

Telemedicine in Hong Kong

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Medicine in Hong Kong is a microcosm of Hong Kong itself—it is bustling, dynamic, go-ahead, state-of-the-art. What is surprising, perhaps, is that Hong Kong should also be in the vanguard of the development of telemedicine, having formed the Hong Kong Telemedicine Association at an early stage in the development of the subject globally, contributed to a series of international telemedicine conferences in London over the past few years, and run the world's first global 24-hour conference on telemedicine.¹

This achievement is surprising because the major successes of telemedicine around the world have been in sparsely populated rural areas, where it has improved access to medical services (particularly specialist services) and reduced the professional isolation of health care workers in remote places. Examples that come to mind include the telemedicine networks in northern Norway² and telepsychiatry in Australia.³ Yet Hong Kong does not have these problems—it is one of the most densely populated regions of the world and has one of the highest standards of living. Why then, should Hong Kong be interested in telemedicine?

The two fundamental driving forces of telemedicine are a desire to reduce costs and a desire to increase the quality of service.⁴ Although planners in Hong Kong probably would not be averse to making economies where they can, it is difficult to believe that this is the principal motivating factor. For example, Hong Kong has none of the problems of poor countries such as Mozambique, where a population of 18 million is served by a mere 600 doctors. In Hong Kong, a population of less than 7 million is served by more than 8000 doctors.

Clearly, telemedicine in Hong Kong is being driven by a desire to improve the way that medicine is practised. How can telemedicine help? The technique of telemedicine ('medicine practised at a distance') covers three broad areas of clinical endeavour: education; diagnosis and clinical management; and treatment. Treatment at a distance—surgery carried out by robots guided by a surgeon in another hospital, for example—is the stuff of science fiction and looks likely to remain

so. There are formidable technical hurdles before telesurgery becomes feasible and few circumstances in which surgery at a distance would seem to be preferable to the real thing.

Education at a distance, on the other hand, presents few technical challenges and may very often be preferable to health care staff having to travel. As Chung et al⁵ point out, advances in medical science occur rapidly and traditional methods of disseminating knowledge, such as publication in journals, may not be able to keep pace. In certain cases, such as advances in surgery, there are also advantages in teaching by video rather than by using the printed page.^{6,7} Given Hong Kong's central position in a developing region of the world, one can confidently expect the special administrative region to play a leading role in medical education in the future.

How will such medical education be delivered? At present, medical education is largely a unidirectional transfer of information from specialist centres to peripheral health care locations. The two changes which technological developments permit are that (1) it is now feasible to have a bidirectional information exchange (ie the education event can be interactive) and (2) it is becoming affordable to deliver education to the home. Given the pressures of day-to-day medical life, few professionals can find time during normal working hours for continuing medical education (CME) activities. While one may entertain reservations about the blurring of boundaries between 'work' and 'home', the reality is that if CME becomes possible at home, it will enter a new dimension of accessibility.

Finally, there is diagnosis and clinical management at a distance. This falls somewhere between the other two areas in terms of technical challenge, utility, and experience to date. Since the advent of digital communication, many areas of telemedicine have been tried, including teleradiology (perhaps the most mature), telepathology (very experimental), telepsychiatry, and teledermatology. As Poon et al have demonstrated,^{8,9} even in a densely populated urban environment such as Hong Kong, teleradiology

produces better decision making about patients with head injuries. In places where teleradiology has been tried, the evidence to date has been largely qualitative, but the first formal prospective research trial in the world is now underway in Hong Kong—another example of Hong Kong telemedicine leading the world.

And if there is one single phenomenon which bedevils the introduction of telemedicine around the world, it is the lack of research. Telemedicine also seems to be unique in attracting instant ‘experts’ who profess strong—and usually mutually conflicting—opinions on its every aspect. (It is always worth applying the Yellowlees test,¹⁰ and asking the current experts to define their practical experience of telemedicine, before listening to them too carefully.) I believe this is an indication of the immaturity of the discipline. The pharmaceutical industry is about 150 years old, and it would be inconceivable that a new drug could be offered without solid evidence of efficacy from a randomised controlled trial (RCT). An RCT could be considered the bare minimum of proof. Yet to date there have been virtually no RCTs in telemedicine and, as Hjelm points out,¹¹ the basic evidence for cost-effectiveness is only now being gathered for a few selected telemedicine applications.

Whither telemedicine in the future, and whither telemedicine in Hong Kong? The answer has to lie in research—and Hong Kong will undoubtedly continue to play an important role in the global development of telemedicine.

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