# SPECIAL REPORT

## The Informationist Conference: report

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### INTRODUCTION

On April 4 and 5, 2002, a conference was conducted at the National Library of Medicine's (NLM's) Lister Hill Center to explore the concept of an ''information-ist'' as proposed by Davidoff and Florance [1]. The conference was funded by NLM and hosted by the Medical Library Association (MLA). The goal was to facilitate a national discussion, derive a consensus definition, and develop recommendations for an action agenda for the informationist professional in the clinical and research domains. The conference objectives were to:

- examine the need for an informationist type of health information professional in health care and biomedical research settings;
- discuss how informationists compare with existing professionals in terms of their unique roles;
- identify the requisite knowledge, skills, and attributes for informationists in different settings;
- determine desirable education and training models and sources for informationists;
- identify how to determine the value of an informationist in health care and research settings (evaluation);
- draft desirable financing models (including salary, third-party reimbursements, indirect costs, grants, fellowships, institutional cost-savings, etc.);
- formulate implementation models that may include grants, fellowships, pilots, and so on; and
- determine promotional vehicles for the informationist concept.

Participants included health sciences librarians, physicians, nurses, bench researchers, pharmacists, association officers and executive directors, library school educators and deans, medical school curriculum directors, and government agency representatives. National Network of Libraries of Medicine (NN/LM) executive and associate directors, librarians from the National Institutes of Health and NLM, and MLA headquarters staff were also present. More than seventy-five attendees listened to twenty-three speakers, who represented different types of health care professionals. Participants also took part in brainstorming group sessions with the results of the groups' thoughts reported to all. A list of attendees may be found on the conference Website. A reception was held at the close of the first day in the Lister Hill Center foyer that permitted more informal exchange of thoughts among conference attendees.

### PLANNING

In May of 2001, the MLA Board of Directors charged the Informationist Conference Task Force to:

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■ determine the best meeting format to facilitate: (1) further exploration of the concept of the ''informationist'' as it relates to health sciences librarians or libraries and education for the profession and (2) preparation of recommendations regarding the next actions that the health sciences library profession should pursue;

■ draw up a list of invited attendees and alternates covering major stakeholders, including, but not limited to, the following groups: MLA members (in addition to members of the MLA Informationist Conference Task Force), Association of American Medical Colleges Group on Information Resources (AAMC/GIR), the Association of Academic Health Sciences Libraries (AAHSL), NLM, and the Philadelphia Regional Chapter informationist symposium editors and authors;

■ plan the agenda for the invitational conference to optimize attendees' time; and

■ obtain recommendations for subsequent actions as they pertain to the profession.

No formal meeting of the entire task force ever occurred. Email correspondence, telephone calls, and task force subgroup meetings at various MLA Board of Director meetings and at the Association of American Medical Colleges (AAMC) meeting in November 2001 were employed for planning the conference. Task force members included: Jean Shipman (chair), M.S.L.S., director, Tompkins-McCaw Library for the Health Sciences, Virginia Commonwealth University; Diana Cunningham, M.L.S., M.P.H., associate dean and director, Medical Sciences Library, New York Medical College; Jacqueline Donaldson Doyle, M.S., manager, Clinical Innovation and Continuing Medical Education, Banner Health System; Valerie Florance, Ph.D., program officer, Extramural Programs, NLM; Ruth Holst, M.S.L.S., manager, Medical Library, Columbia Hospital; Carol Jenkins, M.L.S., president, MLA, and library director, Health Sciences Library, University of North Carolina at Chapel Hill; Joanne Marshall, Ph.D., associate professor, School of Information and Library Science, University of North Carolina at Chapel Hill; Julie McGowan, Ph.D., professor of knowledge informatics and pediatrics and director, Ruth Lilly Medical Library, Indiana University School of Medicine; T. Scott Plutchak, M.L.S., director, Lister Hill Library, University of Alabama at Birmingham; and Carla J. Funk, M.L.S., M.B.A., CAE, executive director, MLA headquarters.

The task force members discussed the various roles an informationist could perform and the potential work settings for this professional. After much deliberation, the decision was made to concentrate on only two work arenas for purposes of the two-day conference, the clinical and research settings. Other discussions centered on the conference content. The task force decided to have three concept exploration panels—one dealing with the clinical setting, one with the research setting, and one with educating information-

ists. Following these panels, breakout group brainstorming sessions would take place, ten groups total, with two groups focusing on each of five topics. Reports from all groups would then be shared. A final action agenda panel would provide ideas on how to take the informationist concept from theory to practice. Marshall Keys, Ph.D., MDA Consulting, was hired as a facilitator and provided a summary of lessons learned from each panel.

## INVITED SPEAKERS AND CONFERENCE AGENDA

The goal of the conference was to have a variety of health professionals discuss their views of what informationists could offer to their work environments and their health care specialty fields. Speakers also expressed their views on the issues that needed to be addressed for transforming the concept into practice; for example, peer acceptance, funding, licensure requirements, and educational preparation. The full conference agenda is posted on the conference Website.

The first day began with welcoming remarks from Kent Smith, deputy director, NLM, and Carol Jenkins. The keynote speakers, Frank Davidoff, M.D., editor emeritus, *Annals of Internal Medicine*, and Valerie Florance, Ph.D., were then introduced by Betsy Humphreys, M.L.S., associate director for library operations, NLM.

### Keynote presentations

Dr. Davidoff began by describing the gap between medical science and medical practice, stating that barriers to accessing knowledge-based information are the primary reason why such information is not being applied at the bedside. He used a ''diffusion of innovation'' framework, based on the work of Everett Rogers [2], to provide some insight into why published scientific evidence is not diffused more rapidly into medical practice. Dr. Davidoff likened the informationist concept to an innovation that has not caught on in the health care practice environment despite the fact that the clinical librarian and clinical pharmacist concepts have been around since the late 1970s. He used Rogers' work to outline the complex factors that explain why innovations are not diffused into practice.

Dr. Davidoff described Gertrude Lamb as an innovator and acknowledged that there were a number of early adopters of the clinical medical librarian concept. However, innovations cannot survive without the acceptance of what Rogers calls an ''early majority,'' which is where the clinical medical librarian concept has been stymied. Dr. Davidoff questioned how the profession should move on.

Dr. Davidoff completed his remarks by applying Donald Berwick's rules for innovation to the informationist concept [3]. These rules include:

**Table 1**
Topic A: Training: How should informationists acquire needed knowledge and expertise in clinical and research settings?

| A1. Julie McGowan, facilitator, and Diana Cunningham, recorder/reporter | A2. Joanne Marshall, facilitator, and J. Michael Homan, recorder/reporter |
|---|---|
| All embraced the concept and attempted to define the concept:<br>■ clinical informationist<br>■ research informationist<br>■ resource developers<br>■ infrastructure developers<br><br>1. master's level minimum, whatever the domain, owing to the need to learn and gain experience in a discipline<br>2. different learning styles demand different kinds of training, formal or informal<br>3. maturity and ability to understand a topic<br>4. ability to search, analyze, and assess information<br>5. varying level of domain content, knowledge, and experience<br><br>Conclusions:<br>1. hard to identify specific training in such a young field<br>2. mentoring and apprenticeship are critical at this stage | The point of decision making should be the focus of the informationist, and context is important to this. The informationist is not restricted to the clinical setting, but research informationists require a deeper subject background than clinical medical librarians (CMLs).<br><br>Must haves:<br>1. knowledge of subject domain<br>2. attributes of personality: communication, collaboration, teamwork, political skills, self-confidence, motivation, orientation to multidisciplinary thinking, proactive<br>3. excellent search skills based on knowledge of data structures<br><br>Format or venue for knowledge gaining:<br>■ multi-institution or multicenter collaborative model makes most sense, along with leveraging existing environments<br>■ variety of implementations: clerkships, fellowships, apprenticeships, etc.<br>■ accreditation or certification models: no agreement on certifying individuals, program, or both<br>■ ideal candidates: background less important than other attributes, but the best background is library information science (LIS) degree plus subject knowledge plus technology knowledge<br><br>How to recruit:<br>1. "show me the money"<br>2. establish models of practice in libraries<br>3. define a career ladder |

■ find a sound innovation,
■ identify and support innovators,
■ invest in early adopters,
■ make early adopter's behavior and activity observable,
■ trust and enable reinvention,
■ create national standards,
■ create slack for change, and
■ lead by example.

Dr. Florance discussed the results from recent reports that support the need for informationists. These included the "desirable futures" identified by the better_health@here.now delphi study and the Integrated Advanced Information Management Systems (IAIMS). The Next Generation tracks of the AAMC's better_health@here.now program [4] as well as Objective 3.2: Further Training in Medical Information and Librarianship of NLM's Long Range Plan 2000–2005 [5].

The richness and complexity of the Internet-enabled information environment makes delivering useful information a grand challenge. In clinical care settings, the problem is how best to deliver the subset of information that supports good decisions. For context-appropriate information to be delivered into care settings, changes are needed at the source. For example, integrated access to information that comes from different sources requires commonality of syntax and semantics and permeable boundaries between formats and organizations. Selecting and integrating the right information from all possible resources also requires information expertise. Informationists bring this expertise to the point where decisions are made. To be effective in the decision setting, informationists must be cross-trained, considered true members of the health care team, and context-based.

Questions still unanswered for the informationist concept include:
■ How should such individuals be trained, so they can provide information at the point of health care delivery?
■ Where will these people find work?
■ How scalable is the concept?
■ Can machines be used to help perform some of the tasks?
■ Who pays for an informationist's services?
■ Will the benefits of an informationist be proved?

**Concept Exploration Panel I: the informationist in a clinical setting**

The first concept exploration panel was moderated by T. Scott Plutchak. The panel considered the varying interpretations of the term "informationist" and sought to define the sorts of services that clinicians need and expect and the different ways that such services have been provided in the past and might be provided in the future. Speakers and the areas they represented included:

Clinical Information Services Recipient: William F. Walsh, M.D. professor of pediatrics and chief of nurseries, Vanderbilt University Hospital; Clinical Medical Librarian: Diane Wolf, M.S.L.S., AHIP, associate director, Medical Libraries, Christiana Care Health System; Clinical Pharmacist: Edward M. Bednarczyk, Pharm.D.,

**Table 2**
Group B: Financial models: How should informationists' services be funded in clinical and research settings?

| B1. Patricia Thibodeau, facilitator, and Jean Shipman, recorder/reporter | B2. Linda Watson, facilitator, and Nancy Henry, recorder/reporter |
|---|---|
| Look for targets of opportunity:<br>1. clinical research projects<br>2. cancer centers<br>3. VA system<br>4. grants<br>5. entrepreneurial activities<br>Groups are the best target, seeking out demonstrations and pilots to prove concept, because successful models are important.<br>Group agreed that informationist services must not be given away for free; users value only what they pay for.<br><br>Selling points: why informationists might be funded:<br>1. protection or error reduction<br>2. quality of care<br>3. emergency national disaster<br>4. length of stay reduction<br><br>Target markets:<br>1. emergency rooms<br>2. research:<br>a. filling curator roles<br>b. performing analysis and retrieval<br>c. defining standards for data protection<br>d. consulting on grants<br>e. acting as "personal information shopper"<br><br>How to pay:<br>1. hourly rate<br>2. subcontract<br>3. retainer<br>4. job sharing between departments<br>5. insurance, but not good if licensure and liability issues<br><br>Observation: clinical would pay better than research<br><br>To do:<br>1. gather data on existing programs<br>2. develop cost models<br>3. discuss with partners (principal investigator)<br>4. communicate expertise domains<br>5. focus on customer needs<br>6. develop standards of practice<br>7. publicize success | General issues:<br>1. need proof of concept, best through institutes<br>2. need information on current models<br>3. explore partnerships<br>4. define education requirements<br>5. reallocate existing funds<br>6. investigate fee-based financing<br><br>Clinical and research follow different paths because of unique issues and opportunities:<br>1. clinical: fund through subcontract with other partners to get reimbursement<br>2. research funding:<br>a. grants<br>b. co-investigatorship<br>c. supplemental grants to existing grants<br>3. both could approach foundations (e.g., Hughes and Burroughs) for concept development<br><br>Funding training support: require payback by informationists taking on a service commitment<br><br>Action agenda:<br>Near-term priorities<br>1. research:<br>a. gather more information about current models through reviews and survey<br>b. explore NLM supplemental funding process and requirements<br>2. clinical:<br>a. begin educating library administrators<br>b. publicize early adopters, encourage early majority<br><br>Longer term:<br>1. research: all requests for applications (RFAs) require an information manager as a direct allowable expense<br>2. clinical:<br>a. initiate pilot study through a health management organization (HMO)<br>b. explore lobbying power of boomer interest in evidence-based health care to change policy |

research assistant professor of nuclear medicine, Pharmacy Practice, State University of New York at Buffalo; Clinical Research Administrator: John I. Gallin, M.D., director, NIH Clinical Center, National Institutes of Health; Consumer Health Provider: Patricia F. Brennan, R.N., Ph.D., FAAN, FACMI, professor, School of Nursing and College of Engineering, University of Wisconsin–Madison; Academic Evidence-Based Medicine: K. Ann McKibbon, M.L.S., doctoral student, Center for Biomedical Informatics, University of Pittsburgh; and Clinical Evidence-Based Medicine: Rosalind K. Lett, M.S.L.S., AHIP, director, Medical Library, Meharry Medical College.

## Concept Exploration Panel II: the informationist in a research setting

The second concept exploration panel was moderated by Linda Watson, M.L.S., director, Claude Moore Health Sciences Library, University of Virginia, and addressed the question of informationists in the biomedical research setting, both in traditional research settings as well as the emerging discipline of bioinformatics. The primary question discussed was: Do the concepts and arguments put forth in the editorial by Davidoff and Florance, which focused on the clinical setting, and the responses it provoked hold true in the research arena, or are there significant differences that must be articulated? Speakers included:

Institutional Review Boards: Kathleen Oliver, M.S.L.S., M.P.H., associate director, Welch Medical Library, Johns Hopkins University; Bench Researcher: Stephen Desiderio, M.D., Ph.D., investigator, Howard Hughes Medical Institute, Johns Hopkins University School of Medicine; Bioinformatics: Michele R. Tennant, Ph.D., assistant university librarian, Genetics Institute and Health Sciences Center Library, University of Florida; Nursing Research: Nancy F. Langston,

**Table 3**
Group C: Promotion: How should informationists' services be marketed in clinical and research settings?

| C1. Lynn Fortney, facilitator, and Rosalind K. Lett, recorder/reporter | C2. T. Scott Plutchak, facilitator, and Neil Rambo, recorder/reporter |
|---|---|
| To sell the benefits to groups with different interests (i.e., clinicians and researchers), need clear terminology | Pragmatic approach |
| Benefits: | Marketing: |
| 1. time constraints are important to both groups | 1. selling the concept |
| 2. avoid liability and errors | 2. raising visibility |
| 3. compare to other roles (e.g., biostatisticians and pharmacists) that are (1) already in place and (2) positively perceived | 3. taking first step: critical to define the concept, roles, skills, activities |
| Complication: key users, key influencers, and key resisters are all the same: physicians and researchers | Areas of interest: |
| | 1. need definition of concept |
| What would constitute success: | 2. determine stakeholders and value added for each group |
| 1. when people want to fund it | a. early adopters: willing to gamble on anecdotal information |
| 2. when the number of units of service rises | b. later adopters: require hard evidence |
| | c. these correspond to near and long term activities |
| Strategies/Action items: | |
| 1. clarify role and terminology | Strategy: present and write for national organizations |
| 2. cultivate spirit of collaboration | |
| 3. cultivate enterprise champions | |
| 4. run public relations campaign emphasizing return on investment | |
| 5. align informationist with organizational mission | |
| 6. participate in coauthoring and programs | |
| 7. work with funding agencies | |

Ed.D., professor and dean, School of Nursing, Virginia Commonwealth University; Research Informationist and Librarian: Julie J. McGowan; and Medical Researcher and Administrator: John N. Evans, Ph.D., professor and senior advisor, University of Vermont College of Medicine.

### Concept Exploration Panel III: the informationist's education

The final concept exploration panel was moderated by Joanne G. Marshall. In this panel, each speaker addressed how their particular school, institution, program, organization, or agency could help to train informationists. Speakers included:

Library Schools: Ellen Detlefsen, D.L.S., associate professor, School of Library Science, University of Pittsburgh; Informatics: Christopher Chute, M.D., Dr. P.H., professor of medical informatics, Mayo Medical School; Medical Library Association: J. Michael Homan, M.L.S., AHIP, director, Mayo Medical Library, Mayo Clinic; Fellowships: K. Ann McKibbon; National Library of Medicine: Betsy Humphreys; and On-the-Job Training: Nunzia Giuse, M.D., AHIP, director, Eskind Biomedical Library, Vanderbilt University Medical Center.

### Focused discussion group sessions and reports

On the second day, the attendees broke into ten small groups to do targeted brainstorming on five different topics. Each group was given a list of questions to address that centered on a particular aspect of the informationist concept. Each group consisted of a facilitator, a recorder/reporter, and four or five group members. The groups met in private sessions for ninety minutes. After the discussions, the attendees reconvened, and each then had ten minutes to share the results of their discussions. Tables 1 through 5 present the topics, along with the primary conclusions as they were presented on flip charts by each of the groups.

### Action Agenda Discussion Panel

The last panel was moderated by Jean Shipman and included representatives from different professional organizations, accrediting and government agencies, and professional library science and medical schools, who addressed taking the informationist from concept to reality. They emphasized what their particular units could offer to support this type of health professional. Speakers included:

American Medical Informatics Association (AMIA): William E. Hammond, Ph.D., professor-emeritus, Community and Family Medicine, and professor, Biomedical Engineering, Duke University; Medical Library Association (MLA): Carla J. Funk; Joint Commission on the Accreditation of Healthcare Organizations (JCAHO): Paul Schyve, M.D., senior vice president, JCAHO; National Library of Medicine (NLM): Betsy L. Humphreys; Library School Curriculum: Joanne G. Marshall; and Medical School Curriculum: Richard G. McCarrick, M.D., senior association dean for undergraduate and graduate medical education, New York Medical College.

**Table 4**
Group D: Concept Testing: What are suggested ways to test and implement the informationist concept in clinical and research settings?

| D1. Carla Funk, facilitator, and Norma Funkhouser, recorder/reporter | D2. Mark Funk, facilitator, and Jocelyn Rankin, Ph.D., recorder/reporter |
| --- | --- |
| Participants believed that finding funding for testing or project implementation would not be a problem.<br>The biggest concern of the group was an effective study design.<br>1. identify experts to design study<br>a. explore possibility of working through an institutional review board (IRB)<br>b. collaborate with National Cancer Institute to identify collaborators among cancer centers<br>c. maintain parallelism between study sites, which is critical<br>d. determine the outcome measures (e.g., length of stay or cognitive effects)<br>e. what studies have already been done? by libraries? in pharmacy?<br>2. define problem<br>3. focus on sustainable test projects | The group contrasted the question with evaluation of value of informationist. Their recommendations are based on pilot projects in pharmacology: first look at toxicity and dosage before looking at efficacy.<br>1. Concept and strategy<br>a. look at existing models<br>b. plan for success: right place, right person, right funding<br>c. leverage existing training funding and opportunities<br>d. market to institution as a free trial<br>2. Test<br>a. proof of concept, not definitive testing<br>b. training ramp up important before measurement<br>3. Posttesting and refinement<br>a. lead to major research projects<br>b. have conferences and discussions with parallel groups and stakeholders<br>c. need means for communication among potential partners and stakeholders during process |

## Synthesis of reports and next steps

Dr. Keys provided summary comments at the close of each panel and at the end of the conference. Summaries and notes on "lessons learned" are available at the conference Website. The key points are summarized below.

■ The informationist concept meets a critical need for an intermediary between the expanding information universe and practitioners. Successful informationists may come from a variety of backgrounds and perform a variety of roles but must have knowledge about both a subject domain and the process of locating, analyzing, and synthesizing information.

■ Persuading people to become informationists and users of informationists' services will require successful and visible model projects. Training entrants to the role must combine formal educational programs, apprenticeships or mentorships, structured clinical learning experiences, and peer-to-peer teaching.

■ Creating model programs requires creating awareness, acceptance, and commitment among funding agencies.

**Table 5**
Group E: Evaluation: What are the ways we can assess the value of an informationist?

| E1. Ruth Holst, facilitator, and Linda Garr Markwell, recorder/reporter | E2. Gerald Perry, facilitator, and Diane Wolf, recorder/reporter |
| --- | --- |
| Group focused on conceptual framework for trial.<br>Asking "What is the value of an informationist?" implies cost benefit ratios. Therefore how do you document impacts? Each domain should be analyzed: clinical, research, patient, education, lifelong learning.<br>Patient outcomes are difficult to measure in relation to informationist activities; what are appropriate proxy measures, formal and informal?<br>1. improvement in retrieval and synthesis skills<br>2. acceptance of the concept<br>3. quantity and quality of patents, publications, etc.<br>What impacts should be measured?<br>1. psychological, including job satisfaction for team members<br>2. ethical<br>3. cost control<br>4. liability control<br>5. public perception<br>Three concepts:<br>1. focus on establishing the baseline, not on benchmarking<br>2. prove the null hypothesis: the informationist is successful if the IRB or the referees do not find errors and omissions<br>3. recognize all costs, including both marginal and costs of change in the system<br>Timing: Most of this could be done in a single controlled trial. Defining the trial could be done in eighteen months. | A consensus on the model:<br>1. study requires extensive preevaluation:<br>a. inventory, reviewing existing evaluations, impact of pharmacists and bioinformaticians<br>b. enumeration of what skills are being imparted to health professionals now<br>c. survey how other members of teams are being evaluated for effectiveness, especially how nurse-educators are evaluated, high priority/short term (HP/ST)<br>2. study should be a "Manhattan Project," high priority/long term (HP/LT), with the following measures:<br>a. length of stay, error avoidance, readmits<br>b. informationist skills bleeding into group (HP/LT)<br>c. grant dollars, publications, time shifts, educational outcomes<br>d. growth in demand for quality of library services, collections (HP/LT)<br>e. impact on health policy and skill growth at active sites<br>f. patient satisfaction (medium priority/LT) |

In closing the conference, Carol Jenkins reviewed the plans for disseminating information about the conference outcomes, including:

■ posting speaker presentations and group discussions on the conference Website;

■ posting the keynote video clip to the Website and loaning videos through the NN/LM Regional Medical Libraries;

■ hosting a post-conference virtual chat with Drs. Davidoff and Florance;

■ holding chapter roundtables at MLA '02 in Dallas;

■ conducting an open forum on the informationist topic at MLA '02 in Dallas;

■ publishing this summary report article about the conference in the October 2002 issue of the *Journal of the Medical Library Association;* and

■ publishing an informationist action agenda.

## CONCLUSION

Grappling with a very amorphous subject, the conference provided an opportunity for participants to share ideas, reach some consensus, agree on differences of opinion, and create a future action agenda. Everyone learned something. Health professionals from all walks of life were able to bring their specific knowledge to the discussion and benefit from the concept exploration.

The conference was only one step in visualizing the informationist professional proposed by Drs. Davidoff and Florance. A lot remains to be done to bring the concept and its many variations into fruition. Members of MLA were invited to further explore the concept through the many vehicles offered at MLA '02 in Dallas, to host chapter and section discussions, and to entertain pilot tests of the concept. Outcomes from the conference will be used to formulate action plans that will further test the viability of the concept and, ultimately, transform the concept into meaningful practice in the clinical setting, the research arena, and any other environment in which knowledge-based information is crucial to the decision making process.

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