

Telehealth: Clinical Guidelines and Technological Standards for Telepsychiatry

SUMMARY

AGENCE D'ÉVALUATION DES TECHNOLOGIES
ET DES MODES D'INTERVENTION EN SANTÉ

Telehealth: Clinical Guidelines and Technological Standards for Telepsychiatry

SUMMARY

Report prepared for AETMIS by Gilles Pineau, Khalil Moqadem, Carole St-Hilaire, Robert Perreault, Éric Levac and Bruno Hamel, with the collaboration of Alexandra Obadia and Lorraine Caron

January 2006

This report was translated from an official French publication of the Agence d'évaluation des technologies et des modes d'intervention en santé (AETMIS). Both the original report titled *Télésanté : lignes directrices cliniques et normes technologiques en télépsychiatrie* and the English report are available in PDF format on the Agency's Web site.

Scientific review

Jean-Marie Lance, MSc, Senior Scientific Advisor

Dr. Véronique Déry, MD, MSc, Chief Executive Officer and Scientific Director

Translator

Matthew Garriss, MA, Certified translator

Editorial Supervision

Suzie Toutant

Proofreading

Frédérique Stephan

Page layout

Jocelyne Guillot

Bibliographic research

Denis Santerre

Coordination

Lise-Ann Davignon

Documentation research

Pierre Vincent

Micheline Paquin

Communications and dissemination

Richard Lavoie

For further information about this publication or any other AETMIS activity, please contact:

Agence d'évaluation des technologies et des modes d'intervention en santé
2021, Union Avenue, suite 1050
Montréal (Québec) H3A 2S9

Telephone: (514) 873-2563

Fax: 514-873-1369

E.mail: aetmis@aetmis.gouv.qc.ca

www.aetmis.gouv.qc.ca

How to cite this document:

Agence d'évaluation des technologies et des modes d'intervention en santé (AETMIS). Telehealth: Clinical Guidelines and Technological Standards for Telepsychiatry. Report prepared by Gilles Pineau, Khalil Moqadem, Carole St-Hilaire, Robert Perreault, Éric Levac, and Bruno Hamel, with the collaboration of Alexandra Obadia and Lorraine Caron (AETMIS 06-01). Montréal: AETMIS, 2006, xxii-75 p.

Legal deposit

Bibliothèque nationale du Québec, 2006

Library and Archives Canada, 2006

ISBN 2-550-46263-7 (Printed), (French edition ISBN 2-550-45922-9)

ISBN 2-550-46264-5 (PDF), (French edition ISBN 2-550-45923-7)

© Gouvernement du Québec, 2006

MISSION

The mission of the Agence d'évaluation des technologies et des modes d'intervention en santé (AETMIS) is to contribute to improving the Québec health-care system and to participate in the implementation of the Québec government's scientific policy. To accomplish this, the Agency advises and supports the Minister of Health and Social Services as well as the decision-makers in the health-care system, in matters concerning the assessment of health services and technologies. The Agency makes recommendations based on scientific reports assessing the introduction, diffusion and use of health technologies, including technical aids for disabled persons, as well as the modes of providing and organizing services. The assessments take into account many factors, such as efficacy, safety and efficiency, as well as ethical, social, organizational and economic implications.

EXECUTIVE

Dr. Luc Deschênes

Cancer Surgeon, President and Chief Executive Officer of AETMIS, Montréal, and Chairman, Conseil médical du Québec, Québec

Dr. Véronique Déry

Public Health Physician, Chief Executive Officer and Scientific Director

Dr. Reiner Banken

Physician, Deputy Chief Executive Officer, Development and Partnerships

Dr. Alicia Framarin

Physician, Deputy Scientific Director

Jean-Marie R. Lance

Economist, Senior Scientific Advisor

BOARD OF DIRECTORS

Dr. Jeffrey Barkun

Associate Professor, Department of Surgery, Faculty of Medicine, McGill University, and Surgeon, Royal Victoria Hospital (MUHC), Montréal

Dr. Marie-Dominique Beaulieu

Family Physician, Holder of the Dr. Sadok Besroul Chair in Family Medicine, CHUM, and Researcher, Unité de recherche évaluative, Hôpital Notre-Dame (CHUM), Montréal

Dr. Suzanne Claveau

Specialist in microbiology and infectious diseases, Hôtel-Dieu de Québec (CHUQ), Québec

Roger Jacob

Biomedical Engineer, Coordinator, Capital Assets and Medical Equipment, Agence de développement de réseaux locaux de services de santé et de services sociaux de Montréal, Montréal

Denise Leclerc

Pharmacist, Board Member of the Institut universitaire de gériatrie de Montréal, Montréal

Louise Montreuil

Assistant Executive Director, Direction générale de la coordination ministérielle des relations avec le réseau, ministère de la Santé et des Services sociaux, Québec

Dr. Jean-Marie Moutquin

Obstetrician/Gynecologist, Research Director, and Executive Director, Département d'obstétrique-gynécologie, CHUS, Sherbrooke

Dr. Réginald Nadeau

Cardiologist, Hôpital du Sacré-Cœur, Montréal, Board Member of the Conseil du médicament du Québec

Guy Rocher

Sociologist, Professor, Département de sociologie, and Researcher, Centre de recherche en droit public, Université de Montréal, Montréal

Lee Soderström

Economist, Professor, Department of Economics, McGill University, Montréal



FOREWORD

TELEHEALTH: CLINICAL GUIDELINES AND TECHNOLOGICAL STANDARDS FOR TELEPSYCHIATRY

Providing access to health care and services remains a concern, making telehealth an option for delivering and supporting certain services from a distance. Seen from this standpoint, telehealth activities must complement existing services and depend on computer and telecommunications systems that facilitate their delivery when and where needed. Appropriate use of telehealth could therefore play a role in improving access to resources throughout Québec. In this context, telehealth would be an essential component in the major reorganization of the health and social services network that is in line with the departmental move towards local service networks, regional hospitals, and integrated university health networks designed to promote continuity and complementarity in health services.

This is the context in which the Direction générale des services de santé et médecine universitaire (DGSSMU) mandated the Agence d'évaluation des technologies et des modes d'intervention en santé (AETMIS) to assess three priority fields of telehealth application for the Ministère de la Santé et des Services sociaux (MSSS) in order to establish clinical guidelines and technological standards. These fields are telepsychiatry, telerehabilitation, and telepathology. At the request of the department, three distinct assessment reports are produced, one for each field of application. In accordance with the work plan presented in April 2004 and with DGSSMU's agreement, a number of considerations relating to the economic, organizational, human, ethical, and legal aspects of telehealth were added.

The main purpose of this report is to propose clinical guidelines and technological standards for telepsychiatry.

In providing this report, AETMIS hopes to provide MSSS with information that will prove useful in making informed decisions about the standardization of telepsychiatry throughout the province.

Dr. Luc Deschênes
President and Chief Executive Officer

ACKNOWLEDGEMENTS

This report was prepared at the request of the Agence d'évaluation des technologies et des modes d'intervention en santé (AETMIS) by **Dr. Gilles Pineau**, MD, graduate in physical engineering; and **Dr. Khalil Moqadem**, MBA, and doctoral candidate in public health, both AETMIS Consultant Researchers and main authors of this report; **Carole St-Hilaire**, economist, PhD (public health) and AETMIS Consultant Researcher; **Dr. Robert Perreault**, psychiatrist; **Dr. Éric Levac**, MD, MSc (Computer Science) and doctoral candidate in computer science; and **Bruno Hamel**, electronic engineer specialized in biomedical engineer, all four coauthors; **Alexandra Obadia**, LLM, lawyer; and **Lorraine Caron**, PhD (Bioethics), both AETMIS Consultants Researchers and collaborating authors.

AETMIS would like to express its appreciation to:

Dr. Manon Charbonneau

Psychiatrist, Chair of the Telepsychiatry Committee, Association des médecins psychiatres du Québec, Montréal, Québec

Johanne Desrochers

Deputy Director, Telehealth, MUHC, Montréal, Québec

Dr. Rolf Heinmüller

AETMIS Consultant Researcher

Thierry Hurlimann

Consultant, Institut de recherches cliniques de Montréal (IRCM), Montréal, Québec

Christophe Lair

Telehealth Technical Advisor, Service du développement et de l'évaluation des technologies, Direction de l'organisation des services médicaux et technologiques, Direction générale des services de santé et médecine universitaire, Ministère de la Santé et des Services sociaux, Québec

Dr. Pierre Lalonde

Psychiatrist, Young Adult Clinic (schizophrenia), Hôpital Louis-H. Lafontaine, and Full Professor, Department of Psychiatry, Faculty of Medicine, Université de Montréal, Montréal, Québec

Christian-Marc Lanouette

Telehealth Coordinator, Direction de l'organisation des services médicaux et technologiques, Direction générale des services de santé et médecine universitaire, Ministère de la Santé et des Services sociaux, Québec

Pascale Lehoux

AETMIS Consultant Researcher

Dr. Anne-Marie MacLellan

Pediatrician, Director of the MUHC Pediatric Network, Montreal Children's Hospital, Montréal, Québec

Dr. Michel Piraux

Medical Advisor, Direction de l'organisation des services médicaux et technologiques, Direction générale des services de santé et médecine universitaire, Ministère de la Santé et des Services sociaux, Québec

Marie-Claude Prémont

Associate Dean, Graduate Studies, Faculty of Law, McGill University, Montréal, Québec

Madeleine St-Gelais

Coordinator, Telehealth Service, MUHC, Montreal Children's Hospital, Montréal, Quebec

Sylvie Vézina

Head of Telehealth, Direction de l'enseignement, Hôpital Louis-H. Lafontaine, Montréal, Québec

Dr. Pierre-Paul Yale

Psychiatrist, Vice President, Association des médecins psychiatres du Québec, Montréal, Québec

AETMIS would like to thank the external reviewers for their many comments, which made it possible to improve the quality and contents of this report:

Dr. André J. Côté

Psychiatrist, Executive Director, Northern Ontario Francophone Psychiatric Program, Faculty of Medicine, University of Ottawa, Ontario

Myriam Le Goff-Pronost

Senior Lecturer, Département LUSSI, École Nationale Supérieure des Télécommunications de Bretagne, France

Renald Lemieux

Coordinator, Unité d'évaluation des modes d'intervention et des technologies de la santé, Direction des services professionnels, Centre hospitalier universitaire de Sherbrooke (CHUS), Hôpital Fleurimont, Sherbrooke, Québec

Jocelyne Picot

President, Infotelmed Communications inc., Montréal, Québec

Claude Sicotte

Full Professor, Department of Health Administration, Faculty of Medicine, Université de Montréal, Québec

Robert Vigneault

Director, MBTelehealth, John Buhler Research Centre, Winnipeg, Manitoba

DISCLOSURE OF CONFLICTS OF INTEREST

None declared.

SUMMARY

INTRODUCTION

Telepsychiatry is one of the oldest applications of telemedicine. Although the first experiences with it date back to the 1950s, telepsychiatry really begin to develop in the 1990s with implementation of a number of projects. Since these were nearly exclusively initiatives carried out in clinical settings, the first concern was to assess this application's feasibility before considering providing a framework with guidelines and technological standards.

With the delivery of care being reorganized across Québec, telepsychiatry will be called upon to play a greater role since it provides a means for improving continuity and complementarity in psychiatric care throughout the province. Standardization, however, is required so that properly structured programs can be put into place.

This involves two equally important fields, one dealing with the content and the other with the vehicle: telepsychiatric clinical practice and the technical provisions for transmitting voice and images across distances. This report therefore aims at achieving two objectives: proposing clinical guidelines and technological standards that would foster the optimal use of telepsychiatry. Although it doesn't deal with them in great detail, this report also discusses the economic, legal, and ethical aspects involved as well as human and organizational factors to highlight their importance in implementing successful programs.

CLINICAL GUIDELINES

This report posits that the quality of telepsychiatric care delivered must be relatively equivalent to that expected in a conventional

face-to-face psychiatric setting. The use of "relatively" equivalent does not imply second-class care but rather that a realistic view must be taken of the technological medium used as connoted by the prefix "tele-." This overall objective served as a foundation for proposing clinical guidelines, while making it possible to exclude certain clinical conditions and therapeutic interventions from the telepsychiatric field of application. It must be clearly understood from the outset that telepsychiatry is not an alternative to setting up an infrastructure and establishing clinicians in rural areas in order to respond to the population's need for psychiatric services.

In the case of adult telepsychiatry, the literature reviewed and the experts consulted confirmed that many clinical activities can successfully respond to the needs of patients and their families. These situations include patient assessment and confirmation of diagnosis; the review of medication for patients who are not in emergency situations; the development of clinical care plans, treatment follow-up and review; psychological therapy and assessment, psychological and neuropsychological testing; medicolegal expertise, and certain psychiatric emergencies. If the costs are justified, this list could be extended to include individual, couple, and family therapy; psychiatric or psychological therapy; psychoeducation, and pharmacoeducation.

On the other hand, adult telepsychiatry is contraindicated for patients who refuse this care mode; for violent, unstable, or impulsive patients; those at immediate risk of suicide or dangerousness; those who require special monitoring that is not available at the primary site; patients with a specific mental symptomatology that could be aggravated by

the use of telecommunications technology; patients with whom news must be shared in person because it could engender significant emotional reactions; and certain individuals who have hearing, visual, or cognitive deficits that limit their ability to communicate with this technology.

The clinical conditions that particularly lend themselves to pediatric telepsychiatry are depression, anorexia, behavior disorders, and attention deficit disorder with hyperactivity. The contraindications for adult telepsychiatry also apply to pediatric telepsychiatry.

Offering quality telepsychiatric health care and services to patients requires that certain related clinical activities be supported by the following:

- 1) A central reservation system and generic consultation tool must be available.
- 2) A medical file must be opened at both the primary and secondary sites for each patient treated by telepsychiatry.¹ The information to be entered in these records is governed by the agreement with the Councils of Physicians, Dentists, and Pharmacists (CPDP) of the institutions involved.
- 3) In order to avoid the proliferation of models, standard agreements must be drawn up in consultation with the institutions involved and approved by the Collège des médecins du Québec (CMQ; Québec college of physicians) and possibly by the Association québécoise d'établissements de santé et de services sociaux (AQESSS; Québec association of health and social services institutions).²

1. **Primary site:** The location of the patient or consulting health-care professional. This definition is consonant with the concept of primary care. The secondary site is the location of the health-care professional or expert being consulted.

2. AQESSS is the result of combining the Association des hôpitaux du Québec (Québec hospital association) and the Association des CLSC et des CHSLD du Québec (Québec association of CLSCs and CHSLDs), which took place on April 28, 2005.

- 4) Conditions governing fee-for-service remuneration for physicians must be established. This issue could be a significant disincentive in involving physicians in telepsychiatry.

- 5) Service providers must have adequate training in telepsychiatry. This is a prerequisite for program start-up.

- 6) A support structure must be in place. Primary sites need a care coordinator, a site coordinator, and a regional coordinator. Secondary sites require a site coordinator and a regional coordinator or university coordinator, if the site is at a university hospital.

TECHNOLOGICAL STANDARDS

Compliance with the following technological standards is required to ensure effective telepsychiatry services.

- 1) The teleconsultation room at the primary site must be at least 9 X 12 feet (2.74 X 3.66 m), with the optimal size being 10 X 15 feet (3.05 X 4.57 m). The walls should be painted a flat color, either light gray, pale blue or dark blue. The lighting should be as close as possible to daylight quality; the intensity should range between 750 and 1000 lux. The room should be located in an area where the noise level will not exceed 50 dB.

- 2) The equipment must include an omnidirectional microphone and a monitor ranging from 27 to 36 inches (69 to 91.4 cm), depending on room floor space. A 32-inch (81-cm) screen appears to be optimal for the room sizes mentioned above. To keep costs down, a CRT monitor should be used, unless the expense of a mobile videoconferencing station is truly justified.

- 3) One of the cameras should be able to capture nearly the entire width of the room, have tilt and pan movement control, have automatic or manual iris adjustment, and be equipped with a remote control. Room equipment should include a telephone and fax machine.

4) Videoconferencing requires a high level of data compression, which is governed by standards. Based on scientific literature, the experts consulted, and the tests carried out, all equipment should be gradually upgraded to the new H.264 compression standard, making it possible to reach double the compression levels, while achieving a significant improvement in image quality at reasonable cost. All new equipment must be compliant with the H.264 compression standard.

5) A 384-Kbps reserved-bandwidth connection will yield a sound and image quality that is compatible with normal telepsychiatric clinical activities. This type of connection is the minimum requirement when used with the H.263 compression standard. It represents the optimal requirement when used with the H.264 compression standard. At the present time, going beyond this standard does not appear desirable, for both technical and economic reasons. Indeed, testing enabled experts to determine that this configuration is compatible with adequate clinical activity. Testing also confirmed that the entire capture, transmission, and reception chain must absolutely meet this standard. A single weak link will significantly degrade quality. Data-packet losses of more than 0.5% compromise image quality to the point that it hinders clinicians in assessing the patient's clinical condition. This is also true of latency time, which should not exceed 500 ms.

ECONOMIC ASPECTS

Very little has been done to assess the economic aspects of telepsychiatry. Moreover, the quality of the cost-related data is generally less than optimal. This analysis does not intend to provide budget indications about some investment and operation costs. It doesn't include costs related to network infrastructure or those required to train professionals taking part in telepsychiatry. These major investment costs should be subject to a more in-depth analysis.

The break-even point of this technology is closely tied to volume of use. Some estimates place this at seven consultations per week. From a societal perspective, the differential costs of telepsychiatry have been estimated by supposing (as suggested by experts) that these activities would take up the equivalent of two days per week, which represents a weekly average of about 14 consultations. Consequently, the room, equipment, and lines of the *Réseau de télécommunications sociosanitaire* (RTSS; health and social services telecommunication network) could be used for other purposes such as tele-expertise and tele-education in other disciplines, which would help offset the initial investment required.

Based on this context and the hypotheses and scenarios used herein, telepsychiatry should provide annual average savings estimated at about CA\$45,000 per telepsychiatric unit. Reduced travel and accommodation costs for visiting psychiatrists account for the major part of the savings. Due to the paucity and uneven quality of the available information as well as the vague nature of economic outcomes, the implementation of applications such as telepsychiatry should be supported by rigorous assessment. These assessments should not limit themselves to economic parameters, but should also include patient and healthcare professional satisfaction, improvement in the quality of care, care distribution and accessibility, and the technical performance of the equipment used.

CONTEXTUAL ELEMENTS

Human and Organizational Factors

“The main obstacles facing telepsychiatry are most often related to physicians and patients adjusting to the technology and not to the bandwidth used for the equipment required for teleconsultation.” The literature contains many such observations, which point to the importance of managing and supporting change by providing caregivers with appropriate training and by putting appropriate structures and procedures into place.

Legal Framework

An adequate legal framework is an essential component of such structures. Telepsychiatry raises a number of legal issues that do not exist in the traditional practice of psychiatry. Current legislation does not address those issues adequately. On the issue of consent, legislation must have provisions to ensure that only legally competent patients can avail themselves of telepsychiatric services. Informed consent of the patient must be obtained in writing. Given the sensitive nature of the information, special care should be taken to protect confidentiality and preserve patient privacy.

Clinical and professional standards, which can have an impact on civil liability, should also be adopted. Many actors may be involved in telepsychiatry: all the individuals and institutions involved in preparing and taking part in the consultation, Québec public authorities, equipment manufacturers and distributors, and telecommunications service providers. Each party should therefore have insurance coverage. The *Act to Amend the Act respecting Health Services and Social Services and other Legislative Provisions* (Bill 83, 2005, ch. 32) provides for patient complaints being made at the primary site. This solution raises a problem when the two sites are far apart and therefore under different jurisdictions. In light of this legislation, the parties involved in telehealth can come to an agreement to settle all the relevant details, yet little is provided for any kind of administrative control over such agreements.

The remuneration of caregivers must also be reviewed to put into place mechanisms to cover payment of telepsychiatric services. Lastly, the legislation aims at ensuring that the entire population has continuous and appropriate access to health care, regardless of regional geographic specifics. From this standpoint, telehealth could offer better access to care for people living in rural, isolated, or remote regions. Implementation of telehealth services on the provincial scale could also result in an

unfair distribution of health-care resources throughout the territory. This issue requires study.

Ethical Considerations

Two ethical aspects have been developed: 1) future prospects of enhanced access to specialized services in remote areas; and 2) the transformation of the traditional therapeutic relationship (face-to-face consultation). It emerged that telepsychiatry alone cannot be viewed as the solution to overcoming the dilemma of providing good geographic coverage. It was also suggested to build on the advantages of telepsychiatry in order to increase the number of face-to-face consultations, while continuing to put into place the multidisciplinary infrastructure and plans to attract physicians to remoter areas.

Moreover, it seems essential to pay special attention to the elements that characterize the patient-physician relationship, such as communication, physician attitude (degree of empathy, professionalism), medical services (assessment, diagnosis, prescription, treatment, etc.), trust between physician and patient, and the measures to ensure confidentiality and privacy.

The clinical guidelines, technological standards, and legal-ethical guidance proposed herein help ensure that the quality of care delivered by telepsychiatry is similar to that of face-to-face consultation.

CONCLUSION AND RECOMMENDATIONS

The definition of clinical guidelines and technological standards aimed at standardizing telepsychiatric practice will promote its large-scale implementation. This would enable Québec to take its place within the framework of large-scale projects funded by Health Infoway. When seen from the standpoint

of the restructuring of primary care and the reorganization of highly specialized medicine overseen by Québec's four university teaching hospital networks (RUIS: French acronym for "*réseaux universitaires intégrés de santé*"), this technology could prove to be a valuable asset in ensuring more equitable distribution of psychiatric expertise throughout the province. This would promote the smoother development of telepsychiatry in Québec.

Based on the considerations presented above, AETMIS recommends that the Ministère de la Santé et des Services sociaux (MSSS) adopt the main guidelines and technological standards proposed in this report in cooperation with the appropriate authorities. AETMIS is firmly convinced that telepsychiatry can help improve the offering of quality health care and proposes procedures that could support medical activities along these lines.

This would promote the harmonious development of telepsychiatry in Québec. Specifically, provisions must be made for a central reservation system and a generic consultation tool as well as fee-for-service remuneration for physicians. Failure to provide for all of these conditions would be a significant disincentive to physician involvement in telepsychiatry. In addition, a certain number of key actors must be involved to support

implementation and use of telepsychiatric services. All actors must have appropriate training.

In order to provide a medium that yields a quality practice environment, the technological infrastructure must be upgraded to a minimum of 384 Kbps of bandwidth using an H.263 data-compression protocol and then be gradually upgraded to an optimal of 384 Kbps of bandwidth using an H.264 data-compression protocol. Data-packet loss should not exceed 0.5%. The minimum latency time should be less than 500 ms and the optimal latency time less than 300 ms. These standards must be applied to the entire data capture, transmission, and reception chain. Telepsychiatric consultation rooms containing the required equipment and accessories should be set up in appropriate clinical settings where needs are greatest.

Taking into account human and organizational aspects plays a part in ensuring the success of this type of activity. The legal and ethical aspects must also be considered. Moreover, a detailed economic analysis should be carried out prior to any massive investment in telepsychiatry. Finally, implementation of psychiatry should be subjected to rigorous downstream assessment in order to improve management and performance.

*Agence d'évaluation
des technologies
et des modes
d'intervention en santé*

Québec 