications for future funding. One intern worked as a post-M.L.S. full-time paid intern in the HSLs for six months. This individual had a clinical health sciences background, having worked as a medical technologist for several years, and completed the M.L.S. in June 1995. This intern's activities included answering reference questions, performing online searches, participating in projects involving the World Wide Web, and evaluating various databases and search engines; in the future, there will also be rotations through other Falk Library departments such as Technical Services, Systems, and the Microcomputer and Media Center, as well as observation of health sciences libraries in settings such as the Eye and Ear Institute and Western Psychiatric Institute and Clinic (WPIC). A second intern completed a more traditional 200-hour internship in Falk Library for three credit hours in the M.L.S. program; this intern had health sciences grants administration experience and a graduate degree in psychology. The objectives for this intern were primarily focused on the provision of reference services, development of subject pages for the World Wide Web, and in-house studies on current awareness tools and a user survey; the intern also spent some time in other Falk departments and the WPIC library. A third intern worked full-time in Falk Library in a paraprofessional position while taking courses toward the M.L.S.; this individual had a health education degree, and participated in the interns' group educational activities and seminars.

The interns participated with HSLs librarians and project investigators in a biweekly seminar and journal club program aimed at providing greater awareness of the current health care environment. Seminar speakers included the director of the Office of Medical Education and the deans of the Schools of Nursing,

Health and Rehabilitation Services, and Pharmacy, and the Graduate School of Public Health. These seminars alternated with a traditional journal club discussion of recent medical and LIS literature on how trends in these areas of health care and education affect the provision of health care information.

Medical library practitioners are keenly interested in such internship programs; a model for such a training program appears in the first volume of MLA's *Current Practice in Health Sciences Librarianship* series [31]. While the M.L.S. program at SIS has offered a popular field placement option for many years, the medical library component was developed individually by each site that accepted an M.L.S. intern. More formal requirements for the site activities, and a formal recognition of the site supervisors as partners with the SIS faculty, were desirable. In addition, the duration of the field placement—currently set at about 150 hours of on-site time for three credits—needed to be increased.

## CONTINUING EDUCATION

Library and information science faculties and large academic health sciences libraries must consider expanding their continuing education offerings and sponsoring continuing education work that can attract both current students and health information practitioners who want to become more familiar with topics and techniques that may have emerged in the field since the completion of their academic studies. Ways in which LIS programs and academic health sciences center libraries or hospital libraries can offer sabbatical opportunities for practitioners and LIS educators to refresh their skills and learn new ones must also be developed.

Health information professionals and LIS faculties alike must pay particular attention to the development of statements of education policy such as the Medical Library Association's *Platform for Change* [32] and the statements put forth by health professionals about education and training goals, such as those of the AAMC [33–34], in order to stay in the forefront of a changing academic marketplace. As societies and professional organizations develop certification mechanisms and sub-specialty qualifications, LIS professionals must insist on full participation in the activities related to health information, whether for the first professional degree or in continuing education.

The SIS expanded its already large program of continuing education offerings. The SIS and the HSLs jointly sponsored several continuing education programs that attracted both current students and health information practitioners who want to become more familiar with topics and techniques that may have emerged in the field since the completion of their M.L.S. studies. In addition, the HSLs in conjunction

with the Advisory Panel members considered ways in which medical library employers can offer short- and long-term sabbatical opportunities for practitioners to refresh and learn new skills.

Many current staff members in health sciences libraries—in academic settings or in hospital settings—received their professional training before medical informatics was an area of interest. Librarians and information professionals who are now beginning to work with this field on a daily basis require continuing education to master and apply these concepts.

Three separate continuing education initiatives for the Department of Library and Information Science took place. The first, with funding from the U.S. Department of Education, was a one-week Institute on Life Sciences Reference and Research (May 6–10, 1996), which brought together sixteen presentations by distinguished researchers and teachers on aspects of health sciences information and medical informatics. Thirty-five participants were selected from the more than sixty applicants to the institute. Papers from the institute are being prepared for publication.

The second department initiative was the presentation of a course entitled "Update in Health Information," which was offered during the summer session of 1996 and featured six CE workshops that could be taken for academic credit by M.L.S. students, provided they attended all workshops and completed a research paper arising out of one of the workshop topics. Each workshop was also available for stand-alone CE credit through MLA, and drew numerous CE registrations from the community of health sciences library practitioners. The six workshops in the 1996 update were the University of Missouri SLIS Telecast workshop on trends in consumer health information and telemedicine (supported by the NLM's Education and Training Grant to the University of Missouri SLIS), a MEDLARS review and refresher course from the NLM National Online Training Center, and workshops on outreach services by medical libraries, electronic records and archives for the medical library, patient and consumer health information sources, and disaster planning for medical and special libraries.

The third initiative was the announcement of a roster of "Library Science Continuing Education Opportunities" for the summer of 1996, including an array of twenty-two different one-, two-, or three-day workshops with topics covering the Internet, the World Wide Web (nine different workshops), digital publishing, government information, cultural diversity, presentation graphics, and electronic information literacy.

The investigators and Advisory Panel discussed the issue of who should share responsibility for the continuing education of librarians and information professionals. Other models for delivery were discussed,

including distance learning via interactive television and the World Wide Web, computer-assisted instruction, and journal clubs. The role of the library and information science programs in providing assistance to health sciences libraries as they mount in-house or in-service staff development programs was also investigated.

Paramount to an understanding of these issues, however, was the need to collate existing needs assessment information, and to understand current health sciences library practitioners' concerns for their own professional development. The follow-up study provided some guidance for this part of the planning effort.

## RECRUITMENT

A review of relevant literature on recruitment revealed that few individuals come to the graduate programs in librarianship with much practical education or experience in health sciences or health care. M.L.S. students with bachelor's degrees in the sciences are also rare [35-37]. In addition, persons of color are seldom recruited specifically to work in health information settings or to degree programs which offer specializations in medical librarianship [38].

The project focused on two recruitment initiatives: to attract persons of color, particularly African Americans and Native Americans (the University of Pittsburgh does not have a large number of Hispanic students, and most Asian students at the university are international students from Pacific Rim countries); and to attract persons with a science major in their undergraduate preparation.

The project investigators believed that facilitating personal contacts with role models was the best way to persuade individuals from these groups to consider professional education and a career in health sciences information work. The investigators further believed that such personal contacts had to be initiated much earlier in an individual's career-planning process than heretofore had been the case, and should take place at least during their undergraduate education, if not in high school.

It is also possible that individuals with science experience and persons of color who now work in non-professional positions in medical and academic libraries are a target audience for recruitment. The Advisory Panel members with science backgrounds who chose careers as LIS professionals were helpful in these discussions. The Advisory Panel also suggested the development of a target list of medical libraries with larger non-professional staffs who could advise on the issues related to attracting "the best and the brightest" of these staff members to a program of professional education. Recruitment initiatives are also under way with the deans of the University of

Pittsburgh School of Nursing and the School of Health and Rehabilitation Sciences, both of which have undergraduate programs that the respective deans have identified as producing recent graduates who may be interested in information careers.

Project investigators also identified science faculty members in selected undergraduate institutions with programs of excellence in the life sciences. The primary focus in the planning year was on science faculty from colleges and universities in Pennsylvania, and science faculty members in historically black colleges and universities in the eastern United States. Specifically, the Department of Library and Information Science developed a one-page poster/brochure for use in a campaign directed at biology, chemistry and pre-medical advisors in undergraduate institutions in Pennsylvania. The Department of Library and Information Science has committed itself to the development of these poster/brochures and to the campaign in Pennsylvania as part of its ongoing recruitment effort, affording an opportunity to mesh the grant team's recruiting efforts with the department's efforts.

The project team also established a relationship with the directors and faculty of the Pennsylvania Governor's School for Health Care, a summer institute for highly talented Pennsylvania youth who are interested in health sciences careers, in order to position health sciences librarianship as a career option for these youth. This summer institute is held annually on the University of Pittsburgh campus and in the University of Pittsburgh Medical Center. Project investigators made presentations in the 1995 institute and again in the 1996 institute.

The specific input from the three advisory panelists with experience in minority recruitment, who are themselves African American, was extremely valuable; in addition, the investigators were in contact with the officers of the American Indian Library Association, two of whom hold M.L.S. degrees from the University of Pittsburgh SIS, and with the Internet officer for the Oneida Nation. Their knowledge of appropriate ways to recruit Native Americans was helpful. The project also built from the solid base of success that the SIS has already established in its efforts to recruit and retain minority students, especially African Americans.

## MEASURES FOR SUCCESS

Success in this planning process has been achieved because in one year the project produced:

1. a revised M.L.S. program for the School of Information Sciences that has a specialization in health sciences librarianship, that continues to meet the program standards for the M.L.S. as accredited by the

American Library Association, and that includes a formal required internship in a medical library as part of the program

2. a recruitment plan that identifies candidates for the M.L.S. degree who are members of a group that is under-represented in the current community of practice, or candidates for the M.L.S. degree who have earned bachelor's degrees with science majors

3. an array of continuing education courses in varying formats that offers practicing health sciences information specialists and medical librarians—or those librarians who want to change their career focus to health sciences information work—vehicles for upgrading knowledge and introducing new concepts. Special attention was paid to offerings in the areas of information technology, special library management, and medical informatics; these offerings were accepted by the Medical Library Association as suitable for medical librarians seeking certification in the Academy of Health Information Professionals.

4. the follow-up study, the results of which are being submitted for publication to an appropriate peer-reviewed journal

Discussions are under way to identify funding sources for further expansion and implementation of initiatives made throughout the planning year.

The threat of becoming a luxurious anachronism is still real, but the specific changes and innovations under way at the University of Pittsburgh are making it possible for health sciences information professionals and LIS educators to offer alternatives to the status quo. Present practice has changed, and the future is brighter for those who choose a career in the world of medical libraries and the health sciences information professions.

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38. MCCOOK, op. cit.

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## APPENDIX A

### MEDLIB-L electronic conference survey – 1995

1995 MEDLIB-L Query: What course or type of course would you recommend to a library school student who is planning on specializing in Health Science Librarianship?

#### A. Take a course or courses dealing with:

- administration/management
- medical terminology
- biology & the psychology of women
- basic anatomy
- computer/automation
- computer applications in the library
- medical reference
- database searching techniques
- basic biology
- medical/health science librarianship
- bibliographic skills
- learning theory for adults (adult education)
- medical bibliographies
- special library management & marketing
- health science resources
- information storage & retrieval
- information creation & organization
- science/technical reference
- history & development of medical thought
- history of health & medicine
- diet & nutrition in health and disease
- government documents
- theory of bibliography, cataloging
- classification & organization of knowledge
- survey of medical diseases (get the big picture)

- drug information
- research methods (to satisfy AHIP criteria)
- bibliographic instruction
- indexing and abstracting
- writing & public relations

#### B. Special coursework

- library traineeship
- student assistantship
- direct study, direct field work
- do a research project, submit for publication
- internship/practicum in medical library
- training offered by regional NLM staff
- teach, become a teaching assistant
- learn to teach effectively
- independent studies

#### C. Become familiar with

- computer operations
- quantifying your work
- developing benchmarks
- NLM classification
- fundamentals of MEDLARS
- literature of health administration, nursing & allied health
- patient & consumer health information sources
- administrative as well as clinical resources
- technical services functions: ILL, acquisitions
- MeSH, MEDLINE searching
- practical aspects of management, budget construction, management of funds received, statistical records, needs assessment
- database searching, concept of controlled vocabulary
- medical jargon
- several forms of access to MEDLINE
- word processing, spreadsheets, telecommunications
- database operating systems, e-mail
- MLA core curriculum
- MLA criteria used to certify in the AHIP
- *Platform for Change: The Educational Policy Statement of the MLA*
- Detlefsen, E.G., *Library Trends* 42(Fall 1993):342-64
- *Handbook of Medical Library Practice [now Current Practice in Health Sciences Librarianship]*
- *Bulletin of the Medical Library Association*, Oct. 1993

#### D. General information

- volunteer or intern in hospital library
- someplace where you can get a real feel for being a researcher, cataloger, photocopier, manager

- do as many electives in the health sciences as your program allows
- read MLA publications, chapter & section newsletters
- get teaching experience
- choose topics related to the medical sciences for your papers/assignments
- attend national, state, regional or local meetings of medical librarians, visit the exhibits
- read all the professional medical librarian journals to stay current in the field

[comments edited slightly by Ellen Detlefsen, March 1995]

## APPENDIX B

### Advisory Panel

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