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What One Georgia Oncology Practice Learned

by Richard S. Leff, M.D., and Bruce Feinberg, D.O.

Although automated billing and collection systems have been used in oncology practices for many years, the use of other medical information technologies (MITs) to control inventory, schedule patients, improve efficiency, and streamline both clinical and business processes varies from practice to practice. Larger group practices have already realized the opportunities afforded by MITs such as electronic clinical management systems. Almost 60 percent of ambulatory health care organizations with 50 or more full-time equivalent physicians responding to a recent survey by the Medical Group Management Association Center for Research reported that they have at least considered electronic medical records (EMR) implementation—nearly 40 percent are committed EMR users.[1]

Many smaller practices/providers still using "traditional" methods (i.e., paper-based information, telephone, and facsimile communication) should know that MIT systems can enhance and update their operations as well (see Table 1).

The decision to proceed with instituting a specific clinical management software program, separately or as a part of a comprehensive MIT system, as well as the choice of vendors and products, are dictated by the individual needs of each oncology practice. The first step is to determine the specific clinical/business services required from the overall MIT system (i.e., managing chemotherapy ordering and delivery, keeping track of clinical research activities). See Table 2 for a list of clinical and business goals.

ASSESSING THE PROBLEM AND EXAMINING SOLUTIONS

Georgia Cancer Specialists (GCS) is a private, specialized oncology practice with 22 sites located throughout north and central Georgia that provides medical and radiation oncology services and palliative care to people with cancer. In addition, GCS offers a range of support services, including nutritional counseling, pain management, wellness counseling, and home health coordination. Thirty-one affiliated physicians and more than 300 support staff members deal with approximately 120,000 patient encounters each year.

Until three years ago, GCS used traditional systems for practice management, including electronic claims submission and tracking. Using a network of "dummy" terminals, each practice site was able to access patient account information, but clinical information was paper-based and communication between offices was done by telephone and facsimile. Handwritten chemotherapy orders were faxed to a central pharmacy and chemotherapy drugs were transported to office sites by couriers. Scheduling was manually performed and there was no central access to each office's patient schedule.

Because of the size and complexity of the practice, as well as the geographic distances between offices, it became obvious that GCS could use some of the newly emerging medical information technologies to streamline its clinical and business processes, improve efficiency and patient safety, and increase employee satisfaction.

Initial attempts to use information from the billing software database for clinical purposes quickly revealed that reliable identification of patient subsets by disease type, disease stage, or specific treatment regimens was not possible. Although patients could be identified by their primary oncologic diagnosis, disease stage and other clinical data were not integrated and were not easily accessible.

Clinical data analysis required examining patient charts maintained at the various practice sites to determine the hospital admission rate and length of inpatient stay associated with specific chemotherapy regimens. The process was extremely labor intensive, tied up a large number of staff for an unacceptable length of time, and limited our ability to use information from our large

patient database to improve patient outcomes and optimize the efficiency of our business management.

GETTING STARTED

A wide variety of clinical management systems is available to help eliminate clinical and administrative problems. (See vendor resource list starting on page 40). Prior to selecting any system or software, a practice must first identify its clinical and business goals, as well as examine its existing equipment, network, and facilities.

After staff has identified the most promising programs and vendors and how much money is available for the project, they must observe how the system/software operates first-hand, before funds are committed. Meet with each vendor for a test run of its systems and software, being careful to look for both positive features and potential problems. Now is the time to gather information, ask the vendor about critical issues such as the privacy of patient data, and begin the decision-making process.

GCS identified the following clinical and business goals: patient care documentation, chemotherapy ordering, pre-certification management, scheduling, and database functions. Installing the new electronic clinical management system selected meant having to replace all of our "dummy" terminals with more powerful desktop computers. We also had to replace our low bandwidth access lines with an array of more powerful information pipelines. The creation of a true wide-area network facilitated all of the changes that followed.

Although the initial focus of our information system development was the EMR, we recognized that the network developed to support this software could also provide a multitude of other services. Our first project after the EMR was installed was an automated medication dispensing and inventory control system.

Table 1. Elements of Medical Information Technology (MIT) Systems

- Electronic medical records (EMRs)
- Electronic practice management (EMP) (i.e., billing, scheduling, pre-certification, referrals)
- Inventory management
- Practice Intranet
- Internal e-mail communication
- Internal insurance verification

Table 2. System Goals for the Selection of an EMR/Clinical Management Program

Clinical Goals

- Patient care documentation
- Transcription programs
- Chemotherapy management (ordering, delivery, documentation)
- Pre-certification management
- Patient assistance program management
- Patient education
- Alert systems
- Outside tumor registry access
- Clinical research-related activities

Business Goals

- Scheduling
- Outcome tracking and reporting
- Database management
- Ability to create a "superbill"
- Programmability by practice personnel

CHALLENGES WITH DISPENSING AND INVENTORY CONTROL

GCS recognized early on that standardizing clinical approaches and eliminating the errors inherent in manual chemotherapy ordering were important first steps in streamlining office procedures.

To help eliminate these errors, we developed pre-printed, standard order sheets for high-volume chemotherapy regimens. Although this system still depended on the manual calculation of drug doses and the information was still transmitted by facsimile, it created a framework that launched our journey.

Despite achieving some success in eliminating errors, we found that the system was still inefficient and we needed to determine how these inefficiencies were affecting patient outcomes. We consistently found that services were not being billed correctly due to either incorrect or incomplete information. The diagnosis attached to a specific service was often not the correct diagnosis for the procedure and resulted in rejected billing claims. Since there was no direct electronic link between patient medical records and the billing system, correcting errors to capture these lost charges was time-consuming and expensive.

Similarly, until three years ago GCS used a traditional system for tracking medication usage and recording patient information. Handwritten prescription orders were sent via facsimile to our dispensing pharmacy and recorded in the patient's chart by nurses. Progress notes were dictated by the attending physician, transcribed, and delivered to the patient's chart by courier.

Although a computerized billing system was in place, it pulled its charges for medications, supplies, and procedures from handwritten orders and patient records.

GCS believed that an electronic clinical management system could help reduce chemotherapy calculation errors and communicate the information needed by centralized services, such as the pharmacy, case management, and billing and collections.

HOW A CLINICAL MANAGEMENT SYSTEM HELPED

Finding the right automated medication dispensing system made it possible for a single pharmacist to review all the chemotherapy orders in a network. While computerized physician-order entry systems may have the biggest impact on reducing medication errors, automated medication dispensing systems control access to drugs. Placing the pharmacist at the hub of the system ensured GCS that we would have the proper documentation for non-standard treatments, and that chemotherapy would not be given until the prescription was reviewed for both potential errors and prior insurance authorization.

Costs were reduced with the automated medication dispensing system, since each item used was accounted for and appropriately charged. Waste was also reduced because there were fewer missing doses and expired items. Drug inventories were tracked continuously and low-use items were eliminated, increasing savings even more.

The level of centralized review and control we achieved with this combination of technologies increased our confidence that the regimen, drugs, doses, and associated pre-medications we use are appropriate for the disease and the patient.

OUTCOMES OF INFORMATION TECHNOLOGY—INTRANET DEVELOPMENT

Although the advent of practice-wide e-mail resulted in facsimile use becoming the exception rather than the rule, we still found that day-to-day operations required forms and information that were costly and inefficient to distribute, maintain, and update at our many sites. As a result we began the process of creating one more practice site: the company intranet.

Initially the site contained templates of all of our paper forms so that they could be printed on-demand. Next, we added our clinical and administrative policies to ensure that each employee in our organization had access to current guidelines without the time and expense of updating and printing policy manuals. Posting staff and departmental contact information on the intranet allowed all staff access to the most up-to-date versions of office, mobile, and pager numbers.

The intranet site is also a convenient way for our physicians and nurse practitioners to share information about common areas of interest, and to review the latest investigational therapies available from our research department. Our list of currently available clinical trial protocols and the eligibility information for each study is updated on a daily basis so that all personnel are able to find appropriate experimental treatment for our patients when needed. We have also posted our physician and nurse practitioner vacation and call schedules on the site, which are updated as soon as changes are made so there is always an accurate listing of available personnel and staff. (A list of intranet functions can be found in Table 3.)

Business operations may also benefit from having a central system for communication. A regularly updated table of information allows all front office personnel to know which physicians participate in which managed care plans. A shared system-wide hard drive on a central server allows key personnel to share financial and management information while maintaining greater confidentiality than could be guaranteed with facsimile or courier transmission. Once the hardware, communication channels, and initial intranet software are established, information storage, access, and dissemination increase dramatically.

EDUCATING STAFF

Integrating a new MIT system into an oncology practice presents the challenge of staff buy-in. Many employees and physicians have limited experience with computers and complex MIT systems. While computer-savvy staff probably will adjust easily, others may need to overcome their initial anxiety and natural resistance to change.

Personnel competent with existing procedures and systems will need to be trained on the new MIT system, and this additional training will come on top of an already busy schedule. The challenge is to communicate to staff that the benefits associated with the new MIT system are worth the time and effort needed to learn the new software and processes.

In the end, setting up the new MIT system will increase the staff's MIT knowledge and skills. Eventually, the staff will feel competent enough to make suggestions and request changes that will improve their ability to deliver care to patients and operate the business more effectively.

Table 3. Intranet Functions

- Managed care participation information and requirements
- Quality and cost improvement projects—reporting and reinforcing
- Electronic storage of business, financial, and management information
- Increased confidentiality over facsimile or courier transmission
- Research protocols and investigational therapies
- Clinical drug trial protocols and eligibility
- Central location for policies and procedures
- Accurate and accessible staff and departmental contact information
- Up-to-date physician and nurse practitioner vacation and call schedules
- Staff and physician education
- Patient education/counseling materials

CLINICAL AND BUSINESS BENEFITS

As the MIT system has developed and the amount of data deposited in our database has expanded, the potential uses continue to evolve. The obvious short-term advantages include the standardization of nursing functions, the ability to review and improve medication administration documentation, and easier access to patient records (Table 4).

The ability to identify and review information from specific subsets of patients has allowed us to evaluate the success of treatment regimens for specific diseases. We can now verify that the regimens used have the activity predicted by clinical trials and that the toxicities that occur are no worse than those seen in academic practice. Centralized charting eases the task of peer review and also makes complying with Medicare documentation requirements easier.

Although the Health Insurance Portability and Accountability Act (HIPAA) was a remote consideration when we embarked on our initial MIT project, time has demonstrated another advantage of EMR/clinical management software. From a HIPAA regulatory standpoint, modern EMR/clinical management software: 1) eases the workload of documentation, 2) facilitates consistent compliance with privacy policies, 3) tracks every individual who opens a patient's record, and 4) monitors what changes each person makes in the chart. The software uses sophisticated e-mail to track and document written com-

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munication between staff members about the patient's care. When records are distributed to physicians outside of your practice who are participating in the care, the EMR/clinical management software will also record to whom information was sent and by which staff member.

Our MIT systems have been useful to the business management side of operations as well. Centralizing insurance verification, referral management, and the pre-certification of tests and imaging has increased office efficiency. For example, patient requests for information needed by their insurance companies or their work, which previously had to be filled by nurses valued for their clinical skills, can now be met by medical records personnel who have developed greater expertise in this task.

Table 4. Clinical and Business Benefits of Electronic Data Collection and Management

Clinical Advantages
- Pharmacy tracking
- Standardization of nursing function
- Ability to review physician documentation
- Accessibility of patient records
- Medication documentation
- Information transmittal
- Tumor registry access

Business Advantages
- Cost reductions
- Billing tracking
- Utilization patterns/information
- Formulary management
- Improved efficiency (medical records audits, pre-certification process)

After using MIT software to track recurring billing errors, we decided to institute a clinical alert system to remind clinical and laboratory staff about special requirements associated with patient insurance policies. Formulary changes can also be instituted system-wide with a simple adjustment of the central software, and utilization patterns for specific drugs or regimens can be studied and evaluated.

Developing MIT expertise and interest will provide an oncology practice with significant business and clinical advantages. In today's uncertain world of staffing shortages and financial restraints, oncology practices should use every tool at their disposal to meet these challenges, maintain economic viability, and ensure quality patient care.

REFERENCES

[1]Lynam KB, Karlan VJ. Electronic medical record systems: Trends in large group practices. *Group Practice Journal.* March 2002.

Bruce Feinberg, D.O., is the CEO and Richard S. Leff, M.D., is CIO, of Georgia Cancer Specialists, which has administrative offices in Decatur, Ga. Omnicell, based in Palo Alto, California, furnished grant-in-aid funding for the development of this article.

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