

**SPACE-AGE MEDICINE, STONE-AGE  
GOVERNMENT: HOW MEDICARE  
REIMBURSEMENT OF TELEMEDICINE  
SERVICES IS DEPRIVING THE ELDERLY OF  
QUALITY MEDICAL TREATMENT**

*Kristen R. Jakobsen*

*We have the technology. What is needed is government financial commitment, so argues Kristen Jakobsen in the following discussion of “telemedicine.” The term refers to the delivery of health care services by means of modern telecommunications technology. According to Ms. Jakobsen, the telephone, the fax machine, the Internet, and interactive audio-visual transmissions hold the key to making medical care more accessible and less expensive. Potential beneficiaries include vast populations of elderly in rural areas, who tend to be remote from upscale health care facilities and in need of the wherewithal to reach them. Standing in the way, in Ms. Jakobsen’s view, is a government which lacks the boldness and the vision to lay an adequate fiscal foundation for this promising possibility.*

**I. Introduction**

*January, Kansas.—Imagine you live in a rural area and you suddenly become ill. Your spouse drives you to the local hospital, which is twenty miles from your home. Your family doctor or the local*

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*emergency room physician is ill equipped to deal with your health problem and refers you to a specialist for your condition. However, this specialist practices at an urban hospital that is more than one hundred miles from where you are. To make matters worse, you are an elderly person who cannot easily make this trip, especially given the poor weather conditions in the Plains states.*

This is not an uncommon situation faced by the rural elderly population in America. Indeed, the magnitude of this problem of inadequate medical care is increasing as the population of the rural elderly grows<sup>1</sup> and more rural hospitals are forced to close or limit services.<sup>2</sup> One study estimated that there are more than 8.2 million rural elderly Americans.<sup>3</sup> Under a more realistic definition, this estimate grows to encompass more than 10.5 million persons.<sup>4</sup> In twenty-one states, the majority of elderly residents live in rural areas.<sup>5</sup>

At the heart of the matter is a deficiency of adequate medical services available to elderly Americans in rural areas. Access to quality health care for the rural elderly is impeded by a shortage of health care providers,<sup>6</sup> inadequate facilities,<sup>7</sup> and a lack of transportation<sup>8</sup> to travel what is often an inordinate distance to receive health care services.<sup>9</sup> The problems caused by inadequate and distant health care services are further compounded by both poorer health<sup>10</sup> and a higher

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1. See *Profile of the Rural U.S.*, AGING, June 22, 1993, at 10.

2. See Lori Johnston, *Hospital Bill OK'd by Georgia Senate; Lt. Gov. Taylor's Measure Would Aid Rural Counties*, CHATTANOOGA TIMES & FREE PRESS, Mar. 7, 1999, at B3.

3. See C. Neil Bull, *Aging in Rural Communities*, NAT'L F., Spring 1998, at 38. Although there is no standard definition of "rural," this estimate includes persons living outside of a metropolitan area during the 1990 census. See *id.* "Elderly" denotes persons over 65 years of age. See *id.*

4. See *id.* This expanded definition of rural elderly includes persons over 60 years of age living outside of areas with 2,500 inhabitants. See *id.*

5. See *Profile of the Rural U.S.*, *supra* note 1, at 10.

6. See Arch G. Mainous & Francis P. Kohrs, *A Comparison of Health Status Between Rural and Urban Adults*, 20 J. COMMUNITY HEALTH 423, 423 (1995).

7. See FEDERAL COMMUNICATIONS COMM'N TELECOMM. & HEALTH CARE ADVISORY COMM., FINDINGS & RECOMMENDATIONS (1996) [hereinafter TELECOMM. & HEALTH CARE ADVISORY COMM.], cited in Christopher Guttman-McCabe, Comment, *Telemedicine's Imperiled Future? Funding, Reimbursement, Licensing and Privacy Hurdles Face a Developing Technology*, 14 J. CONTEMP. H. L. & POL'Y 161, 162 (1997).

8. See Mainous & Kohrs, *supra* note 6; see also C. Neil Bull & Share DeCrox Bane, *Growing Old in Rural America: New Approach Needed in Rural Health Care*, AGING, June 22, 1993, at 18.

9. See TELECOMM. & HEALTH CARE ADVISORY COMM., *supra* note 7.

10. See Mainous & Kohrs, *supra* note 6. Twenty-eight percent of adults in rural areas describe their health status as fair or poor, compared with 21% of urban adults. See Alan Bavley, *Eldest of the Elderly: Rural Areas Have Aging Population and*

occurrence of poverty<sup>11</sup> in the rural elderly as compared to their urban counterparts.

*Now imagine standing in front of a video camera at the local hospital where you are accompanied by your family physician. Through a telecommunications hookup, you are connected to the specialist's office via telemedicine. The specialist, at a monitor in his own hospital, and the local physician work together to assess your symptoms. The specialist studies the results of examinations performed by your local physician. Local technicians perform x-rays and other diagnostic tests, and the results are electronically transmitted to the specialist. The doctors reach a diagnosis, and the specialist instructs your local physician regarding your treatment. You have not traveled any farther than your local hospital, yet you have received excellent care.*

Although several solutions for this problem of inadequate health care for the rural elderly have been proposed,<sup>12</sup> it seems as though telemedicine may be one of the more promising answers. A person need only travel to a local hospital and receive treatment from a team that includes a local care provider as well as a specialist physician providing expertise from many miles away via modern communication technology. This would solve both the issues of lack of transportation and health care provider shortages directly, as only local travel

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*Limited Health Care Resources*, KANSAS CITY STAR, July 26, 1998, at K6. Additionally, 47% of rural adults have diagnosed chronic health conditions, versus 39% of urban adults. *See id.* But see William R. Gillanders & Terry F. Buss, *Access to Medical Care Among the Elderly in Rural Northeastern Ohio*, J. FAMILY PRAC., Oct. 1993, at 349 (suggesting that poorer health among rural elderly is perceptual rather than actual).

11. *See* Diane K. McLaughlin & Leif Jensen, *Becoming Poor: The Experiences of Elders*, RURAL SOC., Summer 1995, at 202; *see also* HEALTH IN RURAL NORTH AMERICA: THE GEOGRAPHY OF HEALTH CARE SERVICES AND DELIVERY 11 (Wilbert M. Gesler & Thomas C. Ricketts eds., 1992) (noting that 85 of the 86 counties that persistently report incomes below the poverty line in the United States are in rural areas).

12. One such program is embodied in the National Health Service Corps Revitalization Amendments of 1990, Pub. L. No. 101-597, 104 Stat. 3013 (codified as amended in scattered sections of 42 U.S.C.). In order to recruit physicians to practice in rural and underserved urban areas, the program offers scholarships and loan repayment plans that are prorated for each year of practice in these areas. *See* 42 U.S.C. § 254 (1995). Additionally, the National Health Service Corps pays for transportation costs as well as continuing medical education (CME). *See* 42 U.S.C. § 254d(c); Daniel McCarthy, Note & Comment, *The Virtual Health Economy: Telemedicine and the Supply of Primary Care Physicians in Rural America*, 21 AM. J.L. & MED. 111, 122 (1995). However, studies have shown that this program has resulted in little to no increase in the number of physicians practicing in rural areas. *See* U.S. CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT, OTA-H-434, HEALTH CARE IN RURAL AMERICA 293 (U.S. Government Printing Office 1990); *see also* McCarthy, *supra*, at 122.

is involved and local care is supplemented with care from a remote physician. Presently inadequate facilities would also benefit financially because fewer of their patients would flee to urban hospitals. The resulting additional income could then be used to enhance the outdated facilities. Some of the reasons for health care provider shortages and inadequacies are thought to be high attrition and lack of continuing education due to isolation.<sup>13</sup> Telemedicine could indirectly address these issues by providing rural physicians with contacts in remote areas and convenient education programs.

Many issues need to be resolved before telemedicine will become an accepted method of health care delivery. Some of these obstacles are licensure, privacy protection, standard of care, and consent.<sup>14</sup> However, even if these hurdles are overcome, the health care community will not embrace telemedicine as a medium for medical service delivery until it is accepted for coverage under government reimbursement programs (Medicare and Medicaid) and private health insurance.<sup>15</sup>

Health care costs are a major concern in the United States, representing more than twelve percent of the Gross Domestic Product in 1996,<sup>16</sup> and are expected to increase to eighteen percent by the year 2000.<sup>17</sup> The coverage of Medicare, the largest health insurance program in the United States,<sup>18</sup> serves more than 36 million Americans<sup>19</sup> and funds more than one-sixth of all health care spending.<sup>20</sup> Most of the rural elderly rely on Medicare.<sup>21</sup> Some also rely on Medicare's

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13. See McCarthy, *supra* note 12, at 114.

14. See Kathleen M. Vyborny, *Legal and Political Issues Facing Telemedicine*, 5 ANN. HEALTH L. 61, 75 (1996).

15. See JOINT WORKING GROUP ON TELEMEDICINE, REPORT TO CONGRESS (Jan. 31, 1997) (visited Feb. 26, 1999) < <http://www.ntia.doc.gov/reports/telemed/index.htm> > [hereinafter TELEMEDICINE REPORT TO CONGRESS].

16. See Christopher Guttman-McCabe, *Telemedicine's Imperiled Future? Funding, Reimbursement, Licensing and Privacy Hurdles Face a Developing Technology*, 14 J. CONTEMP. HEALTH L. & POL'Y 161, 184 (1997).

17. See *id.*

18. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

19. See *id.*

20. See Vyborny, *supra* note 14, at 93 (citing PROSPECTIVE PAYMENT ASSESSMENT COMM'N, MEDICARE AND THE AMERICAN HEALTH CARE SYSTEM, REPORT TO CONGRESS, MEDICARE AND MEDICAID GUIDE (CCH) No. 751, pt. 2, at 15 (June 11, 1993)).

21. See Susan Ettner, et al., *Differences Between Generalists and Mental Health Specialists in the Psychiatric Treatment of Medicare Beneficiaries*, HEALTH SERVICES RESEARCH, Aug. 1, 1999, available in 1999 WL 12475433, at \*6 (stating that Medicare provides insurance for 95% of the elderly).

state-administered counterpart, Medicaid, to cover health care expenses.<sup>22</sup>

Medicare covers only those health care procedures deemed to be “reasonable and necessary for the diagnosis or treatment of illness or injury.”<sup>23</sup> In recent years, the government has authorized a few demonstration projects to study the reasonableness, efficacy, and utility of telemedicine.<sup>24</sup> Since January 1999, telemedicine services have been reimbursed by Medicare nationwide, but only under a limited set of prescribed circumstances.<sup>25</sup> However, experts in the field claim that the limited situations under which coverage exists will not provide a fair basis for a full-scale analysis of the efficacy of telemedicine services.<sup>26</sup>

This note proposes expanding the narrowly defined situations in which telemedicine services are reimbursed by Medicare in order to realize the benefits of this type of health care delivery. Section II of this note provides a brief description of telemedicine technology as well as a short review of Medicare coverage. Section III reviews existing federal and state legislation and programs regarding telemedicine reimbursement, analyzing their effectiveness and exploring their limitations. Finally, this note demonstrates how expanding the coverage will provide quality health care to the rural elderly while maximizing the benefit-to-cost ratio resulting from the adoption of this technology.

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22. See Martha Perryman-Starkey, *Retiree Benefits Revisited*, HEALTH CARE MGMT. REV., Jan. 1, 1998, available in 1998 WL 10910705, at \*10 (stating that in 1987, 8.2% of elderly receiving Medicare used Medicaid as supplemental insurance).

23. 42 U.S.C. § 1395y(a)(1)(A) (1994).

24. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15. Medicare is helping to finance several studies to determine the medical quality and cost effectiveness of telemedicine. See *id.* The Health Care Financing Administration (HCFA) has awarded \$9 million for related research and demonstrations. See *id.*

25. See The Balanced Budget Act of 1997, Pub. L. No. 105-33, § 4206, 111 Stat. 251, 377.

26. See Prepared Statement of Jay H. Sanders, M.D., F.A.C.P., President & CEO of the Telemedicine Group; Immediate Past President of The Am. Telemedicine Ass'n Before the House Comm. on Commerce Subcomm. on Health and the Env't (June 5, 1998), available in LEXIS, News Group, All File [hereinafter *Sanders Statement*].

## II. Background

### A. Telemedicine

“Telemedicine” refers to the use of electronic communication and information technologies to provide or support clinical care at a distance.<sup>27</sup> The term “telehealth” is often used interchangeably, but specifically refers to a diverse group of health-related activities, such as continuing education for medical professionals, public health activities, research, and administration of health services.<sup>28</sup> Telemedicine is simply a mode of health care delivery. The only difference “between ‘traditional’ health care and telemedicine is that some technology sits in the middle during a teleconsultation.”<sup>29</sup>

Although telemedicine may sound like science fiction, it is not a new idea. As early as the 1950’s, closed-circuit television systems made possible long-distance therapy sessions for psychiatric patients.<sup>30</sup> Nevertheless, telemedicine has had limited application<sup>31</sup> until recent technological developments have once again thrust it to the forefront of possibilities.<sup>32</sup> Beyond advancements in transmission and reception technology, there have also been improvements in the networking sciences—including microwave, satellite, and fiber-optic lines.<sup>33</sup> Finally, the growth and acceptance of the Internet and electronic mail (e-mail) have further expanded telemedicine’s possibilities.<sup>34</sup>

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27. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

28. See *id.*

29. Bill Siwicki, *Telemedicine Providers Buck Conventional Wisdom and Get Reimbursed for a Variety of Services*, Aug. 19, 1997, available in 1997 WL 8747955 at \*10–11 (quoting Thelma McClosky Armstrong, Director of the Eastern Montana Telemedicine Network).

30. See William J. Crump et al., *Is Telemedicine Ready for Prime Time?*, PATIENT CARE, Feb. 15, 1997, at 64.

31. Telemedicine applications have been limited to activities where either physical or practical distance from normal medical channels is unavoidable, such as space exploration, ocean going vessels, Native American reservations, and prisons. See Vyborny, *supra* note 14, at 62.

32. See *id.*

33. See *id.*

34. See Douglas D. Bradham, *The Information Superhighway and Telemedicine: Applications, Status and Issues*, 30 WAKE FOREST L. REV. 145 (1995); see also Bill Siwicki, *You’ve Got Mail*, HEALTH DATA MGMT., Feb. 1999, available in LEXIS, Medical and Health Materials Database, at \*1 (describing an e-mail based telemedicine program involving dermatologists in California). President Clinton, in his 1997 State of the Union Address, stated that every hospital in America should be connected to the Internet so doctors could instantly share patient data with experts and specialists. See President William J. Clinton, *State of the Union Address*

Telemedicine services can range from the very simple to the very complex. At the most elementary level, telemedicine includes two physicians consulting via telephone.<sup>35</sup> An example of intermediate complexity would be sharing lab results or images via fax or Internet transmission, followed by consultation via telephone, fax, or e-mail.<sup>36</sup> This is known as “store-and-forward” telemedicine.<sup>37</sup> The image or lab result is stored digitally and then forwarded to the consulting physician. The interaction does not occur in real time. Real time, interactive systems, based on teleconferencing, can be used to simultaneously simulate a full remote examination of a patient by a specialist or consulting physician at another location.<sup>38</sup> In addition to two-way audio and visual transmission, the system can be configured to allow the transmission of electronic signals from special electronic stethoscopes as well as other diagnostic tools.<sup>39</sup>

The different tiers of telemedicine technology call for various levels of network capacity, or bandwidth. These bandwidth requirements vary from a regular telephone-line bandwidth to an expensive broadband infrastructure. To illustrate the difference in capacity between the infrastructures, consider a regular telephone line. A standard telephone line will transfer data at a rate of 112 Kbps, or 112,000 bits of information, per second.<sup>40</sup> This can be used for store-and-forward technology and telephone conversations only.<sup>41</sup> By comparison, an ISDN line, one type of data line with a greater bandwidth than normal telephone lines, transmits data at greater than 128 Kbps, and can be used for lower-quality video conferencing or for higher-quality and faster store-and-forward telemedicine.<sup>42</sup> ISDN lines are becoming more common in many areas of the United States.<sup>43</sup> T1 lines transmit at 1.5 Mbps, or 1500 Kbps, and can be used for real-time full-motion audio and video transmission.<sup>44</sup> Additionally, the use of T1 lines is

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*Before Congress, reprinted in 33 WEEKLY COMP. PRES. DOC. 136, 140 (Feb. 4, 1997).*

35. See McCarthy, *supra* note 12, at 113; see also Crump, *supra* note 30.

36. See McCarthy, *supra* note 12, at 113.

37. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

38. See McCarthy, *supra* note 12, at 114.

39. See *id.*

40. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

41. See *id.*

42. See *id.*

43. See *id.*

44. See *id.*

preferable for store-and-forward technology in high-volume areas due to the resulting vast increase in transmission speed.<sup>45</sup>

There are tradeoffs between the quality and cost of the equipment in terms of transmittal time. For example, to transmit four chest x-ray images (two new images and two old x-rays for comparison) over a 14.4 Kbps modem requires approximately seven hours; over a 28.8 Kbps (common modems today are at least this speed), approximately 3.5 hours; and over a costly ISDN line, only 40 minutes.<sup>46</sup> In comparison, these images would require only four transmittal minutes over a T1 line.<sup>47</sup> However, the installation charge for an ISDN line is approximately \$500, whereas a T1 line costs approximately \$1200.<sup>48</sup> The monthly fixed cost for these two lines is also quite different. ISDN lines cost about \$545 per month, while a T1 line costs somewhere between \$1000 and \$2000 per month.<sup>49</sup>

Currently teleradiology, the interpretation of x-rays by a specialist located at another site, is the most frequently used application of telemedicine.<sup>50</sup> This is largely attributed to the fact that Medicare, Medicaid, and most private insurers already permit reimbursement for this service.<sup>51</sup> Pathology, which often involves interpreting cells obtained during biopsies or other procedures, is the next most common specialty to engage in the use of this technology.<sup>52</sup> Cardiology and orthopedics follow radiology as the most common clinical applications of telemedicine.<sup>53</sup> Besides radiology, Medicare coverage reimburses for specialist interpretations of electronically transmitted electrocardiograms (ECGs), a cardiologic procedure, and electro-

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45. *See id.*

46. *See id.*

47. *See id.*

48. *See id.*

49. *See id.*

50. *See id.* In January 1997, the Office of Rural Health Policy released the first major national survey of rural telemedicine, noting in part that nearly 30% of 159 rural hospitals expected to be using telemedicine within a year's time, of whom 68% expected to offer only teleradiology. *See id.*

51. *See* Jim Grigsby et al., *Effects and Effectiveness of Telemedicine*, TELEMEDICINE SOURCEBOOK, Sept. 1, 1995, at 88; Natalie Schrimpf, *Telemedicine Crucial Link for Rural Providers*, CRAINS CLEVELAND BUS., June 3, 1996, at 2, *cited in* Christopher J. Caryl, Note, *Malpractice and Other Legal Issues Preventing the Development of Telemedicine*, 12 J.L. & HEALTH 173 nn. 41, 42 (1997/98).

52. *See* Laurel Traynowicz Hetherington, *High Tech Meets High Touch: Telemedicine's Contribution to Patient Wellness*, NURSING ADMIN. Q., Mar. 22, 1998, at 75.

53. *See* John Morrissey, *A Fuzzy Picture: So Far, High Start-Up Costs, Low Volume Make Teleconsults Pricey*, MODERN HEALTHCARE, Apr. 7, 1997, at 118.



encephalograms (EEGs), a neurologic procedure.<sup>54</sup> The interpretation of ECGs and EEGs, like the interpretation of x-rays, does not typically require face-to-face interaction. The agency that administers Medicare reimbursement appears more willing to pay for telemedicine in those cases where face-to-face interaction is not customary, even when the patient and the radiologist are at the same facility.

## B. Medicare and Medicaid

Medicare, part of the Social Security system, provides for acute medical care coverage of persons aged sixty-five years and older, regardless of health status or financial need.<sup>55</sup> Medicare is actually divided into two systems—Medicare Part A and Medicare Part B.<sup>56</sup> Medicare Part A, which is financed through payroll taxes, covers inpatient medical care received in a hospital or skilled nursing facility as well as care received at home through a hospice agency.<sup>57</sup> Any person sixty-five or older who is eligible for Social Security benefits is entitled to receive Medicare Part A at no charge.<sup>58</sup> Coverage under Medicare Part B, funded by the recipients' monthly premiums and general federal revenue proceeds,<sup>59</sup> includes a wide range of outpatient services, with an emphasis on doctors' fees.<sup>60</sup> Reimbursable telemedicine falls under Medicare Part B.<sup>61</sup> Generally, to be eligible for Medicare Part B, one must also be eligible for Medicare Part A.<sup>62</sup>

Medicaid is a federal program, acting through state agencies, designed to provide medical coverage for low-income individuals who are aged, blind, or disabled.<sup>63</sup> Although the states must operate within the broad parameters of the federal program,<sup>64</sup> each state establishes its own eligibility factors and covered treatments.<sup>65</sup> The state plans must satisfy the federal requirements of efficiency, economy,

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54. See Jennifer A. Gilbert, *Telemedicine's Advocate in Washington*, HEALTH DATA MGMT., Sept. 1998, available in LEXIS, Medical and Health Materials Database, at \*2.

55. See 42 U.S.C. § 1395c (1994).

56. See *id.* §§ 1395c to 1395w-4.

57. See *id.* § 1395d(a).

58. See *id.* § 1395c.

59. See *id.* § 1395j.

60. See *id.* § 1395k.

61. See *id.*

62. See *id.* § 1395o.

63. See *id.* § 1396.

64. See *id.* § 1396a.

65. See *id.*

and quality care,<sup>66</sup> and commonly consider factors such as less expensive alternative treatments, conformance with commonly accepted health care procedures, and the safety and effectiveness of the services when determining covered programs.<sup>67</sup>

### III. Analysis

#### A. Feasibility Studies and Demonstration Projects

Federal telemedicine demonstration projects began in 1992.<sup>68</sup> Since then, investigation of the feasibility of Medicare coverage of telemedicine has grown. At least thirteen federal agencies began telemedicine research during the 1994–95 fiscal year.<sup>69</sup> During that same year, Congress enacted the Rural Telemedicine Act of 1995<sup>70</sup> to continue, as well as expand, existing telemedicine pilot projects.<sup>71</sup> In response to the Telecommunications Act of 1996,<sup>72</sup> the Federal Communications Commission (FCC) convened a panel of professionals to study telemedicine.<sup>73</sup> The FCC's Advisory Committee on Telecommunications and Health Care released its findings and recommendations in October 1996.<sup>74</sup> The report recommended, in part, that the government should subsidize telecommunications suppliers to provide an incentive to develop rural telecommunications that would aid in establishing telemedicine networks.<sup>75</sup>

Also in October 1996, Medicare announced that it would begin a limited demonstration project to study telemedicine.<sup>76</sup> The payments, based on Medicare's waiver authority,<sup>77</sup> were limited to four states

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66. *See id.*

67. *See* TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

68. *See* Jane Norman, *Main News*, DES MOINES REG., Apr. 16, 1998, at 7.

69. *See* Leslie J. Berkowitz, *Is There a Doctor in the House? The Rise of Telemedicine*, COLO. LAW., June 25, 1996, at 19.

70. Rural Telemedicine Act of 1995, H.R. 851, 104th Cong.

71. *See id.* The Act "directs the Secretary of Health and Human Services to establish pilot projects to establish the effectiveness of the use of rural health care provider telemedicine networks to provide coverage of physician consultative service under part B of the Medicare program to individuals residing in rural areas." *Id.*

72. Communications Act of 1934, as amended by the Telecommunications Act of 1996, Pub. L. No. 104-104 (codified at 47 U.S.C. § 151).

73. *See* TELECOMM. & HEALTH CARE ADVISORY COMM., *supra* note 7.

74. *See id.*

75. *See id.*

76. *See* TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

77. States may request waivers to pay for services that are not otherwise covered, so long as the services are cost effective. *See Brief Summaries of Medicare &*

and did not include all facilities in those states that provided telemedicine.<sup>78</sup> The Health Insurance Portability and Accountability Act of 1996<sup>79</sup> required the Health Care Financing Administration (HCFA), the agency that administers Medicare, to report to Congress on Medicare reimbursement of telemedicine services before March 1, 1997, and to include a proposal for Medicare reimbursement of these services.<sup>80</sup> However, data from the demonstration project was not included in this report due to the short time the demonstration project had been active.<sup>81</sup> Little additional data has been generated because few providers in the demonstration projects meet HCFA's preliminary reimbursement criteria.<sup>82</sup> These demonstration projects are ongoing and have recently been expanded to cover more facilities in the participating states.<sup>83</sup> Still, the number of consultations in the demonstration projects has proven disappointing—partially due to HCFA's reimbursement criteria and partially due to reporting anomalies from participating sites.<sup>84</sup>

From the most recently available data, the estimated maximum reimbursement level for existing telemedicine services in 1997 was only \$4.2 million.<sup>85</sup> Because of the limited eligibility criteria, even under an ideal full reimbursement scheme, extrapolated estimates indicate that less than \$10 million will be spent in 1999.<sup>86</sup>

The passage of legislation calling for Medicare reimbursement of telemedicine required a number of hurdles to be overcome. HCFA objected to a congressional mandate for reimbursement as a usurpation of its position as guardian of the Medicare trust fund.<sup>87</sup> The initial cost estimate to implement coverage of telemedicine services was just

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*Medicaid* (visited Feb. 28, 1999) <<http://www.hcfa.gov/medicare/ormedmed.htm>>.

78. The four states that are participating are Georgia, Iowa, North Carolina, and West Virginia. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

79. Pub. L. No. 104-191, 110 Stat. 1936 (Supp. 1996).

80. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

81. See *id.*

82. See *Large Telemedicine Reimbursement Payments Unlikely in 1998*, BUSINESS WIRE, June 23, 1998, available in LEXIS, NEWS database.

83. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

84. See *id.*

85. See *id.*

86. See *id.*

87. See Tom Morris et al., *Incremental Steps Lead to Reimbursement Success*, TELEHEALTH MAGAZINE (visited Feb. 26, 1999) <<http://www.telehealthmag.com/topics.reim1.htm>>.

over \$1 billion for five years, a figure too high to even be considered.<sup>88</sup> Subsequently, more modest proposals proved ineffective or inequitable.<sup>89</sup> Finally, Senator Kent Conrad (D-ND),<sup>90</sup> a longtime telemedicine advocate and bill sponsor, recommended reimbursement for rural counties that are medically underserved.<sup>91</sup> Under his proposal, an estimated \$170 million would be required for implementation.<sup>92</sup> After a typical give-and-take exchange between the House and the Senate, the current legislation was crafted.<sup>93</sup>

### **B. Current Legislation for the Coverage of Telemedicine by Medicare**

Section 4206 of the Balanced Budget Act of 1997 required that HCFA begin Medicare reimbursement of telemedicine services in rural underserved areas starting January 1, 1999.<sup>94</sup> In June 1998, HCFA promulgated a proposed rule regarding the regulation of Medicare

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88. *See id.* The Congressional Budget Office (CBO) estimated the cost based on figures provided by the Office of the Actuary at HCFA. *See id.* This estimate represented a worst-case scenario, visualizing rapid expansion and increased utilization. *See id.*

89. *See id.* Among the ineffective were suggestions to expand reimbursement of demonstration projects, which would not lead to formulating a policy for HCFA reimbursement, as well as proposals to only reimburse federally funded projects, such as those supported by the Office of Rural Health Policy and the Rural Utilities Service. *See id.* Proposals to reimburse only certain projects seemed inequitable, as did the suggestion to reimburse only for certain medical specialties, such as dermatology. *See id.* Also, nonphysician providers were excluded under the proposal to reimburse by specialty. *See id.*

90. Senator Conrad became interested in the potential of telemedicine to help with health care outreach to the rural areas of his home state, North Dakota. *See id.* In 1992, he founded the Ad Hoc Steering Committee on Telehealth. *See id.* He introduced the Comprehensive Telehealth Act late in the 1996 legislative season, which was not passed, but generated interest. *See id.* Conrad reintroduced the bill and sought sponsors in 1997, leading up to the current legislation. *See id.*

91. *See id.*

92. *See id.*

93. In helping the legislation through the Senate Finance Committee, Senator Conrad gained the support of a number of Republicans from largely rural states by proposing that some of the surplus that would be realized by reducing the Medicare Savings Account Demonstration would be used to expand telemedicine reimbursement. *See id.* With this surplus \$400 million, the Senate proposal was amended to include rural counties that were not near metropolitan areas, even if these counties could not be designated Health Professional Shortage Areas (HPSAs). *See id.* However, when the House took up the cause, this expansion became an area of leverage that the Senate could use in retreating. *See id.* In withdrawing back to the original proposal to reimburse only in HPSAs, approval was won in the House. *See id.*

94. *See* Balanced Budget Act of 1997, Pub. L. No. 105-33, § 4206, 111 Stat. 251, 377.

coverage of telemedicine.<sup>95</sup> The proposed rule includes the following provisions:

1. Only interactive modes will be reimbursed.
2. Reimbursement will occur in all rural Health Professional Shortage Areas (HPSAs).
3. Reimbursement may occur for any Medicare beneficiary, regardless of whether or not he is a resident of an HPSA, but referring provider and teleconsultation must originate from a rural HPSA.
4. Physicians that provide teleconsultations will be reimbursed at 75% of in-person reimbursement rates.
5. Reimbursement is contingent on the type of provider that presents the patient.<sup>96</sup>

The rule, adopted on November 2, 1998, essentially contains the above proposed provisions with minor alterations.<sup>97</sup> For example, the beneficiary must reside in a county designated as an HPSA.<sup>98</sup> Payment is to be shared between the referring and the consulting physicians and may not exceed the fee schedule amount that would be paid to the consulting practitioner.<sup>99</sup> The payment must not reimburse for any telephone charges or facility fees, and the rules prohibit the provider from billing the beneficiary for these costs.<sup>100</sup> Reimbursement is provided for care offered by physicians, as well as service provided by physician assistants, nurse practitioners, and other specialized health professionals.<sup>101</sup>

The remarks made during the notice-and-comment period reflect many of the concerns addressed in this note.<sup>102</sup> Some comments indicated disappointment that only rural HPSAs were to be included—in part because of discrimination issues and in part because the distance the patient must travel to visit the specialist, not the distance to the local physician, is considered in the HPSA calculation.<sup>103</sup> Additionally, a number of comments addressed the issue of store-and-forward telemedicine, to which HCFA responded that it interpreted teleconsultation to be interactive, prohibiting store-and-forward technol-

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95. See 63 Fed. Reg. 33,882 (1998).

96. *Id.*

97. See 63 Fed. Reg. 58,814, 58,879–886 (1998).

98. See *id.*

99. See *id.* at 58,879.

100. See *id.* at 58,881.

101. See *id.* at 58,886.

102. See *id.*

103. See *id.* at 58,880.

ogy.<sup>104</sup> Also, HCFA pointed to the types of consultations currently available under Medicare as generally limiting the use of store-and-forward telemedicine.<sup>105</sup> This reasoning was again the reply to comments regarding the use of allied health care professionals to provide medical services. The final rule reflects only those health care professionals that are generally covered under Medicare.<sup>106</sup>

Congress directed the Secretary of Health and Human Services to designate HPSAs<sup>107</sup> using three indicators: (1) whether it is a “rational” area for the delivery of primary care; (2) whether primary medical care manpower in contiguous areas is overutilized, excessively distant, or otherwise inaccessible to the population under consideration; and (3) the primary care provider-to-client ratio.<sup>108</sup> HPSAs are presently defined as “areas with a primary care provider-to-client ratio of 1 to 3,500, or worse.”<sup>109</sup> HPSAs are more prevalent in rural areas, where twenty-nine percent of the population resides in an HPSA, compared with nine percent of urban residents.<sup>110</sup> However, there are only 745 rural HPSAs across the country.<sup>111</sup>

In paying only for interactive consultations, HCFA has rejected paying for store-and-forward telemedicine beyond the services it already covers, including teleradiology and specialist interpretations of ECGs and EEGs. HCFA has also eliminated the possibility for other high-technology solutions to health care shortages in rural areas, including Internet-based medicine.<sup>112</sup>

On March 23, 1999, the bipartisan House Rural Health Care Coalition,<sup>113</sup> led by Jim Nussle (R-IA) and Mike McIntyre (D-NC), announced the “Triple A Rural Health Improvement Act” that would

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104. *See id.*

105. *See id.* at 58,882.

106. *See id.*

107. *See* 42 U.S.C. § 254e (1995).

108. *See id.* § 254e(a)(1).

109. AMERICAN NURSES ASS'N, RURAL/FRONTIER NURSING: THE CHALLENGE TO GROW 12 (1996), *quoted in* Caryl, *supra* note 51, at 175 n.13.

110. *See* McCarthy, *supra* note 12, at 116.

111. *See* Morris, *supra* note 87.

112. *See* HCFA Limits Telemedicine Payments, HEALTH DATA NETWORK NEWS, July 20, 1998, *available in* LEXIS, News Group File, at \*1.

113. The House Rural Health Care Coalition is a 146-member bipartisan alliance that regularly sees its goals enacted into law. *See* Rural Health: Bipartisan Coalition Unveils Multi-Part Bill, HEALTH LINE, Mar. 24, 1999, *available in* WESTLAW, NPPLUS Database, at \*1; Rural House Members Unveil Package of Health Reforms, NAT'L J. CONG. DAILY, Mar. 23, 1999, *available in* 1999 WL 5951017, at \*1.

alter the impact of the 1997 Balanced Budget Act on rural areas.<sup>114</sup> Among other things, this bill increases funding for telemedicine and addresses persisting barriers such as licensure and HCFA reimbursement.<sup>115</sup> The bill, which was formally introduced on March 25, 1999, is estimated to cost a total of \$1.5 billion to \$3 billion over five years,<sup>116</sup> however, Representative McIntyre stresses that there are a number of measures on the table that will offset this expenditure.<sup>117</sup> As of the writing of this note, this bill remains in committee.

In addition to the aforementioned "Triple A Rural Health Improvement Act," there are two bills pending in the Senate that also address reimbursement for telemedicine services, as well as legislation to overcome other obstacles to the realization of telemedicine as a viable resource. These bills, which also are currently in committee, are S. 770,<sup>118</sup> introduced by Senator Conrad on April 13, 1999, and S. 980,<sup>119</sup> introduced by Senator Max Baucus on May 6, 1999.

### C. Related Federal Legislation

Rural communities are the most likely to benefit from the application of telemedicine services but also are among the least equipped to adopt this new technology. Long distance phone lines, the most cost-effective means to transmit telemedicine data,<sup>120</sup> either are not readily available in rural areas or exist in a severely deteriorated condition.<sup>121</sup> Congress, however, has taken steps to promote the expansion of the telecommunication networks necessary for the success of telemedicine in rural areas. The Telecommunications Act of 1996 required the FCC to assure that health care providers in rural areas have access to necessary telecommunication services at rates comparable to those in urban areas.<sup>122</sup> This bold step forward was extended in the

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114. See *Rural House Members Unveil Package of Health Reforms*, *supra* note 113, at \*2.

115. See *id.*

116. See *id.* at \*2-\*3.

117. See *id.* at \*3. McIntyre specifically pointed to the proposed change in Medicare's end-stage kidney disease program, estimated to save \$625 million alone. See *id.*

118. S. 770, 106th Cong. (1999).

119. S. 980, 106th Cong. (1999).

120. See *Telemedicine: Significant Barriers Remain in Rural Areas*, *Symposium Hears*, HEALTH CARE DAILY (BNA), Oct. 23, 1993, available in WESTLAW BNA-HCD Database, at \*28.

121. See *id.* at \*26.

122. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

Telecommunications Act of 1997,<sup>123</sup> and subsequent FCC orders,<sup>124</sup> that set aside \$400 million in telecommunications discount support for rural health care facilities.<sup>125</sup> Beginning in May 1998, funding for telecommunication "parity" became available through the Universal Service program, under which eligible rural telemedicine service providers can offset costs associated with telephone line charges.<sup>126</sup>

#### D. Medicaid Legislation

Although not required to do so, Medicaid programs in most states look to treatments covered by Medicare to determine their own range of coverage. Medicaid covers telemedicine expenses in only eleven states.<sup>127</sup> However, in early 1999, more states introduced legislation proposing Medicaid coverage of telemedicine.<sup>128</sup>

Exact details of coverage may vary from state to state, but most Medicaid agencies that recognize telemedicine have similar policies. Most states reimburse for physician consultations utilizing interactive video conferencing.<sup>129</sup> Payment is usually on a fee-for-service basis, providing the same type of reimbursement as that for covered services in conventional, face-to-face interactions.<sup>130</sup> Reimbursement is often dispensed at both the providing and the receiving sites.<sup>131</sup> In addition, some states cover mental health services and medical consultations,<sup>132</sup> and Kansas, in particular, covers home health care in certain situations.<sup>133</sup>

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123. See *Sanders Statement*, *supra* note 26.

124. See *id.*

125. See *id.*

126. See *Large Telemedicine Reimbursement Payments Unlikely in 1998*, BUSINESS WIRE, June 23, 1998, available in WESTLAW, ALLNEWSPLUS Database, at \*2.

127. See Health Care Fin. Admin., "List of Medicaid Telemedicine States," (visited Feb. 26, 1999) <<http://www.hcfa.gov/medicaid/telelist.htm>>. These states are Arkansas, California, Georgia, Illinois, Iowa, Kansas, Montana, North Dakota, South Dakota, Virginia, and West Virginia. See *id.*

128. Nebraska's bill has been introduced to the legislature and eliminates in-person contact between health care professionals and patients for Medicaid reimbursement. See *id.* Texas has two bills introduced in the House that expand Medicaid reimbursement by eliminating the restriction to rural services and by including consultations in conjunction with an Early and Periodic Screening, Diagnosis, and Treatment Program. See *id.*

129. See *id.*

130. See *id.*

131. See *id.*

132. See Bill Siwicki, *Progress on the Payment Issue*, Aug. 19, 1997, available in 1997 WL 8747955, at \*2, \*6.

133. See Health Care Fin. Admin., *supra* note 127.



### E. Other Reimbursement Issues

When determining what services should be covered in their plans, most private insurance carriers look to the Medicare program,<sup>134</sup> however, some insurance carriers have decided independently to cover telemedicine services.<sup>135</sup> Only one private insurance carrier, Blue Cross/Blue Shield of Kansas, is identified as having a formal policy to pay for telemedicine services across the board.<sup>136</sup> Other carriers, including Blue Cross/Blue Shield of Montana have paid for telemedicine services in limited situations.<sup>137</sup> Additionally, eight percent of telemedicine providers have successfully negotiated payments from private insurers.<sup>138</sup> Managed care facilities are also beginning to embrace telemedicine services.<sup>139</sup> Allina Health System, a system of nineteen hospitals based in Minnesota, maintains a state-wide telemedicine network.<sup>140</sup> Even though Allina has spent nearly \$3 million to start the network,<sup>141</sup> and spends nearly \$500,000 annually to maintain the network,<sup>142</sup> a 1997 cost/benefit analysis revealed that telemedicine was at least a break-even proposition.<sup>143</sup> Based on this analysis and the hope of continually expanding reimbursement, Allina has expanded its vast telemedicine network.<sup>144</sup> Denver-based Exemplar Healthcare has broadcast over 100 educational programs for physicians and nurses using this technology and estimates a savings of \$18,000 in travel costs alone.<sup>145</sup>

Some states are beginning to mandate that private insurers who solicit customers in their state provide some level of coverage for telemedicine services. In 1996, California passed a law requiring pri-

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134. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15. Telemedicine has been reimbursed by Blue Cross/Blue Shield of Kansas for over five years. See also Siwicki, *supra* note 132.

135. See Siwicki, *supra* note 132, at \*6.

136. See *id.* at \*4.

137. See *id.* at \*2.

138. See TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

139. See *id.* Examples of this new partnership between telemedicine and managed care include Allina Health Systems in Minnesota and Methodist Hospital of Indianapolis. See *id.*

140. See Bill Siwicki, *Is There a Doctor in the House?*, HEALTH DATA MGMT., Mar. 1999.

141. See *id.*

142. See *id.*

143. See *id.*

144. See *id.*

145. See Roger Fillion, *Sharing the Health: Technology Expands Long-Distance Care*, DENVER POST, Apr. 5, 1999, at C-01.

vate managed care plans to establish policies for covering telemedicine services.<sup>146</sup> Louisiana has passed a law specifying certain reimbursement rates for physicians engaged in telemedicine,<sup>147</sup> which also includes language that prohibits insurance carriers from discriminating against telemedicine as a medium for delivery of health care services.<sup>148</sup> Oklahoma and Texas have also enacted nondiscrimination statutes,<sup>149</sup> which prohibit insurance companies from refusing to pay for medical care simply because it is delivered via telemedicine.<sup>150</sup>

Finally, states are encouraging the move to telemedicine in other resourceful ways. For example, the Georgia legislature recently passed a bill creating a one-time grant for hospitals in rural areas.<sup>151</sup> Implementing telemedicine is one approved use of these grants.<sup>152</sup> Hospitals, medical schools, and private insurers have also used state grant funds to test the technology.<sup>153</sup>

#### F. Cost/Benefit Analysis

Telemedicine has the potential to solve several issues that lead to inadequate health care among the rural elderly, and it has already been credited with saving money and lives.<sup>154</sup> Telemedicine can be used as a tool to alleviate the shortage of rural physicians, lowering rural physician attrition by addressing the issues of isolation and continuing education using telemedicine infrastructures for contact with other physicians and medical education providers.<sup>155</sup> It also helps overcome the rural physician shortage by allowing primary patient care to be provided by a midlevel practitioner, such as a nurse practi-

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146. *See id.*

147. *See id.*

148. *See id.*

149. *See* Leslie A. Sandberg, *Telemedicine Continues to Wrestle Wicked Problems: Reimbursement, Licensure, and Bandwidth Rules or Is It Compliance?*, HEALTH MGMT. TECH., Feb. 1, 1999, at 134.

150. *See id.*

151. *See* Johnston, *supra* note 2, at B3. Eighty-seven hospitals are eligible under the criteria that the hospital is located in a county of fewer than 35,000 residents. *See id.*

152. *See id.* The grants may also be used to modernize facilities and buy new equipment. *See id.*

153. *See* Morris, *supra* note 87.

154. *See* Robin E. Margolis, *Law and Policy Barriers Hamper Growth of Telemedicine*, HEALTHSPAN, Nov. 1994, at 14; *see also* TELEMEDICINE REPORT TO CONGRESS, *supra* note 15 (noting that Montana officials estimate that telemedicine saved patients \$65,000 in travel time, lost wages, food and lodging in fiscal year 1995).

155. *See* McCarthy, *supra* note 12, at 127.

tioner or physician assistant, while being supervised remotely by a physician or specialist.<sup>156</sup> Most importantly, telemedicine enhances the level of care that the rural elderly can obtain without requiring access to long-distance transportation. Telemedicine can also cut costs and improve health by allowing patients to be diagnosed and treated earlier, when a disease is not very advanced, rather than when the disease progresses and becomes more expensive to treat.<sup>157</sup>

Not only do patients of rural hospitals benefit by having access to specialists and equipment that those hospitals cannot afford, but the rural hospitals have a better chance to remain economically viable if patients are able to remain in that hospital's beds, rather than fleeing to an urban hospital for treatment.<sup>158</sup> By one estimate, a small hospital could probably recover initial telemedicine costs in only three years if one patient per day goes to the small hospital instead of seeking treatment at a different facility.<sup>159</sup> However, because a great portion of the rural elderly relies on Medicare and Medicaid to pay for their medical expenses,<sup>160</sup> these systems *must* cover telemedicine before it is a widespread and viable option. Although the steps taken by Congress thus far are in the right direction, the full potential of telemedicine, both as a probable money-saving device as well as a solution to the health care crises faced by elderly patients, will not be realized until additional steps are taken.

In addition to the clear benefit of increased access to quality health care, the organizations that reimburse health care expenses are possibly the greatest beneficiaries of telemedicine.<sup>161</sup> Other countries, such as the United Kingdom, have been more willing to embrace this innovation and have already reported substantial savings due to the use of telemedicine.<sup>162</sup> Japan uses telemedicine to facilitate daily con-

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156. *See id.*

157. *See* Kathleen M. Vyborny, *supra* note 14, at 63.

158. *See* Stacey Swatek Huie, Note, *Facilitating Telemedicine: Reconciling National Access with State Licensing Laws*, 18 HASTINGS COMM. & ENT. L.J. 377, 384 (1996).

159. *See* McCarthy, *supra* note 12, at 120.

160. *See supra* text accompanying note 21.

161. *See* Ann K. Schooley, *Allowing FDA Regulation of Communications Software Used in Telemedicine: A Potentially Fatal Misdiagnosis?*, 50 FED. COM. L.J. 731, 732 (1998).

162. *See* Marilyn Larkin, *Telemedicine Finds Its Place in the Real World*, THE LANCET, Aug. 30, 1997, at 646 (citing a savings of US \$67,200 annually at a minor treatment center in London, where there are only nurses on-site who consult with physicians in Belfast). Canada has recently announced that \$50 million of its budget will be devoted to developing health innovations focused on rural and remote care, including telemedicine. *See Health Minister Says Budget a 'Turning Point'*

versations between homebound patients and health care providers.<sup>163</sup> The Memorial University, located in the Canadian province of Newfoundland, has utilized store-and-forward telemedicine in rural areas for many years.<sup>164</sup>

Norway, one leader in telemedicine,<sup>165</sup> introduced a fee schedule with full reimbursement by the national health care service in 1996.<sup>166</sup> Telemedicine has proven especially cost effective in the northern regions of Norway, where even the costly telemedicine equipment is far cheaper than flying.<sup>167</sup> Due to the success of the program, this health care delivery system has become part of Norway's welfare system, reimbursable despite geography or income.<sup>168</sup>

Private insurers here in the United States have reported that telemedicine visits can run as low as one-third of the cost of on-site care.<sup>169</sup> Commentators have estimated savings of approximately \$36 billion per year in health care costs due to telemedicine.<sup>170</sup> Much of these savings would be a result of lowered commuting and transportation costs, reduced duplication of tests and medical records, and increased efficiency of claim processing and administrative tasks.<sup>171</sup>

One important consideration in the cost/benefit analysis is the minimum level of interaction required and the cost of initial set-up. Higher bandwidth infrastructure is unavailable or very expensive to implement in rural areas.<sup>172</sup> Thus, as many rural communities lack the

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for *Canadian Health Care*, CANADIAN CORP. NEWSWIRE, Feb. 17, 1999, available in LEXIS, News Group File, at \*1; see also *Good Health and Quality Care: Moving Forward Together* (visited Feb. 25, 1999) <<http://www.hc-sc.gc.ca/budget>>.

163. See Nancy Brown, *Telemedicine Is Coming of Age* (visited Feb. 3, 1999) <<http://www.atsp.org/resources/telemedofage.htm>>.

164. See *id.*

165. See Inger Sethov, *The Wonders of Telemedicine* (visited Feb. 28, 1999) <[http://www.techserver.com/newsroom/ntn/info/111097/info10\\_14458\\_noframes.html](http://www.techserver.com/newsroom/ntn/info/111097/info10_14458_noframes.html)>. In the 1920s, a hospital on the western coast of the country initiated a program where sailors at sea could consult physicians via radio. See *id.* Telemedicine services included not only remote diagnosis and treatment suggestions, but also surgical operations guided by physicians via radio. See *id.*

166. See *id.*

167. See *id.* Norway's northernmost health region, where telemedicine has proven most useful, covers approximately 43,600 square miles but has a population of only 475,000. See *id.*

168. See *id.*

169. See Siwicki, *supra* note 29 (reporting on Blue Cross/Blue Shield of Kansas).

170. See Schooley, *supra* note 161.

171. See *id.* Telemedicine is apt to save tens of thousands of trips between the patient's home and the distant specialist's office in 1999, as compared to the 2000 teleconsultations reported in 1993. See Fillion, *supra* note 145, at C-01.

172. See *id.*

capabilities for this type of telecommunication, the initial outlay will often be four to five times that of urban areas.<sup>173</sup> The question becomes whether the technology desired requires a level of bandwidth that is too expensive or impractical for the area being served.

It is crucial when performing a cost/benefit analysis that the analysis does not end after looking at the short-term costs, which include the high costs of purchasing new equipment.<sup>174</sup> The long-term, and possibly intangible, benefits must also be considered.<sup>175</sup> After the initial large outlay, telemedicine has “the potential to provide health care more efficiently”<sup>176</sup> and to provide other benefits that cannot be measured in dollar amounts.<sup>177</sup> However, there is anecdotal evidence that telemedicine programs must be operational for several years before attracting enough participation to bring down costs,<sup>178</sup> and concern over the large start-up cost remains. These substantial costs, ranging between \$134,000 and \$288,000 per institution in initial set-up costs,<sup>179</sup> coupled with \$19,000 to \$80,000 annual transmission and maintenance fees,<sup>180</sup> may seem exorbitant, especially because quantifying many of telemedicine’s benefits is difficult. There have been suggestions that the Universal Service Fund<sup>181</sup> should reimburse telecommunication providers for both the cost of infrastructure buildup and the lower rate paid by rural health care providers.<sup>182</sup> Once these telemedicine networks are set up, though, the services provided can be expanded at nominal extra cost, while increasing the benefits significantly.

One valid concern regarding the increase in available health care professionals and reimbursed services is that the demand for these services will also increase.<sup>183</sup> Studies have shown that demand for medical procedures is drastically increased if insurance covers the

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173. *See id.*

174. *See* Vyborny, *supra* note 14.

175. *See id.*

176. *Id.*

177. *See id.*

178. *See* Morrissey, *supra* note 53, at 118.

179. *See* TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

180. *See id.*

181. The Universal Service Fund is a fund administered by the FCC. Interexchange carriers, or telecommunication carriers that provide service across state lines, contribute \$750 million each year to this fund, which is used to support telecommunications service to rural areas. *See* Guttman-McCabe, *supra* note 16, at 165.

182. *See id.* at 168.

183. *See* ALLAN S. DETSKY, THE ECONOMIC FOUNDATIONS OF NATIONAL HEALTH CARE POLICY 39 (1978), *cited in* McCarthy, *supra* note 12, at 117.

procedure.<sup>184</sup> On the other hand, both patients and doctors might resist and be hesitant to employ this type of technology-laden medical delivery system.<sup>185</sup> Older patients and physicians, especially those who did not grow up in an era in which there was a computer, or even a television, in every home might be skeptical about this use of technology. A careful balance between the overuse of reimbursable medical care and apprehension about this new technology will need to be drawn. However, this is the situation whenever any field advances. HCFA, in particular, has handled this issue before when allowing reimbursement for now common treatments that were once deemed “experimental.”

#### IV. Resolution and Recommendation

Telemedicine, although requiring a large initial expenditure, will both increase the quality of health care available to the rural elderly as well as potentially save the government, private insurers, taxpayers, and ultimately patients, a significant amount of money. Medicare coverage is essential in obtaining widespread acceptance of telemedicine reimbursement. This widespread acceptance will necessarily follow a showing of cost effectiveness and improved services. Although Congress has begun to study telemedicine, the limitations placed on reimbursement for telemedicine delivery will ultimately cause inaccuracy in the benefits observed. One telemedicine advocate has gone as far as to say that HCFA is “setting . . . up for failure.”<sup>186</sup> Another danger inherent in HCFA’s decision is that development dollars in telemedicine are being spent on expensive technologies that the agency has deemed reimbursable, rather than researching and improving more cost-effective avenues.<sup>187</sup> To fully realize the benefits available through adoption of this technology, HCFA and Congress

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184. See *id.* at 38–39, cited in McCarthy, *supra* note 12, at 117.

185. See Derek F. Meek, Comment, *Telemedicine: How an Apple (or Other Computer) May Bring Your Doctor Closer*, 29 CUMB. L. REV. 173, 180 (1998/1999) (discussing patient apprehension); Fillion, *supra* note 145 (discussing physician apprehension of technology as well as fear of being replaced by technology).

186. Eric Weissenstein, *New Rules for Telemedicine: Medicare Plans to Pay for Interactive Consultations Only*, MODERN HEALTHCARE, June 29, 1998, at 34 (quoting Neal Neuberger, Chairman of the Policy Committee of the American Telemedicine Association). Neuberger also charges that HCFA’s explanation that it is waiting for data to come in from the demonstration projects is merely an excuse to delay effective reimbursement. See *HCFA Limits Telemedicine Payments*, *supra* note 112, at \*1.

187. See Siwicki, *supra* note 132.

must broaden their views and open the door for an expansive study of this new and promising technology.

The best way to measure the benefits of telemedicine services is to ease some of the limitations in the rule proposed by HCFA.<sup>188</sup> First, reimbursement must not be limited to face-to-face, interactive consultations. Second, reimbursement should be available in all HPSAs, not just those HPSAs considered rural. It is even possible to imagine that reimbursement should be available nationwide, and not conditioned on a shortage of physicians at all. Third, home health care services should be included in the scope of coverage. Finally, once this telecommunication infrastructure is established, there is no reason to limit its use to strictly telemedicine services. A number of other activities could share the “airtime” with telemedicine, thus increasing the amount of benefits available without significantly increasing the costs.

#### A. Store-and-Forward Telemedicine

Store-and-forward telemedicine, in situations where real time interaction is not necessary, could prove invaluable to the patient as well as more cost-effective than interactive telemedicine.<sup>189</sup> HCFA argues that under the proposed (and subsequently adopted) rules for telemedicine reimbursement, Medicare will spend \$270 million from 1999 to 2003 for services that it currently does not cover.<sup>190</sup> Thus, the agency is deferring consideration of expansion of coverage until a

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188. This note expands on and adds to recommendations made in a letter drafted by a number of telemedicine advocate groups to the administrator of the HCFA. That letter made the following recommendations: (1) reimbursement of “store-and-forward” telemedicine is vital to effectuate the intent of providing adequate medical care to rural Americans; (2) telemedicine reimbursement must be available in all HPSAs; and (3) physicians utilizing telemedicine need to be protected from liability for “sharing” Medicare payments, which invokes the Anti-Kickback Statute. *See A Letter to the Honorable Nancy-Ann DeParle, HCFA Administrator* (visited Oct. 19, 1999) <<http://www.arentfox.com/telemed/articles/deparle.html>>. The signatories of the letter include National Rural Health Association, Association of Telemedicine Service Providers, American Hospital Association, American Medical Association, American Telemedicine Association, National Association of Community Health Centers, National Association of Rural Health Clinics, and National Organization of State Offices of Rural Health. *See id.*

189. *See* Gilbert, *supra* note 54. The Office for the Advancement of Telehealth was recently created by the Health Resources and Service Administration, a branch of the U.S. Department of Health and Human Services. *See id.*

190. *See HCFA Limits Telemedicine Payments, supra* note 112, at \*1.

later date.<sup>191</sup> However, in determining the overall feasibility of telemedicine, there will be no findings available regarding the benefits reaped by store-and-forward telemedicine, as this type of delivery is currently excluded from reimbursement.

Store-and-forward telemedicine has several advantages over interactive two-way video conferencing. Interactive video is much more expensive than store-and-forward telemedicine over the Internet.<sup>192</sup> The bandwidth required for adequate audio and visual quality for interactive video is much higher than that required for transmitting images.<sup>193</sup> In fact, store-and-forward images can be broadcast over existing telephone lines, where interactive video requires the installation of special T1 lines.<sup>194</sup> While telephone lines are readily accessible in much of rural America, T1 lines are expensive to install and exist mainly in urban areas.<sup>195</sup> Additionally, interactive video requires the simultaneous presence of two health care professionals— one at either end of the consultation. With the hectic schedules of physicians and other health care professionals, this is not always convenient. On the other hand, the specialist can review store-and-forward telemedicine at his or her convenience. For example, the specialist can use spare time between scheduled patients to view the images that the local practitioner had previously sent. At his or her convenience, the specialist can either call or e-mail the local physician with an assessment. This method is much less of an intrusion than the imposition of interactive video conferencing.

There is a valid concern, however, regarding store-and-forward telemedicine. As suggested by Dr. Richard Raymond, the Chief Medical Officer of Nebraska, the store-and-forward method evokes the image of a physician, coming home after a long day of treating patients, grabbing a glass of wine, and heading into the den to watch video tapes and make adjustments to medication.<sup>196</sup> Of course the physician will charge the patient or the government for this service.<sup>197</sup> Even beyond the concern over the irresponsible physician, Dr. Ray-

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191. *See id.*

192. *See* Siwicki, *supra* note 29.

193. *See* TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

194. *See id.*

195. *See id.*

196. *See* Ellen Perlman, *The Long-Distance Healer*, GOVERNING, Aug. 1999, at 28.

197. *See id.*



mond finds store-and-forward telemedicine to be an inappropriate dialogue between the doctor and the patient.<sup>198</sup>

Not every area of medicine is equally adaptable to store-and-forward telemedicine. Teleradiology, telepathology, and specialist interpretations of ECGs and EEGs are clearly ideal situations in which store-and-forward telemedicine is appropriate. In fact, these are situations where face-to-face consultation is unlikely, even if the patient and the specialist are in the same facility. This is the reason why reimbursement provisions for most of these services are already in place. There are, however, other medical fields, usually thought of as clinical fields, that are equally suitable for applications of store-and-forward telemedicine. For example, telemedicine has been used for dermatology applications.<sup>199</sup> A digital image is taken of a skin ailment that has the local physician puzzled. The rural hospital transmits the image to a specialist, who views the image and telephones or e-mails the local physician to discuss diagnosis and treatment plans. Although this is very similar to specialist interpretation of x-rays and ECGs, reimbursement is not currently allowed for this type of telemedicine.<sup>200</sup>

For these reasons, Medicare must provide reimbursement for store-and-forward telemedicine. The cost/benefit ratio is likely to be far higher for store-and-forward services than for two-way video telemedicine, and the quality of care in certain areas of medicine would be just as high without interactive consultations. Without analyzing this possible benefit, it is likely that Medicare and the government will reach the unfavorable conclusion that telemedicine is not cost-effective, endangering the future of telemedicine as a whole.

#### **B. Urban HPSA Coverage**

There are essentially no reasons to limit telemedicine reimbursements to care rendered to residents of rural HPSA sites. Initial proposals for Medicare coverage included areas beyond rural HPSA sites, but this recommendation was scaled back in order to achieve passage.<sup>201</sup> Efforts are again being made to expand telemedicine re-

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198. *See id.*

199. *See* TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

200. *See id.*

201. *See* Morris, *supra* note 87.

imbursement to urban HPSA residents as well.<sup>202</sup> In urban areas, it is more likely that the telecommunication infrastructure—particularly in the form of telephone lines—is already established, and thus, initial costs for providing telemedicine to these patients would be substantially less for urban HPSAs than for rural HPSAs. The nonmonetary benefits, including improvement of the quality of health care for the population and advancement of the economic viability of hospitals, remain just as valid in urban HPSAs as in rural HPSAs. Although the monetary savings might not be as drastic because transportation and other expensive elements of rural health care are not likely to be at issue, it is unlikely that the benefit-to-cost ratio would be lowered to the point of insignificance.

With minor modifications, this same argument can be made for Medicare coverage of any telemedicine services. Notwithstanding the number of physicians available in the area, telemedicine exploits the telecommunication infrastructure more effectively, which means that the benefits reaped from the initial outlay will be greater. Especially with home health care coverage, expanding the coverage to include the entire Medicare-eligible population, irrespective of the number of health care professionals in the area, would result in measurable benefits while requiring only nominal additional expenses.

### C. Home Health Care Coverage

Kansas is the only state whose Medicaid program currently covers home health care visits utilizing telemedicine.<sup>203</sup> Managed care providers and private insurers in Kansas have followed this lead.<sup>204</sup> Home health care, as a method of health care delivery, is clearly a cost-saving measure because the number of visits a patient must make to a physician's office is decreased.<sup>205</sup> Based on the evidence that a number of companies have been formed specifically to market tele-

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202. *See id.*

203. *See* TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

204. *See* Siwicki, *supra* note 29.

205. *See* Ace Allen, M.D. & Shifra Stein, *Cost Effectiveness of Telemedicine* (visited Feb. 26, 1999) <<http://www.telemedtoday.com/articlearchive/articles/costeffectivenessoftelemedici.htm>>. Kaiser Permanente has produced a pilot study of home health care via telemedicine that suggests substantial economic benefits. *See id.*

home care and tele-monitoring, it seems that this type of care makes economic sense.<sup>206</sup>

Home health care usually consists of a medical professional, such as a nurse or technician, visiting the home of the patient.<sup>207</sup> As a significant portion of the elderly reside in rural areas and often are not readily mobile, either due to poor health or transportation issues, home health care decreases the number of times that this patient has to journey to the nearest town. By using telemedicine to provide this service, the patient is saved the trip to the physician's office and the home health care provider is saved the time and expense of traveling to the patient's home.

Telemedicine can have a number of applications in the home health care field. The simplest system can involve a regular telephone consultation between the patient and the physician. This elementary system has already been supplemented with electronic devices, such as stethoscopes (to listen to the patient's heart or lungs) or otoscopes (to view the patient's inner ear), that attach to the household telephone jack and are used to transmit signals to a physician's office.<sup>208</sup> A more complex system, involving a specially formatted television set and remote control, can be used for interactive visits with a health care professional, without requiring the patient to leave his own living room.<sup>209</sup>

Telemedicine can be used by a home health care professional to transmit information to a physician for daily monitoring via an electronic hookup to a regular household telephone jack, or via video conferencing to allow a midlevel care provider to occasionally observe the patient. For example, this allows a midlevel provider to make sure the patient is properly changing the dressing on a wound or injecting medication. Under either mode, the benefits go beyond decreased travel expenses. Besides reducing the number of on-site visits required, the patient, if he is able, becomes more involved in his own health care and consequently learns how to keep himself healthier.<sup>210</sup>

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206. *See id.*

207. *See* Patricia C. Kuszler, *Telemedicine and Integrated Health Care Delivery*, 25 AM. J.L. & MED. 297, 304 (1999).

208. *See* TELEMEDICINE REPORT TO CONGRESS, *supra* note 15.

209. *See* Marilyn W. Serafini, *High-Tech House Calls*, THE NAT'L J., Feb. 3, 1996, at 258. These systems have been used in Kansas, and in one case, saved the patient an estimated \$15,000 in one year. *See id.*

210. *See id.*

Both of these results, lower travel costs and healthier patients, are positive for the payer of health care costs.

These home health care benefits would also be observed if the coverage for telemedicine services were expanded beyond areas with health professional shortages. Clearly, any time a patient becomes more involved in her own health care and takes steps to become a healthier person, this is beneficial. If home health care via telemedicine services produced this result for a patient, it would not even matter if she lived next door to the hospital—she would still be taking responsibility for her own welfare.

#### D. Unrestricted Use of the Telecommunication Infrastructure

Finally, once agencies and companies that reimburse for health care expenses make the initial capital investment to develop a telecommunication infrastructure, the use of the network need not be restricted to telemedicine applications. Several agencies could conceivably benefit from the ability to extend their reach to rural members of the public or people who are not able to travel.<sup>211</sup> By allowing other agencies to use the already developed infrastructure for a fee, Medicare could reap additional monetary benefits, which would help offset preliminary expenditures. Additionally, the interest of the public would be advanced by allowing a greater outreach by organizations of all types, including educational, political, and special-interest groups. One example of this possibility has been realized in the Eastern Montana Telemedicine Network, based in Billings, Montana. There, the Billings telemedicine network has opened its system to other nonprofit agencies. For example, the Girl Scouts have used the network for statewide training before cookie sales.<sup>212</sup> As another example, this technology could be used in the educational field to broadcast extension or continuing education courses from universities into rural communities. This technology could also be used for political and civic involvement, allowing rural participation via video

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211. See Victor Miller, *Accountability Keystone of Frist Education Bill*, CHATTANOOGA FREE PRESS, June 28, 1998, at J2. Education advocates have already proposed sharing information regarding the technology as well as the infrastructure utilized in telemedicine. See *id.*

212. See Bert Caldwell, *Telemedicine Extends Reach of Health Specialists*, THE SPOKESMAN-REVIEW (Spokane, Wash.), June 27, 1999, at D1.

conferencing in town meetings or political debates, which are frequently held only in more urban areas.

Finally, it is important to observe that this note is not encouraging a system where patients no longer have personal contact with physicians. Teleconsultation can never replace human contact; however, there are situations where this face-to-face contact is impractical or unnecessary in providing the services required.<sup>213</sup> There are also situations where it is far more beneficial to give the patient some autonomy for his or her own health care. Additionally, given the choice between telemedicine and no, or inadequate, medical care, it seems the ability to receive some form of medical treatment far outweighs the negative aspects incurred by interspersing technology with medical care.

## V. Conclusion

Lack of quality medical care is a significant problem for the rural elderly. Telemedicine is a promising solution for this problem. Because many elderly rely on Medicare to pay for their health care expenses, telemedicine will not truly provide a solution until Medicare promulgates a suitable reimbursement scheme for this type of health care delivery. Medicaid and private insurers will likely follow Medicare's lead.

Although Medicare has taken some cautious steps forward by providing for some reimbursement and calling for a study of the results, the limited reimbursement scheme that has been put into place to test the waters is simply not effective. An accurate benefit-to-cost ratio cannot be calculated until Medicare recognizes some of telemedicine's stronger features. Store-and-forward telemedicine is far more cost-effective than interactive telemedicine, the only type that Medicare presently covers. Store-and-forward telemedicine also makes better use of the existing infrastructure and is more feasible as far as physician scheduling. Additionally, Medicare has limited reimbursement to rural areas, but providing telemedicine to urban areas would require a much lower initial investment while providing maximum benefit. Medicare should also follow the lead of Kansas and include in its coverage home health care via telemedicine. Fi-

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213. See *supra* text accompanying notes 197-98.

nally, Medicare should utilize the infrastructure once it is built to recoup some of its costs and to benefit the public.

Unless Medicare sees a positive return on its initial investment, expansion of telemedicine is unlikely. On the other hand, unless Medicare expands its narrow reimbursement scheme for telemedicine, it is less likely to see the necessary positive return.