

C.A. McDowell E.B. Challis J.M. Lockyer
L. White K. Adams I.J. Parboosingh

Teleconferencing CME Programs to Rural Physicians: The University of Calgary Teleconference Program

SUMMARY

Continuing medical education (CME) provides practising family physicians with the cornerstone of maintenance and improvement of skills. In rural areas the problems of isolation and distance are a barrier to continuing medical education. Provision of CME programs by audio-teleconferencing is an attempt to overcome these problems. This article describes the teleconference program of The University of Calgary, how it has developed over the five years of its existence, and its impact on rural physicians. (*Can Fam Physician* 1987; 33:1705-1708.)

RÉSUMÉ

L'éducation médicale continue (ÉMC) constitue pour les médecins de famille en pratique la pierre angulaire du maintien et de l'amélioration des habiletés. Dans les régions rurales, les problèmes d'isolement et de distance sont une entrave à la formation médicale continue. La mise sur pied de programmes d'ÉMC utilisant les téléconférences vise à surmonter ces problèmes. Cet article décrit le programme de téléconférence de l'Université de Calgary, son développement au cours de ses cinq années d'existence et son impact sur les médecins en pratique rurale.

Key words: continuing medical education, rural family physicians, audio-teleconferencing

Dr. McDowell and Dr. Challis, certificants of the College, are members of the Department of Family Medicine in The University of Calgary; Ms. Lockyer and Ms. White hold positions in the Office of Continuing Medical Education in The University of Calgary. Dr. Parboosingh is Assistant Dean, Continuing Medical Education and Professor of Obstetrics and Gynecology in the University of Calgary. Mr. Adams is a staff member of The Teleconferencing Centre of the University of Calgary. Requests for reprints to: Dr. I.J. Parboosingh, Health Sciences Centre, 3330 Hospital Dr. N.W., Calgary, Alta. T2N 4N1

FAMILY PHYSICIANS practising in urban centres have a wide variety of continuing medical educational (CME) offerings available to them. Their rural colleagues, on the other

hand, are restricted to reading, self-assessment programs and the very occasional guest speaker who visits the community. Weekly rounds are rarely possible. While rural practitioners seek out and attend conferences in major centres, the logistics of arranging coverage, accommodation and transportation make participation difficult. Clinical practice in rural communities often requires greater than average expertise. Physicians must be up to date in all aspects of medicine and equally adept at recognizing and treating both the life-threatening problem and the minor complaint.

Recognizing the need for regular (CME) programs in the small centres in southern Alberta and southeastern British Columbia, the Office of CME at The University of Calgary, in conjunction with the Perinatal Education Program of the Foothills Hospital in Calgary, began experimenting with audio-teleconferencing in 1981. Audio-tele-

conferencing has been shown to be an economical method of delivering educational programs to distant centres.^{1,2} Further, it is a practical alternative to hospital rounds in communities that lack the resources to mount regular ongoing programs. As the faculty person giving the teleconference is on the end of a telephone line, a variety of in-province, out-of-province, and international speakers can be recruited for programs. Unlike audio- and videotapes, which do not permit two-way interaction between faculty person and learner, the technology available for teleconferencing easily lends itself to lively discussion.

The teleconference medium has been used in Canada for the transmission of CME programs for at least 10 years. An excellent review, by D.A. Davis, of the use of this medium in Canada has recently been published. The oldest and perhaps the most sophisticated tele-health network using

the teleconference medium exists in Newfoundland, while British Columbia is probably the most recent participant in this form of CME activity.³

After five years of delivering teleconference programs, it was thought that an evaluation of the program was necessary. During that period the program had grown from a once-monthly program for five hospitals to a weekly program for 43 hospitals. The purpose of this article is to describe the development of the teleconference network, the methods used to identify the educational needs of the physician participants, the teaching format used in the program, and the evaluation of the program.

The Teleconference Network

The Faculty of Continuing Education at The University of Calgary began the practice of teleconferencing credit courses for students in rural communities in Alberta in 1978, using a Darome Meet-Me Bridge⁴ situated on the University campus. The teleconferences were received in the extension schools and colleges in the communities by portable Darome teleconveners kits. These conveners were loaned to the hospitals for the first medical teleconferences, which were offered to five communities in southern Alberta as a pilot project during 1981. The conferences were enthusiastically received by the physicians and nurses in these communities. During the next five years hospitals purchased Darome conveners at a cost of \$1,000 per unit. During this period the teleconference network grew to include 37 hospitals for the CME programs and 47 for the perinatal programs (Table 1). The current cost of teleconferencing bridges ranges from \$10,000 for smaller ten-port equipment to \$80,000 for a more sophisticated twenty-port unit. The cost to the participating hospital is currently \$400 for a series of 34 conferences. The hospitals accept the long-distance telephone charges incurred during the conferences. The average cost per participant is estimated at \$3.00 to \$5.00 per conference. This includes the cost of courier charges for handouts and audiovisual aids (average \$10 per centre) and photocopying charges. The administrative and secretarial expenses are met by the Office of Continuing Medical Education and the Perinatal Education Programs. Each hospital has a staff person

who looks after the teleconference programs. These staff members post notices, arrange for whatever audiovisual equipment is required (35 mm projector, overhead projector, etc.), duplicate handout material for participants, and set up the actual teleconference room. The success of the program depends heavily on the commitment of the program administrator in each hospital.

The Teaching Sessions

The program currently operates weekly teleconferences on a Tuesday to 18 hospitals between 0800 and 0900 hours, and the session is repeated for another 25 hospitals between 1200 and 1300 hours on the same day.

The success or failure of any CME program has been shown to be closely linked with the degree to which the content meets the needs of the participants. Every effort is made to ensure physician input in the planning of the program content. The physicians in the rural communities are surveyed annually for suggestions of topics. Suggested topics are reviewed at a teleconference attended by a small group of physicians from rural communities. While participants at this teleconference have an opportunity to discard topics or add new ones, the main purpose of the meeting is to determine the specific content that should be covered within a topic. In the case of the perinatal teleconference, where the sessions are geared to the needs of obstetric nurses as well as to those of physicians, a similar mechanism is used to ensure nursing input into the development of the content of the teaching sessions. The faculty are selected on their reputation, first as sound practical clinicians and, secondly, as good presenters at CME meetings. Earlier studies have shown that there are particular specialties, mainly those demanding intensive nursing and medical care such as intrapartum and

emergency care, in which the teaching is most effectively done by a physician and nurse team.⁵ Accordingly, when appropriate, a physician and nurse team is used to present these topics. Half the faculty who present the programs are private practitioners working in Calgary and other cities in Alberta. They give freely of their time to this program without receiving any financial reimbursement.

The teaching sessions follow a standard pattern developed over the years. Each teleconference is moderated by a family physician. The Chairman of the Department of Family Medicine at The University of Calgary and the Assistant Professor serve in this capacity. The perinatal conferences are chaired by the Coordinator of the Regional Perinatal Program. At each teleconference the faculty deals with the topic for discussion in a 20-minute didactic presentation, using slides, overhead transparencies, and written material. More recently, a videotape has been shown at each centre for selected programs as an alternative to the didactic presentation. The rest of the hour is left unstructured for interaction between the participating physicians and nurses in the peripheral hospitals and the faculty.

Evaluation of the Teleconference Program

Evaluation of the effectiveness of CME delivered by any method is no less complex today than it has been in the past. The problem of evaluation is compounded by the introduction of a new technology. Does the technology or the environment in which the programs are received pose an obstacle to learning? Several methods have been used to evaluate the effect of the teleconference series on the participants.

Post-Session Feedback

The results of questionnaires, completed after each session, have consistently shown high ratings for learner satisfaction. These results compare favorably with the results obtained for on-site conferences, although the data for teleconferences is perhaps more objective. It is rare for the faculty at on-site conferences who have travelled long distances at the invitation of local physicians to receive anything but a favourable evaluation. In contrast, learners will not sit through a telecon-

Table 1
Number of Hospitals
in The University of Calgary
Teleconferencing Network

Year	No. of Hospitals
1981-82	19
1982-83	32
1983-84	38
1984-85	45
1985-86	47

ference which is not pertinent and well presented, and they freely express any dissatisfaction on the evaluation forms.

The quality of sound, which is so important to the success of teleconferencing, is evaluated by the site coordinators. Transmission loss because of circuit impedance can be overcome by high-quality bridging equipment that can amplify the signal under the control of the bridge operator. Clipping of voices can inhibit interaction during a teleconference, but this imperfection rarely compromises the educational value of the session.

Attendance Rates

Attendance is not a valid indicator of learning, since it does not measure achievement in terms of knowledge gained or change effected in behaviour. However, increasing attendance rates in a series of programs indicates that the participants find the sessions worthwhile enough to return and to encourage their colleagues to attend. The number of hospitals recruited into the program over five years is shown in Table 1.

When one considers the small numbers of doctors at each centre (fewer than eight active physicians in 35 of the hospitals), the attendance rates (see Table 2) appear to be highly satisfactory. The evident fall in the attendance rates for nurses and other professionals could be related to an increase in the number of teleconferences produced for nursing person-

nel in rural hospitals by the Alberta Hospital Association.

A Content Analysis of Interaction between Faculty and Participants

In general, the amount of interaction which takes place between faculty and participants during an education session is a reflection of the educational value of the program. A content analysis of the discussion period in 47 teleconferences has shown that participants asked an average of 9.2 questions per conference; 287 or 68.2% of the questions analysed related to practical tips on patient management, and 55 or 13.2% related to specific clinical problems of current concern to the physicians. We conclude that the physicians are using the discussion period to obtain practical information which is either lacking in the speaker's initial presentation or requires clarification.

Evidence of Change in Physician Behaviour

Some persons hold the view that evidence of a change in clinical practice or in patient outcome is needed to demonstrate the practical benefits of an education program for physicians. We do not entirely share this view. We do not believe that we should be trying to prove conclusively that an item of information learned in a continuing education program results in a measurable change in practice behaviour. There are good data on the learning

preferences of Canadian physicians⁶ and on the sources of information which they rely on when deciding whether or not to adopt a new form of investigation or treatment.⁷ The consistency of the results in these studies lends credibility to the method of surveying physicians for their perception of the usefulness of education programs.

During the current year the physicians and nurses in 39 rural hospitals participated in a survey with the object of identifying specific changes in clinical practice that they attribute directly or indirectly to the teleconference programs. To date, a total of 144 specific changes in practice procedures have been identified by 108 physician respondents who regularly attend the teleconference series. Changes were cited throughout the scope of clinical practice. Clinical areas which tended to predominate were prenatal care, cardiology, and diabetes. Many of the changes in investigation and treatment attributed by the physicians to the teleconference programs involved the use of recent technological advances and their incorporation into rural practice. More frequent use of ultrasound and electronic fetal monitoring, closer attention to blood glucose monitoring and glycosylated hemoglobin levels, as well as use of newer cardiac drugs were cited by many of the respondents as changes they had made in their practices after attending the teleconferences. An effort is being made to verify reported changes in practice. Two centres were visited, and the physicians were interviewed about their reported changes in practice. Charts were examined and, where applicable, changes in hospital policy and the records of the pharmacy were reviewed to confirm the physicians' impressions. In five out of six cases positive confirmation of a change in practice was made. It is hoped to extend this confirmation process to many more centres by means of a structured interview technique used by the authors in a previous study⁶ to identify the role played by teleconferencing in the change process. A review of the nurses' responses, currently being analysed, also seems to show alteration in many areas of their practice.

Conclusions

CME is vital to rural family physicians and allied health professionals in

Table 2
Mean Attendance Rates per Teleconference for CME and Perinatal Conferences

	Mean No. of Centres	Mean No. of MDs	Mean No. of Allied Professionals
CME Teleconferences			
1981-82	11	29	33
1982-83	22	55	133
1983-84	32	56	134
1984-85	32	65	112
1985-86	32	66	105
Perinatal Teleconferences			
1982-83	29	32	169
1983-84	35	42	173
1984-85	38	79	154
1985-86	37	79	119

Source: Data obtained from returned evaluation forms.

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their quest for high standards of care. Teleconferencing is a practical method of providing up-to-date information in a variety of disciplines to physicians and allied professionals. When properly scheduled to minimize disruption to office and hospital routines, it overcomes the problems created by distance and cost.

The technology in use is able to deliver programs with a quality of sound which does not detract from either learning or interaction between speaker and participants. The use of imaginative handouts and their distribution to participating centres prior to the conference date greatly enhance the quality of teleconferencing. The use of videotapes to present the topics adds variety and increases the scope of programming.

The University of Calgary Teleconferencing Program has paid particular attention to the quality of program delivered from both a clinical and a technical viewpoint. Among physicians and allied professionals working in southern Alberta and southeastern British Columbia, teleconferencing has achieved a broad level of acceptability. The participants are increasingly relying on the program to bring them new information and to validate information they have heard or read elsewhere. They are using all this information to improve the care they give to patients. ●

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