Telehealth tumour teams: diagnostics and management

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Introduction

Cancer management is becoming increasingly complex with multi-modality treatment and supportive care. One response to this is the formation of multi-disciplinary teams. They can include practitioners from each treatment modality, palliative care and allied health care. Team meetings are also excellent continuing education opportunities. The challenge in rural and remote areas is to assemble such teams so that there is access to specialist information where there are no specialists in residence. There is also the need to try to achieve equity of outcomes by facilitating access for diagnosis and treatment and providing supportive care for the greater than a third of Australians who live outside major cities, with 3% living in remote or very remote areas.1,2 Some of this can be achieved using telehealth systems. Existing rural practitioners can be supplemented with experts from larger centres to complete a team, using telemedicine.

Telehealth

A WHO definition of telehealth is “the practice of healthcare using interactive audio, visual and data communications. This includes healthcare delivery, diagnoses, consultation and treatment as well as education and transfer of medical data”. The ability to practice telemedicine is constantly being simplified by new technology.

The analogue telephone system had some useful applications but the addition of vision with videophones improved communication. Transmitting images clearly stressed the analogue system, as occurred when the internet was accessed using phone lines. Linking centres with digital lines enhances the transfer of data but carries the expense of installation and there are limits to the accessibility to digital lines especially in remote areas. Now fast broadband technology is being used for telemedicine which means widespread access, and there are fewer problems with compatibility of equipment. Cheap webcams and free provision of videoconferencing software enable individuals to videoconference cheaply over the net using their computers or small mobile phones. This should hasten the application of videoconferencing to telehealth.

The addition of a video image improves the social interaction as we found in a study of the use of videophones to enhance palliative care outreach nursing in remote South Australia.3 In this trial we provided analogue videophones to palliative care nurses in Port Pirie (229 km from Adelaide, population 15 200) to enable them to communicate with palliative care patients when general nurses from the more remote Peterborough (95 km) and Booleroo Centre (65 km) visited them in their homes and plugged a video phone into their analogue phone lines. The advantage was more contact between visits without increased travel for the palliative care nurses and better communication for the patients who reported better rapport when they could see who they were talking to. Some disadvantages were long set up times if the remote nurse was technophobic and freezing or calls dropping out because of the addition of video over a standard busy phone line.

Between fixed centres installing digital lines was quite effective in transmitting data as we found when we used this technology to export multi-disciplinary care in a project linking Darwin Hospital with the Royal Adelaide Hospital Cancer Centre. The expertise of a multi-disciplinary team in Adelaide was made available to the medical oncologist and surgeons in Darwin.4 Darwin lacked radiation oncologists who were able to contribute to planning the patients’ multi-disciplinary care. The regular multi-disciplinary meeting by telemedicine better supported the isolated clinicians, decreased travel and enhanced the opportunity for education and peer review. Patients in Darwin were able to access the opinion of a full cancer treatment multi-disciplinary team.
Diagnosis and treatment

Diagnostic tests can be reviewed using telemedicine. Telepathology has been used between major specialists hospitals and rural hospitals.\textsuperscript{5} Sending pathology images by the internet is being used for diagnosis, expert consultation and education at Cornell University.\textsuperscript{6} This can be done in real time with remote control of the microscope stage.

Likewise radiology images can be transmitted digitally and used in a multi-disciplinary conference.\textsuperscript{7} An extension of this, for treatment, is remote radiotherapy planning which can be achieved by transmitting a remote CT planning image to a planning computer in a tertiary centre, thereby making the best use of the planning expertise. We have employed this as part of the interaction between Adelaide and although patients are still required to travel to receive radiotherapy the time and expense of being away from home is reduced if planning can be done in advance. Furthermore even in cancer surgery, robotic surgical equipment such as the Da Vinci equipment for prostate surgery, linked by telemedicine makes remote surgery possible.

Counselling

A further use for videoconferencing has been demonstrated with women with breast cancer in rural areas who in most situations do not have access to professionally led support groups. Twenty-seven such women in the Intermountain Region of north-eastern California participated in an 8 session support group under the leadership of an oncology social worker who joined them by teleconference.\textsuperscript{8} As with the other examples, this proved feasible and was acceptable to the participants. Comparing tests prior to and after the group sessions showed significant decreases in depression ($p<0.02$) and posttraumatic stress disorder symptoms ($p<0.05$) as a result of the group support. Teleconferencing therefore allowed these women to avail themselves of a useful service despite the leadership expertise not being available in their community.

Medico legal considerations

Multi-disciplinary case conferencing can occur between clinicians with the patient’s own primary clinician communicating the opinion to the patient, thus avoiding potential medico legal issues if opinions directly to patients cross jurisdictional boundaries.

Telemedicine raises no new ethical issues but those already associated with providing patient data to multiple clinicians for expert opinions. The whole team may be held responsible for the opinion given. Patients should give consent for their case to be discussed and may not know who is attending in the room if anyone is out of camera range or there are many people in the room.

Evaluation

One of the challenges for telehealth tumour teams is how to evaluate their effectiveness. There are no globally agreed parameters. Patient and practitioner satisfaction is important but patient numbers at the remote sites are small. Most importantly there is a paucity of economic data demonstrating the cost effectiveness of teleoncology. Often all that is evaluated is savings in travel costs compared to the capital cost of the equipment, but health outcomes should be taken into account unless it is assumed that the health benefit will be the same as for a face to face consultation. Patient preferences will be important since remote patients may be prepared to pay more for the convenience of telemedicine, if they deliver equal health outcomes.

Conclusions

Telehealth provides one set of solutions to assist with equity of access and work towards equity of outcomes for rural and remote patients with cancer. Non-resident specialists can supplement local practitioners to form multi-disciplinary teams. Pathological and radiological information can be
exchanged. This allows remote planning for radiation therapy and saves time for patients needing to travel to urban centres for their treatment. Rapid advances in technology will provide more options for delivery of cancer care to rural patients but is important to evaluate such programs including an economic evaluation.

References

2. Department of Health and Aged Care. Accessibility/Remoteness Index of Australia (ARIA). Canberra: The Department, March 1999 (Occasional Papers Series No. 6)

Presenter

Ian Olver graduated from the University of Melbourne in 1976 being awarded an MD in 1991 for a project on clinical trial methodology. He completed a PhD from Monash University in bioethics in 1997. He trained in medical oncology at Peter MacCallum Cancer Institute, the Alfred Hospital in Melbourne and the University of Maryland Cancer Centre. He worked for 6 years at the Peter MacCallum Cancer Institute and then moved to Adelaide, becoming the Clinical Director, Royal Adelaide Hospital Cancer Centre and the first Cancer Council SA Professor of Cancer Care at the University of Adelaide, during which time he established an oncology clinic in Alice Springs and a teleoncology service with Darwin. In May 2006 he was appointed CEO, The Cancer Council Australia and a Clinical Professor in the Department of Medicine at the University of Sydney.