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The Atlantic Rim Telemedicine Summit

Edited by: GARY W. SHANNON, PH.D.

ABSTRACT

The Transatlantic Telemedicine Summit was convened to facilitate the international exchange of ideas and experiences regarding anticipated obstacles to the deployment of telemedicine in and among Atlantic Rim countries. Presented here is a review and summary of the Summit, as well as the principal recommendations derived from the proceedings. These recommendations provide a basis for the further development of cooperative efforts in international telemedicine.

INTRODUCTION

THE PRECEDENT SETTING TRANSATLANTIC TELEMEDICINE SUMMIT (TTS) was held in May 1997 in Boston.* The meeting brought together a diverse group of some 240 telemedicine policy makers, health care practitioners, and technology providers from 20 countries on both sides of the Atlantic (see Appendix). The TTS derived in part from a recognition of the potential for telemedicine to facilitate international health care delivery, the recent development of professional associations with telemedicine interests in North America and Europe, the need for coordinating activities in telemedicine on both sides of the Atlantic, and recognition that Atlantic Rim countries could serve as a regional testbed for the global development and deployment of telemedicine technology and services.

The objective of the TTS was to assemble an international group of telemedicine practitioners, policymakers, and researchers from the private and public sectors. Through presentations and discussion, the meeting was designed to encourage the identification of common concerns, exchange of experiences, and promotion of shared recommendations for action.

Over the course of 3 days, plenary panels, discussions, and action panels were convened dealing with issues pertaining to the develop-

*The Summit benefited from the endorsements and participation of some notable individuals. Among those were. Canadian Prime Minister Jean Chretien; United States Vice President Al Gore; Alan Donnelly, Chairman of the European Parliament's Delegation for Relations with the United States; United States Federal Communications Commissioner Reed Hundt; Jean-Claude Healy, European Commission Coordinator for Health Care Telematics; United States Senator Edward Kennedy; United States Congressmen Edward Markey and Joe Moakley; Navy Surgeon General Vice Admiral Harold Koenig, Brigadier General Russ Zajtchuk of the United States Army Medical Corps; Michel Richonnier, Head of the European Commission's Directorate General XIII; and, the American, Canadian, and French Telemedicine Associations.

Among the sponsors who made the Summit possible were the Telemedicine Technology Area Directorate of the U.S. Army Medical Research and Material Command, System Resources Corporation, Partners Health Care System, World Trade Center Boston, American Medical Development, PictureTel Corporation, VTEL Corporation, Raytheon, Lahey Hitchcock Clinic, Apple Computer Inc., Digital Image FX, Inc., Viacron Medical Services, Inc., NEC Corporation, The Port and City of Rotterdam, Peace Engineering Council, NYNEX, TSD Communication Services, Fraunhofer CRCG, Inc , Eastman Kodak Company, ESC/MILSATCOM, SatelLife, the Greater Boston Convention and Visitors Bureau, the Massachusetts Convention Center Authority, the City of Boston, and the Alsace Development Agency, Inc

ment of a comprehensive Atlantic Rim Telemedicine Network (see Appendix) Included were panels on: (1) Global Health Care Applications' Projects of the G-7 Nations and European, North American, Southern Hemisphere and Other Regional Perspectives on Telemedicine; (2) Legal/Regulatory Barriers and Potential Solutions in Telemedicine; (3) Military Telemedicine; (4) Clinical Applications of Telemedicine; (5) Medical Records and Patient Information; (6) Disease Monitoring and Management; and (7) Distance Learning and Continuing Medical Education

This report has several purposes. First, it provides a brief overview of the development of the Atlantic Rim Network (ARN) and its involvement in telemedicine. Second, it offers a working narrative of the issues raised and addressed by the speakers and panels at the TTS, which may be instructive to other proponents of telemedicine regardless of geographic location. Third, it attempts to illustrate and summarize focal issues that seemed to recur throughout the TTS. These issues can be identified as barriers/conduits to cooperation among Atlantic Rim countries in pursuing a common goal of providing high-quality, cost-effective health care to people across the area. Finally, it reports the recommendations for action toward removing barriers and resolving differences, which, it is hoped, will serve as the basis for further cooperation and the achievement of common objectives.

Background

The relatively recent development of global communications networks has contributed to and underscores the notion that, increasingly, we are living in a global "village" of nation-states. However, in this global village, we are confronted with many examples of the fragmentation of larger nation-states into more culturally homogeneous mini-nations. These pressures exist in Europe, North America, Latin America, and Africa. Issues of nationalism and the attendant forces of localism are common to all regions of the Atlantic Rim.

As these pressures persist, paradoxically and simultaneously, the formation of private and public supranational arrangements and organizations continues apace. Among the more prominent examples in the region are the European Union (EU) and the North American Free Trade Association (NAFTA). Interestingly, the creation of supranational Organizations may indirectly lead to increased devolutionary pressures and has led directly to the development of other supranational organizations. For example, the 70-member Organization of African, Caribbean, and Pacific Countries (OACP) was developed to manage those countries' economic aid relations with the EU. Importantly, at the same time, we have seen the growth of internationally oriented, nongovernmental groups outside the domain of the nation-states. The ARN was created to promote this latter type of development.

The Atlantic Rim Network and Telemedicine

The concept of an Atlantic Rim Network was conceived at an International Boston symposium in June 1992 and nurtured in meetings and conferences in Europe, Canada, and the United States in 1993. The basic premise of the ARN is that in the changing global economy and political landscape, although nation-states remain important, the key building blocks of the new global economy are dynamic metropolitan regions, and there is much to be gained by exchanges of experience and cooperative activity between their leading businesses, organizations, and institutions.

The ARN was formally organized in 1994 during the First International Congress on the Atlantic Rim convened in Boston. The Congress was developed by International Boston, Inc., a nonprofit corporation, and is supported by a number of private and public sector organizations and businesses. At this meeting, more than 500 participants from communities on and near the Atlantic, representing more than 20 countries, endorsed the creation of the ARN.

The ARN was created to promote economic cooperation, help create jobs, and enhance the quality of life among the cities and nations of the Atlantic region. A permanent framework was established at the conclusion of the Congress at Boston's World Trade Center through which working groups from cities and nations could set goals and agendas and define clear

and practical collaborative projects related to such things as trade and investment, transportation, tourism, telecommunications and information technologies, the environment, education and training, social issues, and government restructuring.

It is important to note that the ARN is an independent, nonprofit, nongovernmental organization, the goal of which is to provide a framework for collaboration, to complement and add value to the efforts of other organizations for economic and social improvement. The ARN will not be, nor will it create, yet another political/bureaucratic structure or a stand alone entity.

Another distinguishing characteristic of the ARN compared with most other supranational organizations is its cooperative base and the integrative, "ground-up" building block approach. Rather than relying solely on the cooperation of nation-states, with their sometime attendant vagaries associated with increased nationalism, the primary building blocks of the Network are the dynamic metropolitan regions from all geographic regions bordering the Atlantic and those inland communities with strong Atlantic orientations. As Alan Donnelly, MEP and Chairman of the European Parliament's Delegation for Relations with the United States expressed it, it is hoped that this "approach would avoid transatlantic atrophy especially at times like these, when elections are run on nationalist agendas" and serve to build a "truly Atlantic community."

Additionally, the ARN involves private and public sector leadership, which will build on the strengths of metropolitan areas and their derivative regions, initially developing a "supra-subnational" organizational framework for international cooperation. Through this framework, the Network hopes to promote and provide for collaboration which complements and enhances the work now being done separately in the various countries around the Rim.

At the initial ARN Congress in 1994, participants learned of the challenges and opportunities of using telemedicine as an enabling technology to make high-quality health care more timely, affordable, and accessible. A presentation outlined telemedicine's potential for helping urban medical centers improve the delivery of health care to their local populations and those in distant areas. Delegates agreed that a healthy population and access to health care services are prerequisites for economic and social development, which, in turn, impact significantly on a region's ability to compete nationally and internationally. At a subsequent meeting, held in Halifax, telemedicine was established as one of the Network's priorities, and the ARN was identified as being poised to become the keystone regional testbed for global telemedicine.[1] Prior to the TTS, the ARN's activities included the adaptation of voice recognition technology (currently being developed to assist in locating and identifying land mines) to aid non-English speaking runners with health problems in the 100th Boston Marathon. It also participated in a briefing for NATO's Partnership for Peace and was responsible for the creation of the Telemedicine Policy Roundtable for Ocean Cities '95 Conference in Monaco.

The ARN's most important telemedicine objective for 1995 was the development of a framework within which telemedicine issues could be aired, strategies developed, and benchmarks and standards established. Given this, it was proposed that the ARN facilitate telemedical testbed activities in the Atlantic Rim through which special capabilities could be planned, implemented, tested and, if successful, incrementally extended throughout the region. Finally, at the request of representatives of the American Telemedicine Association, the French Telemedicine Association, the U.S. Defense Department and others, the ARN convened the Transatlantic Telemedicine Summit reported on here. Playing leading roles in Summit Program development, organization and implementation were ARN Chairman James Barron, Conference Chairmen Jay Sanders and Jean-Pierre Thierry, Deputy Program Manager John Evans, Lt. Col. Ron Poropatich and Digital Image FX CEO Wayne Bell.

REGIONAL PERSPECTIVES ON TELEMEDICINE

One section of panels was devoted to presentations and reports of telemedicine from subregions around the Atlantic Rim. Thus, reports

on selected telemedicine projects and perspectives on telemedicine development were presented from the European, North American, and Southern Hemisphere communities. It should be noted here that participants in the ARN Summit included representatives from several Asian nations. They were interested in exchanging experiences from that part of the world and extending the notion of the Atlantic Rim Telemedicine Initiative to a global telemedicine system. Certainly, the TTS, or any summit conference for that matter, could not encompass descriptions of all telemedicine efforts under way in each region. Therefore, the TTS invited participants associated with or knowledgeable about a representative cross-section of telemedicine efforts and needs in each subregion of the Atlantic Rim. Even so, a detailed narrative description of the project reports is beyond the scope and purpose of this discussion. What is presented in this section is selected information about the projects reported on from each region, especially as it pertains to and illustrates those issues related to the development of telemedicine. Also, an attempt is made here to compare and contrast the experiences of the various regions in an effort to identify issues that may hinder or facilitate regional development of telemedicine in communities around the Atlantic Rim.

Some Preliminary Observations

Some perceived differences in the approach to the development of telemedicine in Europe and the United States were identified in the initial plenary session of the TTS. With regard to the general approach to the development of telemedicine, several European representatives were of the opinion that because of the involvement of institutions such as the EU and national governments in the development of initiatives, there was a more structured approach to telemedicine development there. It was suggested that this more structured approach begins with the development of standards.

Regardless, it was emphasized that Europe and the United States could benefit from one another's experience. On the one hand, the Europeans could limit the "academic thinking" and reduce the perception that everything is "too difficult." On the other hand, the Americans might want to pay more attention to a controlled developmental process with greater emphasis on the need for developing a basic set of standards.

Europe

The European perspective on telemedicine was represented by two groups of participants. One group discussed selected European Community Directorate General XIII (DG-13) Projects. The work of the DG-13 encompasses activities related to telecommunications policy development. These include the liberalization and regulation aspects, interconnection and interoperability of networks and services, universal services and communication, security, research and development programs in advanced communications and telematics application and support for the exploitation of results, and supporting the establishment of a European single market in electronic information creation, retrieval, and storage. The impetus for this development derived in part from the reports on the progress in the United States toward developing the information highway across America and worldwide.

It was decided that the Bangemann Commission should develop a comparable agenda for the European Community. The 1994 White Paper, "Growth, Competitiveness, Employment: The Challenges and Ways Forward into the 21st Century," or Bangemann Report,[2] presented a baseline for development of an "information society" in Europe. Included in the Report was a section on the implications of a European information society for health care, and telemedicine was specifically identified as a priority area for funding. Some of the telemedicine projects described here are subsumed under the Telematics Application Program within the European Commission dealing with health.

Also included in the European projects reported on at the TTS are those based on the Global Health Care Applications of the Group of Seven (G-7) initiative in telemedicine. The official G-7 membership encompasses France, Germany, Italy, the United Kingdom, Japan, Canada, and the United States. With regard to the Global Health Care Applications project, the G-7 position is that any country can participate

under the coordination and guidance of the G-7 national coordinators. Developed to facilitate economic cooperation among the seven major non-communist economic powers, the members met in 1995 to discuss the requirements for the information society and to agree on principles to make the global information infrastructure a reality. One of G-7 initiatives was to examine the relation between information technology and the improvement of health care delivery.

In Europe, in addition to the development of the worldwide communication infrastructure, the impetus for telemedicine development derives from severe reductions in budgets for health systems. While general economic conditions contribute to these reductions, there has been further pressure to cut costs as countries strive to meet the EU economic criteria for participation in the European-wide monetary system.

The teleoncology project (Sub-Project 2 of the G-7 Global Health Care Applications) was developed to take advantage of telematics for oncology. The greater goal was to create an inexpensive oncology network to serve all European countries. The teleoncology project would be integrated with the G-7 Medical Imagery Reference Center Project (Sub-Project 9) to bring information for health care professionals and citizens to their desktops.

Standardization emerged as an early concern and had an impact on the discussion about which communication system to use. Internet communication was proposed because it is available everywhere, easy to run, cheap, and, most importantly, standardized. Of course, the disadvantages included difficulties with validation of data, and, at least in Europe, speed of communication, as well as security. The initial work focused on trying to determine standards for client sites for Internet-related communications.

Standards and *interoperability* were concerns when direct telecommunications networks were considered. The advantages of this mode of communication are speed and independence from an Internet provider, leading to a secure environment. On the other hand, drawbacks were identified, including the proprietary nature and the lack of *standardization* of technology at origins and destinations.

Again, however, the issue of standardization for the direct and network communication systems must be resolved for expanding the concept and implementing the system beyond Europe. Moreover, it was suggested that the standardization be global rather than regional, especially as the necessary technologies are available. If standardization is only inter-regional, it may be necessary to reconfigure the whole system in the future. The first priority must be to figure out precisely what is needed for each application and standardize it and then bring it to the global horizon.

The G-7 Sub-Project 4 was described as a European feasibility study for a global 24-hour multilingual emergency telemedicine services system (GETS) to improve the promptness and effectiveness of operations and service management through telematic interconnections of emergency points of care. The impetus for GETS derived from the desire to organize a world multilingual system by connecting centers of different nationalities and emergency medical teleconsultations.

A number of findings derived from the feasibility study. Among the initial results was a determination of the preeminent need for standards. This realization arose from experiences related to exchanges of emergency information through telemedicine centers. In order to operate globally, it would be necessary to have a common and agreed on idea of the management of emergency situations. Protocols must be established for linking resources, for triage, and for training.

Among the most important problems identified was the need for a financial plan and a clear idea of potential resources available for supporting the development of the service. Although the GETS is technically feasible, it is not yet economically viable.

In the GETS feasibility project, *human factors* were identified as a most important component of international collaboration for the development of an Atlantic or global telemedicine network. Again, the opinion was offered that the technology "is there"; however, even in limited attempts at international cooperation, language and cultural factors come into play. Also, the greater the geographic diffusion of the ARN, the greater will become the importance of human factors.

Finally, although time zone differences were determined to be not a trivial problem, it was

suggested that telemedicine can destroy the Aristotelian concepts of space, time, and action. Although in reality, telemedicine may actually be instrumental in restructuring rather than destroying these Aristotelian concepts, this would be possible only if there is integration of structure, architecture, and people within the network. The opinion was offered that this was enormously important for international projects, because integration is not only between equipment, but between people, activity levels, and technology.

One view from the United States was that we are all wrestling with the issue of standards, albeit perhaps naively. It was suggested that we do not currently have standards in the traditional system. For example, we do not have standards for stethoscopes or for the visual acuity of radiologists. The standard to be applied to telemedicine is to ensure that it in no way decreases the existing standards. In reality, this interpretation of "standards" might be a misreading of just what the term implies in the international setting. As described and promulgated by the Europeans, "standards" refers more to agreed on protocols, and guidelines and architecture that facilitates international communication and collaboration.

The need for such standards was demonstrated in another setting as well. This time, it involved an intra-urban group of hospitals and the use of a "smart card" in a project for the control of pacemaker patients. The lack of a standard protocol reportedly caused "big problems," as every hospital, every center, every laboratory had its own methodology. One radiologist used one method, one cardiologist another, and so on. The "filter" was not a technical filter—rather, it was a filter of a school, an education, and a group. The project managers found it necessary to develop guidelines in order to solve the problem of lack of standardization.

It was reported that the European community had initiated a research and design program and that one of the interim outcomes is a European committee for normalization or standardization in medical informatics. One project is trying to validate a number of standards related to open distributed systems. Another critical problem identified was the lack of a control vocabulary.

Southern Hemisphere and Other Regional Perspectives

The Southern Hemisphere and Other Regional Perspectives panel consisted of individuals involved in the development of telemedicine in developing countries, including disaster relief networks in Latin America, provision of mental health care in Tanzania, and disaster preparedness in Armenia. Here again, the purpose of this report is not to describe the projects in detail, but rather to identify the issues raised in the presentations that are of potential significance to increased collaboration and successful implementation of international telemedicine projects.

Under the sponsorship of the National Aeronautics and Space Administration, (NASA), the EU, and the Pan American Health Organization, a series of projects was developed to improve disaster preparedness in various regions including the Andean, Southern Cone, and Caribbean countries. The need for better and consistent communication between disaster managers was made clear by annual face-to-face meetings, which were not followed up by concrete collaborative efforts. Hence, it was decided to use the Internet for communication between disaster managers within these countries; i.e., between different geographic sectors of a country and between institutions in subregions and regionally throughout the Americas. A second goal was to provide access to global sources of information that are currently unavailable.

This panel pointed out that technology was not the problem, as basic e-mail, listservers, and other selected aspects were already utilized. The problem was related to the human factors, such as political attitudes and how decisionmakers in each country viewed information exchange and the use of such information. "It wasn't a matter of technology; that was the easy part. It was a matter of focusing on the users."

In order to facilitate matters, the target population was limited. Initially, for example, six Spanish-speaking countries of Central America were included as a single region. The development of the projects was more time-consuming and people-intensive and required "a lot of encouragement and hand-holding."

Language was a barrier in communication across borders, but not a serious one within Latin America. The wide availability of information in Spanish on the World Wide Web has been particularly helpful. Nevertheless, between Latin America and the Caribbean, where English and French are the common languages, communication became a problem. With regard to Spanish-speaking countries, however, "now everybody is much more comfortable in their own language, since a substantial amount of disaster-relief information is available in Spanish, including training manuals and guidelines."

Armenian telemedicine was involved in emergency medicine and trauma. A distance-learning partnership has been established between Armenia and Boston University Medical Center, but so far, its use has been limited.

It was suggested that, at least for the foreseeable future, the dissemination of international telemedicine would flow from developed countries to developing and underdeveloped environments. Significant impediments remain to the introduction of even simple technology.

LEGAL AND REGULATORY BARRIERS

The purpose of the session on Legal and Regulatory Barriers and Potential Solutions was to provide an overall, although necessarily cursory, overview of the variety and extent of the legal and regulatory issues that could directly or indirectly affect the development and practice of global telemedicine. These issues may constitute the most serious impediment along the road to international collaboration and cooperation in the development of truly international telemedicine networks. The international projects now under way are simply that, projects, and most have received special legal and regulatory dispensations in order to provide a testbed for exploring the use and integration of technology. To date, however, there have been no international telemedicine testbeds that examine the ramification of cultural differences and the many legal issues that need to be resolved.

Included among the potential and realized legal and regulatory barriers to the development of national, as well as international, telemedicine systems were:

- Licensure
- Privacy and confidentality
- Medical record variation
- Liability (malpractice and product/vendor)
- Intellectual property rights
- Credentialing
- Reimbursement
- Accreditation
- Informed consent
- Medical education
- Scope of practice.

Most of these issues have been identified as impediments to the growth of cooperative telemedicine ventures across state lines within the United States. They derive not only from the recent experience of telemedicine but also from the practice of medicine generally. With one exception, that being the NAFTA experience, the discussion here centered on extrapolating problems encountered in the interstate practice of medicine and telemedicine in the United States to the international regional and global setting.

Licensure was identified as a very significant issue within the United States. And, although there are significant problems in this country trying to get cooperation between states operating under a single legal/medical system, the problem would be much greater in an international setting, where legal systems differ from country to country, as do definitions and regulations.

Privacy and confidentiality of the physician–patient relationship were viewed as potentially significant with the electronic transfer and storage of information. Sufficient security measures have to be provided for the transmission of data from one country to another and for data storage.

The *lack of a uniform medical record* was identified as another potential problem. Medical records differ from institution to institution, from specialty to specialty, and from region to region. There may be differences in content, composition, and presentation.

Liability with regard to telemedicine was viewed as novel ground, lacking any solid

precedent for reference. The liability of providers interacting from country to country must be determined up front in order to establish guidelines for reference, rather than waiting for a problem to develop

Intellectual property rights have some precedents for international reciprocal agreements providing protection for such things as software.

Credentialing is very important to consider, as no formal or universal credentialing policy or practice exists for telemedicine even within the United States. Certainly, there is none extant for the international telemedicine community.

Reimbursement for telemedicine service has yet to be completely resolved in the United States and will pose problems for international telemedicine. The variety of government programs in different countries and the mixture of public and private payers all must be considered as they pertain to the reimbursement issue.

Accreditation is a familiar issue in the United States, and it will be even more complicated internationally. In fact, the meaning of accreditation may differ from country to country. Problems may arise in the international electronic transmission of images, biometry, and other data.

The concept of *informed consent* differs from country to country and is influenced by variations in culture, including language, custom, and religion. These differences must be recognized to the extent that a provider or institution is considering international telemedicine.

Medical education generally, and continuing medical education specifically, differ from country to country. Such differences must be addressed in developing international or global medical education. Important cultural differences exist in both health and illness behavior that must be incorporated into local medical care delivery and must be recognized and accounted for in international telemedicine.

Finally, there are some unresolved issues with regard to who is authorized and who is licensed to do what in medicine, in other words, *scope of practice*. Specifically, this involves questions about whether nurses or physician assistants can provide diagnosis and treatment for common complaints. Internationally, there are significant differences in licensure, custom, culture, and actual practice from country to country.

Unless resolved, such legal and regulatory issues may constitute significant barriers to the development of international telemedicine. The common denominator of concern was cultural variation between (and even within) countries. Despite the emergence of a "global information village," there remain significant differences within regions, from region to region, and, certainly, from country to country. These differences include language, religion, legal systems, and practice standards. As global telemedicine moves forward, proponents must be mindful of these differences.

There must be progress toward resolution of these issues. The term used frequently in the presentations on legal and regulatory issues was "harmonization." Licensure procedures and regulations must be harmonized among countries. The same applies to medical records, credentialing, reimbursement, accreditation, and education. Such a reconciliation with regard to global telemedicine or telemedicine within the Atlantic Rim requires the development of uniform, agreed on standards.

Whereas the legal and regulatory issues seem to be daunting, a number of models of harmonization were offered. These models provide a glimpse of what is possible.

Rather than describing the differences from place to place, the proposed models are based on the common denominator(s) of the licensure process. The first is to establish the minimum qualifications for the profession. The second is to create a means for investigating and adjudicating complaints. However, this is not simple, as there are attendant purposes of licensure that may be culturally or nationally specific. For example, definitions of professional standards of conduct, relationships between professional and patient, informed consent, confidentiality, patient autonomy, and scope of practice can differ from place to place and culture to culture.

Nevertheless, five models were proposed for the harmonization of licensure between countries. The models were:

- Reciprocity. Two or more states would agree to treat the license awarded by the other(s)

as valid in each. This model derives from the spirit of the laws in the United States. However, to date, there are no actual reciprocal relations specifying or stipulating the reciprocal relations between states or countries.

- Endorsement. Each state or country would require "nonlocal" or exogenous physicians to meet the local requirements in obtaining a license, and their credentials would be considered and endorsed accordingly. Problems include the lack of a centralized credentialing function, possible retaking of licensing examinations, and in-person interviews before licensing boards.
- Mutual recognition. The mutual recognition model derives from one place in Australia, wherein a physician licensed in one state can practice in another state on registering in the latter. This model would require uniform initial licensure requirements in the various states.
- Special purpose licensure. A special purpose license permits transnational practice of medicine akin to a proposal by the Federation of State Licensing Boards in the United States. The license would allow physicians to practice telemedicine only in certain jurisdictions. Opponents argue that it may then be possible for a less credentialed physician to cross state borders to practice in a state with more stringent requirements.
- International licensure. The international model derives from an idea initially proposed by the National Council of State Boards of Nursing for multistate licensure. This approach would establish a special and separate multicountry practice license, and it would require a multicountry agreement on qualifications.

Proponents of these models for harmonization of licensure laws for the practice of telemedicine were less than optimistic regarding their implementation, especially in the short run. This pessimism was attributable in part to international variation in specific laws governing the health professions. In addition, each country may try to protect its "turf" by insulating its professionals from external competition. Nonetheless, the proposed models may give rise to some optimism about the future. Dialogues in the form of international conferences are under way to harmonize licensure requirements.

Rather than trying to deal with issues simultaneously, it might be fruitful to prioritize the licensure requirements for telemedicine practice. For example, the issue of consultation may serve as the starting point for discussion at international conferences. As with attempts to develop cooperative and collaborative international, and even intranational, telemedicine systems, there is a need to develop international standards as a basis for agreement.

This process of resolving differences is difficult, however, as evidence was presented of the problems of establishing transnational medical practice agreements even between geographically contiguous countries and those whose cultures are by and large, indistinguishable. The agreements created considerable "cross-border" tensions, as every country tried to protect its own interests as it perceived them. Thus, professional territoriality and sovereignty are principal barriers to harmonization of the legal and regulatory issues pertaining to the practice of telemedicine. These issues are further complicated as they are filtered through the cultural differences among potential collaborators and partners.

One final comment is in order on the discussions focusing on legal and regulatory barriers to the development and implementation of telemedicine. All of the panelists and, with one exception, the discussants in this session were from the United States. The United States is recognized as one of the most litigious of societies. Therefore, it would seem important to solicit the opinions of legal scholars from other countries around the Atlantic Rim and, especially, to examine the medical licensure processes of regional bodies such as the EU before coming to any firm conclusion about the size and scope of the legal and regulatory barriers to telemedicine.

THE MILITARY

In some ways, the military is in a unique and advantageous position with regard to the development of telemedicine generally and the development and implementation of an inter-