Teleconferencing may be (micro)wave of future

BY DAVID J. BALTZER, MARK GRAY, AND JACK PFITZER

TELECOMMUNICATIONS

Microwave communications system between two VA hospitals and a school of medicine provides teleconferencing activities for educational programs and staff meetings

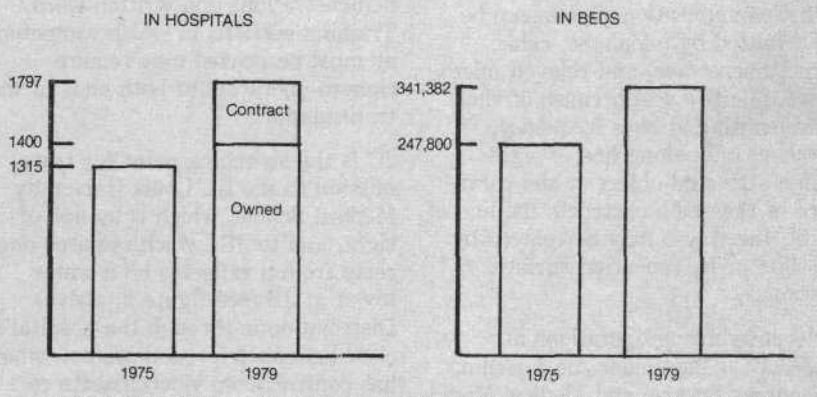
The Greeks had a word for it—*tele* for far off—but even those wise wordsmiths of old could not have envisioned how modern man would combine their four-letter root word with camera, lens, film, and a host of other inventions that would make far off appear nearby, almost like being in the same room. Telecommunication is the catch-all term. How it applies to the delivery of health care in multihospital systems is a timely subject.

Excluding government-operated hospitals in 1979, there were 267 multiinstitutional health care systems in the United States, consisting of 1,400 owned and 397 contract managed hospitals with 341,382 beds. Figures 1 and 2, at right, show the extent of the growth of these systems in the past few years. The trend to merge is likely to continue as organizations seek to economize by sharing services and professional expertise.

The 1971 merger of the John J. Cochran VA Hospital (JC) and the Jefferson Barracks VA Hospital (JB) into two divisions under one administration, now called the St. Louis Veterans Administration Medical Center (SLVAMC), was accompanied by numerous communications problems. John J. Cochran Hospital is located in mid-town St. Louis, 18 miles by vehicle or 11.2 miles by air from Jefferson Barracks in the southern suburbs. Shuttle buses leave

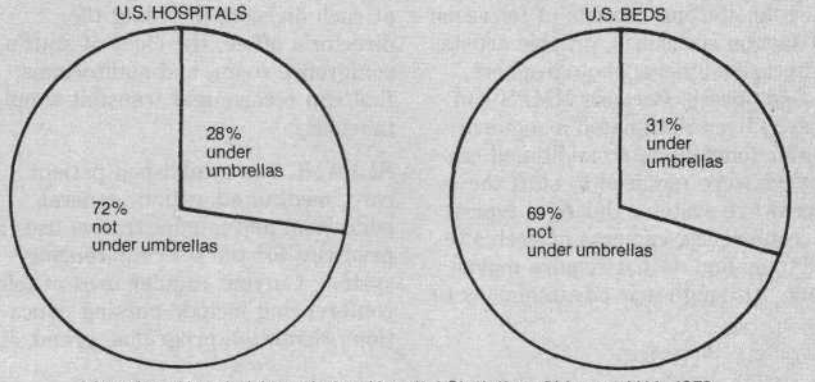
David Baltzer *was a Washington University, St. Louis, graduate student on externship with the St. Louis Veterans Administration Medical Center at the time this article was written. He now is administrative resident with the Evangelical Hospital Association, Oak Brook, IL.* **Mark Gray** *was chief, Learning Resources Service , St. Louis Veterans Administration Medical Center. He now is with Telstronix, Inc., Santa Clara, CA.* **Jack Pfitzer** *is chief, Medical Media Production Service, St. Louis Veterans Administration Medical Center.*

*Figure 1—Growth under umbrellas**



**American Hospital Association.* Directory of Multi-Hospital Systems. *Chicago: AHA, 1980.*

*Figure 2—Comparison of facilities under umbrellas to facilities not under umbrellas**



**American Hospital Association.* Hospital Statistics. *Chicago: AHA, 1979.*

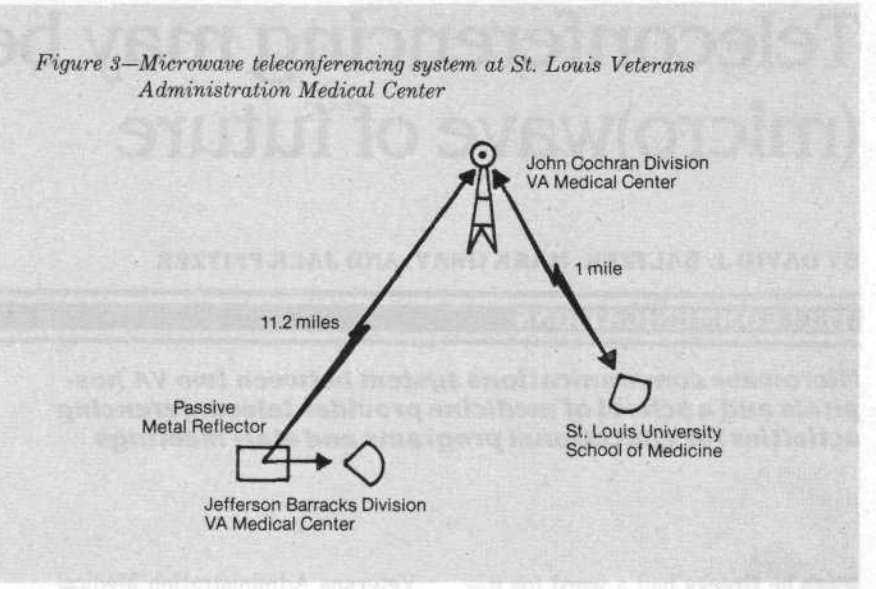
each division four times daily carrying interoffice mail, laboratory specimens, patients, and employees. The ride is notoriously rough, and, regardless of the purpose of the mission, the round trip invariably consumes half a day. The telephone requires only the prefix "1" for direct dialing between divisions, and conference calls are frequently used by administrators.

"Interactive media" is the broad term for communications exchange linkups between two or more locations. "Telehealth" refers to communications support systems. An informal application of a telehealth system is physician consultation via telephone. SLVAMC uses formal applications including telephone-to-computer reproduction of scans from seven VA hospitals as far away as Syracuse, NY, and Grand Junction, CO, for diagnosis by the SLVAMC Nuclear Medicine Department; telephone-to-computer color graphic reproduction of teaching slides; and teleconferencing. Communication signals can be transmitted by telephone, cable, direct microwave, and relayed microwave. Microwaves, because of short wavelength and high frequency, transmit only along line of sight. When a ground object or the curvature of the earth obstructs the line of sight, the waves may be relayed by satellite or by repeating surface stations.

Teleconferencing operations at SLVAMC come under the Learning Resources Service and Medical Media Production Service (MMPS). In addition to teleconferencing, functions include medical illustration, photography, and production of complete instructional packages for distribution throughout the VA system.

Because of SLVAMC's systemwide VA role, staffing consists of television production specialists, graphic artists, writers, designers, photographers, and engineers. Because MMPS had already been designated a regional production center, no additional employees were required to staff the microwave system. During a typical teleconference, cameras at each site are fixed and do not require movement. Although it is advantageous to have a technician in the control room at JC, monitoring can be adjunct to other duties. Educational sessions usually require a cameraman at the place of origin to obtain close-ups of demonstrations and written work. Training sessions in which competency must be proved may require camera operators at both ends of the transmission.

Figure 3—Microwave teleconferencing system at St. Louis Veterans Administration Medical Center



JC is the switching point for transmission to the St. Louis University Medical School, which is by line of sight, and to JB, which requires one relay from a reflector on a water tower at JB (see figure 3, above). Distribution is through the hospital's closed-circuit television system, which has control room videocassette recording capability. Participants view themselves as they are seen at the other division on one screen and view the distant party on another screen. Television studios at JB and JC are acceptable for small informal meetings but not for large conferences. There are approximately 50 locations at each division, including the director's office, the chief of staff's conference room, and auditoriums, that can receive and transmit simultaneously.

SLVAMC has established patient care, medical education, general education, and administrative uses as priorities for the teleconferencing system. Current regular uses of teleconferencing include nursing education orientation programs, grand rounds, and departmental staff meetings.

New nurses are given a feeling for the larger purpose of the VA in house education sessions. Policies are presented in consistent fashion, and the teleconference gives a cohesive approach to standardized procedures. Grand rounds, which originate at any one of the three locations, are educational experiences in which formal papers, clinical cases, and lectures using visual aids are presented. Department heads are also beginning to realize the value of teleconferencing. Weekly meetings are scheduled through MMPS. Library service, medicine service, nursing service, and now pharmacy service are regular participants. Learning Resources Service has weekly staff meetings via microwave as a matter of routine.

In April of this year, the director's staff meeting was held via microwave for the first time instead of having half the participants travel via shuttle bus. Administrative assistants were also invited to attend. The agenda was short. Because of the newness of the situation, reports were given efficiently and much time was saved. Some original stiffness dissolved into a more relaxed atmosphere after the first 10 minutes. Oral and written responses were all favorable, although one participant did suggest that the meetings should be held in person at quarterly inter-

vals in order for people to mingle before and after the meeting.

Teleconferencing is especially useful when there is more than one person at one of the locations, because participants are forced to be responsive to the issues under discussion. Meetings held via microwave are viewed by participants as being more structured, so agenda adherence and organization are enhanced. Leaders prepare their topics well, because the camera accentuates their roles. Meetings are easier to control, because side conversations can be picked up by the microphone. One study shows that teleconferences were from 15 to 40 percent shorter than meetings in person.* Teleconference can supplement or totally replace travel.

There is a very real human aspect to communication that needs to be dealt with in a teleconference. The warmth of conversation with people is not present when talking through a television set, but, because of the visual element, there is immeasurably greater potential for intimacy than by telephone. Techniques are available to facilitate this intimacy. Participants should be introduced in roll-call fashion at the outset as they would be in a telephone conference call. Participants should be educated to maintain eye contact through the camera. The chairman of the meeting should involve everyone with questions to register concensus and determine the level of understanding. The greater the ease of operation of the equipment, the less discomfort there will be among participants.

A comfortably furnished, warmly attractive conference room seating some 35 people is ideal. A projection screen is helpful. The number and positions of cameras is crucial. Camera techniques such as zoom, pan, tilt, and close-ups add to communication effectiveness if not overused. A remote-control device controlled by a participant may be added to provide the same camera functions used by an operator, thus eliminating the feeling of intrusion caused by the presence of an operator. Administrators and physicians can be confident of the privacy of their transmissions, because regular television receivers lack necessary converter components.

To be sure, there are problem areas in telecommunications. Technology provides the hardware, but what about the people involved? Telehealth deals in an area in which human beings need to catch up with technology. Problems in the microwave system may mean that a meeting has to be rescheduled. The very notion of technological answers to communication problems requires difficult cost justification to cautious administrators.

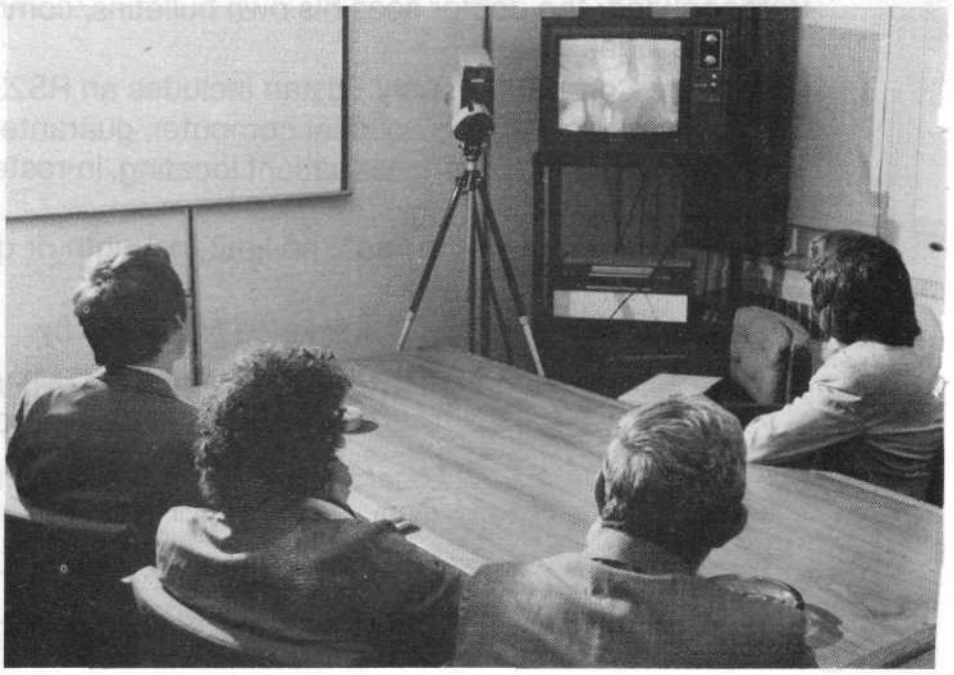
The cost of a basic microwave teleconferencing system will vary depending upon distances, number of links, reliability, needs, and desired uses of the institution. One link could vary in price from $5,000 to $100,000. A reliable contractor or consulting engineer can provide specific budgetary estimates. Costs may be expected to decrease in the future as the technology is distributed throughout the health care system. State health planning agencies are generally favorable toward expenditures that promote the success and proliferation of multi-institutional systems.

Benefits from telehealth technology have never been formally investigated and would be difficult to measure because of intangible factors. A dollar value can be ascribed to personnel time saved. Energy savings can be computed. It may be possible to quantify benefits gained from increased control for a corporate executive. But how does an executive evaluate the safety and convenience of decreased travel during inclement weather? How does an administrator assign a dollar value to the sense of identification with the mission of the organization gained by a nurse during orientation? Values formed during this crucial experience could greatly affect future performance.

Past applications of telehealth systems have been limited to remote regions—Indian reservations, geographically isolated regions, and rural areas. Advancing more readily available technology will make telehealth systems increasingly attractive to multi-institutional systems. The newly formed Association of Hospital TV Networks (AHTN), with offices in Cleveland, has 25 multi-institutional members representing 550 hospitals. The purpose of the AHTN is to coordinate hospital TV networks, with an eventual goal of facilitating shared programming. Also, a special section of the Health Sciences Communications Association in Wauwatosa, WI, is dedicated to hospital television networking.

The health field will have to remain receptive to new approaches for dealing with new problems. Concerning communications, it is obvious that there is a future for microwaves in multi-institutional systems. ■

The microwave telecommunications system has been especially effective for long-distance staff meetings. As much as a half day in travel time per person can be saved.



*Forrest, R., and File, K. "The future of videoconferencing: there is more than the meeting to consider." Paper, Teleconferencing & Interactive Media Conference, University of Wisconsin, Madison, March 16, 1980.