West Virginia State Health Plan
Coordinated Healthcare System*

I. BACKGROUND

Economic, technological, and social forces are exerting strong, and often conflicting, pressures on health care delivery systems nationwide. Advances in medical technology make it possible for larger and larger numbers of patients to be served outside of community hospitals. The desire to minimize costs creates strong economic incentives to move as many services as possible out of hospitals, given their higher overhead and charity care cost burdens. These forces, unless strongly resisted, have an atomizing effect. They often lead to the proliferation of single-purpose outpatient service centers, particularly in larger communities where they can profit as direct competitors for privately insured patients with nearby hospitals. The emergence of redundant diagnostic imaging and surgery centers in many larger communities illustrates the tendency.

Other forces, notably managed care payment schemes, have the net effect of encouraging integration and consolidation of the delivery system if allowed full sway. System integration can be problematic if it occurs through mergers and acquisitions that convert not-for-profit community-based services to proprietary status and the subsequent closure of needed, but insufficiently profitable, services and facilities. This problem has arisen nationwide, particularly in rural and inner city communities where access to care is already a substantial problem. Consolidation in the form of coordinated community-oriented delivery systems, integrated horizontally and vertically, can improve operating efficiencies and quality without sacrificing access.

These developments and their potential effects are of particular interest in West Virginia. Population size, composition, and density, transportation difficulties, relatively poor health status indices, low income levels, a large uninsured population, and heavy reliance on public payment for health care reduce access to care already. As documented in the ***West Virginia Rural Health Plan***, developed by the Office of Community and Rural Health Services in 1998 in order to qualify for the Medicare Rural Hospital Flexibility Program, there are relatively large numbers of small hospitals, long-term care centers, primary care centers, clinics, public health department, and personal care homes around the state. Maximizing development and operating efficiencies under these circumstances is difficult at best. It is more likely to be achieved, as are improvements in quality, access, and in the array and sophistication of services actually available, if these often disparate services are linked in integrated, well-coordinated systems of care.

II. SYSTEM ASSESSMENT

A. Context

Health facility and service size, location, and program offerings in West Virginia are more profoundly influenced by population size, composition, and distribution, and the geography of the state, than they are in most states, including neighboring Appalachian states. Often described as the second most rural state in the country, 45 of the state's 55 counties are designated rural, and more than 60% of the population lives in areas meeting the Census Bureau definition of rural. About two-thirds of the population reside in communities of fewer than 2,500 persons. Unusually large percentages of these people are either elderly or are between 50 and 65 years of age (Table AR 2, At Risk Populations).

*Note: tables and maps referenced but not contained here may be viewed and obtained, in their entirety, at the West Virginia Health Care Authority

The terrain is rugged, and average travel time to medical services is higher than that of nearby states. Based on its examination of the West Virginia Department of Transportation Providers Directory (1998), the West Virginia Rural Health Access Program has concluded that, although several transportation resources may be available in a community, they often are managed by programs that address the needs of specific populations (e.g., elderly, disabled, Medicaid beneficiaries) or specific facilities (e.g., vehicles operated by hospitals, primary care centers, mental health facilities). Anecdotal information from providers suggests transportation resources may not be used to capacity because of restrictions placed by funding sources.

A large majority of the state's residential areas are designated as Health Professional Shortage Areas (HSPAs) or (and) Medically Underserved Areas (MUAs). There are medically underserved areas in 50 of the 55 counties, and all or part of 40 counties are designated health professional shortage areas. (See Maps AC 33 and AC 34.) The state's 62 acute care community and specialty hospitals are spread among 36 counties; there are 19 counties that do not have a community hospital. As might be expected, average hospital size is small; half (31) of the hospitals may be properly characterized as small rural hospitals. They have a licensed complement of 100 beds or less, have fewer than 5,000 admissions per year, and are located in rural communities with service area populations of fewer then 10,000 persons. Slightly more than half of these facilities, 16 in all, are designated as sole community hospitals that provide essential access to care for Medicare patients. (See Maps AC 23 & AC 24.)

Many of these hospitals are increasingly providing long-term nursing care services, especially Medicare skilled nursing care, to meet the growing need for long-term nursing care services and to compensate for decreasing inpatient acute care demand. There are now 1,033 certified skilled care beds in 32 acute care hospitals. The state has 106 licensed nursing homes with 9,944 beds. There has been a moratorium on nursing home bed development for more than a decade. As might be expected, given the composition of the population and the moratorium, nursing home occupancy levels have remained high, even as some excess acute care hospital beds have been converted to skilled long-term nursing care use. (See Maps AC 23-AC 27.)

A significant number of elderly persons are served by the 65 personal care homes licensed by the state. These homes have a total of 2,443 beds, some of which are operated as distinct part units of acute care hospitals. Licensing officials also report 652 licensed personal care beds in residential board and care homes.

West Virginia has an unusually large network of primary care centers. There are 48 nonprofit primary care centers, with 91 primary care service sites dispersed in 42 counties (Map AC 29). Given the large number of counties without community hospitals and the large number of medically underserved areas, these centers are the principal or only source of basic medical care in many rural communities. According to the recently filed West Virginia Rural Hospital Flexibility Program plan, the primary care centers are accommodating nearly a million patient visits a year.

Local public health departments play an unusually important role in making primary care accessible to the general populace, particularly in rural areas. The 54 local health departments are the principal source of many primary care services for many of those most in need of care (Map AC 28). They have local boards of directors and work very closely with local elected officials. Only about one-fourth of the budgets for local health departments come from state and local appropriations. The majority of their revenue is generated from fees charged for services rendered. Because of this, market reform poses a substantial potential risk to these service programs. Given that the local departments service many of those most in need, any reform or integrated system formation should take fully into account their value and role in the delivery system and assure that those served by them are not ignored.

There is widespread recognition that developing a well-coordinated system of care is in the public interest and is essential to the well-being of most, if not all, providers of health services and the communities they serve. The West Virginia Hospital Association has called for legislative and policy changes that it believes are needed to facilitate the development of coordinated systems of care in the form of provider-sponsored networks. State policymakers and health officials have acknowledged a similar goal in a number of ways, including participating

in a number of federal programs and initiatives to establish health networks as a means of improving access to care, particularly in rural areas. Although there may not yet be full agreement on the means, there appears to be little disagreement on the need for organized networks and better integration of the delivery system.

Effective coordination means devising a means of equitably weaving the disparate elements of the existing delivery system into a more coherent and more efficient network, without weakening unintentionally important components of the existing system.

B. Strength-Weakness-Opportunities-Threats (SWOT) Analysis

Given the unusually difficult circumstances and obstacles to overcome, it appears that improved coordination and organized system formation must be approached initially from a statewide policy perspective and move to the community level, where care is delivered.

The problems of supply, distribution, access, and continuity of care are exacerbated by the need to serve many small population pockets scattered throughout a rugged rural state. Most patients, particularly the elderly, need access to a continuum of health and nonhealth services and programs for chronic health conditions. The services should include nursing home care, home health care, acute hospital care, and hospice care as well as social services, transportation services, and housing options for seniors. The following discussion highlights the strengths, weaknesses, opportunities and threats that intensive network development may entail.

1. *Strengths*

Network development is already under way in various guises. The West Virginia Center for Rural Health Development, in conjunction with the West Virginia Office of Community and Rural Health Services and the West Virginia University Office of Rural Health, has been coordinating efforts to encourage rural network development under managed care. There are already several successful rural health partnerships that promote horizontal integration. The federal Office of Rural Health Policy awarded grants in 1997 to the Eastern Panhandle Integrated Delivery Systems (EPIDS) in Petersburg. EPIDS is a vertically and horizontally integrated provider network seeking to develop a managed care insurance product. As part of the grant, EPIDS has developed a management information system to integrate all participating providers in a centralized collection and electronic claims system.

Grants to critical access hospitals promote crucial hospital-to-hospital linkages, as well as hospital and emergency medical services links.

The West Virginia Rural Health Education Partnerships are used to provide medical care to residents in 13 medically underserved counties. The partnership mission is to achieve greater retention of West Virginia-trained health sciences graduates in underserved rural communities.

Hospitals and health care systems are already necessarily developing integrated service delivery systems as survival strategies.

Seven managed care organizations now operate in West Virginia. All have been established in recent years (Table AR 1, Economic/Financial Indicators, Entries 108-109). As of December 31, 1997, there were seven HMOs operating in West Virginia, with 202,880 enrollees. This represents a penetration rate of about11%. The counties with the highest managed care penetration were Ohio (48%), Marshall (36%), Kanawha (24%), Brooke (22%), Monongalia (14%), Marion (18%), Harrison (13%), Putnam (13%), and Hancock (14%). Only one licensed HMO reported Medicare managed care enrollment data (approximately 4,000 covered lives). Other plans were expected to enroll Medicare beneficiaries when the Medicare capitation rate was improved. This has yet to occur.

West Virginia takes advantage of telehealth and telemedicine to improve service delivery. A federal grant supports telemedicine capacity in about 20 rural sites and at a Veteran's Administration site. West Virginia has an extensive network of primary care centers (48 centers and 91 service sites) throughout the state. The West Virginia Rural Health Access Program supports efforts to increase the supply of primary care providers in underserved areas, strengthen the rural health care infrastructure, and build capacity in poorly served communities. The program is supported by the Claude Worthington Benedum Foundation and the Robert Wood Johnson Foundation.

The next West Virginia Behavioral Risk Factor Survey will include a question on transportation. Initial data are expected to become available in mid-2000. The responses will be useful to assess transportation problems and resulting gaps in access to care.

2. *Weaknesses*

Fragmentation of service delivery persists; there is no overarching policy guidance ensuring or promoting network formation or systematic coordination of services.

Most funding and planning are programmatic or categorical.

Managed care penetration is approximately 11% statewide, several fold lower than in nearby states. There is little financial incentive for commercial managed care plans to move into those areas of the state most in need of coverage.

Although there are seven managed care organizations in the state, there are no commonly accepted standards that can be used to monitor adequacy of plan performance or coverage.

Managed care plans do not contract with hospitals that are not accredited by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO). As small rural critical hospitals do not have to seek JCAHO accreditation, this may be an additional reason (or excuse) for plans not offering access to hospital services in certain counties.

Medicaid managed care does not provide sufficient financial incentives for providers to participate in the program. Limited or inadequate funding generally discourages provider participation, making it difficult for them to offer the array of services that could be offered.

Health information is not integrated beyond the individual provider or health care system. Existing information systems are not necessarily compatible, with significant variations in hardware and software.

Currently, there is limited public-private collaboration for planning and policy formulation. There is a relatively large uninsured population, approximately 300,000, and a large percentage of the population is covered by public payers, Medicare and Medicaid.

Enrolling children in West Virginia's CHIP (Children's Health Insurance Program) has not progressed as rapidly as planned.

3. *Opportunities*

Special funding may be available from public and private sources to help promote service integration and access to care. The Rural Hospital Flexibility (RHF) program, authorized under the Balanced Budget Act of 1997, provides funding to states for the designation of limited-service hospitals in rural communities and the development of networks to improve access to care in these communities. Under the program, hospitals certified by the Secretary of the U.S. Department of Health and Human Services as critical access hospitals may receive cost-based reimbursement from the Medicare program. In West Virginia, the program supports essential rural

health care services by encouraging the restructuring of the rural health care infrastructure and systems. The program awards grants and loans to financially vulnerable hospitals located in underserved areas.

There is substantial strategically located, excess inpatient acute care capacity. It may be possible to use some of this capacity to meet other identified community health needs.

Build on successful partnerships and collaborative efforts created between the public and private sectors. The Center for Rural Health Development has several ongoing partnerships, the Rural Health Community Leadership Program, the Rural Networking Project, and the West Virginia Primary Care Performance-Based Support Program.

Consider making the formation of provider-sponsored networks both possible and practical to promote improved coordination and regionalization of services.

Continue to take advantage of telehealth/telemedicine technology to improve access, education, training, and patient care.

Take advantage of health data collected from hospitals, Medicaid, and the public employees insurance and workers' compensation programs to better understand demand, use, cost, quality, and access issues.

4. *Threats*

A rapidly aging population will continue to require more services and care. Given the population composition and distribution, rapid changes to the delivery system are needed if the increased demand is to be accommodated at a reasonable cost, without severely limiting access.

Financial stability of the health care infrastructure continues to be at risk. Market reforms, particularly higher managed care penetration, are likely to increase this risk considerably.

Provider and public acceptance of managed care remains somewhat uncertain. Continued intense competition for paying patients, for a larger share of a shrinking acute care inpatient market, could continue.

There is a shortage of resources required to develop, maintain, and expand services and programs. The large uninsured population and the heavy reliance on public payments necessarily limits the financial base upon which the health care infrastructure depends.

Regulatory constraints such as certificate of need, insurance regulation, and antitrust regulation limit provider flexibility and incentives for market reform in some instances. Each needs to be evaluated carefully to ensure that both the needs of the public and the delivery system are met.

Urgency for change rests with the knowledge that the needs of the state, and the many small, difficult-to-serve communities in it, can best be met through the development of integrated, better coordinated health care networks. The question is how to do this in ways that yield maximum benefit and minimum collateral damage to elements of the existing system and to those dependent upon these services.

III. PROBLEM STATEMENT

There is growing recognition, if not yet a consensus, that market reform in some form is needed if the healthcare infrastructure that West Virginians depend upon is to be preserved intact. There also is recognition that population and economic dynamics are such that future stresses on the system are likely to increase dramatically. Hence, the need to organize the system to be efficient and as responsive as possible to the full array of community needs.

The underlying question is how to promote community-oriented cooperation, rather than continue to rely on

counterproductive competition for a larger share of a smaller inpatient acute care market. The best approach appears to be to move toward integrated health care networks, where a continuum of care can be provided as efficiently and effectively as possible. Collaborative efforts of public and private health care officials will be needed to determine how best to move in this direction quickly, with as little disruption as possible.

IV. ANALYSIS

As in other endeavors, knowledgeable persons argue for better coordination and use of time and resources as a way to improve outcomes and reduce costs. This is as true in the provision of health care as in the production of any other product or service. West Virginia, and most other states, could benefit from moving to an integrated, better coordinated health care delivery system. The dynamic nature of today's health care environment places a premium on efficient organization and delivery of care, better quality, and improved access at a reasonable cost. Consolidation, mergers, and closures nationwide are market-driven responses to tighter reimbursement policies, and, where possible, to the shift from the higher cost inpatient care setting to the less expensive outpatient setting.

Poor rural populations, particularly the elderly, are at greater risk of not receiving the services required to meet their health needs. Aging populations have more intensive service needs, requiring a network of preventive, acute, behavioral, habilitation, rehabilitation, and hospice care as well as housing, transportation, and social service needs. Many communities do not have sufficient resources to meet the projected needs of the aging rural populations. These services should be more readily available as part of an integrated service delivery system.

A. Electronic Patient Record

One important characteristic of a coordinated health care system is an integrated health information system. An information system that collects and stores information and makes it immediately accessible to clinicians and others providing necessary services, while safeguarding patients' confidentiality, is invaluable to timely, cost-effective delivery of health services. The electronic patient record is an unusually important, if not necessary, component of an integrated health information system.

Patients typically receive care from multiple providers, with each maintaining a medical record for the patient. Normally, there is no centralized patient record that contains all the patient's encounters with the health care system or that tracks the patient over time through various service encounters. The absence of having a single source of information about each patient that can be accessed by different providers hinders effective coordination of care and timely, efficient provision of services.

An electronic patient record documents all care and decision-making processes for each patient. It involves a seamless integration of clinical, financial, administrative, and related information. It can help to improve patient care by having medical information from multiple sources stored and accessible by all providers as needed. It is also valuable as a management and planning tool. Individual medical records can be combined into a medical database that can be used to assess the health of populations and to identify services and programs required to meet community needs.

Because the electronic record translates information from a paper record into a computerized format, record content can be expanded beyond paper copy limits to include on-line images and videos. Consequently, the electronic record can include full patient histories, family histories, risk factors, findings from physical examinations, vital signs, test results, known allergies, immunizations, health problems, therapeutic procedures and medications, and responses to therapy. It also may include each provider's assessment and plans, advance directives, information on the patients' consent to and understanding of therapy, and permission for disclosure of information for use by other providers or payers.

Electronic records offer several potential advantages over traditional paper records:

- allow providers to access patient's information from different locations and to share information more easily with other potential users of the record;
- reduce the number of redundant queries and diagnostic tests;
- improve availability of health-related information at the point of delivery;
- improve security, as electronic patient records may be more secure than paper records, and
- promote aggregation of individual records into a large medical database that may be used for assessing access to care and use of services, assessing costs and identifying opportunities for savings, evaluating quality and outcomes of care, planning and monitoring patient care, improving administrative efficiency, operating programs, planning services and programs, tracking injury and illness, preventive care, and healthy behaviors, and promoting regional and community health planning, education, and outreach.

Electronic patient records also have several potential disadvantages. These include:

- employers might have access to medical information that could be used to deny employment or job advancement;
- potential denial of insurance because an individual is at high risk, and
- potential access by a larger number of people, with possible misuse.

A major concern with the development of the electronic patient record and the merging and linking of databases is the need to ensure the privacy and security of health information. Providers are responsible for ensuring only legitimate access to health records, the integrity of the data contained in those records, and the confidentiality of the records. Health care organizations establish policies for the collection, use, and release of health information to maintain privacy and security. The federal government (HCFA) is promoting electronic submissions to expedite reimbursement. Many states require on-line submission of data from hospitals and other providers, and some make summary hospital discharge data available on-line.

The administrative simplification portion of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) will help improve data standardization. Under HIPAA, the Secretary of Health and Human Services is required to adopt standards for the electronic transmission of specific administrative health transactions. The standards will apply to health plans, health care clearinghouses, and health care providers who transmit any health information in electronic form. Improved standardization will promote electronic transactions and reduce paperwork.

General implementation of electronic patient record systems should benefit from standardization, and the process of national standardization is already under way. Notices of Proposed Rule Making (NPRM) have been published for transaction and coding, national provider identifier, national employer identifier, and security. It is expected the final rules will be published in late 1999 and compliance required in 2002. Notices of Proposed Rule Making are expected in late 1999 for national health plan identifiers and claims attachments. A NPRM on a national individual identifier is on hold pending privacy legislation and regulations.

V. ACTION STEPS

Many of the steps that need to be taken to permit, and then encourage, the formation of health care networks and more effective cooperation and coordination among providers of heath services have been identified. They are being discussed widely among industry officials and policy makers. The current status of network development,

and the obstacles to more effective coordination and network formation, are summarized in the West Virginia Rural Hospital Flexibility Program plan, filed in early 1998. The hospital industry position is outlined in a number of issue papers on the subject, notably its January 1998 statement titled "A Plan for Assuring Access in Rural Communities."

Building on the suggestions, objectives, and actions identified in these documents, consideration should be given to the following:

- Document fully the extent and nature of ongoing service integration across the state, in both the public and private sectors.
- Incorporate HIPAA data standards use in West Virginia data collection and reporting.
- Given the unusually important role played by local public health departments in making primary medical care available to those most in need, and the genuine threat managed care, network development, and market reform generally pose to these community assets, undertake a careful assessment of the effects these changes would be likely to have on public health departments and other public health services.
- West Virginia should begin as soon as possible to work with provider organizations to develop an acceptable, economically viable, strategy for the orderly, expeditious implementation of the electronic medical record as market reform proceeds.
- Develop a strategy to ensure that, collectively, West Virginia takes maximum advantage of federal government, private foundation, and industry resources available to rural communities. Given limited support resources, this might include contingency arrangements with consultants, community organizations, and those doing research. The recently announced Robert Wood Johnson "Networking for Rural Health" request for proposals is an example of such opportunities for which West Virginia would appear to be especially well qualified. Application deadlines are September 15, 1999, and February 15, 2000.
- Using the database, undertake a detailed analysis of hospital service use to determine the likely effects on existing institutional providers of acute, long-term care, and rehabilitation services statewide. The Milliman & Robertson *Health Care Management Guidelines* model, widely used by the managed care industry, should be followed.

VI. POTENTIAL SOLUTIONS

Dealing effectively with the current threats to the state's health care infrastructure will require considerable cooperation and collaboration among health care policymakers and health industry officials. Among the major issues that will need to be faced are

- the adequacy of existing public payments, particularly by the Medicaid program, including whether the state is taking maximum advantage of the favorable Federal/state match for Medicaid expenditures;
- the degree to which regulatory controls may need to be modified to permit and encourage the formation of various types of health care networks, including provider sponsored networks, and
- the need to balance competing interests of public and private provider entities, as well as those among disparate private providers of health care services.

Given the nature of the existing state health care infrastructure (notably the large public provider component, the substantial reliance on public payments, and comparatively large uninsured population), initiative, leadership, and guidance probably need to come, at least initially, from public officials.

VIII. POLICY RECOMMENDATIONS

Consideration should be given to using planning and regulatory tools e.g., licensing, certificate of need, and selected reimbursement incentives, to promote the system coordination and integration. Monitoring and enforcement mechanisms should be built into the process.

Promote public/private community-based coalitions to pursue health service coordination where feasible. A locally driven solution should receive greater buy-in from stakeholders, which will facilitate implementation and assist in monitoring progress.

When setting up the Consolidated Health-Related Information Service (CHRIS), WVHCA should facilitate the adoption of core sets of measures, indicators, and data that will be used for planning, policy setting, performance monitoring, and other systemwide measures.

WVHCA, working with the other interested parties, should promote the gradual implementation of electronic patient records across health provider settings. This effort is necessarily long term and will take considerable effort and commitment. But it is an essential element if there is to be efficient and effective coordination.

IX. FEASIBILITY

A consensus appears to be emerging that the public interest, and the future well-being of the state's health care delivery infrastructure, would be better served by changes that would promote the development of community-based, coordinated health care networks and delivery systems. Public and private health care officials are increasingly speaking of the need for cooperation and coordination of effort. There is broad understanding that, although managed care levels continue to be far lower than those nationally and in neighboring states (Table AR 1, Economic/Financial Indicators, Entries 108-111, Map AR 25), market reform is both necessary and desirable.

Obstacles to market reform are recognized and discussed frequently. Although there does not appear to be broad agreement yet on the specific steps that need to be taken, there is enough commonality in the views expressed and the assessments offered to suggest that general agreement on the needed changes can be arrived at without too much difficulty.

IX. ACCOUNTABILITY

Accountability as used here means that all interested parties accept or at least acknowledge that major changes are needed if the state's health care infrastructure is to survive intact, and if those in greatest need of health care are to have reasonable access to it. Part of this understanding may be the recognition that many, if not most, of these changes probably are inevitable, driven by forces beyond the jurisdiction and control of policymakers and health care officials. They are likely to take place in some form regardless of the views of stakeholders. The central task for policymakers, health care officials, and all other affected parties is to work collaboratively to develop the process and means whereby views and interests can be expressed and resolved as equitably as possible, while keeping the pubic interest paramount. There is no reason to think that this cannot be done.

X. ISSUES FOR THE FUTURE

A number of preliminary studies and analyses are needed to help guide and advise those who will ultimately decide the nature and degree of health care market reform. Most of these have been identified elsewhere by the parties that have been discussing the changes that are needed. Two that do not appear to have been discussed, at least not extensively, are

- Surveys to determine the extent to which various medical records are now kept in electronic form, and how record keeping varies by setting and provider type.
- Sequential and longitudinal analyses of inpatient hospital and nursing home use data to determine, preliminarily, the likely effects of significantly higher managed care penetration levels. Attachment 1 contains the framework for such an analysis.

Bibliography

Managed Care

Arthur Clark Company. "Managed Care Study," a report prepared for the Managed Care Committee for presentation to the West Virginia Health Care Authority, October 1998.

Rural Health Research Center, Division of Health Services Research and Policy, School of Public Health, University of Minnesota. *Rural Managed Care: Patterns and Prospects.* Minneapolis, MN, April 1997.

Electronic Patient Record

Blair J, Standards Bearers, "The Standardization of Healthcare Information Gains Momentum," originally published in *Healthcare Informatics Magazine*, February 1994, included on the World Wide Web site of the Medical Records Institute (http://www.medrecinst.com).

Bridging the Barriers of Telehealth to Underserved Populations: Barriers and Opportunities, workshop report of the Center for Public Service Communication, Friend of the National Library of Medicine, sponsored by the Robert Wood Johnson Foundation, July 1998.

Dick RS and Steen EB, eds. *The Computer-Based Patient Record: An Essential Technology for Health Care.* Institute of Medicine. Washington, DC: National Academy Press, 1991.

Donaldson MS and Lohr KN, eds. *Health Data in the Information Age: Use, Disclosure, and Privacy.* Institute of Medicine. Washington, DC: National Academy Press, 1994.

Goldman J and Mulligan D. *Privacy and Health Information Systems: A Guide to Protecting Patient Confidentiality.* Seattle, Washington: Foundation for Health Care Quality, 1996.

National Committee on Vital and Health Statistics. "A Concept Paper Assuring a Health Dimension for the National Information Infrastructure." Presented to the U.S. Department of Health and Human Services Data Council, October 14, 1998.

National Research Council. *For the Record: Protecting Electronic Health Information, Committee on Maintaining Privacy and Security in Health Care.* Applications of the National Information Infrastructure. Washington, DC: National Academy Press, 1997.

Waegermann P. "Medical Records Institute's Role in Standards." A presentation created May 26, 1998, and included on the World Wide Web site of the Medical Records Institute (meedrecinst.com).

World Wide Web Sites

U.S. Department of Health and Human Services	aspe.os.dhhs.gov/adminsimp
National Association of Health Data Organizations	nahdo.org
Medical Records Institute	medrecinst.com