
ACOGQUEST: the model phase of the IAIMS project of the American College of Obstetricians and Gynecologists*

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In 1990, the American College of Obstetricians and Gynecologists (ACOG) became the first national organization to receive a model phase Integrated Academic Information Management System (IAIMS) grant from the National Library of Medicine. The goal of the ACOG model phase project is to develop and test a prototype for an integrated system that will meet the needs of ACOG and NAACOG members in patient care, research, education, and administrative information. The model phase goal will be accomplished primarily through ACOGQUEST, an integrated approach to providing accurate, current, quality-filtered information to ACOG and NAACOG members in a variety of formats. Another method of information dissemination now being tested is a heuristic-based patient management database, which will include a concise, interactive display of ACOG-reviewed information that can be incorporated into patient records.

In 1986, the American College of Obstetricians and Gynecologists (ACOG), which represents more than 31,000 practicing obstetrician-gynecologists, became the first and thus far only national organization to receive a planning phase Integrated Academic Information Management System (IAIMS) grant from the National Library of Medicine (NLM). The planning phase activities were described in a previous IAIMS symposium published in the *Bulletin of the Medical Library Association* [1].

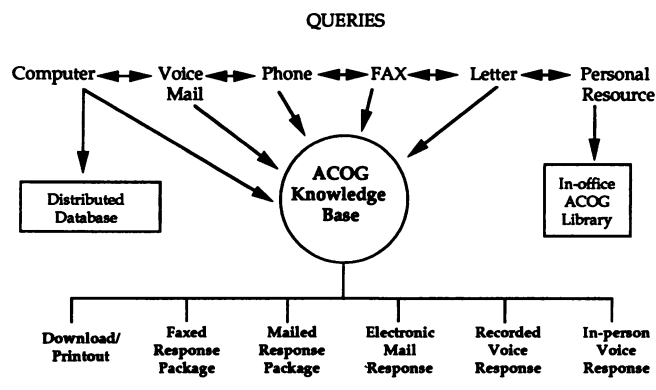
The overall mission of the ACOG IAIMS project, as defined in the planning phase, is to identify the core of knowledge necessary for the practice of obstetrics and gynecology (ob-gyn), to structure this knowledge and put it into electronic form, to integrate it into a national ob-gyn information network, to prepare ACOG and NAACOG (the Organization for Obstetric, Gynecologic, and Neonatal Nurses) members to use it, and to disseminate this core of

knowledge to members in appropriate forms. According to the strategic plan prepared in the planning phase, ACOG will accomplish this mission by pursuing four objectives: to assist health care practitioners in becoming information and computer literate by 1992 so they can access the proposed network; to define an integrated database that incorporates relationships between the elements of medical knowledge to assist health care practitioners in providing the best and most current methods for patient care and to provide the framework for lifelong medical education; to create an integrated, interactive system that enables health care professionals to communicate electronically with ACOG and NAACOG; and to serve as a model for medical information integration for medical specialty organizations.

In 1990, ACOG became the first national organization to receive a model phase IAIMS grant from NLM. The overall mission of the ACOG project remains the same, but the implementation plan has been revised in response to evolving information needs of ACOG members, changes in technology, and

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Figure 1
ACOGQUEST—as envisioned*



* The American College of Obstetricians and Gynecologists. ACOGQUEST—a versatile way to meet the information needs of ob-gyns. ACOG Newsletter. Washington, DC © January 1992.

new federal initiatives. The goal of the model phase is to develop and test a prototype for an integrated system that will meet the needs of ACOG and NAA-COG members in patient care, research, education, and administrative information.

EVOLVING INFORMATION NEEDS

A survey completed during the planning phase of the IAIMS project indicated that only 38% of ACOG members had computers, although an additional 13% planned to purchase a computer soon [2]. Correspondingly, meeting members' needs to achieve basic computer literacy and evaluate computer systems was a significant part of the planning phase. However, results of a recent survey by *OBG Management* indicate that 82% of obstetrician-gynecologists now have computers [3]. As a result of this increased computer literacy, the project focus has changed to teaching members how to manage information and to providing convenient access to quality-filtered information.

CHANGING TECHNOLOGIES

When ACOG first applied for model phase funding, telefacsimile transmission and voice mail were in their infancy, so these technologies were not critical components of the plan. Now both methods of communication are in wide use, requiring ACOG to adapt to changing technology and to disseminate information in forms desired by members. The revised IAIMS model phase plan uses these and other new technologies including CD-ROM, as well as more traditional telecommunications, mail, and telephone. Of greater importance, the revised ACOG plan also pro-

vides a framework for incorporating other technologies as they evolve.

ACOGQUEST

To address both evolving information needs and changing technologies, ACOG is developing ACOGQUEST as the primary vehicle for providing members with universal access to current, accurate, quality-filtered information. Members' requests may enter the system by FAX, electronic mail, voice mail, telephone, or letter. Responses will be provided through a continuum of technologies, from highly automated to low-tech, to suit the varied preferences of members. Dissemination may be by CD-ROM, FAX, voice mail, telecommunications, telephone, or mail (Figure 1). Members will be able to place a request via one technology and request an answer in another form. For example, a member could place a request through voice mail and request an answer by FAX.

Members also will be taught how to use information resources effectively in their practices, irrespective of the form of communication they choose. For example, ACOG publishes several hundred documents, and members need to know how to use and maintain their publication sets. Training will be provided through keys to the use of ACOG publications, published in the ACOG Newsletter, *On Target*, printed handouts, and lectures and instruction at ACOG courses and meetings. Members will be encouraged to consult their own collections of ACOG resources before contacting ACOG for guidelines. If a critical publication has been misplaced or the required information cannot be found, members still can contact ACOG in any of the ways described in the following sections.

ACOGNET

At the high-tech end of the ACOGQUEST continuum is ACOGNET, a computerized information retrieval network that has been available to ACOG and NAA-COG members since 1987. Using a computer, modem, and telephone line, more than 1,500 ACOG and NAA-COG members access ACOGNET to receive electronic mail, to search ACOG and NAACOG publications in full text, to receive news and notices, to participate in specialized conferences, and to download text files and software programs. Members can review job notices, share ideas on patient management, request and receive MEDLINE searches, find nearby subspecialists for patient referral, and review listings of upcoming educational opportunities. Soon users will be able to do their own MEDLINE searches, peruse ACOG library catalog records, register for ACOG programs, and order ACOG publications. ACOGNET use by members continues to grow, especially as a result of toll-free access.

Members learn about ACOGNET through *On Target*, a periodic newsletter; a detailed manual and quick reference sheets; one-on-one demonstrations at ACOG meetings; lectures; and online and telephone consultation.

Distributed databases

ACOG is studying the feasibility of developing and distributing an ob-gyn database on disk or CD-ROM for members who prefer maintaining the databases on their own computers. As with ACOGNET, the core information contained in the distributed database will consist of ACOG publications, including *Obstetrics and Gynecology*, the official ACOG journal. A broader knowledge base is being considered; it could include key ob-gyn textbooks, the full text of other journals, and a specialized subset of MEDLINE or EMBASE. Such a database would be updated periodically.

Voice mail and FAX

Telephone calls always have provided ready access to ACOG information. This will never change; indeed, many members find it their preferred mode of communication. Through IAIMS, traditional telephone service will be enhanced by voice mail and FAX. Members would dial a toll-free number to reach the ACOGQUEST voice mail box. They would move quickly through choices on a hierarchical series of menus to hear brief recorded messages outlining information on practice policy, upcoming meetings, and publications ordering, as well as announcements and news. Members could choose to obtain information either by listening to messages or by using their telephone keypad to request that details be sent to them by mail or FAX. Of course, members would be able to talk to an ACOG or NAACOG staff member, either immediately or by return call.

Similarly, members also will be able to send requests by FAX. At present, they can request order forms and sample publications and place orders by FAX. Other types of information will be offered as standard packages that can be transmitted by FAX, and members also will be able to request that individually prepared materials be FAXed to them by special request.

FEDERAL INITIATIVES

Some recent federal initiatives have had an impact on IAIMS activities in general. Those of most interest to ACOG include outreach to the information-underserved or unaffiliated health care professional, development of computerized patient records, and access to clinical guidelines and patient care standards. ACOG is in an excellent position to respond to each of these initiatives and to incorporate them into its IAIMS model phase plan.

Outreach

In response to a congressional request, NLM issued the DeBakey outreach report, which offers recommendations for providing information to unaffiliated health care professionals [4]. Because most ACOG and NAACOG members are not affiliated with major medical centers, services provided to members can be considered outreach activity. This includes information services provided under IAIMS. In addition, ACOG conducts several projects that target underserved populations: an annual postgraduate course on obstetric, gynecologic, and neonatal care for Indian Health Service physicians and nurses; the National Fetal and Infant Mortality Review Project (NFIMR); and maternal-child health programs aimed at providing optimal care to medically underserved populations. In the revised model phase plan, ACOG incorporated these projects into its IAIMS activities. ACOGNET is used for several outreach activities to facilitate communication, research, and data sharing. An ACOGNET conference for NFIMR project participants will provide wide access to statistical information, project findings, and technical materials developed about the fetal-infant mortality review process. PREGNET, a conference for a model network of state-level maternal and child health care professionals, provides an electronic forum for exchange of relevant information and strongly emphasizes prevention of infant mortality. Indian Health Services health care professionals, trained to search MEDLINE through ACOG's GRATEFUL MED outreach grant from NLM, receive free access to ACOGNET and ACOG Resource Center services.

Patient record guidelines

Development of a computer-based patient record and improvement of information services for health services researchers are priorities of the Institute of Medicine (IOM). The IOM Committee on Improving the Patient Record released its recommendations for an automated record at the 1991 Symposium on Computer Applications in Medical Care [5]. According to the first of five committee objectives, "future patient records must support patient care and improve its quality" [6]. In addition, the IOM Committee to Advise the National Library of Medicine on Information Center Services in Health Services Research recommends improved "access to the published results of health services research and to the various guidelines, regulations, and policy documents that pertain to the delivery of health care" [7].

An important step toward achieving the IOM objectives and recommendations is the incorporation of quality-filtered patient-management guidelines into the computer-based medical record. This can improve the quality of care because guidelines can be incor-

porated into the patient record at a point where physicians need them for clinical decision making, thus improving access to the guidelines.

A model for incorporating patient management guidelines into the computer-based medical record was presented at the 1991 Educational and Research Conference of the American Medical Informatics Association (AMIA) [8]. The authors included the full text of a society's guidelines as hypertext in a computer-based patient record. Information from the guidelines can be added to the progress notes in the record, and patient data can be compared to the guidelines. The authors' ideas are exciting, innovative, and timely because the technology necessary to incorporate guidelines now exists in IBM and Macintosh formats, patient record software companies are willing to work with societies, IOM recommends that a standardized computer-based patient record be developed and that access to guidelines be improved, and, most important, physicians and nurses need this information while reviewing patient records.

At the 1991 national ACOG meeting, several members and software vendors asked ACOG to explore providing guidelines in an automated format that could be incorporated into patient records. In response to these requests, ACOG will develop and test a more concise format than was presented at the AMIA meeting, as well as a means of incorporating guidelines into clinical decision making.

ACOG publishes quality-filtered patient management documents and recommends that they be disseminated in accordance with the IOM recommendations. In the IAIMS model phase, ACOG is developing a method for providing these documents in several formats and is exploring means of incorporating these publications into patient records. In addition, ACOG is developing a prototype for interactive clinical management decision trees that can be incorporated into automated records. This prototype will serve as a model for transforming printed guidelines into automated decision and record-keeping tools.

The approach of a clinical decision tree was chosen because it provides a systematic approach to solving the patient problem and an agreed-upon protocol for management of the specific problem, therefore enhancing the prospects for high-quality, cost-effective, and efficacious management.

The ACOG Heuristic Task Force and staff are working with an expert system consultant to develop a model interactive decision tree based on the contents of selected ACOG Technical Bulletins. The model will include the following capabilities: graphic representation of the tree, interaction with contents, access to additional text and information, access to the decision tree at any point in the program, and incorporation

of patient care data in several ways. In the model phase of the IAIMS project, ACOG will develop and test the feasibility of deriving decision trees from existing publications, a cost-effective and efficient process for the production of multiple decision trees, several formats for the decision tree, and decision trees that can be incorporated into a sample automated patient record. The first decision tree is being developed based on the ACOG Technical Bulletin on management of isoimmunization in pregnancy.

SUMMARY

The overall mission of the ACOG project is to identify the core of knowledge necessary for the practice of obstetrics and gynecology, structure it and put it in electronic form, integrate it into a national ob-gyn information network, prepare ACOG and NAACOG members to use it, and disseminate this core of knowledge to members in appropriate forms. The goal of ACOG's model phase project is to develop and test a prototype for an integrated system that will meet the needs of ACOG and NAACOG members in patient care, research, education, and administrative information. The model phase goal will be accomplished primarily through ACOGQUEST and the heuristic-based patient management database project.

ACOGQUEST defines an information environment that will meet both the present and future needs of ACOG and NAACOG members, one that will enable ACOG to serve its membership in the most efficient manner. While not a revolutionary concept, ACOGQUEST represents a practical, well-coordinated, and integrated approach to information management. It incorporates all levels of existing technology, while encouraging members to use the communications tools that are the most comfortable and accessible. It will help ACOG deliver vital information to all members, regardless of their practice setting and location.

ACOG, as a national medical specialty organization, is in a unique position among IAIMS participants. Its focus is national, allowing for broad outreach, rather than confined to the specific geographic boundaries of an academic medical center. ACOG's information systems and services complement those provided to members through their own affiliations. The information needs of members are in a specific subject area, which provides an easily defined knowledge base. This gives ACOG the freedom to concentrate on serving member needs effectively. Programs developed under IAIMS are not tied to specific hardware or software systems and are not limited by institutional barriers. Rather, they represent concepts that can be adapted easily for use by other national organizations.

REFERENCES

1. VAN HINE P, PEARSE WH. The IAIMS project of the American College of Obstetricians and Gynecologists: using information technology to improve the health care of women. *Bull Med Libr Assoc* 1988 Jul;76(3):237-41.
2. JELOVSEK FR, RITTWAGE J, PEARSE WH, VISSCHER HC. Information management needs of the obstetrician-gynecologist—a survey. *Obstet Gynecol* 1989 Mar;73(3 pt. 1): 395-9.
3. Ob/gyns & computers: still room to grow. *OBG Manage* 1991 Jun;3(6):64.
4. DEBAKEY ME. Improving health professionals' access to information: challenges and opportunities for the National Library of Medicine. Bethesda, MD: National Library of Medicine, 1989.
5. DICK RS, STEEN EB, EDS. The computer-based patient record: an essential technology for health care. Washington, DC: National Academy Press, 1991.
6. *IBID.*, 6.
7. HARRIS-WHELING J, MORRIS LC, EDS. Improving information services for health services researchers: a report to the National Library of Medicine. Washington, DC: Institute of Medicine, 1991:2.
8. RUSLER DC. Delivering practice guidelines to the practicing physician, a marriage of hypertext and computer-aided documentation. Abstracts of the Second Annual Educational and Research Conference, American Medical Informatics Association, San Francisco, June 5-8, 1991:61.

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