

## Providing Access to Oncology Care for Rural Patients via Telemedicine

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Cancer is a considerable public health issue for all population groups. However, certain subgroups, including people living in rural communities, are more at risk than others.<sup>1,2</sup> Providing equitable access to cancer services regardless of patient location is an issue of paramount importance.<sup>3</sup> Published cancer statistics may not offer an accurate picture of the number of people affected by cancer in the United States, as many cases, particularly rural patients, may go undiagnosed and, consequently, untreated because of the difficulties they have when attempting to access specialty health care services.<sup>4</sup>

Although accessing specialists is not an impossible task for rural patients, it is much more involved for them than for their urban counterparts. The cumbersome process of accessing specialty care is further complicated by the health status of cancer patients. Pain from symptoms, discomfort caused by treatment, and the emotional toll associated with having cancer make it particularly challenging, both mentally and physically, to travel long distances to access treatment. Therefore, being able to readily access quality specialty care can significantly influence outcomes for people living with cancer.<sup>5</sup>

### Confronting the Distance Challenge

One way to overcome some of the barriers rural patients face when seeking specialty care is through outreach clinics whereby physicians periodically travel to rural locations to provide health care services. In 1983, the University of Kansas Medical Center (KUMC; Kansas City) began offering “fly-in” outreach oncology services to several rural Kansas communities. The monthly clinics allowed patients to receive care close to home, with expertise offered by the oncologist and day-to-day management provided by the local primary practitioner. However, disadvantages such as travel time for the oncologist and flight costs made it difficult to view outreach clinics as the most economically viable means of improving access to oncology services. In addition, the unpredictable nature of Kansas weather frequently resulted in canceled clinics, delaying evaluations and treatment schedules.

In an attempt to surmount the travel-related disadvantages associated with KUMC’s initial outreach efforts and to ensure that individuals living in rural areas gained access to care, KUMC launched a telemedicine project in 1993.<sup>6</sup> Telemedicine, the utilization of telecommunication technology to provide health services over a distance, offers

one possibility for overcoming the geography barrier.<sup>7</sup> Applications of telemedicine, which typically involves the use of interactive televideo (ITV) allowing real-time interaction between health care providers and patients, enable underserved populations to access health care services that otherwise would not be readily available to them.

### Telemedicine in Action

In 1995, KUMC established its first tele-oncology connection with a rural medical center located more than 250 miles away in Hays, Kansas, connecting a university-based oncologist with a center in the central part of the state. After establishing the initial clinic at Hays Medical Center, a second telemedicine clinic was developed 2 years later in Horton, Kansas.

Hays Medical Director Robert Cox, MD, describes himself as the “burr” that pushed for telemedicine to develop in Kansas. “Telemedicine has allowed us, in a remote, rural part of Kansas, to offer access to urban resources in health care,” he says. “Our physicians have a strong relationship with consulting physicians, resulting in better patient care. . . . Telemedicine is helping us be better stewards of limited health care resources.”

Telemedicine clinics use an ITV system consisting of a video monitor, video camera, microphone, and speakers. Integrated services digital network (ISDN) and internet protocol (IP) are two ways that data are carried for video conferencing. With the assistance of health care professionals at the remote site and using an electronic stethoscope, the physician is able to listen to cardiac and breath sounds. Other peripheral devices may be used for visualization of the ear, nose, and throat areas. A document stand provides a medium to review computed tomography scans and magnetic resonance images online, in real time.

“The traditional consultation process sent the patient to the consultant at the consultant’s office. The only communication was made between the professionals initially and in follow-up. These exchanges may have been spoken or written. Actual visits by our staff or our physicians rarely, if ever, occurred,” explains Cox. “With telemedicine, we have a more robust exchange of understanding. We do see each other during the consultation, and many of us have visited KUMC to see the facility and know the staff.”

Telemedicine technology enables the oncologist to remain at the medical center in Kansas City and examine patients in Hays, approximately 265 miles away, and Horton, which is located in the northeast corner of the state, approximately 90 miles from KUMC. Tele-oncology services are made possible



Collaboration between on-site staff and the university-based doctor is critical to successful tele-oncology care.

by the collaboration of a team of professionals including the KUMC oncologist, nurses located at the remote sites, administrative personnel, and technical support staff. This team works together to provide periodic on-site services in addition to the services rendered via telemedicine.

The tele-oncology visit mirrors a traditional face-to-face visit. After providing consent for treatment, the patient is given a brief overview of the telemedicine technology and process during his or her first telemedicine encounter. Once the patient is familiar with the system, the specialist proceeds with taking the patient's history and is assisted by the clinician at the remote site with the physical examination, reviewing radiographs and laboratory work, and ultimately discussing diagnosis and potential treatment.

"When a physician comes on site, I do the typical things a nurse does in a clinic setting, such as prepping a chart, taking vital signs, medication and allergy information as well as chief complaint," says Sonjia Clay, RN, BSN, who works with tele-oncology patients at Northeast Kansas Center for Health and Wellness in Horton. "However, when we see ITV patients, my responsibility extends to facilitating the physician's exam by palpation, auscultation, and inspection. The provider is able to use the stethoscope, but he needs a clinician to be his hands." After each consultation, whether telemedicine or on site, the facilitating nurse faxes all information gathered from the visit, including x-rays and laboratory results, to KUMC so patients' charts are always up to date in a centralized location.

Although the specialist has clinical oversight of patient care, the tele-oncology practice is a collaborative effort from start (when the local health care team identifies and refers patients in need of specialty care) to finish. Additionally, the role of the on-site nurses is critical for effective, efficient coordination of patient care in the local communities. "Whether it is in person or on ITV, the nurse is with the patient to be his or her advocate, to make sure all concerns



Using interactive communication technology, doctors can provide medical care to patients hundreds of miles away.

have been voiced and the patient understands what the diagnosis and plan are," says Clay.

### Relieving Patient Concerns

In addition to increasing patient access to specialty health care services, tele-oncology practices have been largely well received by patients.<sup>8,9</sup> Some patients have expressed concerns about telemedicine care, such as not seeing the doctor face-to-face and not feeling entirely comfortable having a nurse performing various aspects of the physical examination rather than a doctor.<sup>9</sup>

"The period of initial adjustment in the 1990s included questions of quality, patient acceptance, confidentiality, and reimbursement," says Cox. "The key to patient concerns is to have our staff nurse present in the room during the telemedicine appointments. The patients know and trust the nurse. The nurse, by being present, is able to explain any questions that arise after the session." Also critical to telemedicine's success, says Cox, is the support on-site nurses provide to patients both during and between ITV visits.

According to Shannon Karst, RN, BSN, and Shawn Mulkey, RN, BSN, at Hays Medical Center, nurses' involvement with telemedicine visits allows them to develop a closer rapport with patients and to better understand their treatment plan because they're part of the full discussion of care between patient and physician. "Patients quickly became comfortable with going through the nurses for questions or their needs," Mulkey says.

Additionally, the majority of patients who verbalize concerns about the delivery method also communicate that they understand and appreciate the utility of telemedicine services and value the enhanced access to specialty health care.<sup>9</sup> "I feel we have the best of both worlds with tele-oncology in a rural community," says Clay. "The patients served here, as well as our staff, are very grateful for the opportunity we have to

work with this technology and the skilled health care providers we have access to.”

## Financing Tele-Oncology

Improving access to specialty care for patients in rural areas is one thing; offering this service in an economically reasonable manner is another. The existence of every medical practice is fundamentally rooted in the economic viability of the service, and tele-oncology practices are no exception to this rule. The need to assess the costs associated with providing cancer care to rural Kansas towns via telemedicine technology stemmed from the desire to continue offering this vital service.

Researchers at KUMC have completed several cost analyses with the Kansas tele-oncology project to date; a fourth cost analysis, which incorporates two quality-of-life measures into the methodology, is in progress. The primary goal of the cost analyses is to document the expenses associated with tele-oncology visits to compare them with the costs of providing traditional care in an outreach setting. Whereas the first analysis revealed an average cost of just over \$800 per telemedicine consult, data from the second analysis showed a marked decrease in costs of providing tele-oncology services to an average telemedicine cost of \$410 per consultation. With the KUMC oncologist managing patient care via telemedicine, fees from services such as intravenous therapy, diagnostic and therapeutic radiology, and chemotherapy drugs remain within the local health care system in Hays, generating significant revenue streams for the rural community. Although data from the current cost analysis are still being examined, preliminary figures suggest that the cost of providing cancer care via telemedicine have decreased once again and are comparable with the costs of traditional oncology care.

## Looking Ahead

In addition to transforming physician-patient consults, telemedicine also has the potential to alter other areas of health care practice. In the clinical setting, the capability

exists for physicians to consult with one another via ITV and to utilize the technology for case presentations. Says Clay, “We have done ad hoc visits with providers that had not previously been involved with telemedicine because [an on-site provider] discussed a need we had for one of our patients and that specialist took time out of their schedule to see a patient here on ITV.” Furthermore, the technology offers advanced registered nurse practitioners the potential to conduct follow-up visits with patients and to oversee chemotherapy administration.

The technology can play an educational role in the future of health care as well. ITV systems are already being utilized for Tumor Boards at KUMC, and they can also be used to provide ongoing education and training to nurses in the rural sector.<sup>10</sup> Moreover, health care providers can offer an added service to their patients by utilizing the technology for clinical trial enrollment. Utilizing relatively novel technology for this purpose may be an effective means of enrolling rural patients in clinical trials, as researchers have found that different kinds of interventions may be necessary to improve cancer treatment trial enrollment in rural locations.<sup>11</sup>

With the quality of care remaining equivalent to that found in traditional face-to-face clinic settings and with the costs of providing health care via ITV now comparable with traditional services, telemedicine may prove to be the best solution for increasing access to specialty health care services for patients in rural areas throughout the country.

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