6.6 Literature Summary – Human Resources Context

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
Aas, I H M. (2000). Working with telemedicine: user characteristics and attitudes. *Journal of Telemedicine and Telecare 6(1) S1,* 66-68. [Norway]	Telemedicine	Descriptive	No	• A survey revealed that 90% of respondents reported that telemedicine technology was easy to use. 30% of these individuals had access to a technician.
Aas, I.H.M. (2001). A qualitative study of the organizational consequences of telemedicine. *Journal of Telemedicine and Telecare, 7(1)*, 18-26. [Norway]	Telemedicine	Descriptive	No	• 80% reported no staffing changes following the introduction of telemedicine. • Telemedical work accomplished by changing job descriptions. Employees have more mixed roles and perform more functions. • Types of skill necessary for personnel increases and work role boundaries changing (i.e. between nurses and doctors). • 33% said more personnel would make telemedical work function better.
Aas, I.H.M. (2002a). Changes in the job situation due to telemedicine. *Journal of Telemedicine and Telecare, 8*, 41-47. [Norway]	Telemedicine	Descriptive	No	• 63% reported technology had produced changes (i.e. less traveling) in their job situation. • Telemedicine can be tiring and stressful. • Results suggest that full-time in

---

[1] See Appendix 8.1 for Study Design Typology.

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				telemedicine consultations are not desired.
Aas, I.H.M. (2002b). Learning in organizations with telemedicine. *Journal of Telemedicine and Telecare, 8*, 107-111. [Norway]	Telemedicine	Descriptive	No	• Nineteen respondents received instruction on how to use telemedicine equipment, 8 had no education on the technology, 8 had access to a technician and 3 stated they learned by trial and error. • Initial instruction is sufficient-extensive training programmes may not be needed for people who are beginning to work with telemedicine.
Allaërt, F.A. & Dusserre, L. (1998). Telemedicine: responsibilities and contractual framework. MEDINFO "98: 9th world congress on medical informatics, Seoul, Korea. *Medinfo, 1*, 261-264. [France]	Telemedicine	Informed Opinion	Guidelines	• Competence of doctors must be taken into account in determining responsibilities of doctors involved in telemedicine. • Doctors need complete knowledge of telehealth equipment use and limitations. • Remuneration issues must be resolved (i.e. will each communication be charged?). • A legal framework needs to be clarified.
American College of Radiology. (1999). ACR standard for teleradiology (Res.21-1994). Retrieved 05/15/02 from	Teleradiology	Informed Opinion	Standards	• Interpretation must be done by a physician with certain requirements (i.e. trained in the use of teleradiology equipment).

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
http://med.mc.ntu.edu.tw/~some d/teletea/document/teleradiology _standard.html [USA]				• Technologists or sonographers must also be certified and trained to operate and supervise the teleradiology system. • Licensure requirements stipulated.
American Psychological Association. (1997). APA statement on services by telephone, teleconferencing, and internet. Retrieved 15/21/02 from http://www.apa.org/ethics/stmnt0 1.html [USA]	Telehealth	Informed Opinion	Standards	• A revision of the ethics code is planned and will address telehealth. • Outlines how existing standards in the Ethics Code apply to delivery of services by telehealth. For example "Boundaries of Competence".
American Telehealth Association. (2001). ATA adopts telehomecare clinical guidelines. ATA News and Resources. Retrieved 11/12/01 from http://www.atmeda.org/news/list. html [USA]	Telehomecare	Informed Opinion	Guidelines	• Outlines who is able to provide a video visit (i.e. RN's social workers, etc.). • These individuals must be trained and demonstrate competency on the technology. • Staff must demonstrate ability to troubleshoot. • Written guidelines should exist for troubleshooting and follow-up methods.
Anderson, C. (2001). Continuing Education Via Telehealth – Present Status; Future Growth: A Working Document. CA Consulting, Unpublished report.	Telehealth	Informed Opinion		• Survey of need for continuing education (CE) developed by telecommunications equipment within Alberta. • Summary of human resources for

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
[Canada]				telehealth CE. • "Importance of senior management… buy-in… and support as important factors." • Need for sufficient human resource support for telehealth and the need for additional resources. • Multiple roles for telehealth coordinators. • Job descriptions "revised to better incorporate audio-visual personnel into the Telehealth team." • Need for flexible working arrangements within contracted agreements. • Rapid staff turnover and potentially high burn out.
Angaran, D.M. (1999). Telemedicine and telepharmacy: current status and future implications. *American Journal of Health-system Pharmacy, 56(14)*, 1405-1426. [USA]	Telemedicine and Telepharmacy	Informed Opinion	Accreditation and Standards	• Lack a curricular approach to the provision of telemedicine training and education by health care professions at the undergraduate and graduate level. • Information about training and education, regulation and licensure, accreditation and practice standards, liability and reimbursement are reviewed.
Ashcroft, R.E. & Goddard P.R. (2000). Ethical issues in	Teleradiology	Informed Opinion	Standards Accreditation	• Ethical and legal implications remain unclear nationally and

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
teleradiology. *The British Journal of Radiology, 73*, 578-582. [United Kingdom]				internationally. • Need a means of ensuring competence at user AND provider institutions that specify minimum standards of training. • An internationally recognized system of accreditation may be the answer.
Ashley, R.C. (2002). Telemedicine: legal, ethical, and liability considerations. *Journal of the American Dietetic Association, 102(2)*, 267-269. [USA]	Telemedicine	Informed Opinion	No	• Multiple licenses, lack of credentialing and malpractice liability are barriers to growth. • Telemedicine practitioners should be guided by a set of policies, procedures and protocols.
Bailey, M. (2000). Legal issues relating to telemedicine in Canada's publicly funded health-care system. *Journal of Telemedicine and Telecare, 6(S1)*, 140-142. [Canada]	Telemedicine	Informed Opinion	No	• Within Canada agreements for physician compensation are possible. • International agreements in which the province/territory pays are less likely. • Third party or patient payment are not likely to contravene compensation policies buy many contravene licensing rules.
Bashshur, R.L. (1997). Critical Issues in Telemedicine. *Telemedicine Journal, 3(2)*, 113-26. [USA]	Telemedicine	Informed Opinion	Guidelines	• Telemedicine must establish its professional credibility by creating norms of professional conduct and practice guidelines. • Telemedicine is constrained by restrictive reimbursement policies

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				and limitations on clinical practice across states. • Federal policy has been inconsistent (provides funding for telemedicine but will not reimburse unless face-to-face contact).
Beard, D., Hemminger, B., Keefe, B., Mittelstaedt, C., Pisano, E., &. Lee, J. (1993). Real-time radiological review of remote ultrasound low cost video and voice. *Investigative Radiology, 28(8)*, 732-734. [USA]	Teleradiology	Descriptive	No	• Success depends on training of both technologists and radiologists. • Learning effect appeared in data. On-going training environment is recommended. • The training should be continued indefinitely to provide a training environment for new personnel.
Beilby, W., Ceresia, P & Crolla, D. (2000). Telehealth: proceed with caution. Canadian Medical Protective Association Information Sheet. Ottawa, Ontario: The Canadian Medical Protective Association. [Canada]	Telehealth and Telemedicine	Informed Opinion	Standards	• Summary of medico-legal issues related to telehealth including: jurisprudence, duty of care, standard of care, vicarious liability, scope of practice, and licensure
Berlin, L. (1998). Malpractice issues in radiology: teleradiology. *American Journal of Radiology, 170(6)*, 1417-22. [USA]	Teleradiology	Informed Opinion	Standards	• Interstate practice of telemedicine is confusing because lawsuits can be brought at alternative locations. • Discusses ACR standards. These standards will be reviewed (mandatory) every 4 years. • Growth inhibited in States due to lack of third-party reimbursement.

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
Blignault, I. & Kennedy, C. (1999). Training for telemedicine. *Journal of Telemedicine and Telecare* 5*(S1)*, 112-114. [Australia]	Telemedicine (video-conferencing)	Descriptive	No	• Information on video-conferencing equipment training is not available. • Minimum level of training to be provided by videoconferencing vendors did not always occur. • Training needs to be incorporated into orientation courses, and staff development. • High turnover of staff creates problems (especially in rural areas).
Campbell, T. & Martel, R.F. (1999). A program management model for the Nova Scotia telemedicine network. *Canadian Journal of Rural Medicine, 4(2)*, 77-80. [Canada]	Telemedicine	Descriptive	No	• Important to establish training protocols for both users and providers. • Identify the financial and human resources needed to implement the program and policy issues surrounding licensure and reimbursement.
Canadian Association of Occupational Therapists. (2000). Position statement on telehealth and tele-occupational therapy. *Canadian Journal of Occupational Therapy,* 67(5), 362-363. [Canada]	Telehealth And Tele-occupational Therapy	Informed Opinion	Standards	• CAOT recognizes that high standards of professional service delivery are required to sustain tele-occupational therapy. • Four goals are outlined in this statement.
Canadian Council on Health Services Accreditation. (2001). Achieving Improved	None	Informed Opinion	Accreditation	• Instruction manual for the AIM (Achieving Improved Measurement) Accreditation

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
Measurement Accreditation Program. Ottawa. Ontario: Canadian Council on Health Services Accreditation. [Canada]				Program. • Human resources section includes criteria for (1) planning; (2) feedback and assessment; (3) recruitment, retention and credentialing; (4) orientation, training and performance appraisal; (5) roles and responsibilities, and working relationships; (6) occupational health and safety; and (7) achievement of HR objectives.
Canadian Nurses Association. (2001). Position Statement: The role of the nurse in telepractice. Ottawa, Ontario: Canadian Nurses Association. [Canada]	Telepractice	Informed Opinion		• Indicates that specialized nursing knowledge and skills are required for a nurse to provide a service without face-to-face contact. • Nurse must be competent with respect to the technology being used. • Registration issues outlined
Canadian Nurses Association. (2000). Telehealth: Great potential or risky terrain? Retrieved 05/15/02 from http://www.cna-nurses.ca/_frames/issuestrends/issuestrendsframe.htm [Canada]	Telehealth (Telenursing, telepractice)	Informed Opinion		• Policies need to be developed that state who is qualified to provide telehealth services. • Sufficient levels of education, experience and specialized skills needed by nurses to perform telehealth must be determined. • Professional practice issues discussed.
Carlisle, J. (2000a). Regulatory	Telemedicine	Informed	Standards	• Inter-provincial telemedicine

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
aspects of telemedicine in Canada. *Telehealth Law, 1(1)*, 4-6. [Canada]		Opinion		• programs create jurisdictional and regulatory problems. • Discusses FMLAC's recommendations to provincial medical licensing authorities. • "Telemedicine permits" may be needed to practise across provinces. • Internationally provided services cannot be guaranteed by licensing authorities in Canada.
Carlisle, J. (2000b). Licensure issues in Telemedicine [Presentation]. Canada E-Health 2000: From Vision to Action. 2000 October 22-24; Ottawa. Ottawa: Office of Health and Information Highway. Retrieved 04/15/02 from http://www.hc-sc.gc.ca/ohih-bsi/chics/even/2000_econf/presentations/carlisle_e.pdf [Canada]	Telemedicine	Informed Opinion	Standards	• Summary of licensure issues in telemedicine in Canada
Clinidata Corporation. (1999). Guidelines and Procedures Manual, Volume 1. Moncton, New Brunswick: Clinidata Corporation. (note: Guidelines and Procedures are updated regularly). [Canada]	Teletriage	Informed Opinion	Guidelines and Standards	• Propriety corporate manual that governs telephone triage operations in New Brunswick and Ontario • Includes HR policies that define scope of practice for teletriage nurses, hiring checklists,

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				employee wage and benefits, and quality management objectives related to employee performance.
Crolla, D.A. (1998). Health care without walls: responding to telehealth's emerging legal issues. *Health Law in Canada, 19*, 1-19. [Canada]	Telehealth	Informed Opinion	Guidelines and Standards	• Education, clinical and practice guidelines are needed to minimize legal risk. • Challenge is to find a way to minimize legal risk without impeding the growth of telehealth. • Licensure issues need to be resolved. Inadequate training could be basis for liability.
CST Education Committee (2003*). Final Report of National Telehealth Coordinators Workshop 2002*. (Held in conjunction with the 5th Annual Meeting of the Canadian Society of Telehealth, October 1-5, 2002, Vancouver, BC) prepared by the Telehealth Coordinator's group on behalf of the Canadian Society of Telehealth. Unpublished manuscript. January 2003. [Canada]	Telehealth	Informed Opinion	Accreditation, Standards and Guidelines	• Workshop to discuss roles and responsibilities of telehealth coordinators as well as day-to-day job issues of consent protocol, documentation, evaluation, training and other issues. • "The position of a Telehealth Coordinator is a multi-functional role." • "The actual title of Telehealth Coordinator should not be standardized as it will not uniformly fit into all organizational structures and the position will evolve and become more fully integrated into the health care system." • "Certification and/or accreditation

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				is an option for providing credibility to Telehealth Coordinators." • Other, more favoured options to providing credibility to telehealth coordinators are "earlier exposure to telehealth during career training, orientation program, networking with peers, 'communities of learning', investment in professional development, and flexibility in hiring practices…" • Key HR challenges are: recruitment and retention, stress and burn out and "professional development to meet the broad and evolving needs of the role." • Suggestions for improvement included: description of role and accountability, "solid commitment and support from management and/or funding bodies", "centralized telehealth program management", "sufficient investment in training and professional development", effective communications to raise awareness and appreciation, "mentoring, peer support and collaborations with other

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				coordinators. • Consider the development of a common training tool kit that could be customized as needed. • Training needs to be specific, relevant, timely and ongoing, with flexible approach, content and delivery mechanisms. • Technical, clinical and operational training in telehealth is needed. • "A formal, accredited Telehealth Coordinator training program affiliated with an educational institute…was not a high priority for the majority of the Telehealth Coordinators…at the workshop." • "A more flexible, self-directed approach to training and professional development" was preferred by participants. • The primary functions, roles, key competencies and skills were identified for telehealth coordinators.
Daley, H.L. (2000). Telemedicine: the invisible legal barriers to the health care of the future. *Annual Health Law, 9*, 73-106. [USA and International]	Telemedicine	Review	Guidelines	• Health care workers avoid telemedicine because of liability and licensure concerns. • Licensure options are discussed. • A telemedicine license could be developed.

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				• "Mutual recognition" may be best option. • Medical malpractice is an issue.
Edelstein, S.A. (1999). Careful telemedicine planning limits costly liability exposure. *Healthcare Financial Management,* 1999 (December), 63-69. [USA]	Telemedicine	Informed Opinion	No	• Regulatory bodies have not kept up with technology development. • Resolution of malpractice liability and licensure issues is difficult until there are clear legal precedents and professional guidelines.
Federation of Medical Licensing Authorities of Canada. (1998). Policy Statements and Guidelines: Telemedicine. Retrieved 05/01/02 from http://www.fmlac.com/activities/psg.html [Canada]	Telemedicine	Informed Opinion	Guidelines	• Recommendations to licensing authorities include: telemedicine service provided by a physician should be deemed to occur at the patient's location; physicians "must satisfy the licensing or registration requirement of the jurisdiction in which their intended patients reside" (p. 1); the term professional misconduct should include practicing telemedicine in a jurisdiction where one has not obtained the necessary registration license or authority to do so.
Gerrard, L., Grant, A.M., & Maclean, J.R. (1999). Factors that may influence the implementation of nurse-centred	Telemedicine	Descriptive	Standards	• Developed model illustrating human resource implications for registered general nurses in telemedicine.

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
telemedicine services. *Journal of Telemedicine and Telecare*, 5, 231-236. [United Kingdom]				• Interview results revealed inadequate training, incomprehensible or unavailable technical support, increased scope of practice for nurses. • Continued training and support and clarity of roles and responsibilities are needed.
Hogenbirk, J., Pong, R., Chan, B., Robinson, D., McFarland, V., Lemieux, S. & Liboiron, L. (2002). Evaluation of a Teletriage Pilot Project in Northern Ontario. Unpublished report prepared for The Richard Ivey Foundation. Sudbury, Ontario: Centre for Rural and Northern Health Research. [Canada]	Teletriage	Descriptive	No	• Comprehensive evaluation of an Ontario teletriage pilot project • Continuous quality improvement processes were summarized, including those specifically related to HR such as hiring, roles and responsibilities, and job performance appraisal.
Hogenbirk, J., Pong, R., & Liboiron, L. (2001). Fee-for-service Reimbursement of Telemedicine Services in Canada, 1999/2000. Unpublished report prepared for Health Canada. Sudbury, Ontario: Centre for Rural and Northern Health Research. [Canada]	Telemedicine	Descriptive	No	• 3 provinces (AB, MB and SK) reimbursed fee-for-service for a wide variety of telemedicine services in 1999/2000. • 9 provinces/territories reimbursed for selected telemedicine services. • 1 province (ON) did not reimburse fee-for-service for any telemedicine services. • Total billings for 1999/2000 ranged from zero t less than

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				$8000 per province/territory. • Lack of fee-for-service reimbursement may impede physician's participation in telemedicine programs.
Horton, M.C. (1997). Identifying nursing roles, responsibilities, and practices in telehealth/telemedicine. *Healthcare Information Management, 11(2)*, 5-13. [USA]	Telehealth/ Telemedicine	Descriptive	No	• Requisite educational background or roles and responsibilities of nurses working in telemedicine programs unclear. • Telemedicine nurses surveyed reported various roles (i.e. nurse, administrator, etc.). • Nursing role needs redefinition as it pertains to telemedicine.
Hughes, E.M. (2001). Communication skills for telehealth interactions. *Home Healthcare Nurse,* 19(8), 469-472. [USA]	Telehealth (Video-conferencing)	Informed Opinion	No	• Discusses American Nurses Association "Competencies for Use of Telehealth Technologies in Nursing". • Special communication skills needed by nurses engaging in video-conferencing.
Industry Canada. (n.d.). Sector Competitiveness Frameworks Series - Telehealth Industry Highlights / Growth Prospects. Retrieved 01/05/02 from http://strategis.ic.gc.ca/SSG/hs01326e.html [Canada]	Telehealth	Informed Opinion		• Users need to have the right content and learning tools. • Must address shortage of skills among professional users of telehealth. • Need to use telehealth technologies to educate telehealth users about telehealth.
Industry Canada. Sector	Telehealth	Informed	No	• Information technology sector may

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
Competitiveness Frameworks Series. Telehealth Industry: Changing Conditions and Industry Response. Retrieved January 5, 2002. [Canada]		Opinion		experience a shortage of project managers, systems specialists and network architects. • Most health care workers have not been trained or educated for the new and expanded roles that the information age has produced.
Industry Canada. Sector Competitiveness Frameworks Series. Telehealth Industry. [Canada]	Telehealth	Informed Opinion	No	• Analysis of 121 companies active in telehealth revealed they are most often staffed by 20 to 25 people.
Iserson, K. V. (2000). Telemedicine: a proposal for an ethical code. *Cambridge Quarterly of Healthcare Ethics, 9(3)*, 404-406. [United Kingdom and International]	Telemedicine	Informed Opinion	Standards	• Ethical standards are needed to guide the future of telemedicine. • A code is outlined that commits telemedicine practitioners to ensure that personnel, including non-physician providers and technicians are supervised and are competent to work with telemedicine.
Jacobson, P. & Selvin, E. (2000). Licensing telemedicine: the need for a national system. *Telemedicine Journal and e-Health, 6(4)*, 429-439. [USA]	Telemedicine	Informed Opinion	Standards	• Licensure options include: full licensure, endorsement, mutual recognition and reciprocity agreements, consultation exceptions, special licensure and national licensure. • National licensure is preferred [USA]. • Two approaches to national

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				licensure are discussed.
Jenkins, R., & White, P. (2001). Telehealth Advancing Nursing Practice. *Nursing Outlook 49(2)*: 100-105. [USA]	Telehealth, Telemedicine, Telenursing	Informed Opinion	No	• Summary of major barriers including costs, reimbursement, confidentiality, licensure, liability and ethical concerns • "Legal standard [in the US] is that health care is given at the site of the patient, so a consultant must be licensed in all states in which he or she practices." P.103
Jennett, P. & Andruchuk, K. (2001). Telehealth: "real life" implementation issues. *Computer Methods and Programs in Biomedicine, 64*, 169-174. [Canada]	Telehealth	Informed Opinion	Standards	• Human capacity to manage, operate and monitor telehealth has not been studied. T • Telehealth impacts staffing duties and time.
Jennett, P. & Siedlecki, B. (2001). Telehealth policy: Building a functional system. *Telehealth Law, 1(4)*, 53-58. [Canada]	Telehealth	Informed Opinion	Standards Accreditation	• Policy issues surrounding professional standards, licensing and accreditation need to be resolved. • Uniform reimbursement amounts and procedures needed. • Alberta, Nova Scotia, Saskatchewan and Manitoba have telehealth reimbursement policies.
Jennett, P., Watson, M & Watanabe, M. (2000). The potential effects of telehealth on the Canadian Health workforce:	Telehealth	Descriptive		• Need for additional staffing. • Existing staff take on new roles. • Most training is sporadic. • There is a need for organized

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
where is the evidence? *Cyberpsychology and Behaviour, 3(6)*, 917-923. [Canada]				training in telehealth such as certification courses or programs.
Jerome, L W., DeLeon, P.H. James, L.C. Folen, R, Earles, J & Gedney, J.J. (2000). The coming of age of telecommunications in psychological research and practice. *American Psychologist, 55(4)*, 407-421. [USA]	Telehealth (Psychology)	Informed Opinion		• Barriers to growth include competency, reimbursement and licensure requirements. • Research is needed to determine human-factors. • The APA established a statement on 'services by Telephone, Teleconferencing, and Internet". • Among other things, the APA is looking at liability for equipment failure, licensure and regulatory and legislative issues.
Johnston, R., Staveley, R., Olfert, L. & Jennett, P. (2000). An industry, clinical, and academic telehealth partnership venture: progress, goals achieved, and lessons learned. *Telemedicine Journal and e-Health, 6(3)*, 341-348. [Canada]	Telehealth	Descriptive		• Telehealth coordinator needed. • Learning curve for telehealth steep. • Interactive continuing medical education beneficial. • Transfer of information, liability and remuneration discussed.
Josey, P. & Gustke, S. (1999). How to merge telemedicine with traditional clinical practice. *Nursing Management, 30(4)*, 33-36. [USA]	Home telemedicine program	Informed opinion	No	• Six-step approach to successfully developing a home telemedicine program. • Develop policies and protocols, educate staff and evaluate staff competency.

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
Lacroix, A., Lareng, L., Padeken, D., Nerlich, M., Bracale, M., Ogushi, Y., et al. (2002). International concerted action on collaboration in telemedicine: recommendations of the G-8 global healthcare applications subproject-4 (Special Report). *Telemedicine Journal and e-Health, 8(2)*, 149. [International]	Telemedicine	Informed Opinion	Standards	• Barriers to telemedicine include insufficient addressing of legal and reimbursement issues. • Outlines several recommendations for the Human Factors aspect including financing from national governments for training and evaluation of human factors, technical expertise provided to users and incentives for individuals to learn and use telemedicine.
Loane, M. & Wootton, R. (2002). A review of guidelines and standards for telemedicine. *Journal of Telemedicine and Telecare, 8*, 63-71. [International]	Telemedicine	Informed Opinion	Guidelines and Standards	• Reviews identified guidelines and standards for teleradiology, telepsychiatry, home telenursing, etc. • Benefits of developing guidelines include reduced risk of litigation, standardization of work practices and encourages quality assurance.
Maclean, J.R. (1996). Telemedicine and the nurse: the benefit or burden of new technology? *Journal of Telemedicine and Telecare, 2(S1)*, 54-55. [United Kingdom]	Telemedicine	Informed Opinion	No	• There will be a burden upon all telemedicine staff trained on the telemedicine technology. • Extension of nursing role may result in increased stress due to the responsibility of using telemedicine technology and remuneration concerns.
Mowbray, D., Bennett, J., Butler,	Teleradiology	Informed	Standards and	• Physicians involved in

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
G., Ferguson, B., Mason, F., Pavlosky, W., et al. (1999). CAR standards and guidelines for teleradiology. Retrieved from http://www.car.ca/standards/teleradiology.htm [Canada]		Opinion	Guidelines	teleradiology should have an appropriate fellowship or certification. • Training is the responsibility of the operating site and the supervising physician.
Nelson, R. & Schlacta, I. (1995). Nursing and telemedicine: merging the expertise into telenursing. *Journal of the Healthcare Information and Management Systems Society, 9(3)*, 17-22. [Europe]	Telemedicine and Telenursing	Informed Opinion	No	• Nurses in telemedicine programs are program managers, clinical coordinators and head nurses. • New roles and job opportunities will be established with the growth of telemedicine.
Nerlich, M., Balas, A., Schall, T., Stieglitz, S.P., Filzmaier, R., et al. Teleconsultation practice guidelines: Report from G8 Global Health Applications Subproject 4. *Telemedicine Journal and e-Health, 8(4),* 411-418. [International]	Telemedicine and Telehealth	Informed Opinion	Guidelines	• "Generic" suggestions for establishing policies and procedures to promote safe, high quality application of teleconsultation technology to the practice of medicine. • "These policies must comply with applicable local, national, and international laws and standards." • "Specialists.. must be authorized to practice in both their usual place of practice and by a recognized authority." • "The local provider must chose an appropriate and competent specialist." • Contracts must be in place

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				between jurisdictions/institutions/ professionals to cover professional responsibilities, liability coverage, reimbursement, licensure, law, and proper documentation.
Nesbitt, T.S., Hilty, D.M., Kuenneth, C.A., & Siefkin, A. (2000). Development of a telemedicine program. *Western Journal of Medicine, 173*, 169-174. [USA]	Telemedicine	Descriptive	No	• Findings revealed that physicians reported a technical difficulty in about 1 of 5 consultations (i.e. unexpected disconnections). • Reimbursement is a barrier to the use of telemedicine.
Nitzkin, J.L., Zhu, N. & Marier, R.L. (1997). Reliability of telemedicine examination. *Telemedicine Journal, 3*, 141-157. [USA]	Telemedicine	Comparative	No	• Comparison of face-to-face and telemedicine consultations for a wide variety of medical services. • Clinicians without experience or knowledge of telemedicine limitations missed findings of clinical importance. • Technical improvements may resolve some of these problems.
Nohr, L.E. (2000). Global medicine and licensing. *Journal of Telemedicine and Telecare, 6(S1)*, 170-172. [Norway]	Telemedicine	Informed Opinion	Standards	• "Limited licenses" could be extended to include telemedical practice. • Solution to cross-border licensing: the creation of an international health personnel register offering international licensing or national legislation. • Barrier is establishing legislation

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				that is accepted by all nations. An international body needs to be involved in this process.
Noorani, H.Z. & Picot, J. (2001). Assessment of videoconferencing in Telehealth in Canada. Ottawa, Ontario: Canadian Coordinating Office for Health Technology Assessment. [Canada]	Video-Conferencing	Descriptive	Guidelines	• Eight telehealth programs reviewed. • For one program the technical staff provided training and for all others it was the vendor. • Little information available about the content of training.
Ontario Hospital Association. (2001). Building the foundation for e-Health in Ontario: A pathway to Improved Health Outcomes. Report of OHA's Information and Communications Technology Advisory Committee. Toronto, Ontario: Ontario Hospital Association. [Canada]	E-Health	Informed Opinion		• There is a demand for nurses who can provide services in health call centers. • A post diploma/graduate telehealth nursing program was developed at Centennial College (funded by The Richard Ivey Foundation).
Ontario Ministry of Health and Long-Term Care Telehealth Task Force. (1999). Ontario Ministry of Health and Long-Term Care Telehealth Task Force. (1999). Recommendations for a Telephone Health Education and Triage / Advisory Service Final Report to the Ontario	Teletriage	Informed Opinion	Guidelines and Standards	• Discussion of issues in the provision of telephone triage • Recommendations on minimum criteria for personnel, software and operations.

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
Ministry of Health and Long-Term Care. Retrieved 08/168/2001 from http://www.gov.on.ca/MOH/english/pub/ministry/telehealth.html [Canada]				
Pendrak, R.F. & Ericson, P. (1996). Telemedicine and the law. *Healthcare Financial Management, 1996 (December)*, 46-49. [USA]	Telemedicine	Informed Opinion	Guidelines and Standards	• Impact that telehealth will have on professional liability is unclear because no legal precedents exist. • Physician licensure a problem because there are no clear national licensing standards. • Procedures used for credentialing physicians will need to account for telemedicine.
Picot, J. (2000). Meeting the need for educational standards in the practice of telemedicine and telehealth. *Journal of Telemedicine and Telecare, 6(2)*, 59-62. [Canada]	Telemedicine and Telehealth	Informed Opinion	Standards	• Education and training programs are needed for all professionals in telehealth and telemedicine. • There are no programs in Canada that offer training in telehealth. • Lack of available training means that professionals are learning on the job.
Picot, J. & Cradduck, T. (2000). The telehealth industry in Canada: industry profile and capability analysis. Life Sciences Branch, Industry Canada, Ottawa, Ontario. Retrieved	Telehealth	Informed Opinion	Standards	• Synopsis of Canadian telehealth industry including a summary of medico-legal issues, reimbursement and licensure.

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
05/15/02 from http://strategis.ic.gc.ca/SSG/it05488e.html?he=y [Canada]				
Pong, R.W. (2002). Sharing the Learning: The Health Transition Fund. Synthesis Series: Rural Health / Telehealth. Ottawa, Ontario: Health Canada. [Canada]	Telehealth	Informed Opinion	No	• Synthesis of 33 telehealth projects funded by Health Canada's Health Transition Fund program, with particular reference to rural health issues • Identifies organization and human-relations problems as major impediments to some of the projects. • Restrictive funding models and restrictive scope-of-practice stipulations were also identified as on-going human resource issues.
Pong, R.W. & Hogenbirk, J. (2000). Reimbursing physicians for Telehealth practice: issues and policy options. *Health Law Review, 9(1),* 3-12. [Canada]	Telehealth	Informed Opinion	No	• Reviews reimbursement policy options for physicians and summarizes the pros and cons of each option. • Policy options are grouped under status quo, selective reimbursement, full-scale reimbursement and reimbursement under alternative payment plans.
Pong, R.W. & Hogenbirk, J. (1999). Licensing physicians for telehealth practice: issues and policy options. *Health Law*	Telehealth	Informed Opinion	Accreditation	• Qualifications and locus of accountability both need to be resolved. • Reviews current status of

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
Review, 8(1), 3-14. [Canada]				licensure in Canada Australia, Europe and the United States. • Lists pros and cons to options for licensing (i.e. national licensure). • Credentialing an issue for hospitals and institutions participating in telehealth. • How does one enforce and perform accreditation when many are virtual facilities? • Must ensure technical competence of those using equipment.
Reed, G.M., McLaughlin, C.J. & Milholland, K. (2000). Ten interdisciplinary principles for professional practice in telehealth: implications for psychology. *Professional Psychology, Research and Practice*, *(April) 31(2)*, 170-178. [USA]	Telehealth	Informed Opinion	Standards, Guidelines and Accreditation	• Interdisciplinary collaboration identified principles including that "each health care discipline… is responsible for "assuring competence in the delivery of health care via telehealth technologies (p. 174)." • Mechanisms to ensure this competence include training, accreditation, licensing and continuing education requirements as well as licensing exams. • Discusses scope of practice. • Safe use of equipment by practitioner is an issue.
Reisinger, P.B. (1998). Experiences of critical care	Teletriage	Descriptive	Standards, Protocols	• Teletriage nurses had no prior education or experience in

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
nurses in telephone triage positions. *Dimensions of Critical Care Nursing, 17*(1), 20-27. [USA]				teletriage. • Teletriage difficult to learn because amount of information was overwhelming. Nursing role different (i.e. more independent, no immediate confirmation that decision was right). • Recommendations include: develop training curriculum and standards of practice so that scope of practice and qualifications needed to perform teletriage are clear across all types and levels of practices
Rigby, M. (1999). The management and policy challenges of the globalisation effect of informatics and telemedicine. *Health Policy, 46*, 97-103. [United Kingdom]	Telemedicine	Informed Opinion	No	• Threats to management such as ineffective liability and accountability controls. • Challenge is to create a management environment that considers accountability issues without stifling innovation or benefits.
Rigby, M., Forsström, J., Roberts, R & Wyatt, J. (2001). Verifying quality and safety in health informatics services. *British Medical Journal, 323*, 552-556. [Europe]	Telemedicine	Informed opinion	Accreditation	• Need international agreement on regulation, liability and control (i.e. what laws apply?). • Difficult to ensure user-training and education. • Professional integrity is threatened by lack of regulation. • A national agency whereby

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				telemedicine service providers can register is recommended.
Robinson, D.M. (1998). Telehealth Risks and Liabilities: Policy Options for Removing Barriers to Growth. Unpublished report submitted to: Advisory Council on Health Info-Structure for Canada, 1998 (December). Vancouver: The Techknowledgey Group. [Canada]	Telehealth and Telemedicine	Informed Opinion	No	• Synthesis of liability issues in telehealth in Canada grouped into (1) delivery of services; (2) delivery of information; and (3) use of communications and information technology. • Key HR issues grouped in the delivery of services category include applicable duties an licensing.
Schmitz, H. (1999). Telemedicine and the role of the health information manager. *Topics in Health Information Management, 19(3)*, 52-58. [USA]	Telemedicine	Informed Opinion	Accreditation	• Licensure issues are a barrier to growth (i.e. crossing state or national lines). • Accreditation issues include what policies and procedures govern the credentialing of personnel, etc. in an organization. • Who is liable? Person giving advice or receiving advice?
Sjögren, L.H., TornQvist, H., Schwieler, A. & Karlsson, L. (2001). The potential of telemedicine: Barriers, incentives and possibilities in the implementation phase. *Journal of Telemedicine and Telecare, 7(S1)*, 12-13. [Sweden]	Telemedicine	Descriptive		• Interviews with physicians, IT managers and other managers revealed they thought telemedicine would change the functions of the personnel and the hospitals involved in telehealth. • Hospital managers need to make time available for training. • Acceptance will be facilitated by

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				appropriate training and good technical support.
Society of American Gastrointestinal Endoscopic Surgeons. (2000). Guidelines for the surgical practice of telemedicine. *Surgical Endoscopy, 14*, 975-979. [USA]	Telemedicine (Surgical)	Informed Opinion	Guidelines	• Discusses the definition, appropriate use and provides comments regarding several means of telehealth such as teleconferencing, telementoring and teleconsulting.
Stamm, B.H. & Perednia, D.A. (2000). Evaluating psychosocial aspects of telemedicine and telehealth systems. *Professional Psychology, Research and Practice, 31(2)*, 184-189. [Norway]	Telehealth	Informed Opinion	Guidelines	• Interface between people and technology is an important human aspect. • Discusses training issues such as how to dress most effectively for a camera and general etiquette.
Stanberry, B. (1998b). *The legal and ethical aspects of telemedicine*. London: Royal Society of Medicine Press. [United Kingdom and International]	Telemedicine	Informed Opinion	Standards	• Chapters on confidentiality, data protection, consent, malpractice, standards, equipment, intellectual property, jurisdictional issues and regulation. • "Existing legal and ethical guidance and protocols issued and adhered to by conventional medical practitioners apply to teleconsultancy…" • Key regulatory issue is to find ways to practise telemedicine to the very highest standards. • "There is the danger that telemedicine might become a

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				"high risk" speciality, with expensive… insurance that acts as a disincentive…"
Stanberry, B. (1998a). The legal and ethical aspects of telemedicine. 4: Product liability and jurisdictional problems. *Journal of Telemedicine and Telecare*, 4, 132-139. [United Kingdom and International]	Telemedicine	Informed Opinion	No	• Product Liability, licensing, malpractice insurance and jurisdictional issues discussed. • Under which country's laws will liability be determined (i.e. in the event of equipment failure)? • The development of a telemedicine license may be necessary. • The alternative is the requirement of full licensing in any area they wish to practice.
Stanberry, B. (2001). Legal, ethical and risk issues in telemedicine. *Computer Methods and Programs in Biomedicine, 64(3)*, 225-233. [United Kingdom and International]	Telemedicine	Informed Opinion	Standards	• Legal and ethical responsibilities of telemedicine have not been given adequate attention. • Radiology groups have published technical guidelines and standards but these are needed in other disciplines. • Human performance and not just technology must be considered in standards and guidelines. • Little guidance about telemedicine is provided from professional associations and Royal Colleges.
Tachakra, S., Sivakumar, A., Hayes, J., Dawood, M.S. Wiley,	Telemedicine	Informed Opinion	Standards	• Steep learning curve for users of telemedicine, especially for

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
C., & Stinson, A. (1997). Problems in Telemedicine. *Emergency Nurse, 7(5)*, 29-32. [United Kingdom]				consultant at receiving end. • Brief training makes some overly confident. • Users need to attend workshops, training courses, receive supervision and require ongoing situational teaching. • National standards will be developed. International standards may be more difficult to achieve.
Tachakra, S., Sivakumar, A., Hayes, J., Wiley, C. & Stinson, A. (1999). Training users of telemedicine. *Emergency Nurse, 7(7)*, 29-31. [United Kingdom]	Telemedicine	Informed Opinion	No	• Staff at both receiving and transmitting end must know how to use the technology and keep informed regarding developments, the limitations of telemedicine, where their authority comes from, who will cover them in the event of an accident. • This can be accomplished by courses, practice with equipment, learning on the job and continual improvement.
U.S. Department of Health and Human Services. (2001). 2001 Telemedicine: Report to Congress. Washington, D.C.: U.S. Department of Health and Human Services, Health Resources and Services Administration, Office of the	Telemedicine	Informed Opinion	Accreditation, Standards, Guidelines	• Summary of federally-funded telemedicine programs [USA]. • Discussion of major legal, licensure and reimbursement issues. • Appeal for technical and clinical standards, protocols and/or guidelines.

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
Advancement of Telehealth. [USA]				• Common licensure application forms should be investigated.
Vidmar, D.A. (1997). Plea for standardization in teledermatology: a worm's eye view. *Telemedicine Journal, 3*, 173-178. [USA]	Tele-dermatology	Informed Opinion	Standards	• Focus must be shifted to the training needed to perform the techniques of teledermatology and the best way to teach the techniques. • Telemedicine sites do not always have formal training manuals available. Training ranges from extensive to minimal and learning is mostly on-the-job training.
Wheeler, T. (1998). Whistling Past the Graveyard: don't let your equipment decisions haunt you. *Telemedicine Today, 1998 (August)*, 10-13. [USA]	Telemedicine	Informed Opinion	No	• Human factors are important and include personnel selection and training. • Must train people how to interact during a consultation. • Discusses assessment of a device called "The Care Manager". • Lack of good training about this equipment before implementing lead to confusion. • Big learning curve.
White, P. (2001). Legal Issues in teleradiology-distant thoughts! *British Journal of Radiology, 75(891)*, 201-206. [Hong Kong, discusses laws of other nations]	Telemedicine Teleradiology	Informed Opinion	Guidelines	• Most medical laws enacted before possibility of telemedicine realized. • No accepted legal definitions of telemedicine. • Guidelines should be implemented to address the relevant legal

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
				issues.
Whitten, P., Eastin, M.S., & Davis, S. (2001). Telemedicine in the Michigan Upper Peninsula region: an evaluation of the first five years. *Journal of Telemedicine and Telecare, 7(5)*, 288-299. [USA]	Telemedicine	Descriptive	No	• Site co-ordinators varied from secretaries to nurses. • Overlap of responsibilities a problem for telemedicine staff. • Great need for education and direction for physicians to use telemedicine. • More policy and procedural work needed. • Reimbursement issues need to be addressed.
Williams, S. (2000). Facts and figures: How is telehealth being incorporated into psychology practice? *Monitor on Psychology, 31(4)*, (page numbers not available). [USA]	Tele-psychology	Descriptive	No	• Most psychologists are using the phone-not many are using other means of telehealth. • Infrequent use may be because graduate psychology programs do not train students in this area as a part of the standard curriculum. • Legal and ethical uncertainties may also play a part.
World Medical Association. (1999). World Medical Association statement on accountability, responsibilities and ethical guidelines in the practice of telemedicine. Retrieved 05/21/02 from http://www.wma.net/e/policy/17-	Telemedicine	Informed Opinion	Guidelines	• Telemedicine training needs to be part of basic and continued medical education. • The physician must ensure that non-physicians (allied health professionals) involved in telemedicine are trained and competent.

Bibliographic Citation	Type of Telehealth	Study Design[1]	Discussion of Accreditation, Standards, or Guidelines	Key Issues/Findings
36_e.html [International]				• Physicians must be authorized to practice in the country or state where the patient is located. • Recommendations to National Medical Associations include: promotion of training and assessment programs for telemedicine techniques. • Practice guidelines and standard protocols that address physician registration and liability should be developed.
Yellowlees, P. (1997). Successful development of telemedicine systems: seven core principles. *Journal of Telemedicine and Telecare, 3(4)*, 215-223. [Australia]	Telemedicine	Informed Opinion	No	• The human factors are critical to the success or failure of telemedicine projects. • Lack of emphasis on training. • Continuing education is not provided.
Yellowlees, P. & Kennedy, C. (1996). Telemedicine applications in an integrated mental health service based at a teaching hospital. *Journal of Telemedicine and Telecare, 2*, 205-209. [Australia]	Telemedicine	Descriptive	No	• Human factors, particularly staff training, are crucial, more time consuming and more difficult than the technological side. • Ignoring human factors may be why some programs collapse prematurely.