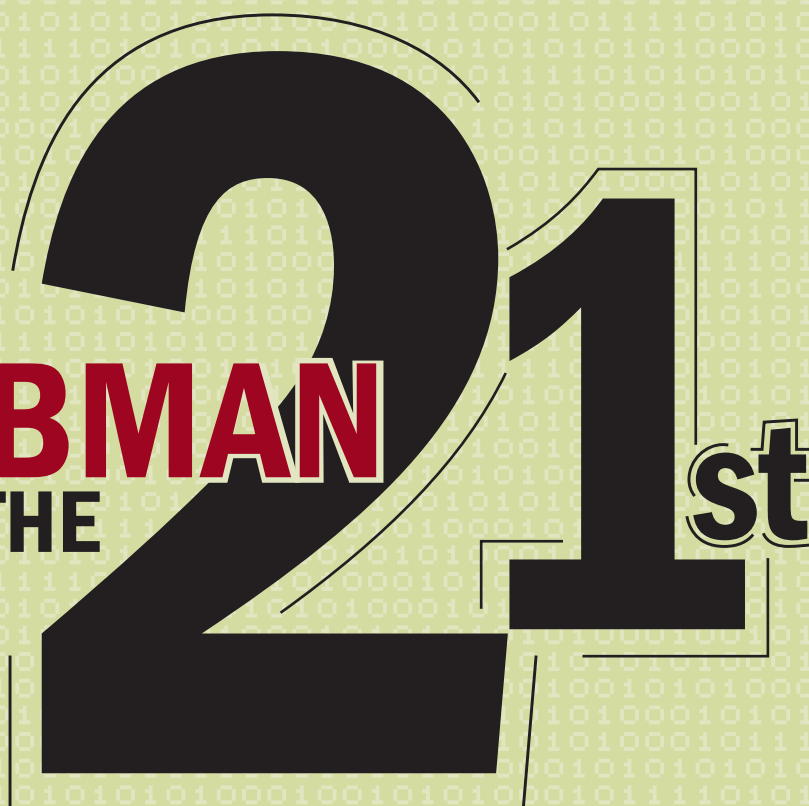


AT THE TAUBMAN IN THE



IN THE NEW CENTURY, MEDICAL LIBRARIANS REDEFINE THEMSELVES AS THE CLINICAL QUESTION BECOMES A BIGGER ONE

BY J. CHRISTOPHER HIPPLER

Gurpreet “Preet” Rana may well be the model for the 21st century medical librarian. Five hours a week she dispenses her storehouse of knowledge at the reference desk of Taubman Medical Library, much like the beloved traditional librarian we all remember from our earliest school days. But for most of the week, Rana focuses on “taking the library on the road.” She may consult with physicians at the U-M Health Clinic in Brighton one day, helping them navigate resources to find the clinical information they need to determine the best care for their patients. She may teach a class to students at the medical school the next day, introducing them to the world of electronic resources for medical information. Still the next, she may be teaching the concepts and strategies of evidence-based medicine to residents in a hands-on class back at the library.

“The importance of knowing how to search literature to find the best clinical evidence is growing because of

THROUGHOUT MUCH OF WRITTEN HISTORY, LIBRARIES HAVE BEEN REPOSITORIES OF INFORMATION TO WHICH PEOPLE TURNED FOR ANSWERS TO THEIR QUESTIONS. BUT “GOING TO THE LIBRARY” IS FAST BECOMING A THING OF THE PAST AS THE INTERNET AND WORLD WIDE WEB TAKE THE LIBRARY TO ITS USERS, WHEREVER THEY HAPPEN TO BE.

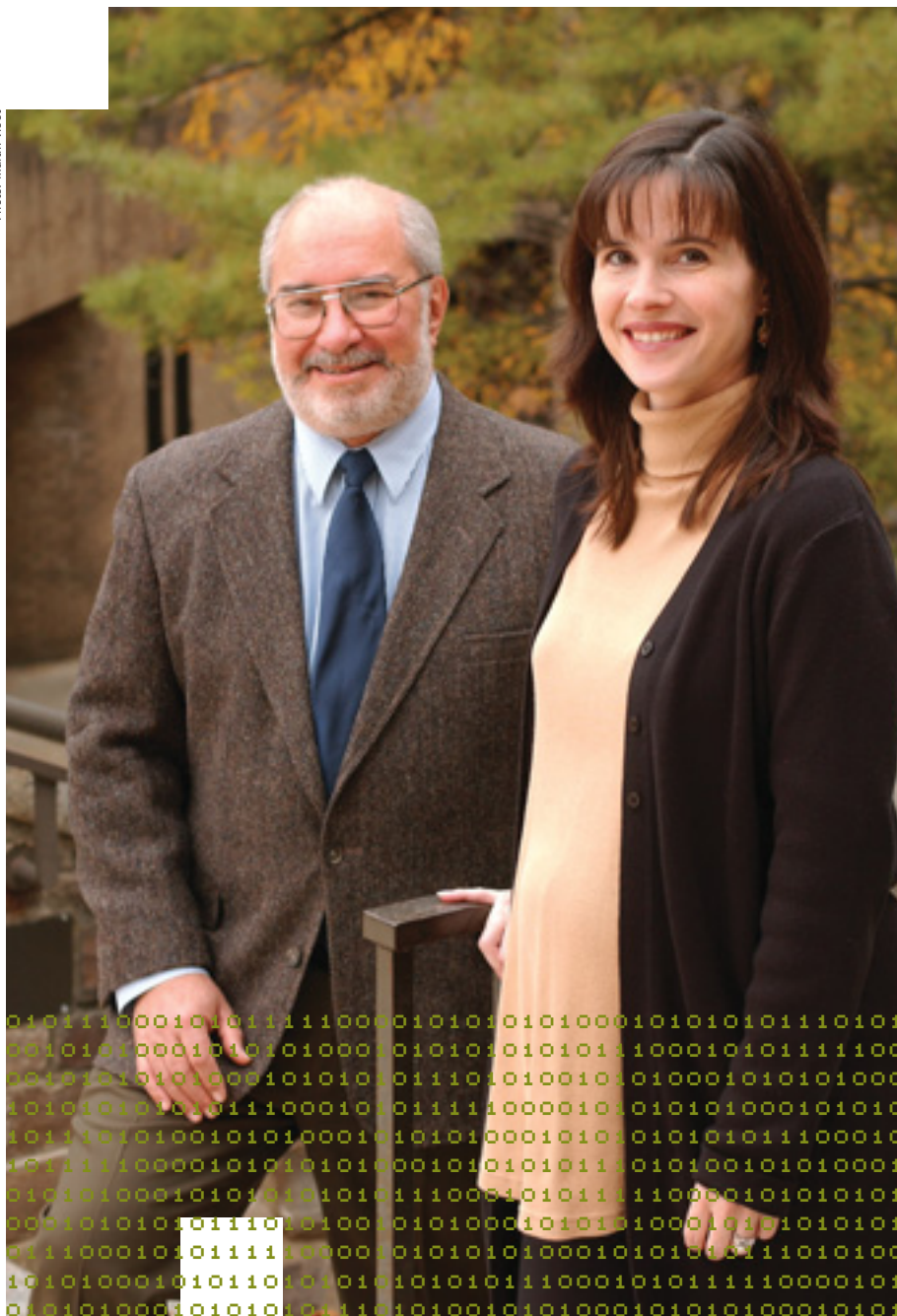
FOR MEDICAL STUDENTS AND CLINICIANS FACING A FLOOD OF BIOMEDICAL AND CLINICAL INFORMATION, “FRAMING THE MEDICAL QUESTION” HAS NEVER BEEN MORE ESSENTIAL TO RETRIEVING THE BEST POSSIBLE ANSWER IN A WORLD OF WORK THAT IS INCREASINGLY EVIDENCE- AND PATIENT-BASED.

AS CARD CATALOGS GIVE WAY TO SEARCH ENGINES, AND VIRTUAL ACCESS TO COLLECTIONS ECLIPSES PHYSICAL ACCESS, DATABASES AND TECHNOLOGY ARE REDEFINING MEDICAL LIBRARIES IN THE 21ST CENTURY.

the increasing amounts of information available,” says Rana. “As a result, staff members of the library are now much more involved in teaching the skills necessary to formulate clinical questions and use effective search strategies.”

John Frohna, M.D., clinical associate professor of internal medicine and of pediatrics and communicable diseases, works with Rana and her library colleagues in training pediatrics residents as well as in clinical situations. “As the number of information resources expands, busy clinicians can easily be overwhelmed. Questions often arise in the course of patient care; some of these I can answer quickly, others I want to look into more fully. Preet and the other medical librarians are very helpful in taking my clinical question and helping me find the most up-to-date information. They will even do the literature search for me.”

Photo: Martin Vaet



Two converging factors have fueled the changes at Taubman Library: a growing awareness of the important connections between lifelong learning skills and evidence-based medicine, and burgeoning technological advances.

Rigorously defined, evidence-based medicine is the explicit and judicious use of the best available research evidence to help physicians make informed medical decisions, in concert with their clinical expertise and the unique context of the individual patient. Between 1993 and 2000, *JAMA* published the guiding principles of evidence-based medicine to help physicians read the literature.

Initially, the concept of evidence-based medicine resonated with only a small cadre of physicians. The vast majority saw it as too time-consuming and cumbersome to be practical. But the dedication and professional knowledge of individuals like the Taubman librarians and intrepid faculty members at Michigan have helped doctors make the leap into new informational waters. The library leases electronic databases of select evidence-based health care resources, and library staff help everyone navigate those new seas without getting swamped.

The volume of information available to medical students and physicians is indeed daunting. Mirlyn, the University Library’s online catalog, provides the electronic foundation for library resources at the University. The Taubman Medical Library also provides a selection of biomedical databases through UMMEDSEARCH, such as MEDLINE (the most comprehensive source of biomedical literature, with over 11 million cita-

TAUBMAN LIBRARY DIRECTOR EMERITUS ANTHONY AGUIRRE AND INTERIM DIRECTOR DOREEN BRADLEY

tions from 1966 to the present); CINAHL (Cumulative Index in Nursing and Allied Health Literature); the Cochrane Library, which actually consists of several distinct databases; ACP Journal Club (from the American College of Physicians); and EMBASE, which contains international biomedical health literature. A wealth of other electronic resources in the health sciences is accessible through the Taubman Web site. “We provide a whole information environment,” says Rana. In these days of clicks and links and interconnected-

ness, “people sometimes don’t even know they are accessing information through the Taubman site.”

Each database has a different focus, different strengths, different reasons for consulting it. Filters help narrow searches among the four categories into which clinical questions fall: diagnosis, therapy, prognosis and etiology. Librarians evaluate databases and information sources on an ongoing basis to determine their suitability. ➤

We're changing the whole dynamic and perception of the library," says University of Michigan Librarian William Gosling. "The role of the librarian has been redefined. Rather than sitting in a building surrounded by stacks of books, the librarian is a colleague working within the health system." From his eighth-floor office in the Harlan Hatcher Graduate Library on central campus, Gosling oversees the entire University Library system.

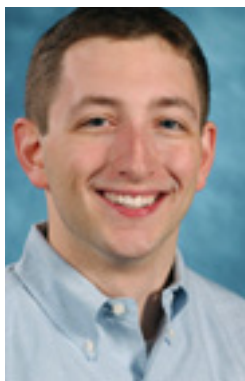
The A. Alfred Taubman Medical Library, named after the Michigan-based shopping mall pioneer and benefactor who helped finance construction of the building in 1980, is one of the largest medical libraries in the country and serves the University of Michigan Health System, including the Medical School, the School of Nursing and the College of Pharmacy.

Taubman's librarians now play an active role in helping medical students and physicians learn critical skills, including formulating "searchable" clinical questions and using effective search strategies. And as electronic resources grow even more vital, the virtual presence of the library rivals its bricks and mortar.



OLSON

"Taubman Library is a phenomenal resource," says Christina Olson, a fourth-year medical student from San Juan Capistrano, California. "I can access it from any computer on campus."



PLATCHEK

Her third year of medical school was all rotations, and Olson availed herself of the library's databases on an almost daily basis. Whether at an outpatient clinic, the VA Hospital, or a clinic within the hospital, she had easy access to all the databases.



PREET RANA CONSULTS WITH JOHN FROHNA AND PEDIATRICS RESIDENT RACHEL CASKEY, M.D.

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Terry Platchek from Chicago, also a fourth-year student, projects his virtual to physical access ratio to be as high as 20:1 — "and I think I'm fairly average as a user. I go to Taubman as a place to study, but not so much to access its holdings." While Platchek appreciates the physical proximity to the library for first- and second-year students, it's not so convenient, he says, for clinic-based studies. "Even the ten-minute walk from the hospital can be significant on many days, so Web access saves me time. If I can't find an article online, rather than go to the library for a hard copy, I'll look for another article," he says.

While Taubman Medical Library and the U-M Medical School are increasingly active partners in education and patient care, the library is actually not part of the school. Rather, it is a facet of the University Library system, an immense jewel of 19 libraries spread across the university's campus. With extraordinary resources and collections that exceed six million volumes, the University Library is consistently rated as one of the top ten

academic research libraries in North America.

You are a physician who cares for children. It's winter, and the bronchiolitis season is upon us. During a particularly bad spell, you saw a large number of infants and children with bronchiolitis. This clinical experience was educational for you in a number of ways. One particular observation you made was that there appeared to be a variable response to bronchodilator therapy in this group of patients. Since your colleagues and experts often recommend the use of these drugs, you assumed that their efficacy has been well-documented. Textbooks cite bronchodilators as being useful in this clinical setting. Still, your own powers of observation have led you to wonder about this recommendation.

What is the clinical question?

This scenario is one of many in the library's course materials to aid students

Photo: Martin Vloet

Photo: Martin Vloet

in building a clinical question. Taubman librarians teach medical informatics to medical residents as well as students, in conjunction with faculty such as Rajesh S. Mangrulkar, M.D., a clinical assistant professor of internal medicine and associate director of the internal medicine residency program who also directs the medical decision-making and evidence-based medicine courses for first- and second-year medical students. Teaching is not the only effort on which librarians collaborate with faculty; they also play an active role in developing the curriculum itself.

“When I became involved with the curriculum five years ago,” recalls Mangrulkar, “I wanted to tap the expertise of the Taubman staff about using information resources. That focused skill is really crucial to the entire medical decision-making paradigm.

“We’ve become more practical in our approach to asking clinical questions,” he says. “The librarians have given us a lot of guidance in how physicians should structure patient-care questions that will allow them to pick the right information resource. There are so many resources, but most fit only certain needs.

“For example, if a learner is inquiring in general about a condition, such as the staging of lung cancer, then it’s best to go to electronic textbooks or practice guidelines. It would be a waste of time to do a literature search for primary articles on lung cancer. If, on the other hand, the learner wants to know the comparative benefit of one chemotherapeutic regimen over another for the treatment of lung cancer, the greatest success would come with evidence-based medicine databases or searching MEDLINE for primary literature.

“The librarians have helped shape the curriculum that teaches these points,” Mangrulkar says. “They pay attention to how students and physicians use resources, so they lend a very practical aspect to their learning.”

Assistant Dean for Medical Education Casey White was another of the early educators who saw the value of having the library play a larger role in the medical school’s curriculum. Physicians, she reasoned, help students construct the clinical question and develop the critical appraisal of the literature. The librarians know the databases and how to conduct the searches.

“All in all,” White says, “teaching was less effective before we brought together the expertise of the physicians and the librarians. Librarians did some of the training, but it was up front, during orientation and before classes, so there was no context. Once faculty reached a point in the curriculum that provided the context, they had to go back over very basic searching skills in order to progress to more advanced material.

“The relationship has been a natural collaboration,” says White. “The librarians have always wanted to be more involved in medical student learning. Being able to combine physician experts with librarians has allowed us to add more active learning sessions for the students, and it’s taken some of the burden off the clinical faculty.

“Medical education today involves a more patient-centered approach as well as learning medicine in a clinical context rather than as separate bits of knowledge, and active, hands-on learning in smaller groups facilitated by experts. The collaboration between librarians

and clinicians in teaching medical students evidence-based medicine skills is a perfect model of changing trends in medical education.”

When Anthony Aguirre accepted the position of director of the Taubman Medical Library in 1993, he relished the challenge, but he was also in pursuit of a simpler lifestyle. For four years he had been commuting daily by train from his home in Philadelphia to his job at the Medical Library at Columbia University in New York. “I wanted a job,” says Aguirre, “where I could walk to work.”

At Columbia’s medical library, Aguirre directed an innovative program funded by the National Library of Medicine that integrated the academic information systems of Columbia Presbyterian Hospital, the medical school and the medical library.

It was an experience that prepared him well for Michigan. The medical library he walked into at U-M had no network ➤



Photo: Martin Vioet

BILL GOSLING



Photo: Martin Vioet

RAJ MANGRULKAR

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in place. Electronic databases were not being integrated fast enough. And there wasn't a great deal of collaboration and communication with the medical school.

In addition to overseeing a complex renovation of the building, completed in 2002, Aguirre led a scrupulously thorough review, evaluation and acquisition of the electronic databases that are now the lifeblood of the library. Outreach and education programs were established. Collaboration with the medical school became a primary goal. After guiding Taubman through the most vital decade of change in the library's history, Aguirre retired in 2003. One of the librarians he mentored during his term, Doreen Bradley, has led the library as interim director until her recent leave from the university to take on a new role, that of mom to Baby Aidan. As of November 15, Taubman has a new interim director, Michael Miller, director of the libraries that serve art, architecture and engineering.

Bradley has overseen a budget that is increasingly devoted to the acquisition of electronic databases. The Taubman Medical Library's 2003-04 collection budget — materials purchased or leased — was \$1.7 million. Of that, \$332,000 was spent on electronic databases, and \$1.2 million was for print. But those numbers don't tell the whole story because many print journals include an electronic version. Plus, many electronic databases don't show up in the medical library's budget because they are part of a licensed purchase that the central library system authorizes.

"Probably the biggest challenge for us is the transition from print to electronic resources," Bradley says. "From a user standpoint, it probably seems quite simple. However, for us it means maintaining print and electronic collections of the same items until the long-term stability and ownership issues surrounding electronic items have been worked out with libraries and publishers. From a few large publishers, we have been able to purchase electronic data, so that we own it in case they go out of business. In some cases, we can only license access to electronic items, not actually own them, so if a publisher goes out of business or we discontinue a subscription, we lose access to everything that we have paid for — in cases like this, we still maintain print copies as a backup.



CASEY WHITE

"The collaboration between librarians and clinicians in teaching medical students evidence-based medicine skills is a perfect model of changing trends in medical education."
—Assistant Dean for Medical Education Casey White

"Because the University Library system is a research library," says Bradley, "we keep at least one paper copy of everything that we purchase forever — we do not discard older items. Having ownership of the information that we purchase is very important to us in meeting the needs of current and future researchers and students."

Aguirre, like Bradley, sees challenges in the area of intellectual rights, property rights and dealing with the publishers of electronic resources. "The issue of protecting copyright of electronic materials is looming, too, because it affects everything that we do in terms of making resources available. And privacy as well; a perfect example is the wireless network for the library. How do you reconcile the library's desire to make everything available everywhere, with the concern for confidentiality? These are important and fundamental issues that are complex and difficult to work out."

Bradley sees the trend of librarians going out to users continuing to grow in the future. "A recent study in the journal *Information Research* suggests that for every one user physically in a medical library, there are approximately four remote users — this could be in an office on campus, in a clinic across town, or across the country with faculty members on sabbatical. So Taubman librarians

will be looking to spend more time in clinic settings and university offices, helping users where the users are."

Just as clinicians have a responsibility to keep up with changes in health care and areas of medical specialty, librarians must also keep pace with changes in information resources, such as product quality, design and searching standards. "Staff members are committed," says Bradley, "to training current and future clinicians in the use of best practice and evidence-based knowledge, as well as building a superior research collection for use by generations to come.

"We also realize," she says, "that even with growing electronic access and remote use, there will always be a need for human interaction between librarians and users, and a need for the library as a place where browsing collections and interacting with others will be in demand for many years to come." [m](#)

The question posed in the clinical scenario on page 40 is:

Are bronchodilators beneficial in the management of bronchiolitis in infants and young (<24 months) children?

(Clinical scenario authored by Robert E. Schumacher, M.D., associate professor of pediatrics and communicable diseases.)

FROM TECHNO TO TIMELESS

In stark contrast to the futuristic electronic resources that dominate Taubman Medical Library today, its Rare Book Room — two rooms, actually, nestled on the library's fifth floor — holds priceless and fascinating glimpses into medicine's past.

The front room, open to the public by appointment, contains glass-topped floor display cases, and portraits of prominent donors and of U-M Medical School icon Victor Vaughan. Artifacts on exhibit include an 18th century German collection of small "Dance of Death" figurines, a ceramic bleeding bowl with a semicircular curve in the edge of the bowl where an arm would lay, and a 19th century Italian porcelain anatomical mannequin of an expectant mother.

Beyond the public room is a smaller one. This deeper recess, off limits to browsers, is where early books and journals are stored on floor-to-ceiling shelves. To safeguard the collected works, the University Library's Preservation Division monitors the Rare Book Room's humidity and temperature via the Internet.

"Nearly everything here has been acquired through the generosity of benefactors," explains Doreen Bradley, former interim director of Taubman, walking down narrow aisles of thickly-bound books. "Dr. LeRoy Crummer and his wife gave the library their collection of books and artifacts, and they specified that their ashes be kept with the collection." A portrait of physician Crummer hangs nearby, along with the small, decorative urns stored high atop a bookcase, containing their ashes.

The Rare Book Room contains early medical works of scholarly significance, pre-1850 original research, and medical classics. Subject coverage is broad with concentrations in early anatomy, surgery, pharmacy, obstetrics and gynecology, American medical literature from the early 1800s, homeopathy, cardiology, pathology and hernia repair. A complete list of the contents is available in the online Mirlyn catalog at <http://mirlyn.lib.umich.edu>.

Valued recently for insurance purposes at \$13 million, the collection consists of approximately 6,300 monographs (primarily pre-1850 imprints) with titles that date from 1470 to the early 20th century.



Nicholas de Larmessin II created the caricature *Habit de Medecin* circa 1690, illustrating the 17th century French physician carrying the literature of his profession neatly and compactly under his robe — a far cry from the explosion of medical information confronting today's physicians and medical students. This charming peek into another age is believed to be part of a series of engravings of fanciful costumes of trades and professions by Larmessin, an artisan in a family of engravers, and can be found in the collections of the Rare Book Room in Taubman Medical Library.

Also housed in the Rare Book Room are a small collection of journals, illustrations, 82 incunabula, and a collection of 52 "magical" medical amulets. The amulets comprise a joint collection with the Kelsey Museum of Archeology and are a gift of Frederick A. Collier. While the diminutive carved stones and gems are available for viewing at the library, the Taubman Web site captures each in a full-color photograph with explanation. Now a medical curiosity, amulets were once believed to ward off evil spirits. Worn as protective devices around the body, they were common in all societies and all periods of antiquity. Their use

was accepted as normal by secular, religious and scientific authorities.

The Rare Book Room serves as a resource for U-M faculty and students, many from non-health sciences departments, as well as scholars from around the world. Its collections are a reminder of how far medicine has come in a relatively short period of time. Meticulously preserved, the historical treasures are a poignant contrast to the ephemeral electronic databases that serve as such efficient transmitters of medical knowledge today.

—JCH