THE DEVELOPMENT OF A GLOBAL HOSPITAL IS CLOSER THAN WE THINK: AN EXAMINATION OF THE INTERNATIONAL IMPLICATIONS OF TELEMEDICINE AND THE DEVELOPMENTS, USES AND PROBLEMS FACING INTERNATIONAL TELEMEDICINE PROGRAMS

I. INTRODUCTION

The patient sits perfectly still as the robotic arm grabs her arm and rotates it back and forth.[1] Her primary care physician, suspecting a fractured ulna, looks on from nearby. Finally, the robotic arm stops, and the consulting physician, from a hospital 100 miles away, speaks up on the computer monitor, "I have reviewed the X-rays and have manipulated the patient's arm, and I believe that you are correct, the ulna is fractured."[2]

In another part of the world, paramedics on the scene of an emergency suspect that the patient has had a stroke. They hook up a laptop computer equipped with a video camera and establish a satellite link with the hospital.[3] The on-call physician asks the patient a series of questions and that she perform a series of manual tasks.[4] The physician, from the hospital, observes the patient's verbal and physical responses and confirms the paramedics' suspicion that the patient has suffered a stroke.[5] As a result, treatment begins within the hour, and the patient regains the use of her arm, suffering only negligible speech impediments.[6]

A man feels a bit of a stomachache while hiking in a remote location and asks his watch what the problem might be. His watch, which continuously monitors his health by noting changes in blood pressure, heart rate, and skin temperature, responds that his stomach acid levels are elevated and are causing mere indigestion. This watch is equipped with a "personal medical assistant" (PMA), an artificially intelligent computer with software that can determine if the patient requires any changes in lifestyle or medical

---

1. *See* Stacey Swatek Huie, Note, *Facilitating Telemedicine: Reconciling National Access With State Licensing Laws*, 18 HASTINGS COMM. & ENT. L.J. 377, 380-81 (Winter 1996).

2. This is a fictional account of a real technology that has been developed. *See* discussion *infra* Part II.B.

3. *See Hi-Tech Hope for Stroke Victims*, THE SCOTSMAN, Oct. 11, 1999, *available at* 1999 WL 28856973.

4. *See id.* The treatment protocol used in this example was developed at the National Institutes of Health in Washington, D.C. *See id.*

5. *See id.* The diagnosis rates of strokes using telemedicine are comparable to the same rates when physicians are in physical contact with the patient. *See id.*

6. *See* Medical Encyclopedia, *at* http://keye.drkoop.com (visited Oct. 22, 1999). Strokes cause the brain to be deprived of oxygen. *See id.* The longer the brain is without oxygen, the more permanent and severe the damage is to the brain. *See id.* The earlier that treatment is initiated, the more complete the recovery is for stroke victims. *See id.*

assistance.[7] The watch responds to a wearer's health questions using voice recognition and a speech synthesizer.[8]

These scenarios present just three examples of how telemedicine is currently being used throughout the world. The World Health Organization defines *telemedicine* as:

> The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communications technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities.[9]

Telemedicine is being used in the United States to solve problems related to the lack of access to health care and the lack of sufficient health care. However, various problems related to telemedicine remain unresolved in the United States. These problems include the licensing and regulation of physicians using telemedicine, jurisdiction and choice of law issues related to malpractice litigation, and the point of formation regarding the physician-patient relationship.

With the increasing use of telemedicine throughout the world, legal problems also arise in the context of the global community. Many of the problems facing domestic telemedicine programs also apply in an international setting. Part II of this note explores the various telemedicine programs and technological innovations currently in use in the United States and in several foreign countries. Part III of this note examines the existing legal and technical problems facing telemedicine in the United States and abroad. Finally, Part IV of this note proposes possible solutions to these problems that may increase society's access to and improve the quality of health care in the United States and throughout the world.

---

7. *See Veterans Health Care, Witness Statement before the Subcomm. on Hospitals and Health Care of the House Veterans' Affairs Comm.*, 103rd Cong. (1996) (statement of William R. Rowley, Rear Admiral, Medical Corps, U.S. Navy).

8. *See id.* In addition, the wearer of the watch can access the Internet and confer with medical professionals who would have access to the information accumulated and stored by the watch. *See id.*

9. World Health Organization (WHO), *at* http://www.who.org/ism-htp/Telematics/s-rpt1.html (visited Sept. 16, 1999).

II. BACKGROUND AND CURRENT DEVELOPMENTS OF TELEMEDICINE

A. Historical Perspective of Telemedicine

Telemedicine first occurred in the 1950s when a multi-state audio link-up was established to connect seven state hospitals in four states.[10] As technology improved, many other applications, including education, teleconferencing, and teleradiology emerged for use worldwide.[11] In addition to electronic information exchange, x-rays, ultrasounds, electrocardiograms (EKG's), lab reports, magnetic resonance imaging (MRI's), cranial tomography (CT) scans, stethoscope results, and other information can now be transmitted via the Internet.[12] As technology continues to improve, telemedicine will become an essential tool for practicing physicians in the 21st century.

American citizens make approximately 734 million visits to physicians annually.[13] In the United States, the percentage of the Gross Domestic

---

10. Douglas D. Bradham et al., *The Information Superhighway and Telemedicine: Applications, Status, and Issues*, 30 WAKE FOREST L. REV. 145, 149 (1995). The National Institute of Mental Health (NIMH) established this 1278-mile closed-circuit telephone system between hospitals in Nebraska, Iowa, North Dakota, and South Dakota to provide weekly teleconferencing lectures. *See id.* In 1959, the NIMH assisted the Nebraska Psychiatric Institute at the University of Nebraska by implementing audiovisual linkage. *See id.* Having found no adverse effects of treating patients via a "telepsychiatric consultation", the NIMH funded an interactive audiovisual linkage with Norfolk State Hospital, which was 112 miles away, by microwave. *See id.*

Eventually, in 1970, the Veterans Affairs hospitals in Omaha, Lincoln, and Grand Island joined the network. *See id.* Of the 1,267 on-line hours registered, 68% of the time was devoted to educational use, 25% for patient care, and 7% for other purposes. *Id.* At the same time that this network was established, a group of Canadian radiologists were developing the first teleradiology applications. *See id.* at 150.

11. *See id.* at 152-58. While electronic information transfer remains an important use of telemedicine, other technologies such as ultrasound imaging, clinician-to-patient consultation, clinician-to-clinician consultation, and televideo conferencing have enlarged the role of telemedicine. *See id.*

12. *See* Barry B. Cepelewicz, *Can Foreign States Exercise Jurisdiction in Med-Mal Cases Based on Internet Use?*, 4 INTERNET NEWSL.: LEGAL AND BUS. ASPECTS 7 (Sept. 1999).

13. *Statistical Rolodex, Office Visits to Physicians, at* http://www.cdc.gov/nchswww/fastats/docvisit.html (visited Sept. 27, 1999). This site also offers other pertinent statistics (all figures are for the United States and for the year 1996):

1. Average Number of Visits Per Person: 3.4 *Id.*
2. Most Frequent Principal Reason for Visit: General Medical Examination (54.7 million visits) *Id.*
3. Most Frequent Physician Specialty Visited: General and Family Practice (186,190,000 visits) *Id.*
4. Most Frequent Diagnostic Procedure Performed: Pap Smears (over 22,000 annually) *Id.*
5. Most Frequent Principal Diagnosis: Essential Hypertension (27,690,000 diagnoses) *Id.*

Product (GDP) spent on health care has increased from 5.1% in 1960 to 13.6% in 1996.[14] An estimated 14% of the GDP will be spent on health care in the year 2000 and that amount will climb to 15% by the year 2005.[15] The U.S. military currently devotes 6% of its Department of Defense budget to health care where fifteen years ago health care accounted for only 3%.[16] In response to this increase in spending on health care, new methods of delivery must be developed so that a greater number of Americans can receive health care in a more cost-effective manner. Dr. Eric Tangalos of the Mayo Clinic has suggested that "the export of U.S. medical expertise," partially with telemedicine, could provide enough money to "fund our domestic health care system."[17] Furthermore, an estimated forty to sixty billion dollars a year could be saved with the implementation of an interactive telemedicine system.[18]

The health care system in the United States is in a state of turmoil. Despite the pervasiveness of private health insurance coverage and the existence of some public health insurance programs, an estimated 16% of the U.S. population lacks health insurance.[19] In addition, many people who live in rural communities must rely exclusively upon the care provided by Sole Community Hospitals.[20] For these hospitals and communities there are many

---

6. Type of Drug Most Frequently Mentioned: Amoxicillin (15.9 million) *Id.*

7. Most Frequent Source of Payment: Private/Commercial Insurance (21% of visits) *Id.*

14. PHOEBE LINDSEY BARTON, UNDERSTANDING THE U.S. HEALTH SERVICES SYSTEM 163 (Health Administration Press 1999). Next to social security, the United States spends more money on health care than any other government service. *See id.* at 7. These expenditures on health care "significantly exceed expenditures for defense, education, transportation, agriculture, and other government services." *Id.* Moreover, "the United States allocates a greater proportion of its GDP to health care than do other countries, more than twice that of the United Kingdom, and nearly double that of Japan." *Id.* at 23.

15. INSTITUTE FOR THE FUTURE, HEALTH & HEALTHCARE 2010: THE FORECAST, THE CHALLENGE 25 (2000).

16. *National Security Subcomm. of the House Appropriations Comm. Holds Hearing on DOD Medical Programs* (1997), 104th Cong. (statement of Stephen Joseph, Assis. Sec. of Def., Health Affairs).

17. Huie, *supra* note 1, at 392.

18. *VA Health Care and Technology, The Veterans Health Administration Health Information Infrastructure Before the Subcomm. on Oversight and Investigations of the Comm. on Veterans' Affairs, U.S. House of Representatives* (1994), 101st Cong. (statement of Michael D. McDonald, Senior Advisor, Health and Telecommunications, The C. Everett Koop Institute). These savings would result from allowing patients to "self-triage", which would reduce unnecessary professional care. *See id.* In addition, the information provided would result in health promotion and a reduction of disease. *See id.*

19. *See* BARTON, *supra* note 14, at 46-47.

20. *See id.* at 215. Sole Community Hospitals (SCHs) were created under the 1982 Tax Equity and Fiscal Responsibility Act (TEFRA). *See id.* These hospitals are designed to be "the primary source of inpatient services for the residents of a market area." *Id.* at 216. They are "often the only source of inpatient services for rural areas." *Id.* "SCHs are designated based

advantages to a telemedicine program. First, eliminating the need for patient trips to metropolitan areas in order to visit specialists can reduce costs.[21] Also, more physicians may choose to practice in rural areas because the concern of professional isolation would be reduced.[22] Finally, since many rural hospitals had to adapt to rising costs of national health care, they scaled down the services offered.[23] Utilizing telemedicine can help these hospitals stay open.

B. Current Uses and Developments of Telemedicine in the United States

The effect that telemedicine can have on the U.S. health care system is potentially unlimited, especially as technology continues to improve. Specifically, five of the top ten leading causes of death in the United States could be diagnosed and treated with the use of telemedicine.[24] The Center for Disease Control (CDC) cites heart disease as the leading cause of death in the United States.[25] Telemedicine is well equipped to combat heart disease by allowing for early diagnosis and treatment. Cancer, the second leading cause of death in the United States,[26] can be addressed by allowing specialists to interpret x-rays, magnetic resonance imaging (MRI's), and test results of patients not otherwise able to visit an oncologist. Early diagnosis and

---

on the distance of the hospital from neighboring facilities . . . and a requirement that the hospital be located in a rural, nonmetropolitan statistical area." *Id.*

21. *See* Bradham, *supra* note 10, at 147. A 1992 study indicated that health care costs could be reduced by thirty-six billion dollars annually with the use of telemedicine. *Id.*

22. *See* Derek F. Meek, *Telemedicine: How an Apple (or Another Computer) May Bring Your Doctor Closer*, 29 CUMB. L. REV. 173, 176 (1999).

23. *See Health Care Revision Access to Care: Written Testimony Presented to the Senate Finance Comm.*, 101st Cong. (1994) (statement of Walter S. Busch, Administrator, Roosevelt Memorial Medical Center).

> [R]ural hospitals play a unique role within the spectrum of hospital services in the United States. Rural Hospitals, although they are much smaller than their urban counterparts, are not merely scaled down versions of their city cousins. The common denominator of small rural hospitals is that they make available a menu of basic services to their local communities . . . the evidence shows that rural hospitals continue to concentrate on the basic "plain vanilla" services which are within the competence of local health care providers . . . these hospitals are basic public service organizations, for the most part community owned and community run, more akin to public wishes than entrepreneurial ventures.

Id. (quoting Drs. Hart, Ammundson and Rosenblatt, 1990 Report in THE JOURNAL OF RURAL HEALTH).

24. *Statistical Rolodex-Deaths, Deaths/Mortality, at* http://www.cdc.gov/nchswww/fastats/deaths.htm (visited Sept. 27, 1999).

25. *See id.*

26. *See id.* Cancer is the second leading cause of death in the United States, killing 539,577 people in 1997. *Id.*

treatment positively affects the survival rate of many types of cancer.[27] In Scotland, telemedicine is already used to diagnose and treat strokes.[28] The early diagnosis of Chronic Pulmonary Disorder,[29] which is beneficial to the patient because early treatment increases the chances of survival, can also be diagnosed via telemedicine.[30] Telemedicine programs to combat diabetes[31] have also been implemented in the United States.[32] As technology continues to improve, telemedicine will be able to combat many more diseases that adversely affect people in the United States and throughout the world.

More people turn to the Internet for answers to health care questions.[33] Internet use on the whole has increased dramatically in recent years.[34] However, physicians are not keeping up with the demand for medical information on the Internet.[35] Fortunately for rural communities, telemedicine has developed into a successful and widely used tool for patients to receive medical assistance from previously inaccessible physicians. However, access to telemedicine in the United States is still limited due to certain obstacles.

The United States does not have a national telemedicine program. Instead, the development of a health care system on the Internet is left to the

---

27. *See* Interview with Dr. Peter Gulick, D.O., Board Certified Oncologist, Michigan State University, in East Lansing, Mich. (Nov. 12, 1999).

28. *See* THE SCOTSMAN, *supra* note 3. Strokes are the third leading cause of death in the United States, killing 159,791 people in 1997. *Statistical Rolodex-Deaths*, *supra* note 24.

29. *See Statistical Rolodex-Deaths*, *supra* note 24. Chronic obstructive pulmonary disease is the fourth leading cause of death in the United States, with 109,029 deaths in 1997. *Id.*

30. *See Medical Encyclopedia*, *supra* note 6.

31. *See id.* Diabetes is the seventh leading cause of death in the United States, with 62,636 deaths in 1997. *Id.*

32. *See* discussion cited *infra* at note 51.

33. *See* Patrick Cross, Presentation before the Indiana Hospital & Health Association (Oct. 8, 1999), *Internet Users*. Seventy percent say that the Internet has become 'indispensable' in their lives. *Id.* In addition, 65% have sought health information at least once, and over 1/3 look up information regularly. *Id.*

34. *See* IntelliQuest April 1998 poll, Nielsen October 1998 update, USA TODAY 1999 survey. One hundred two million people in the United States have access to the Internet compared to 21.5 million in October 1996. *Id.* Approximately 150 million people worldwide have access to the Internet. *Id.* Twenty-five percent of Internet users are new in the past 12 months. *Id.* On average, Internet users use the Internet 5.5 hours weekly. *Id.* The average age of Internet users worldwide is 37 while the average age in the United States is 36.2. *Id.* The average income of Internet users worldwide is $55,000. *Id.* By way of comparison, the average income of Internet users in the United States is $25,000. *Id.*

35. *See id.* Seventy-seven percent of patients prefer to get online health information directly from their physician, but less than 10% of physicians have web pages and most refuse to give out their e-mail addresses. *Id.* The number of physicians who are accessing the Internet for medical information has increased from 3% in 1995 to 90% in 2000. George Lundberg, Netscape, Presentation before the American Bar Association/American Medical Association's Conference on Physician-Legal Issues: Critical Regulatory and Compliance Developments (June 9-10, 2000).

initiative of each individual state.[36] The Medical College of Georgia has established one of the largest telemedicine programs in the country, "spending ten million dollars to link sixty remote locations with its medical center."[37] In addition, it is currently coordinating with the Georgia Institute of Technology in the development of an electronic hand.[38] This electronic hand can perform an initial diagnosis, complete with manual manipulations, on a patient in another part of the state or anywhere in the world.[39] Similarly, Massachusetts General Hospital in Boston developed a telemedicine program to promptly diagnose patients so that they can receive the treatment necessary within hours, greatly increasing a patient's chances of full recovery.[40]

Several states have developed telemedicine programs, the most recent being West Virginia. Mountaineer Doctor Television (MDTV) is a two-way interactive audio-video system that allows a physician specialist at West Virginia University Health Science Center in Morgantown to consult with a patient at a distant site with full audio and video capabilities.[41] This has

---

36. *See* Huie, *supra* note 1, at 402. Four states that have implemented telemedicine systems are Oregon, Georgia, Kansas, and Iowa. *See id.*

37. *Id.* at 381.

38. *See id.* at 380-81.

39. *See id.* at 381.

40. *See* THE SCOTSMAN, *supra* note 3. Drugs that mitigate the damage that a stroke causes "must be given within three hours" to be effective. *Id.* Stroke specialists at Massachusetts General Hospital reported that tests using a telemedicine link "worked almost as well as seeing a patient in person." *Id.* The physicians at one end of the tele link-up viewed patients through video cameras and made a diagnosis based upon a scale developed by the National Institute of Health. *See id.* This scale assesses speech, comprehension, clumsiness, vision, and eye movement, all indicators of a stroke. *See id.* Physicians using the computer link-up made almost identical diagnoses as their colleagues who treated the patient in-person. *See id.* In addition, "CAT scans of the brain can be sent using the same link," greatly enhancing the physician's ability to make a diagnosis. *Id.* This is a very important program because, in terms of stroke victims, every minute counts in diagnosing and treating a stroke. *See id.*

41. *See Telemedicine: Written Testimony Regarding the Results and Effectiveness of the Mountaineer Doctor Television (MDTV) Program Before the Senate Subcomm. on Science, Technology, and Space of the Senate Comm. on Commerce, Science, and Transportation,* 106th Cong. (1999) (testimony of Dr. James Brick, Chairman, Department of Medicine, Robert C. Byrd Health Science Center, Morgantown, West Virginia). Nineteen Mountaineer Doctor Television sites have been implemented in the state of West Virginia "including service centers with specialty care." *Id.* Five more MDTV sites are planned by the end of 1999 for a grand total of 24 MDTV sites throughout the state of West Virginia. *Id.*

The system in West Virginia is used primarily for education. *See id.* "In 1998, over 1036 hours of medical education and 209 hours of administrative teleconferencing" dominated the network. *Id.* In addition, 146 hours were logged seeing patients "which translates to over 680 patients seen." *Id.* The greatest benefit of telemedicine in West Virginia has been to rural physicians because it gives them access to the same levels of professional support that doctors in academic or urban settings experience on a daily basis. *See id.* In addition, rural hospitals have benefitted from telemedicine because they can keep patients in the community hospital who might otherwise have transferred to larger metropolitan hospitals. *See id.*

immediate and easily cognizable benefits to patients and doctors in rural areas. However, individual states are not the only users of telemedicine.

One of the most extensive users of telemedicine is the United States military.[42] The United States military uses telemedicine to treat personnel in the battlefield, on ships, and in airplanes.[43] At Walter Reed Army Medical Center, the military provides "well over 3,000 medical consults per year to armed forces personnel and their families worldwide."[44] The Army Medical Department's telemedicine program uses "store and forward" technology[45] to send images and information over the Internet. Images are sent to tertiary care[46] physicians for review. The consulting physicians then render a diagnosis and return the diagnosis to the referring physician.[47]

The military is also pioneering several new applications of telemedicine. For example, the military has developed the Personal Information Carrier, or "digital dog-tag", which carries a soldier's personal information as well as their entire medical record.[48] This dog tag contains all of the soldier's medical information to be read by physicians at all levels of care.[49] In addition, the Center for Total Access[50] is pioneering home health telemedicine for the care and monitoring of diabetic patients.[51] The military also developed and implemented technology to care for patients suffering from heart problems,[52] neuropsychological problems,[53] dental

---

42. *See Telemedicine; Remarks Before the Senate Comm. On Commerce, Science, and Transportation, Subcomm. on Science, Technology, and Space*, 106th Cong. (1999) (statement of Ronald K. Poropatich, M.D., Member, Board of Directors, American Telemedicine Association).

43. *See generally DOD Medical Programs, National Security Subcomm. of the House Appropriations Comm.*, 106th Cong. (1999)(statement of Lieutenant General Ronald R. Blanck, Surgeon General, U.S. Army).

44. Poropatich, *supra* note 42.

45. Cepelewicz, *supra* note 12. "Store and Forward" technology uses e-mail on an Internet platform to send high-resolution still and motion images, digital audio and other types of clinical data. *See id.* This information is stored and then forwarded to the receiving physician for review at his or her leisure. *See id.*

46. *See* BARTON, *supra* note 14, at 266. Tertiary medical care is defined as "highly specialized care, usually extremely complex." *Id.*

47. *See Defense Health Programs; Statement on Health Care in the United States Army before the Senate Armed Services Personnel Comm.*, 106th Cong. (1999) (statement by Lieutenant General Ronald R. Blanck, Surgeon General, U.S. Army). The majority of the Army's telemedicine projects are in the areas of radiology, dermatology, and psychiatry. *See id.*

48. *Id.*

49. *See id.*

50. The Center for Total Access is a military program that concentrates on home health care for disabled and elderly patients. *See id.*

51. *See id.* The intent is to improve compliance and reduce hospitalizations of patients with diabetes. *See id.*

52. *See id.* Telecardiology, which is digital radiographic examination of the heart, is used to transfer echocardiogram information between Fort Belvoir Community Hospital and Walter

problems,[54] cancer,[55] hearing problems,[56] dermatological problems,[57] and kidney problems.[58] The Army also established a World Wide Web site containing useful information beneficial to not only military personnel but the general public as well.[59]

The Navy has a more comprehensive web site that provides information to the public and military personnel on virtually any medical topic ranging from what to do with an amputated arm to the dangers of smokeless tobacco.[60] In addition, the Navy has uploaded all field manuals concerning chemical and medical defense so that reserve or other organizations, such as local police and fire departments, can download treatment protocols from the Internet in the event of a biological or chemical emergency.[61]

Commercial uses of the Internet are aiding hospitals in the treatment of high-risk elderly patients and are assisting in the home-delivery of health care. The LifeMasters web site allows patients to personalize their own health care page by uploading data such as weight, heart rate, and blood pressure.[62] Nurses review the pages looking for significant changes so that the patient and the treating physician can respond accordingly.[63] LifeMasters contracts with Health Maintenance Organizations (HMOs) and has recently

---

Reed Army Medical Center. *See id.*

53. Active neuropsychological telemedical sessions take place between patients and doctors at Army medical centers in Texas. *See id.*

54. In Europe, there are teledentistry programs at 37 sites. *Id.*

55. Subspecialists in pathology, radiology, surgery, radiation oncology, and hematology examine patients from remote Hawaiian islands with tumors to render opinions on the treatment of these patients. *See id.*

56. Tripler Army Medical Center has developed video-otoscopy (video inspection of the middle ear) for diagnosis of middle ear diseases in patients from remote sites. *See id.* This program will be important for early treatment and possible prevention of significant hearing loss. *See id.*

57. *See DOD Medical Programs, National Security Subcommittee of the House Appropriations Committee Holds Hearing on DOD Medical Programs*, 106th Cong. (1999)(Rear Admiral Stephen T. Fisher, Deputy Chief, on Behalf of Vice Admiral Harold M. Koenig, Surgeon General, United States Navy). A dermatologist in Bethesda, Maryland diagnosed a basal cell carcinoma next to a sailor's eye. *See id.* This is unremarkable except for the fact that the sailor was located on a ship that was half way across the world. *See id.*

58. A specialist in San Diego diagnosed a kidney stone in a sailor who was stationed on a ship located in the Antarctic. *See id.* The doctor ascertained the size of the kidney stone via an ultrasound and prescribed an appropriate treatment. *See id.* The treatment involved allowing the kidney stone to pass through the system naturally. *See id.* This avoided a costly evacuation because the ship's runway had been closed for the winter. *See id.*

59. *See Army Medicine, at* http://www.armymedicine.army.mil (visited Oct. 24, 1999). Information regarding biological weapons involving anthrax and vaccines to prevent the effects of anthrax are posted for the general public. *See id.*

60. *See Virtual Naval Hospital, at* http://www.vnh.org/ (visited Oct. 24, 1999).

61. *See* Vice Admiral Harold M. Koenig, *supra* note 57.

62. *See* Josh Fischman, *A Logon a Day Keeps the Doctor Away*, U.S. NEWS & WORLD REP., Oct. 25, 1999, at 65.

63. *See id.*

initiated a commercial site that is accessible by the general public.[64] This program saves patients considerable money by allowing them to leave hospitals earlier than normal.[65]

However, the most beneficial use of telemedicine, from the perspective of the United States as a whole, is its positive impact on rural health care. Rural areas in the United States are plagued by a shortage of doctors,[66] and patients oftentimes live hundreds of miles from the nearest hospital.[67] Douglas Henley, the President of the American Academy of Family Physicians, testified that "there are currently 2682 counties or parts of counties [that] remain designated as primary care health professions shortage areas (HPSA's). This means [that] there is less than one primary care physician for every 3500 persons in those areas."[68] Because of persistent shortages, rural hospitals have been closing at a disproportionate rate for the past twenty years.[69]

The Federal Government recognizes telemedicine as a possible solution to the problems faced by rural communities.[70] As a result, various bills and fund allocations have been devoted to develop telemedicine programs in rural communities.[71] However, the United States does not stand alone in its

---

64. *See id.*

65. *See id.* Web monitoring saves an average of $2,100 over a typical hospital stay, $450 over a typical nursing home stay, and $90 over a typical home-health visit. *Id.*

66. *See Rural Health Care: Testimony before the Comm. on Ways and Means, U.S. House of Representatives*, 104th Cong. (1996) (statement of Jeffrey Human, Director, Office of Rural Human Policy, Health Resources and Services Admin., Dept. of Health and Human Services). When considered "on a per capita basis, there are almost twice as many primary care physicians practicing in urban areas as there are in rural areas." *Id.* When all physicians are considered, "there are well over twice as many physicians practicing in urban areas (on a per capita basis)." *Id.*

67. *See id.*

68. Christopher J. Caryl, Note, *Malpractice and Other Legal Issues Preventing the Development of Telemedicine*, 12 J.L. & HEALTH 173, 177-78 (1998). Health Professional Shortage Areas (HPSA) are "areas with a primary care provider-to-client ratio of 1:3500 or worse." *Id.* at 175. Furthermore, "twenty-nine percent of rural residents reside in HPSA's. In contrast, only nine percent of urban residents live in HPSA." *Id.*

69. *See* BARTON, *supra* note 14, at 231-32. Between 1980 and 1988, 200 rural hospitals closed. *Id.*

70. *See generally* Caryl, *supra* note 68, at 177-80. Hospitals will be reduced from 850,000 beds in 1997 to 720,000 beds in 2005. INSTITUTE FOR THE FUTURE, HEALTH & HEALTH CARE 2010: THE FORECAST, THE CHALLENGE 6 (2000).

71. *See Rural Healthcare: Testimony before the Senate Agriculture, Nutrition, and Forestry Comm.*, 104th Congress (June 9, 1994) (testimony of Douglas E. Henley, M.D., Board Chair of the American Academy of Family Physicians).

> The Rural Electrification Administration (REA) makes low-interest loans to telephone and telecommunications companies to set-up communication links for telemedicine. The 1990 Farm Bill authorized $60 million to assist rural hospitals and schools set-up fiber-optic link-ups. The National Telecommunications and Information Administration (NTIA) within the Department of Commerce has $26 million to distribute in the form of matching grants to states for

recognition of the potential benefits of telemedicine.

C. *Current International Uses and Developments of Telemedicine*

Many countries have implemented, or are in the process of implementing, a telemedicine system.[72] However, these efforts to utilize technologies associated with telemedicine remain hindered by a lack of technology.[73] Approximately eighty percent of the world's population does not have a telephone.[74] Those countries with telemedicine programs have various programs that widely differ. Some programs are controlled and regulated by the central government.[75] Other countries call upon the private sector to aid in the advance of telemedicine.[76] In addition, program initiatives vary across the borders. Some countries are interested in establishing a large telemedicine program that will encompass a large region (including other countries),[77] while other countries focus more on serving the domestic needs of their own populations.[78]

---

telecommunications development, including telemedicine. Finally, the Agency for Health Care Policy and Research (AHCPR) and the Health Care Financing Administration (HCFA) will both fund demonstration studies of the clinical issues in telemedicine, while the National Library of Medicine's High Performance Computing Applications in Health Care initiative will study standards for data transmission.

Id.

72. *See* Gustavo Capdevila, *Health: New Focus for WHO in Setting Policies*, INTER PRESS SERVICE, Jan. 16, 1997, *available at* 1997 WL 7073219.

73. *See* Edward R. Leahy & Michael O'Brien, *Telecommunications Law and Technology in the Developing World*, 22 B.C. INT'L & COMP. L. REV. 1, 8 (Winter 1999).

74. *See id.*

75. *See German Federal, State Governments Reach Accord on Multimedia Control*, COMPUTERGRAM INTERNATIONAL, July 31, 1996, *available at* 1996 WL 10473518. Germany has designated that the Federal Government have control over telemedicine programs. *See id.* In addition, countries like Kuwait and Australia are also looking to the government to establish, implement, and control telemedicine. *See Kuwait: New Telecommunications Services to be Launched*, INT'L MARKET INSIGHT TRADE OPPORTUNITIES INQUIRIES, Dec. 2, 1997, *available at* 1997 WL 15020970. *See also Australia: Telemedicine Industry: An Overview*, INT'L MARKET INSIGHT REP., Aug. 4, 1998, *available at* 1998 WL 13711492.

76. *See South Africa: First Telemedicine Site Launched*, INT'L MARKET INSIGHT REP., Mar. 10, 1999, *available at* 1999 WL 8686522. Telehealth SA, a consortium of private companies, is sponsoring South Africa's national telemedicine network. *See id.*

77. *See* Anil Noel Netto, *Malaysia-Information: Spare a Thought for the Poor Along the Highway*, INTER PRESS SERVICE, Jan. 21, 1997, *available at* 1997 WL 7073265. Malaysia has implemented a program that is intended "to develop into a regional center for telemedicine, linking rural clinics to medical experts and renowned clinics in Malaysia and abroad." *Id.*

78. *See Rural Communities in Southern Ontario Receive $11.5 Million in New Telecommunications Services*, CANADA NEWSWIRE, Oct. 22, 1999. Canada has implemented a nationwide telemedicine program to further the healthcare needs of rural communities. *See id.*

It helps to examine the extent of the telemedicine programs in other countries before examining the problems facing telemedicine on an international level. The World Health Organization (WHO) actively promotes telemedicine as a tool for improving world health.[79] Dr. Nakajima, Director-General of the WHO, stated, "The World Health Organization fully realizes that the rapid development of modern telecommunication technologies presents countries with a unique opportunity to improve the health of their populations."[80] The World Health Organization demonstrated the remarkable potential of telemedicine to the International Telecommunication Union (ITU) during an international TELECOM 97 Forum by presenting two live interactive transmissions between Moscow, Washington, and Geneva.[81] In addition, the World Health Organization began a worldwide surveillance program on the spread of drug resistance, pollution levels, reactions to toxic chemicals, and the adverse side effects of various pharmaceuticals.[82] However, the WHO is not the only organization to realize the benefits of telemedicine.

1. The European Union

Like many industrialized areas throughout the world, the European Union (EU) is experiencing an increase in its elderly population. The population of elderly people in the EU is expected to reach fifty-six million people by the year 2000, and the disabled population will total thirty-six to forty-eight million people.[83] The increases in these populations prompted the EU to commission the European Foundation Research Project to study the various uses of telemedicine throughout the EU. The European Foundation Research Project consisted of five case studies: the Domiciliary Fetal Monitoring Study,[84] the Information System for the Disabled Study,[85] the

---

79. *See* Press Release, World Health Organization, Telehealth and Telemedicine Will Henceforth be Part of the Strategy for Health for All (Sept. 16, 1997), *available at* http://www.who.int/archives/inf-pr-1997/en/pr97-98.html.

80. *Id.*

81. *See WHO Director-General Highlights Potential of Telemedicine, at* http://www.who.int/archives/inf-pr-1997/en/pr97-65.html (visited Sept. 16, 1999). The TELECOM 97 Forum was held in Geneva, Switzerland and was sponsored by the International Telecommunication Union (ITU). *See id.*

82. *See* WHO, *supra* note 79.

83. DR. MARJORIE GOTT, TELEHEALTH AND TELEMEDICINE: EXECUTIVE SUMMARY OF A EUROPEAN FOUNDATION RESEARCH PROJECT, EUROPEAN FOUNDATION FOR THE IMPROVEMENT OF LIVING AND WORKING CONDITIONS (1994).

84. *See id.* at 8. The Domiciliary Fetal Monitoring Study was conducted in Wales and was intended to study the efficacy of training pregnant women to use telemedicine to record fetal traces (heart rates) and transmit them to the Obstetricians Unit of their hospital from their homes. *See id.* The women's self-monitoring reports were found to be as good or better than those recordings made at the Obstetric Unit of the hospital. *See id.* The results of this study were found to be effective in reducing clinical visits for pregnant women and reducing the costs

Computer Youth Network Study,[86] the Personal Alarms Study,[87] and the Videotelephony Study.[88]

The European Foundation has seven recommendations that they suggest would benefit Europe. These recommendations include a reorientation of health services towards primary health care.[89] In addition, it recommends that the study of telehealth and telemedicine and the use of telematic services be included in the basic and post-basic training of health care professionals.[90]

2. *Malaysia*

While the WHO is concentrating on promoting world health with the use of telemedicine, individual countries are initiating and developing their own telemedicine programs. Malaysia has announced plans to become a worldwide leader in Internet telecommunications technologies.[91] Among its plans is to be the world's first country to set-up a "cyber court."[92] In

---

associated with having a baby. *See id.*

85. *See id.* at 9. The Information System for the Disabled Study was conducted in Italy and the Netherlands and was intended to evaluate the HANDYNET Project that established a European-wide information system on all aspects of living with a disability. *See id.*

86. *See id.* at 10. The Computer Youth Network Study was conducted in Alberta, Canada and was intended to utilize Internet bulletin boards to educate teens and young adults on the dangers of drug and alcohol use. *See id.* The sites associated with the bulletin boards were found to be successful based on the increased frequency of visits to the site. *See id.*

87. *See id.* at 11. The Personal Alarms Study was conducted in the Netherlands and in Canada and studied a system in which elderly and disabled people living alone could call for help by means of an alarm system that sounds an alarm directly to an emergency center. *See id.* The alarm system allows the elderly and disabled to feel secure while living independent lives and also helps to organize an adequate response to an emergency situation. *See id.*

88. *See id.* at 12. The Videotelephony Study was conducted in Germany and Portugal and was intended to evaluate a program that allows for two-way visual and sound interaction between people in their homes and remote care centers. *See id.* This program proved to be an effective, easy to use program that lowered costs and provided care to rural populations. *See id.*

89. *See id.* at 16. Primary health care is defined as "the appropriate treatment of common diseases and injuries, the provision of essential drugs, simple prophylactic and therapeutic dental care, and the identification of potentially serious physical or mental health conditions that require prompt referral for secondary or tertiary care." BARTON, *supra* note 14, at 266.

90. *See id.* The other recommendations made by the European Foundation for the Improvement of Living and Working Conditions include the commissioning of an international study of telemedicine and allowing for policy makers to accept that technology is only a part of the whole health care package. *See id.*

91. *See* Anil Noel Netto, *Malaysia: Cyber Laws Passed to Support High-Tech Dreams*, INTER PRESS SERVICE, Apr. 1, 1997, *available at* 1997 WL 7074521.

92. *Id.* The "cyber court" would be "the first on-line reference center for criminal cases world-wide" an unidentified ministry official stated. *Id.* Since March 24, 1997, the parliament has passed several new "cyber-bills." *Id.* These bills cover "computer crimes, digital signature, intellectual property protection, and telemedicine development." *Id.*

addition, Malaysia plans on using its Multimedia Super Corridor (MSC)[93] to lure businesses to Malaysia and enhance government services.[94]

The Malaysian Health Ministry has established a project to link all state and district hospitals and clinics nationwide on a common Virtual Private Network (VPN) platform.[95] This project will be implemented in four phases. The first phase is called the Lifetime Health Plan and will link-up modules such as clinical support systems and personalized lifetime health plans that cater to individuals with group data services to track patients in an outpatient setting.[96] The group data services digitalize medical data for analysis purposes.[97] The second phase is known as the Mass Customized and Personalized Health Information and Education phase.[98] This phase focuses on using the Internet to educate the public on maintaining healthy lifestyles.[99] This phase is to be dedicated to serving specialized groups of people with similar health problems, such as cancer.[100] The third phase is called the Continued Medical Education (CME) phase.[101] This phase enables the Health Ministry to offer medical education to health care providers.[102] The final phase of the Malaysian Health Ministry's telemedicine program is called Teleconsultation.[103] This phase involves linking forty physicians practicing in remote areas with specialists in larger, metropolitan areas.[104]

The preliminary results from the pilot program in Malaysia seem promising. Between 1992 and 1997, the National Heart Institute of Malaysia provided services to more than 35,000 patients from low income groups.[105]

---

93. *See Health Ministry in Final Stage to Carry Out Telemedicine Project*, BERNAMA, THE MALAYSIAN NAT'L NEWS AGENCY, Oct. 28, 1998, *available at* 1998 WL 20443138. "The MSC is a 750 square-kilometer area stretching from the Kuala Lampur City Center to the Kuala Lampur International Airport in Sepang, and is a dedicated hub for the development of multimedia products and services." *Id.* The MSC is expected to provide millions of dollars of revenue for Malaysia but will face competition from "Cyberclones" in Singapore, Hong Kong, Taiwan, Thailand, and India. Thomas Omestad, *Building a High-Tech Magnet*, U.S. NEWS & WORLD REPORT, Sept. 25, 2000, at 36.

94. *See* Netto, *supra* note 91.

95. *See Malaysia: Virtual Private Network Platform Project in Full Swing*, INT'L MARKET INSIGHT REP., Aug. 10, 1999, *available at* 1999 WL 17739411. The Virtual Private Network (VPN) is built on a corporate information superhighway (COINS) infrastructure. *See id.* The main objectives of the VPN are to provide a communication infrastructure to support the various applications that run on a secure environment - such as telemedicine - and also to utilize Internet technology. *See id.*

96. *See id.*

97. *See id.*

98. *See id.*

99. *See id.*

100. *See id.*

101. *See id.*

102. *See id.*

103. *See id.*

104. *See id.*

105. *Pilot Project on Telemedicine Next Year*, BERNAMA, THE MALAYSIAN NAT'L NEWS

Malaysia also successfully tested a teleradiology program that allows a paramedic at a remote district hospital to obtain radiographic films interpreted by a radiologist overnight.[106] Malaysia furthered its goal of being a world wide leader in telecommunications by signing a Memorandum of Understanding with the United Arab Emirates (UAE) that facilitates the formation of a telemedicine program between the two countries.[107]

In addition to creating an infrastructure that supports telemedicine programs, Malaysia is the first country in the world to create legislature that regulates telemedicine. The Telemedicine Act of 1997[108] requires physicians to apply to the Malaysian Medical Council for a certificate to practice telemedicine.[109] Physicians not licensed in Malaysia can also apply for this certificate.[110] However, a physician must obtain the consent of the patient before commencing treatment via telemedicine.[111] Finally, the Minister of Health has the power to create additional regulations as the challenges facing telemedicine become more apparent.[112]

3. *Australia*

Australia is also positioning itself as an international leader in the provision of telemedicine.[113] Video conferencing telemedicine sites have increased from 30 in 1994 to more than 250 in 1999.[114] In addition, telemedicine sites for teleradiology have grown to 150.[115]

Australia conducted a trial run of its first international ophthalmic telemedicine link-up with Indonesia using technology developed in Australia.[116] This trial run involved over 100 highly detailed color pictures

---

AGENCY, Nov. 26, 1998, *available at* 1998 WL 20444738.

106. *See Project Using Internet for Teleradiology Successful in Sarawak*, BERNAMA, THE MALAYSIAN NAT'L NEWS AGENCY, Nov. 5, 1998, *available at* 1998 WL 20443437. Obtaining these radiographic films would have taken a month if done the "old-fashioned" way - by courier service. *Id.*

107. *Malaysia and UAE to Collaborate in Education and Technology*, BERNAMA, THE MALAYSIAN NAT'L NEWS AGENCY, Aug. 7, 1999, *available at* 1999 WL 21721281.

108. Telemedicine Act, Act 564 (1997) (Malaysia).

109. *See id.* cl. 3.

110. *See id.* cl. 4(1).

111. *See id.* cl. 5(1).

112. *See id.* cl. 6.

113. *See Australia: Telemedicine Industry: An Overview*, INT'L MARKET INSIGHT REP., Aug. 4, 1998, *available at* 1998 WL 13711492. The Honorable John Moore, the Minister of Industry, Science and Tourism, announced in 1998 that "Australia is positioning itself internationally as a leading supplier of telemedicine technology and applications." *Id.*

114. *Id.*

115. *Id.*

116. *See Aussie Eye Institute Conducts Telemedicine Trial Link Up with Indonesia*, BERNAMA, THE MALAYSIAN NAT'L NEWS AGENCY, Mar. 5, 1999, *available at* 1999 WL 5596523.

of the eye being sent from Indonesia to Perth, Australia.[117] The Director of the Lions Eye Institute, Professor Ian Constable, explained that "[s]uch a technological breakthrough provides hope for the millions of people in the Third World who, without early detection of disease, face the prospect of going blind."[118] This technology enables ophthalmologists in Australia to examine a patient in another part of the world while simultaneously talking with the patient and the attending doctor.[119]

4. Canada

Canada also implemented a telemedicine plan that allows rural communities to gain access to the same quality health care that they would receive from a larger, urban community.[120] Similar to Australia's Lions Eye Institute plan, the Canadian plan permits nurses and physician assistants equipped with laptop computers and cellular phones to travel to rural communities to meet with patients in need of a wide array of treatment.[121] After the nurses and physician assistants meet with the patients, they contact the physicians, via satellite communications, to receive instructions and help with the various treatments.[122] These treatments vary in scope from physical therapy to diagnosis and treatment of diabetes.[123] As the technology in Canada continues improving, so will the quality of care provided to its citizens.[124]

5. Developments in Other Countries

Several other countries also recognize the potential of telemedicine and have implemented their own programs. Ireland developed a high-tech

---

117. *Id.*

118. *Id.*

119. *See id.* The equipment, which is lightweight for easy portability, includes a portable fundus camera, laptop computer and a satellite phone. *See id.* This portable equipment "can be taken to remote villages where local people can be trained to use the camera and successfully screen the whole population." *Id.*

120. *See Rural Communities in Southern Ontario Receive $11.5 Million in New Telecommunications Services*, *supra* note 78. The Data Services Improvement Program will allow businesses in smaller communities and rural areas to effectively compete with their competitors in urban centers. *See id.* Higher speed data services will improve access to the Internet and will provide more opportunities for local businesses, residents and communities located in rural areas. *See id.*

121. *See* Cross, *supra* note 33.

122. *See id.*

123. *See id.*

124. *See* CANADA NEWSWIRE, *supra* note 78. The Ontario government, in conjunction with Bell Canada and two public sector partners, are investing $11.5 million (Canadian) to extend high-speed data services to rural and small communities in Southern Ontario. *Id.*

computer system to improve cancer research.[125] Ireland also developed a telemedicine-teleconsultation system that enables doctors in Ireland to consult on-line with their colleagues in the United States and Europe.[126]

Most countries collaborate their telemedicine practices by sharing advanced computers that make telemedical link-ups feasible. However, the United States limits the sharing of certain technologies[127] to countries because of the potential threats to national security.[128] Despite this limitation on development, India has developed an advanced computer system that they will use to implement a telemedicine program.[129]

Several other countries are in the process of developing a telemedicine program. Kuwait plans to develop a telemedicine program.[130] In Saudi Arabia, the Saudi Council of Ministers approved the use of the Internet in Saudi Arabia.[131] The Prince Sultan Charitable Foundation has "established a joint-venture partnership with IMED Link, an American Telemedicine firm based in Bethesda, Maryland."[132] However, Saudi Arabia is not the only country to adopt the services of physicians in the United States.[133] South

---

125. *See* Maureen Coleman, *Belfast On-Line with Top US Cancer Research*, BELFAST TELEGRAPH, Oct. 5, 1999, *available at* 1999 WL 28236093. This computer system "will enable doctors, nurses, and scientists in Belfast, [Ireland] to link their research" with researchers at the National Cancer Institute (NCI) in Washington. *Id.* This information system is the first of its kind in the world. *See id.*

126. *See id.*

127. *See* R. Dev Raj, *Science-India: India Beats U.S. Ban on Supercomputer Exports*, INTER PRESS SERVICE, Mar. 30, 1998, *available at* 1998 WL 5986421. A "teraflop" machine is a supercomputer whose computing power exceeds two-thousand mega theoretical operations per second (MTOPS). *Id.* These "supercomputers" are considered a threat to national security because of their ability to launch nuclear weapons. *Id.* Despite restrictions by the United States, India has developed their own "teraflop" machine, called the "PARAM 10,000", and has committed it to developing a National Information Infrastructure (NII) which will allow for "collaboratories for scientific research, digital libraries, electronic governance and telemedicine with the common man in mind," stated Shyamal Ghosh, Secretary in the Department of Electronics. *Id.*

128. *See id.*

129. *See id.*

130. *See Kuwait: New Telecommunications Services to Be Launched*, INT'L MARKET INSIGHT TRADE OPPORTUNITIES INQUIRIES, Dec. 2, 1997, *available at* 1997 WL 15020970.

131. *See Saudi Arabia: Gov't Approves Local Use of Internet Service*, INT'L MARKET INSIGHT REP., Jan. 5, 1998, *available at* 1998 WL 8067121. Internet usage for Saudi citizens is very limited. *See id.* Because access is limited, citizens can only access the Internet at certain authorized sites, such as Internet cafes. *See id.* In addition, content is heavily restricted by the Council of Ministers. *See id.* However, by allowing access to the Internet, Saudi Arabia has paved the way for telemedicine programs to be developed. *See id.* King Faisal Specialist Hospital and Research Center, based in Riyadh, has been connected with King Abdul Aziz City for Science and Technology as part of a telemedicine project. *See id.*

132. *Id.*

133. *See Malaysia and UAE Collaborate in Education and* Technology, *supra* note 107. The UAE formed a telemedical consultative relationship with physicians in the United States and Britain. *See id.*

Africa has also enlisted the assistance of U.S. technology companies to develop and implement a telemedicine program.[134]

III. THE PROBLEMS FACING TELEMEDICINE IN THE UNITED STATES

INTRODUCTION

The increasing use and reliance of foreign countries upon physicians and equipment from the United States presents multiple legal implications. Although international telemedicine creates many challenges, four major problems arise from this international relationship. First, can a licensing scheme be created to utilize the national and international aspects of telemedicine? Second, when problems arise in the context of national and international telemedicine, where can a lawsuit be initiated? Third, when two states or two countries interact via telemedicine, what law should be applied in the event of a conflict? Finally, how do traditional tort principles apply to telemedicine?

A. Regulation and Licensure of Telemedicine

In the United States, the regulation of health care has traditionally been left to the individual states.[135] Historically, the authority to regulate health care is founded on the States' "police power."[136] This power to provide and regulate health services is considered a part of the states' plenary powers, "the power to provide for and protect the public health is a basic, inherent power of the government."[137] The Supreme Court established the premise that a state can exercise "[i]ts unquestioned power to protect the health and safety of its people."[138] Currently, all fifty states regulate the practice of medicine.[139] In order to practice medicine in the United States, physicians must meet certain national and state standards. Even before physicians attend medical school, they must take the Medical College Admissions Test (MCAT), which is administered nationwide and is a factor[140] in being

134. *See South Africa: First Telemedicine Site Launched*, INT'L MARKET INSIGHT REP., Mar. 10, 1999, *available at* 1999 WL 8686522. Some U.S. firms, like Vidar Systems of Virginia, which supplies x-ray film digitizers, already supply products to the South African telemedicine market. *See id.*

135. *See* FRANK P. GRAD, THE PUBLIC HEALTH LAW MANUAL 10 (2d ed. 1990). *See also* U.S. CONST. amend. X. This amendment states, "[t]he powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." *Id.*

136. GRAD, *supra* note 135.

137. Jacobson v. Massachusetts, 197 U.S. 11, 24-25 (1905).

138. Dean Milk Co. v. City of Madison, 340 U.S. 349 (1951).

139. *See* Huie, *supra* note 1.

140. *See* STEFAN BOSWORTH ET AL., MCAT SUPERCOURSE (Prentice Hall 2d ed. 1994).

admitted to medical school.[141] Although these standards vary among medical schools, the testing that medical students undergo is nationally regulated.[142] The National Board of Medical Examiners regulates the tests that medical schools administer.[143] These tests are standard at medical schools nationwide.[144] Upon graduating from medical school and completing all of the requirements, physicians may begin residency training in a specialty.[145] In order to specialize in a certain area of medicine, physicians must undergo a residency program in that area and pass a national test before they are considered Board Certified.[146] A physician who is Board Certified as a specialist in Oncology graduated from a nationally accredited medical school, passed several national standardized tests both in general and within that specialty, and the state has granted the physician a license to practice medicine within that state.[147] To practice medicine in a certain state, a physician must be licensed in that state.[148] The practice of telemedicine does not require a special license, but most states have statutes that regulate telemedicine.[149] Some states stringently regulate telemedicine,[150] but other

---

The weight given to this test varies from school to school. *See id.*

141. *See* Telephone Interview with Denise Hawk, Office for Medical Student Academic Affairs, Indiana University School of Medicine (Nov. 2, 1999).

142. *See id.* Indiana University School of Medicine requires that students take and pass an examination after their second year of medical school. *See id.* This is known as STEP I. *See id.* STEP II involves taking and passing an examination after the third year of medical school. *See id.* STEP III involves taking and passing an examination after the residency program. *See id.* This testing schedule is not a national schedule; nevertheless it has been adopted by the Indiana University School of Medicine to ensure that graduating students have met certain national criteria for the practice of medicine. *See id.*

143. *See id.*

144. *See id.* In fact, if a student attending Indiana University School of Medicine was in Michigan and wanted to take the examination at Michigan State College of Medicine, he or she could do so because the test is standard, and it is administered on a computer. *See id.*

145. *See* Interview with Dr. John Greene, D.O., Member of the Admissions Committee at Michigan State College of Osteopathic Medicine (Nov. 12, 1999).

146. *See id.*

147. *See id.*

148. *See* Interview with Denise Hawk, *supra* note 141. The test that physicians are required to take to be licensed in Indiana is called the Indiana State Medical Exam. *See id.*

149. *See e.g.* IND. CODE ANN. § 25-22.5-1-1.1(a)(4) (West 1998). The practice of medicine in Indiana includes "[p]roviding diagnostic or treatment services to a person in Indiana when the diagnostic or treatment services:

(A.) are transmitted through electronic communications; and

(B.) are on a regular, routine, and non-episodic basis or under an oral or written agreement to regularly provide medical services." *Id.*

150. *See e.g.* TEX. HEALTH & SAFETY CODE ANN. § 151.056(a) (West 1996). Texas has mandated that any examination of a patient within the state of Texas, electronic or otherwise, must be performed by a physician licensed in the state of Texas. *See id.* Nevada's licensure laws includes "equipment that transfers information concerning the medical condition of the patient electronically" within the definition of "the practice of medicine". NEV. REV. STAT. ANN. §6804(A). *See also* OKLA. STAT. ANN. tit. 59 § 492(c)(3)(b) (West 1998); GA. CODE ANN.

states permit limited exceptions for licensed, out-of-state physicians.[151] Unfortunately, these exceptions do not permit telemedicine to reach those patients who could benefit the most from this system.[152] States require full licensure in order to practice medicine in another state.[153] Full licensure requires physicians to become fully licensed in every state in which they wish to practice telemedicine. This presents the most serious impediment to a nationwide telemedicine program. Despite the various exceptions to state licensing requirements,[154] the licensing of physicians is a problem that must be resolved before telemedicine programs are implemented nationwide. Several solutions to the problem faced by telemedicine programs regarding state licensure requirements, however, have been proposed.

B. "Telemedicine Only" License

A plan proposed by the Federation of State Medical Boards (FSMB) allows each state to create its own standards for a "telemedicine only" license.[155] While this proposal may help individual states regulate their telemedicine programs, it makes it more difficult to establish a feasible, national program of this type.[156] Fifty different approaches to telemedicine licensing standards will inevitably prevent physicians from consulting via telemedicine with out-of-state physicians. To alleviate this difficulty, states can legislate exceptions for physicians who are licensed in another state. Endorsements allow practitioners currently licensed for telemedicine in one state to practice telemedicine in other states, provided the physician's other credentials are adequate.[157]

If a state adopted the FSMB proposal, physicians wishing to practice

---

§ 43-34-31.1 (1999).

151. In addition to the exceptions described in section two [IC 25-22.5-1-2] of this chapter, a nonresident physician who is located outside Indiana does not practice medicine or osteopathy in Indiana by providing a second opinion to a licensee or diagnostic or treatment services to a patient in Indiana following medical care originally provided to the patient while outside of Indiana. IND. CODE ANN. § 25-22.5-1-2.

152. *See supra* Part II. Telemedicine is especially useful in providing access to health care for rural communities. *See id.*

153. *See* Huie, *supra* note 1, at 395.

154. *See* Caryl, *supra* note 68, at 185. The three traditional exceptions to state licensing requirements are as follows: a border state exception where physicians from neighboring states are given implicit permission to see patients in that state; a limited duration or consistency exception for physicians to see patients in a state on a limited basis; and emergency exceptions where physicians may be excused from the state licensing requirement in the event of a medical emergency. *See id.*

155. Meek, *supra* note 22, at 181.

156. *See id.*

157. *See* Alison M. Sulentic, *Crossing Borders: The Licensure of Interstate Telemedicine Practitioners*, 25 J. LEGIS. 1, 22-26 (1999). The other credentials necessary would be the state licensure requirements. *See id.*

telemedicine within that state would have to obtain a special license specifically for telemedicine.[158] This allows the states to regulate the health and safety of its citizens while still allowing for the use of telemedicine. Under the FSMB proposal, the state medical licensing board in the state in which the patient is examined would maintain disciplinary authority over the physician.[159] This approach, however, does not simplify the problems that are posed by the interstate practice of telemedicine. In addition, this approach does not address problems that would be faced by an international telemedicine system.

The American Telemedicine Association (ATA) endorses a position on state licensure that is similar to that proposed by the FSMB. The ATA proposed that states should continue to regulate medical professionals.[160] However, to best utilize telemedicine, states should allow patients and primary care physicians to access the services of physicians (specialists) in other locations, including other states.[161] By allowing each state to determine its own standards for telemedicine, patients in rural communities who need telemedicine the most are not helped.

C. *Registration for the Practice of Telemedicine*

In 1996, California enacted the Telemedicine Development Act.[162] This Act provides an innovative method for promoting telemedicine through interstate cooperation.[163] Ultimately, this statute establishes guidelines for a telemedicine program by enabling a registered telemedicine practitioner to offer services in California without obtaining a California medical license. In order to qualify for this exception, out-of-state practitioners must meet certain criteria. To consult with patients in California via telemedicine, an out-of-state physician must consult with a licensed California physician who is considered the "primary caregiver."[164] Furthermore, out-of-state physicians are prohibited from opening an office in California, appointing a place to meet patients, or even receiving calls from patients they have consulted with in California.[165] This statute provides protection for California citizens and promotes the use of telemedicine. Limiting which physician a California patient can consult arguably gives patients the best care possible. This statute is also beneficial because California physicians are not inundated with patients who in the past did not have access to them,

158. *See* Caryl, *supra* note 68, at 190.
159. *See id.*
160. *See* Poropatich, *supra* note 42.
161. *See id.*
162. 1996 Cal. Legis. Serv. 864, §1 (a)-(c), (i) (West).
163. *See id.*
164. *See* Sulentic, *supra* note 157, at 27.
165. *See id.*

and now have access to them via telemedicine. However, even if every state adopted statutes similar in kind and scope to California's, many problems would still exist. Specifically, telemedicine programs in foreign countries pose additional problems.

D. National Licensure

A national licensure proposal would greatly simplify national and international telemedicine use. By taking a standardized test, a national license would be available to physicians.[166] The examination would cover medical knowledge that would be used by physicians and technological knowledge necessary to effectively use telemedicine.[167] A national licensure system eliminates the guesswork that accompanies the other two proposals and also simplifies the practice of telemedicine.[168] In addition, by allowing the federal government to regulate the practice of telemedicine, populations that need telemedicine the most could receive it. Finally, a national telemedicine system would facilitate the international practice of telemedicine.

A national telemedicine system is already being used by the military.[169] Under military law, a health care professional that is a member of the armed forces and holds a valid license issued by a state may practice his profession anywhere in the United States and its territories.[170] Although a national telemedicine program is certainly feasible, certain problems remain. Each state has the power to regulate the health and safety of its citizens, and telemedicine is considered their exclusive domain. However, the regulation of health care is becoming increasingly federalized. For example, the federal government regulates the provision of medical services to veterans and the military. In this situation, the government serves as a third-party payor[171] through the Medicare and Medicaid programs.[172] In addition, Congress regulates health care financing and, more particularly, the financing of telemedical developments throughout the nation. Since the federal

---

166. *See* Meek, *supra* note 22, at 185. *See also supra* Part III.A. A national standardized test given to medical students and physicians seeking to become Board Certified in a specialty. *See NBME® Information, National Board of Medical Examiners®, at* http://www.nbme.org/new.version/home.html (visited Aug. 18, 1999).

167. *See id.*

168. *See* Meek, *supra* note 22.

169. *See* Sulentic, *supra* note 157, at 27. The Veterans Administration, the Bureau of Indian Affairs, and the United States military have all implemented programs that enable licensed physicians to offer services in all jurisdictions without the inconvenience of obtaining local licenses. *See id.*

170. *See id.*

171. A third-party payor is another term for an insurer.

172. *See* Sulentic, *supra* note 157, at 27.

government increasingly regulates the practice of medicine,[173] the implementation of a national telemedicine program would not be very difficult.

A national regulation standard is already implemented to a certain extent in the United States. Prospective medical students take a national examination[174] as part of the admissions process. While in medical school, students must take at least two tests administered by the National Board of Medical Examiners. These tests are nationally standardized. Thus, medical schools must tailor their curriculum to the national standard to allow students to pass these exams. Once a physician decides to specialize, there is another national test to become Board Certified in that specialty. Therefore, establishing a federal license for telemedicine may be the easy to implement because the practice of medicine is already nationally regulated and standardized.

The use of telemedicine on an international scope has increased dramatically within the last five years. Discussions about licensure must begin to take into account this fact. An international telemedicine licensure program would ensure that physicians who consult with other physicians across international borders are trained in both the area of medicine in which they consult and practice in telemedicine. Therefore, an international telemedicine licensure program should be examined to determine its necessity and feasibility.

1. Jurisdiction

One of the major problems inherent in development of telemedicine regulation is the ambiguity surrounding where a "consultation" takes place. A consultation, which establishes a physician-patient relationship, is crucial for medical malpractice concerns. If a physician in Ohio consults with a physician in Switzerland, is the physician in Switzerland subject to service of process in the United States in the event of a misdiagnosis? The Due Process Clause of the U.S. Constitution[175] prohibits unwarranted assertions of personal jurisdiction.[176] For jurisdiction to be asserted upon a foreign party, the foreign party must have minimum contacts with the forum.[177] The minimum contacts test consists of two parts. First, the defendant must have purposefully created contacts with the forum, and those contacts must rise to

---

173. *See supra* Part II.B.

174. The Medical College Admissions Test (MCAT) is required by all medical schools in the United States and is used as a factor (which varies school by school) in admitting students to medical school.

175. U.S. CONST. amend. XIV, § 1.

176. *See* Christopher W. Meyer, *World Wide Web Advertising: Personal Jurisdiction Around the Whole Wide World?*, 54 WASH. & LEE L. REV. 1269, 1285 (1997).

177. *See* International Shoe Co. v. Washington, 326 U.S. 310, 316 (1945).

a level such that the defendant could reasonably expect to face lawsuits in the forum based on those contacts.[178] Secondly, the exercise of jurisdiction must be fair and reasonable.[179] At this point in the development, courts are ill equipped to address a question of minimal contacts.

In the context of telemedicine across international borders, the question of whether minimal contacts would be established is unclear. In most cases, a single consultation is too attenuated a contact to establish minimal contacts.[180] However, as physicians enter into consultation contracts with other countries, this relationship becomes less attenuated.[181]

The opposite situation occurs when a physician in a foreign country consults a physician in the United States and malpractice occurs. Will the physician in the United States be compelled to stand trial in that country? If the physician has established a relationship with the patient, it is likely that the consulted physician will be forced to stand trial in the foreign country.

Various proposals have also been suggested for determining jurisdiction in a telemedicine case. The first proposal involves a patient being "electronically transported" to the state or country in which the consulting physician is located.[182] Physicians are deemed to be practicing within their own state or country, and additional licensure is not needed.[183] This legal fiction is impractical because states will not relinquish their interest in protecting their citizens.[184] In addition, if this is adopted in an international setting, a U.S. patient would be deemed to be transported to a foreign country, making the commencement of a lawsuit extremely difficult. In the alternative, a physician can be considered "electronically transported" to the state in which the patient is located. Notwithstanding this, the proposed determination of jurisdiction over a patient is completely arbitrary and would create confusion.

By adopting a national telemedicine system, jurisdictional issues are simplified. A proposed solution to the problem of where a consultation is deemed to take place is the adoption of a national licensure system.[185] Congress is granted the power by the U.S. Constitution to regulate interstate commerce.[186] Assuming that telemedicine develops and substantially affects

---

178. *See id.*

179. *See id.*

180. *See* Burger King Corp. v. Rudzewicz, 471 U.S. 462, 474 (1985).

181. *See* Huie, *supra* note 1.

182. *See* Caryl, *supra* note 68, at 187.

183. *See id.*

184. *See* Babcock v. Jackson, 191 N.E.2d 279 (N.Y. 1963). This case expresses the view that the states have an interest in protecting the rights of their citizens from the laws of other states unless the others state has an overriding interest. *See id; see also* Neumeier v. Kuehner, 286 N.E.2d 454 (N.Y. 1972) (utilizing the same reasoning as *Babcock*, but involves a foreign province (Ontario) and a U.S. state (New York)).

185. *See* Caryl, *supra* note 68, at 188.

186. *See* U.S. CONST. art. I, § 8, cl. 3. *See also* U.S. v. Lopez, 514 U.S. 549, 559 (1995).

interstate commerce, Congress can regulate this activity.[187] The Center for Telemedicine Law asserts that a federal impetus is "necessary to create a uniform interstate licensure system."[188] A national licensure system allows for federal court jurisdiction in the event of a dispute between citizens of different states. It also allows for the same law and the same procedure to be applied in all fifty states. In the context of an international telemedicine system, federal court jurisdiction simplifies matters for foreign defendants or plaintiffs.

Jurisdictional uncertainty inhibits the development of telemedicine because physicians are fearful of being sued. This question becomes more difficult when physicians must determine if they established a legal duty towards the patient in the form of a physician-patient relationship.

2. *The Physician-Patient Relationship and Medical Malpractice*

For the minimal contacts test to be used to determine if a physician-patient relationship exists, it must first be determined whether a consultation has occurred. Five factors are crucial to determining whether a consultation has formed between a physician and patient.[189] The first factor is whether the consulting physician and patient see each other.[190] In the context of modern developments in telemedicine technologies, a face-to-face consultation is standard.[191]

The second factor is whether the physician examines the patient.[192] This factor is ambiguous because it is unclear exactly what constitutes an examination. Telemedicine allows for face-to-face interaction between the physician and the patient.[193] In addition, robotic manipulations, while not standard in telemedical examinations, are fast becoming an integral part of examinations. Telemedicine technology allows the physician to see and interact with the patient verbally. In addition, a physician's routine examination tasks includes listening to a heart-beat,[194] examining a patient's ear, nose, or mouth,[195] and observing certain tests, such as sonograms.[196]

The third factor is whether a consulting physician ever examines the patient's records.[197] One of the primary uses of telemedicine is electronic

---

187. *See* City of Philadelphia v. New Jersey, 437 U.S. 617, 623 (1978).

188. Caryl, *supra* note 68, at 189.

189. *See* Phyllis F. Granade & Jay H. Sander, *Implementing Telemedicine Nationwide: Analyzing the Legal Issues*, 63 DEF. COUNS. J. 67, 68 (1996).

190. *See id.*

191. *See supra* Part II.B.

192. *See* Granade & Sander, *supra* note 189.

193. *See* Huie, *supra* note 1, at 380. *See also* discussion, *supra* Part II.B.

194. *See* Cepelwicz, *supra* note 12, at 8.

195. *See* Poropatich, *supra* note 42.

196. *See id.*

197. *See* Granade & Sander, *supra* note 189.

information transfer.[198] This involves the exchange of information, such as the patient's medical record, which includes vital statistics[199] and test results. This type of information transfer is standard in telemedical consultations.[200] Thus, telemedicine meets the third factor.

The fourth factor that determines whether a physician-patient relationship exists is whether the consulting physician knows the patient's name.[201] With a face-to-face consultation via telemedicine, there is a good chance that the consulting physician knows the patient's name. Because telemedicine is rarely restricted to electronic information transfer, the fourth factor is met by telemedicine.

The fifth and final factor is whether the consultation is either gratuitous or fee-based.[202] Contracts between physicians in the United States and hospitals in foreign countries are becoming common.[203] In addition, Medicare and Medicaid have begun to reimburse telemedicine consultations.[204] This involves a fee for services provided, and therefore the physician is subjected to jurisdiction in a foreign country.

In *Lopez v. Aziz*,[205] the Texas Court of Appeals determined that a physician who was consulted by a treating physician by telephone was not responsible for the patient's demise because a physician-patient relationship had not been formed. This relationship was not formed because "there [was] no evidence that Dr. Aziz contracted with Dr. Martinez [the treating physician], or anyone else, to perform any services for Mrs. Lopez."[206] The court concluded that, because the consulted physician only provided a recommendation and not an informed diagnosis, he had not established a patient-physician relationship and could not be held responsible for the results caused by the decision of the treating physician.[207] Thus, a telephone conversation between physicians is not always enough to establish a relationship.

However, some telephone consultations have been found to create a physician-patient relationship. In *Wheeler v. Yettie Kersting Memorial Hospital*,[208] a telephone consultation in which a physician received

---

198. *See supra* Part II.A.

199. *See* Dr. Gulick Interview, *supra* note 27. Vital statistics are those taken in an initial examination. These include, but are not limited to, blood pressure, heart rate, pupil dilation, reflexes, and visual acuity. *See id.*

200. *See* Huie, *supra* note 1, at 380.

201. *See* Granade & Sander, *supra* note 189.

202. *See id.*

203. *See* Huie, *supra* note 1, at 384. Dr. Kenet of New York signed a contract to provide services to a dermatology group located in Austria. *See id.*

204. *See* Poropatich, *supra* note 42.

205. Lopez v. Aziz, 852 S.W.2d 303 (Tex. App. 1993).

206. *Id.* at 306.

207. *Id.*

208. Wheeler v. Yettie Kersting Memorial Hospital, 866 S.W.2d 32 (Tex. App. 1994).

information regarding a patient from a nurse at the emergency room established a physician-patient relationship.[209] A physician-patient relationship was determined to exist because the physician used information obtained from the nurse in making the decision to transfer the patient to a hospital over ninety miles away.[210] The patient died en route to the hospital, and the physician was deemed responsible.[211] The fact that the physician who made the decision was the on-call physician also entered into the court's decision.[212]

Because a relationship is most likely formed during a telemedicine consultation, to what standard of care should the physician be held? With the current developments in medicine and communications, including telemedicine, a national standard of care is the most appropriate standard. A national standard of care requires a physician to exercise the degree of care and skill a reasonably competent practitioner in his specialty would use in similar circumstances.[213] As the practice of medicine becomes more and more nationalized, courts are using the national standard of care.[214]

3. *Choice of Law and Conflict of Law Issues*

Even if jurisdiction is determined to exist, it is unclear which law should be applied. This is especially true where the laws are in conflict. The choice of law is especially significant in the context of international telemedicine. Modern conflict of law rules for torts in the United States have used the "center of gravity" or "grouping of contacts" doctrine.[215] In *Babcock v. Jackson*,[216] the court stated that this doctrine gives "controlling effect to the law of the jurisdiction which, because of its relationship or contact with the occurrence or the parties, has the greatest concern with the specific issue raised in the litigation."[217] Moreover, the following four key contacts are considered in determining the law with the most significant relationship: the domicile, the residence, the nationality, and the place where the relationship between the parties is centered.[218] However, the choice of law rule for torts in the United States is diversified throughout the states.

---

209. *See id.* at 39, 40.

210. *See id.*

211. *See id.*

212. *See id.*

213. *See* Robbins v. Footer, 553 F.2d 123 (D.C. Cir. 1977).

214. *See* Caryl, *supra* note 68, at 198 for a discussion of the cases involving the national standard of care.

215. Babcock v. Jackson, 191 N.E.2d 279, 282 (N.Y. 1963).

216. *Id.*

217. *Id.* at 283.

218. *See* J.P. McEvoy, *Choice of Law in Torts: The New Rule*, 44 U.N.B. L.J. 211, 215 (1995).

There is not one definite rule in the United States.[219] The U.S. approach is confusing when the medical malpractice occurs in the United States. This confusion is compounded when the patient or consulting physician is located in another country. It is useful to examine the choice of law rules of various countries to get a better understanding of how international telemedicine malpractice cases might be handled.

4. *Lex Loci Delicti*

The lex loci delicti approach applies the law of the place in which the tort occurred.[220] Internationally the trend is toward adopting the lex loci delicti approach.[221] Australia, for example, has adopted the lex loci delicti as the general choice of law rule for torts.[222] In the context of telemedicine, the place of consultation would have to be determined in order to apply Australia's choice of law rule. If a physician in the United States was treating a patient in Australia via telemedicine, conflict would ensue regarding what law should be applied. Switzerland has also adopted the lex loci delicti as the choice of law rule for torts.[223] Furthermore, Great Britain is in the process of adopting the lex loci delecti rule.[224] In Great Britain the lex loci delicti rule would be subject to displacement if the law of another country was substantially more appropriate "in light of the significance of the factors connecting the tort with that country."[225]

5. *Lex Fori Approach*

Canada, on the other hand, uses a lex fori approach to the choice of law for torts.[226] The lex fori approach adopts the law of the jurisdiction where an action is brought.[227] However, scholars and lawmakers in Canada criticize this approach.[228] A lex loci delicti approach has been approved for

---

219. *See id.* at 216. Thirteen states follow the rule of lex delicti, twenty-two states follow the Restatement of Law-Conflict of Law (2d) approach, one state uses the "center of gravity" or "significant contacts" approach, two states use an interest analysis approach, five states use a policy considerations approach, two states use the lex fori approach, and five states use a combination of various approaches. *See id.*

220. *See id.* at 211.

221. *See id.* at 226.

222. *See id.* at 225.

223. *See id.* at 226. The Swiss Statute on Private International Law, enacted in 1989, provides for the lex loci delicti to be used in a tort case. *See id.*

224. *See id.*

225. *Id.*

226. *See id.* at 221. In Phillips v. Eyre, LR 6OB 1, the court adopted a lex fori approach. *See id. See generally* Daniel P. Schafer, *Canada's Approach to Jurisdiction Over Cybertorts: Braintech v. Kostiuk*, 23 FORDHAM INT'L L.J. 1186 (2000).

227. *See* GILBERT LAW SUMMARIES DICTIONARY 186 (1st ed. 1997).

228. *See* McEvoy, *supra* note 218, at 221-22.

inter-province torts with an exception for international torts.[229] International torts would be viewed in light of the comparative interests of the countries involved.[230]

IV. CONCLUSION & PROPOSAL

The United States should implement a national telemedicine system. With a national telemedicine system organized by the National Institute of Health (NIH), physicians trained and certified in telemedicine would be registered with the federal government.[231] This federal license would be made available to physicians much as their traditional licensure requirements are made available. Classes could be offered at medical school and residency programs in specialties that support telemedical applications and could offer further training in telemedicine as it applies to a particular specialty. Furthermore, Continuing Medical Education (CME) classes, which are a requirement for physicians,[232] can be used to educate physicians on the current technologies available. Eventually telemedicine could become as much a part of the medical school curriculum as gross anatomy and physiology.

A national licensure program of this type would be easy to implement because the licensure of medicine is becoming increasingly federalized. Furthermore, individual states would not necessarily have to stop regulating and licensing health care providers who practice in the state. By allowing only the federal government to regulate telemedicine, a greater number of people could be helped, and patients within the state would still have their health care closely monitored. States could continue regulating the practice of medicine by practitioners physically within state boundaries.[233]

The implementation of a national telemedicine system is also cost effective. Medicare currently offers reimbursement "for several different types of remote services including teleradiology" and various other types of telemedicine.[234] This allows Health Maintenance Organizations (HMOs) to invest in technologies that promote telemedicine because they know that they will be reimbursed. Since HMO enrollment has nearly doubled between

229. *See id.* at 224.

230. *See id.*

231. By a national testing procedure similar to the one already in place for medical students and specialists.

232. *See* Interview with Dr. Gulick, *supra* note 27.

233. No opinion is offered as to whether a physician consulting via telemedicine is "physically transmitted" to the state in which he is consulting with the patient.

234. Poropatich, *supra* note 42.

1986 and 1994,[235] telemedicine would allow access to quality health care for millions of HMO subscribers.

An international telemedicine program is essential for the improvement of world health. A national telemedicine system in the United States would be beneficial to an international telemedicine program. By simplifying the telemedicine program in the United States, an international telemedicine program can be more easily implemented. The World Health Organization (WHO) is in the position to regulate and monitor all international telemedicine programs. By uniting all international telemedicine programs, the best health care in the world would be made available by computer to areas of the world that desperately need better access to quality health care.

There are several reasons why the United States should initiate the development of a global telemedicine program. The United States, especially the United States military, is the world leader in developing telemedicine technology. By implementing technologies developed in the United States on an international scale, the United States can be a world-leader in the provision of health care. In addition, exporting U.S. medical expertise can potentially fund the U.S. domestic health care system.[236]

In terms of telemedicine across international borders, precautions need to be taken so that conflicts can be resolved. When engaging in an international telemedical consultation, the physicians or hospitals should determine ahead of time what law will be applied in the event of malpractice or incident. Another alternative is for the WHO to act as the ultimate arbiter of international telemedical conflicts. The WHO can also control licensure and regulation of international telemedicine programs. By licensing and regulating international telemedicine, the WHO can ensure that telemedicine is being practiced safely and effectively. An international telemedicine license would be available to physicians who wished to engage in the practice of telemedicine across international borders. Furthermore, conflict of law issues and jurisdictional problems could be resolved by having countries interested in joining the global telemedicine program agree to resolve problems in accord with standards developed by the WHO. Medical malpractice issues can also be resolved in this manner. By establishing an international telemedicine program, millions of people who are lacking sufficient health care can be helped by experts all over the world. The time

235. Alan Hillman & Kimberly Ripley, *Physician Financial Incentives in Managed Care: Their Impact on Healthcare for the Elderly*, THE AMERICAN JOURNAL OF MANAGED CARE, Vol. 1, No. 2 (1996).

236. *See* Huie, *supra* note 1.

for the development of a global hospital is truly at hand, and the United States should be the one to develop and implement it.

*P. Greg Gulick**

* J.D./M.H.A. with Concentration in Health Law, Candidate, 2001, Indiana University School of Law - Indianapolis; B.S., 1998, Michigan State University. I would like to thank my wife, Carola, and my family for their support. I would also like to thank the editorial staff of the Indiana International & Comparative Law Review and my editors for their tireless efforts.