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An Introduction to Telemedicine and Email Consultations

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ABSTRACT

E-health, telehealth and telemedicine all describe the use of telecommunication and electronic information technology for the provision of health care at a distance. Interest in telemedicine has been heightened recently due to technological advances making equipment more effective and accessible, and increasing healthcare costs and client expectations creating pressures to find alternative modes of healthcare delivery. Although telemedicine suffers from a lack of conclusive evidence regarding its clinical effectiveness, primarily because it has not been adequately evaluated, its popularity and acceptance, particularly amongst lay persons, continues to increase. With the rapid increase in internet use, email, an electronic communication medium, has the potential to radically alter the culture of health-care. Despite a number of logistical issues related to its use, there is high consumer demand for email consultations, yet only 2% of clinicians currently offer them. As issues surrounding security, workflow, liability and workflow are resolved, email will impact increasingly of clinical service delivery.

INTRODUCTION

E-health, telehealth and telemedicine all describe the use of telecommunication and electronic information technology for the provision of health care - including diagnosis, treatment and medical education - at a distance.^{1,4} This encompasses everything from the standard telephone, through computers and videoconferencing, to fibre optics, satellites and other sophisticated equipment.³ While telemedicine allows a number of tasks to be accomplished without the necessity of face-to-face interaction, it also requires greater collaboration between the client and the practitioner.^{5,6}

Health professionals have readily adopted many of the new communication technologies such as mobile telephones and faxes, however the more advanced systems such as computers have not yet been put to good clinical use.^{2,7,8} In this regard health care has lagged behind other sectors in finding opportunities to substitute less expensive technologies for more costly labour and materials.^{2,4} However, interest in telemedicine has been heightened recently due to:

- technological advances making equipment more effective, less expensive, simpler to use and more readily available
- increasing healthcare costs and client expectations creating pressures to find alternative modes of healthcare delivery.^{1,4,6}

ADOPTION OF COMPUTER TECHNOLOGY

The advent of the internet has rapidly and radically transformed many aspects of society, including health care.^{4,6,9} It is anticipated that the internet will:

- allow health care organizations to collaborate more effectively
- simplify and standardize processes
- improve quality of and access to health care
- reduce health costs.^{6,9}

To achieve this a number of technical obstacles, organizational uncertainties, and policy barriers must be overcome on the part of both health organisations and consumers.^{5,6} Its effective integration into clinical practice will require major modifications to the structure of traditional clinical practice. These would include a major paradigm shift among clinicians, changes to work processes and job descriptions, and organisational restructuring within health services.^{4,10} Yet many believe that the adoption of telemedicine is inevitable. It is being driven by the changing focus of health services away from clinicians towards clients, the emphasis on prevention and health education, the economic imperative to restrain healthcare costs, and the evolution of the 'informed client' who will begin to drive the client-clinician relationship.^{6,7,11,12}

Wider adoption of telemedicine appears to be limited by cultural and attitudinal inertia, and resistance to behaviour change within the healthcare system.^{2,4,7,12,13} Increasingly disillusioned with or isolated from current health care systems, clients have already begun to accept more responsibility for the own health with tens-of-millions of lay people using the internet to access health related information, goods and services, and service providers.^{4,6,9}

Connecting clinicians with clients living in rural or remote areas, particularly those unable to access relevant health expertise in their community, is an area of particular interest for telemedicine.^{2,6,7} Another potential client group is people who simply prefer to receive care, monitoring and support at home instead of in medical institutions.^{6,7} Yet it is anticipated that the most common users of telemedicine will be those clients who choose to integrate virtual care with more traditional methods of healthcare delivery. It would be particularly appropriate for those with chronic diseases who require ongoing monitoring, but not necessarily ongoing intervention.^{7,12}

EFFECTIVENESS

Telemedicine in general suffers from a lack of conclusive evidence regarding its clinical effectiveness in terms of quality, accessibility, or cost, primarily because it has not been adequately evaluated.^{2,3,14} However, telemedicine is hardly unique in health circles in this regard.^{2,5}

Results from teledermatology studies appear to indicate that clinical outcomes are no worse than from conventional treatment, and that some economic benefits occur, but tend to favour the client rather than the health service.^{3,15-20} Surveys also report high levels of client acceptance and satisfaction^{1,3,21,22} citing reasons such as faster appointments, less travel, and less time off work which correspond with reasons for dissatisfaction with traditional services.^{17,18,21}

Additional studies which are more scientifically robust are needed to determine whether telemedicine can achieve its promise of more equitable health services through revolutionised health care practices.^{1,6,7}

EMAIL

One of the simplest and commonest forms of internet access is email. It is an efficient, convenient, accurate and cost effective electronic communication resource which already fulfils all the functions currently addressed with postage or telephones.^{5,6,8} With the rapid increase in the use of the internet the impact of email has the potential to radically alter the culture of health care.^{8,23,24} For a clinician considering their first move into telemedicine the use of email, with its ability to effectively open channels of communication in real time and handle large numbers of queries in a short period of time, would seem a suitable starting point.^{6,8} Yet, while client demand for the use of email is escalating, clinicians are slow adopters with only about 2% currently offering clients this option.^{8,23,25-27}

Email between clinicians and clients has the potential to offer important opportunities for better communication, an increased involvement from clients in supervising and documenting their own health-care, and a reduction in the need for face-to-face encounters.^{6,23,28} Used in conjunction with office visits it is particularly effective as a visit extender, especially for remote clients. It also offers increased episodes of interaction and opportunities for follow-up, allowing improved continuity of care including clarification of advice previously given and time for detailed and considered responses.^{8,29} Yet practitioners, apparently preoccupied with social, legal, and ethical consequences, prefer to use emails for the more routine technical aspects of client care. These include repeat prescriptions, laboratory results, and monitoring clients' self management. They see it as a practice tool that is less disruptive to office routines than the telephone, rather than a personal communication tool.^{23,30} However consumers, despite confidentiality concerns, tend to regard email as a creative communication tool with 90% of clients using email prepared to discuss important, sensitive and intimate health issues.^{8,23,30,31}

The high consumer demand for email contact begs the question - what is it about current service delivery models that leave clients 'wanting more'?^{25,26,30,32} Studies suggest that clients find email less intimidating than face-to-face encounters, allowing them to ask questions, express frustrations and make self-disclosures that they may not otherwise feel comfortable articulating.^{30,32,33} Its increasing use is set to launch a re-examination of the values necessary for good communication and has already begun to reconfigure the client-clinician relationship.^{23,26,30}

ACCESS

Use of email provides easy and fast access for clients to their clinicians for anyone with access to a standard computer, a basic email program and internet access. It is anticipated that regular contact will allow better tracking of a client's condition and reduce the need for active intervention.^{6,34} While the cost of technology continues to plunge, it is still beyond the reach of many. Those who are unable, or unwilling, to purchase their own computer can however, usually access the internet and email at low cost through public libraries or community telecentres.^{4,8} Many people have access through a work computer, but email received at the place of work is, by law, fully accessible to the employer.^{3,6} To avoid the risk of having messages discovered inadvertently, clients who do not have the use of a personal computer should store their e-mail files on the server of a trusted third party and/or encrypt messages, although rules regarding disclosure still need to be developed.⁶

Guidelines published by The American Medical Information Association are available for email communication between doctor and existing clients, guiding the correct establishment of a service, with particular regard to informed consent, confidentiality, and record keeping.^{8,23,25} There is also a requirement for the clinician or practice establishing an email site to create written policies and training for staff. These should delineate who can read client email, how staff should handle client emergencies reported online, and what types of disclaimers the site should contain.²⁹ Similarly, participating clients should clearly understand the principles under which the program operates and who, beyond their practitioner, may be able to read their messages.

ISSUES

Issues related to using email for clinical discussions primarily arise due to the lack of technical standards and policies controlling its use at both government and organisational levels.^{6,35,36} These are needed to address issues such as confidentiality, data integrity, authentication, timeliness, appropriateness, payment for services and licensure, so that participants can have realistic expectations about the uses and safety of clinical email.^{5,6,12} The relative ease with which email is used also raises issues of informed consent. While it has been suggested that initiating contact or supplying an email address are sufficient to infer consent, concerns are raised that consumers do not fully understand the implication of emails used in a medical context, including the fact that they constitute part of the medical record.^{23,24,26,31}

Security is another obvious concern, as email discussions between client and clinician will necessarily involve the exchange of personal information. It is presently impossible to keep all information exchanged over the internet confidential.^{5,6,36} Risks exist for breaches of confidentiality through unauthorised access or disclosure, and loss of integrity through malicious or accidental alteration. Although several options are available to improve security, such as encryption, privacy software and user authentication, none of these are presently enforceable.^{6,12}

Health organisations are also concerned about how email correspondence will be integrated into the present work-flow and workloads, given that there are currently no mechanisms for paying clinicians for these services.^{6,8} Unsolicited email is another problem which, while currently addressed through disclaimers and automated replies, has the potential to cause future medicolegal problems, unless this practice is ratified.^{23,25,37} There are also concerns about the level of service that can reasonably be expected to be provided, including timeliness of answers and the liability of providers if they miss or fail to act upon information contained in an email.^{6,8}

CONCLUSION

While email can remove social as well as geographical distance, it also removes a vast array of interpersonal communication cues such as intonation, gesture, facial expression, direction of gaze, posture, dress, physical distance and demeanour. This may lead to it being more easily misinterpreted.^{23,38,39} Combining email with face-to face encounters reduces the mechanistic nature of email³⁹ while allowing "highly specific, descriptive, and sometimes intimate portrayals of patient narrative."²³

While studies indicate that most practitioners currently use email to replicate preferred modes of interactions with clients, primarily 'doctor-centred' behaviours^{30,40} there is the potential to develop interactive client-practitioner relationships. This would allow clients greater opportunity to act as collaborators in their own health-care, which has been shown to lead to better health

outcomes. Accessing the internet and exchanging emails is poised to impact markedly upon the core of clinical medicine, the one-on-one client-clinician interaction.^{23,30,40} As the eminent surgeon Rick Satava stated: "the future ain't what it used to be".¹¹

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