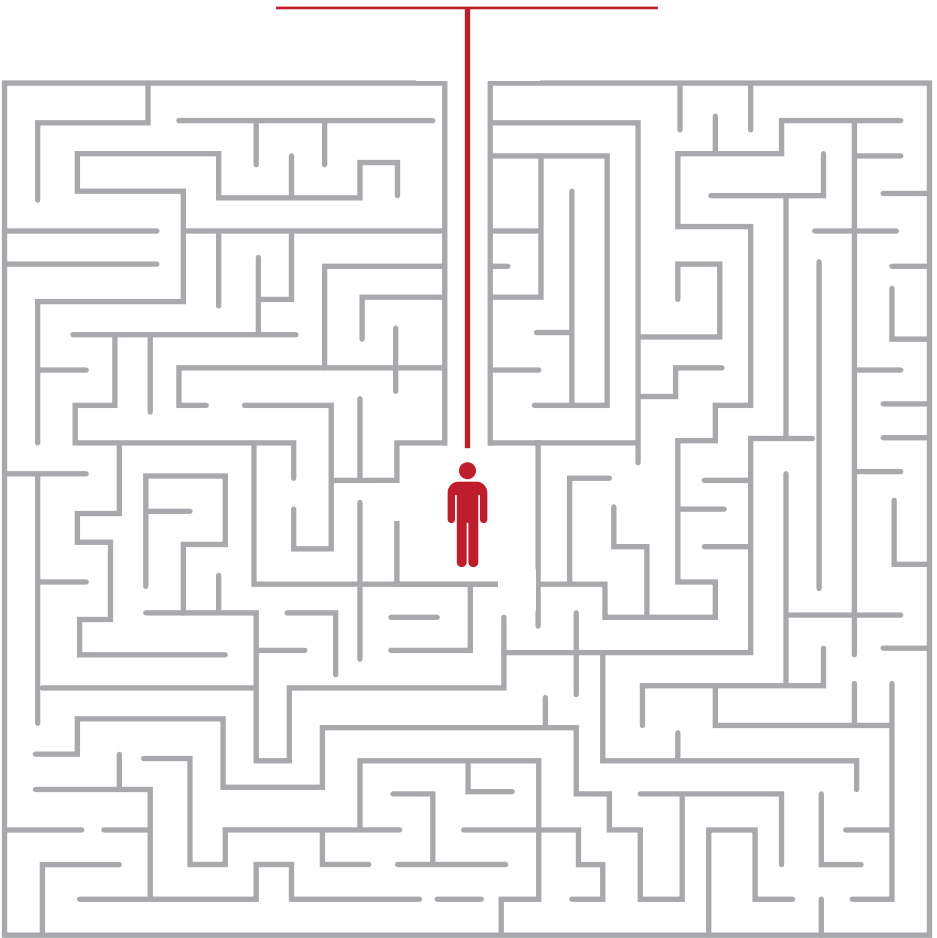


The Health Care Delivery System

A Blueprint for Reform



Workers, Tools, and Knowledge

The Infrastructure for Delivery System Reform

David Blumenthal, M.D., M.P.P.

Karen Davenport, M.P.A.

A health system that performs to its potential, providing high-value care for every dollar invested, requires the raw materials for high performance. To build a state-of-the-art skyscraper, those ingredients would be steel, cement, glass, wiring, pipes, and machinery. In health care, the most vital elements are a highly trained, balanced, and motivated workforce; current and accurate information; and technologies that enable providers to most effectively use resources the right way and at the right time. People, knowledge, and the means for their application are the foundation upon which an efficient, high-quality health system rests.

This chapter explores the state of that foundation in the United States, identifies critical deficiencies, and proposes policies to address them. Five improvements are of particular importance to overcoming the vexing barriers to health infrastructure development:

1. Improving and growing the nursing and geriatric care workforces
2. Building an expanded primary care workforce
3. Establishing federal support for comparative effectiveness research
4. Promoting electronic health record acquisition, particularly for safety-net providers
5. Developing local health information exchange networks

KEY POLICY RECOMMENDATIONS

- Invest in federal scholarship and loan repayment programs—including the National Health Service Corps and the nursing scholarship and loan repayment programs—to ease the burden of educational expenses and encourage newly trained providers to practice in underserved areas or in primary care.
- Create a federal, long-term investment in comparative effectiveness research that will guide clinical practice and payment systems, increasing effective and efficient health care delivery.
- Provide federal funds to support the acquisition of federally certified electronic health records, their maintenance, and the technical assistance needed to implement and use them effectively, such as providing matching grants to safety net providers.

Federal action is required to drive sustained changes in our health system infrastructure. As a major payer for health services through Medicare, Medicaid, and other programs, the federal government will benefit from investments in workers, tools, and knowledge, which will reduce costs and increase overall quality. But the broader public benefits of an improved health care system provide additional impetus for a meaningful federal role in these activities.

THE FUTURE OF HEALTH CARE INFRASTRUCTURE

The prospect of expanded health care coverage is one of the dynamics forcing policymakers to re-examine our health care system's infrastructure. Universal coverage without a health system prepared to serve a larger insured population could rob health reform of its promise and its benefits. However, simply providing more of the same resources, organized as they are today, would also be a mistake. Health care is changing, and the health system's infrastructure must change with it.

The biological and technological revolutions that humans have unleashed are critical forces changing the nation's health system. The flow of new information from the United States' nearly \$60 billion annual investment in biomedical research,¹ together with lesser investments in other western countries, is overwhelming and well beyond the capacity of medical professionals to track or absorb. This explosion in biological information is coupled with the accelerating capability of information technol-

ogy that is most apparent in non-health care sectors. These developments create enormous opportunities and challenges for our health care system.

New information and technology are the life-blood of the health care profession: they empower, motivate, and fulfill providers. Biological breakthroughs are, for the most part, also good news for patients. But keeping up with health advances is like trying to sip water from a fire hose. High-performing health care systems must absorb torrents of new knowledge and equipment. To do so, the health care workforce of the future will need to be trained, both mentally and psychologically, to face this challenge, and they will need assistance from effective information systems.

The workforce of the future will also need to be properly sized to respond to the population's health care needs. It must contain the correct mix of personnel: physicians, nurses, other professionals and non-professionals, generalists, and specialists. The workforce must be prepared for continual changes in the organization of the U.S. health care system, for increasing demands for accountability regarding their performance, and for changes in the demography of the U.S. population, including its older age, increasing burdens of chronic conditions, and growing racial and ethnic diversity.

This workforce will need several types of support. They will need more help than currently exists to distill essential lessons for patient care from the vast stock of data on drugs, devices, procedures, and the health implications of human behavior such as diet, living habits, and exercise. But health care professionals and workers will also need new and different types of information, ranging from the comparative effectiveness of diagnostic and treatment approaches, to how to organize health care systems for maximum effect, to how to be high-performing providers of service.

In addition to managing existing information and generating new knowledge, health care workers in the future will need vastly improved systems for supporting decision making in real time—bringing improved information to bear in a usable form at the point of decision making. This task will require taking advantage of information technologies and their potential.

Our vision for the health care infrastructure of the future is a properly trained, appropriately constituted health care workforce that is supplied with accessible, accurate, and relevant health care information, and is supported by the most advanced information technology. But how close are we to having these elements in place, and what federal interventions are justified to bring us closer?

THE CURRENT STATE OF HEALTH CARE INFRASTRUCTURE

Workforce

The workforce available to our health care system is clearly inadequate. One of the most pressing issues is the large and increasing shortage of nursing personnel.² This shortage is driven by a severe shortage of nursing faculty, which limits new admissions and could result in a nursing shortage of more than 1 million nurses by 2020.³ There is also a huge and dramatic undersupply of health personnel trained and willing to care for America's rapidly aging population. Today, less than 1 percent of nurses are certified in geriatrics, while 7,128 physicians were certified in geriatric medicine as of 2007—a level that may grow by another 700 physicians by 2030. Yet the Alliance for Aging Research has estimated that the nation will need 36,000 geriatricians by 2030. This looming shortage is the topic of a recent Institute of Medicine study, and it demands immediate federal attention.⁴

A third problem is a long-standing and, if anything, growing imbalance between the supply of specialty and generalist physicians in the United States.⁵ While data suggest that higher primary care to specialty ratios are associated with better health and lower costs, specialists represent a majority—approximately 60 percent—of the physician workforce.⁶ This imbalance results, in part, from the higher compensation and sometimes less demanding working conditions specialists enjoy. To compound the problem, trainee physicians are choosing specialty practices over primary care; according to a recent survey, only 2 percent of medical students are planning careers in general internal medicine.⁷

There is also a more controversial debate raging about whether we have enough physicians overall. The number of practicing physicians will have doubled from 453,000 in 1980 to a projected 906,000 in 2010, but the number of physicians per capita will have increased by only 50 percent, and is expected to level off at 293 physicians per 100,000 Americans in 2010. This per capita ratio is about average for industrialized countries.⁸ Some scholars and stakeholders, including many state governments and professional organizations, have concluded that demand will exceed this supply.⁹ The final word on this debate is not in, but if deficits occur, they will likely be focused in certain places, particularly rapidly growing Sun

Belt states such as Florida, Texas, Arizona, and New Mexico. The federal government should continue to monitor this issue while state, local, and private actors respond, as they have in many localities.

Information

The information flowing from our nation's universities and industries has several important gaps. The most important of these is lack of data about the comparative clinical effectiveness and cost-effectiveness of existing diagnostic and therapeutic drugs, devices, and procedures. Without such comparative data, health professionals find it impossible to provide evidence-based care to many types of patients.

The U.S. biomedical research portfolio also systematically omits studies needed to understand how to improve health care systems and services. Studies of systemic issues lack the glamour of disease-oriented studies focused on cancer, heart disease, or HIV. The gaps concern research on how to improve systems of care—to make them safer, higher in quality, and lower in cost. The dissemination of comparative effectiveness, cost-effectiveness, and health system improvement information would benefit the public at large. This information is a type of public good, and federal involvement will be needed to address information deficiencies.

Information Technology

The United States lags behind most western countries in the adoption of health information technology such as electronic health records, which have great potential to improve quality and control the costs of health care services. In Western Europe, Australia, and New Zealand, information technology is nearly ubiquitous in the offices of primary care physicians. In the United States, no more than 17 percent of doctors have functional electronic health records in their ambulatory practices. Hospitals also lag, with fewer than 10 percent (according to the best but inadequate data) reporting the availability of electronic records.¹⁰

The federal government has a big stake in whether health care providers adopt and use health information technology since it is a major payer through its Medicare, Medicaid, and Department of Defense programs. Federal payment practices also have a major influence on whether

the capital is available for many providers—particularly small physician practices and small hospitals—to acquire and maintain expensive health information systems. Studies of other countries suggest that government has a role to play in promoting adoption of health information technology, and it will be important for the U.S. government to put health IT adoption on its federal agenda for promoting the infrastructure needs of a high-performing health system.

POLICY RECOMMENDATIONS

Workforce

Through health care payments, scholarship support, workforce training programs and other avenues, the federal government makes a significant investment in health care workforce development. For example, the federal government supports physician education and training through Medicare Graduate Medical Education payments to teaching hospitals, which totaled \$8.5 billion in 2007.¹¹ Various federal workforce programs seek to improve the supply and distribution of physicians and nurses, with particular emphasis on encouraging health professionals to practice in underserved communities. Additional funding approaches include general workforce development initiatives, notably through the Workforce Investment Act funding stream. Initial steps in addressing our health care system's workforce needs should capitalize on these existing mechanisms.

Invest in scholarship and loan repayment programs. Existing federal scholarship and loan repayment programs—including the National Health Service Corps, Indian Health Service programs, Health Resources and Services Administration's Primary Care Loan program, and HRSA's nursing scholarship and loan repayment programs—ease the burden of educational expenses and encourage newly trained providers to practice in underserved areas or in primary care.

Because physicians with loan obligations are immediately available to practice, loan repayment programs appear to be a particularly effective strategy for quickly improving provider supply in underserved areas. Scholarship programs, in contrast, make an up-front investment in

trainee providers who must finish their training before beginning practice in an underserved area. In general, the funding and numbers of health professionals participating in these programs have been level or declining over the last several years. Participation in the National Health Service Corps, for example, has fallen from 733 scholarship participants and 2,907 loan repayment participants in 2005 to 669 scholarship participants and 2,273 loan repayment participants in 2008. HRSA's nursing programs have recently enjoyed an increase in field strength, but their small size—337 scholarship awards and 902 loan repayment contracts—are dwarfed by the magnitude of the current and forecasted nursing shortage.¹²

Significant new investments in these programs—particularly the nursing scholarship and loan repayment initiatives—should be an important component of a comprehensive strategy to address workforce needs. This investment should begin with the fiscal year 2010 appropriation bills.

Boost capacity in nursing education. The nursing faculty shortage is driven by multiple factors, including the comparatively older age of nursing faculty and low compensation for nurse-educators in comparison to practicing nurses. Nurse practitioners who owned their own practice earned an average of \$94,313 in 2003, compared with nursing professors, who earned an average of only \$61,452.¹³ New federal funding to nursing schools to support increases in nursing faculty salaries may help address faculty retention and help schools fill faculty vacancies. Other strategies, such as streamlining prerequisites for graduate study in nursing and utilizing new models for teaching nursing students may also produce additional capacity within the nation's schools of nursing.

Reauthorize and improve the Workforce Investment Act. The Workforce Investment Act is the major federal program designed to meet the job placement and training needs of displaced and hard-to-employ workers. It has provided employment and training services for health care workers, particularly allied health workers, long-term care workers, and nurses, although exact estimates are difficult to obtain.

WIA-funded health care workforce initiatives have included training programs targeted to a specific job classification, such as certified nurse assistants, or across a range of care-giving occupations. Initiatives have

developed career ladder programs that enable caregivers to obtain skills needed for higher-level health care positions, educational capacity building for workforce occupations, and scholarships to support community college classes or nursing degrees.¹⁴

Reauthorization of the Workforce Investment Act—expected in the next Congress—could provide an opportunity for leveraging WIA funding to specifically target the training, recruitment, and retention of health care workers in general, or a specific group—such as long-term care workers—in particular. This approach would fundamentally alter the existing structure of the WIA, which has attracted criticism for being too locally driven and unresponsive to larger workforce demands.

A related alternative would be to focus on the burgeoning need for direct care workers by launching a new program specifically targeting long-term care workers—in essence, a Long-term Care Worker Investment Act. This type of initiative would specifically direct federal workforce training money to long-term care worker training, job placement, and retention activities, without needing to compete for funding within the framework of WIA.

Strengthen training and licensing standards for geriatric care. The Institute of Medicine’s recent report, “Retooling for an Aging America: Rebuilding the Healthcare Workforce,” highlights the need for greater “geriatric competence” among all members of the health care workforce. The IOM recommends a combination of enhanced training requirements and licensing standards that include competence in the care of older adults for professionals and direct care workers. More specifically, these recommendations include residency training in settings where older adults receive care, stronger state and federal minimum training standards for all direct care workers, and more stringent licensure and certification criteria for professionals and direct care workers, which would include a demonstration of competence in the care of older adults.

These recommendations, which we endorse, require a variety of stakeholders to take action, including teaching hospitals, state licensing boards, and federal policymakers. The federal government, for its part, should amend federal standards for certified nurse assistants and home health aide training to reflect enhanced standards, specifically a minimum of 120 hours of training.

Enact strategies to increase wages and benefits for direct care workers. Payment incentives are popular strategies for improving health outcomes or providing greater access to chronic care management. Pay-for-performance programs, which reward providers for improving quality or lowering cost, have become nearly ubiquitous in health care. Payment reforms could also be used to promote an increased supply of primary care professionals, enhanced numbers of geriatric providers, and greater retention of direct care workers.

Our recommendations include enhancing Medicare payments for primary care professionals to reflect the greater proportion of patient visits devoted to cognitive activities rather than procedures, and enhanced use of wage pass-throughs, wage floors, and other Medicaid payment strategies to increase wages and benefits for direct care workers. These approaches could further additional delivery system improvements such as the development and spread of medical homes. Medical homes reconfigure the delivery of primary care to involve interdisciplinary teams, advanced information technology, care coordination, patient outreach, and other techniques designed to improve quality of and access to services.

Information

As the medical research community makes further strides in developing new drugs, devices, and procedures, it will be important to better understand which new discoveries truly enhance health care, and which are no more effective than products and procedures that are already in common practice. It will be similarly important to understand how to improve health system performance.

Comparative effectiveness research offers one of the most promising avenues for providing patients, providers, and payers with meaningful information about which services, medications, devices, and care processes are most likely to result in improvement or cure. Other nations, including the United Kingdom, Canada, and Australia, rely on comparative effectiveness research to provide guidance on coverage or reimbursement policies for new technologies, pharmaceuticals, and health services, but public payers in the U.S. have lacked the political support and legal authority to do so.

Provide federal support for comparative effectiveness research. Health industry stakeholders, experts, and policymakers—including a major insur-

ance association, a professional society for health services researchers, a former administrator of the Medicare and Medicaid program, and Representatives Tom Allen and Jo Ann Emerson—have all offered proposals that would establish and fund a federal home for comparative effectiveness research. These proposals vary; some would create a new, independent entity to sponsor this research, others would house comparative effectiveness research within the Agency for Healthcare Research and Quality. All proposals recommend a dedicated funding stream, generally by assessing public and private health insurers, ranging from \$375 million per year to \$5 billion per year.

All of these proposals represent viable approaches to jump-starting the comparative effectiveness research enterprise. This enterprise should be authorized and funded in 2009, so that the learning it will yield can be absorbed into medical practice as soon as possible. This effort will take time to gain momentum and deliver actionable research findings, and so a ramp-up of federal funding would probably be the most effective strategy. The federal government could begin with a \$400 million per year appropriation that would grow to \$1 billion per year over a five-year time span. Once this funding threshold is reached, policymakers should examine the effort's efficacy at identifying, funding, and disseminating research on critical coverage and payment issues, and determine an appropriate level of longer-term investment.

Develop a federal strategy for the dissemination and application of comparative effectiveness research. Federal policy toward comparative effectiveness research should move beyond funding and address how the results can be incorporated into the day-to-day treatment decisions made by patients, providers, and payers, as well as providers' efforts to reduce errors and improve care. Federal support for comparative effectiveness research should therefore be accompanied by an aggressive communications and dissemination campaign targeted at both providers and patients. To be useful, this information must not merely be available to patients—it must be appropriately, but aggressively, communicated (see chapter 2 on health system organization for more details on ways to disseminate information).

There is general agreement that the results of comparative effectiveness research should be publicly available, but there is less consensus about the degree to which these results should influence payment or coverage policies.

For example, the Centers for Medicare and Medicaid Services does not regularly assess a service's cost-effectiveness in Medicare coverage or payment decisions, nor does it evaluate a service's clinical effectiveness in comparison to alternative services. The Medicare statute requires the federal government to cover "reasonable and necessary" items and services. On at least two occasions, CMS has attempted to include comparative information in coverage decisions, such as using cost-effectiveness as a factor to determine whether a treatment is reasonable and necessary, or considering whether a service provides added value to Medicare as a criteria for national coverage decisions. In both cases, CMS backed down when faced with significant industry opposition. Today, CMS does not have clear authority to take costs into account when making coverage and payment decisions.¹⁵

Congress should direct the Centers for Medicare and Medicaid Services to incorporate comparative effectiveness research into Medicare coverage and payment policies, giving CMS the ability to consider comparative data for particularly costly services, drugs, or devices.

With this change in statute, Medicare could modify its coverage and payment approaches in a variety of ways. First, Medicare could choose not to cover less effective clinical regimens. CMS could also use less stringent approaches, such as economic incentives to encourage the choice of the most effective treatments. CMS could limit payment for treatment of a given condition to the costs of the least expensive, comparably effective clinical intervention, or could create tiered payment structures based on effectiveness. CMS and other payers could also use this information to encourage patients to choose the most effective procedures through tiered cost sharing.

Health Information Technology

Federal authorities should focus on two health information technology challenges in the short term: encouraging health professionals and facilities to acquire and use electronic health records, and creating local and regional communication networks that facilitate health information exchange among wired providers. These two goals, though related, are distinct in important ways. The former is about getting independent clinical entities to make independent decisions about the value of health IT. The second involves promoting cooperation among independent groups to share clinical health information through electronic means.

Promote the use of electronic health records. Surveys of physicians and hospitals suggest there are two key barriers to adoption of electronic health records: costs associated with acquiring and maintaining electronic health records, and uncertainty about which technologies to acquire.

Solo physicians, small physician groups, and financially stressed health care facilities have particular problems with the high upfront costs of electronic health records and uncertain return on investment. Electronic health records may save the health system money, but it is less clear that they are economically beneficial to providers who must invest to acquire them.

The rapid advance in information systems has also frozen less-sophisticated providers in place. They fear acquiring outmoded systems that are obsolete as soon as they turn them on and investing in systems that lack essential capabilities such as the ability to communicate with their hospital or other health care providers.

The solutions to these problems are straightforward, and some are already in progress. The federal government should provide grants and loans to select health care providers so that they can acquire and support the use of electronic health records. This select group should include solo physicians, small physician groups with fewer than five doctors, federally qualified community health centers, safety net hospitals (those in the top 30 percent of hospitals in disproportionate share receipts), and critical access hospitals. Community health centers, safety net providers, critical access hospitals, small physician practices—especially in underserved and poor areas—and distressed essential providers should be eligible for both grants and loans. Other groups should receive loans only.

Federal funds should support the acquisition of federally certified electronic health records, their maintenance, and the technical assistance needed to implement and use them effectively. Specifically, the federal government should provide matching grants (at a 1:1 match ratio) to assist in acquisition and implementation of the technology in safety net and other financially vulnerable hospitals, and all community health centers, as well as physician practices of five or fewer.

To minimize providers' concerns over which technologies to acquire, federal authorities should continue to review and certify the software that is used for electronic health records in ambulatory and inpatient settings. The Department of Health and Human Services already does this through the Office of the National Coordinator of Health Information Technology

and its Certifying Commission on Health Information Technology. In support of this certifying activity, the federal government should continue to lead a standards development process to assure that the clinical and electronic languages used by various software vendors can communicate with one another. This is a prerequisite to health information exchange, and makes certain that providers will not find themselves isolated from the rest of their health information community if they purchase the wrong system.

Encourage health information exchange. Health information exchange is almost certainly good for patients, assuming privacy is protected, but there is no compelling business case at the current time for independent health care organizations to exchange clinical information within a community or with more distant facilities. When a doctor or hospital shares such data, they may make it easier for their patients to switch to a potential competitor. When they receive information from another facility, they may find that the lucrative test they wanted to perform is no longer necessary because it was already done elsewhere.

Changing financial incentives could improve this situation, but not eliminate it. If providers shared financial risk, and thus benefited from conserving resources, they might see the value of exchanging information to avoid duplicative testing, and thus contain costs. But doctors and hospitals would still worry about losing patients to competitors. Health information exchange is, in many respects, a quasi-public good—its benefits are crystal clear, but these accrue to parties—patients, payers, employers, society at large—who are not directly involved in the private transactions.

Public action will be required to encourage health information exchange. The federal government, as a party to health care transactions in every community in America, needs to be part of the solution. The federal government should provide matching funds to state and local governments to create local health information exchange networks, but should offer no more than one-third of the funds to ensure state and local ownership. The federal government should, at first, target funding to the 100 largest health care markets. Once health information exchange is up and running in those markets it should cover approximately 65 percent of the population. This scale should be sufficient to drive change in most remaining markets.

The success of health information exchange is dependent on electronic health records, and the phase-in of exchange networks will allow physicians

and hospitals the time needed to adopt new technologies. At the same time, planning for health information exchange is essential during the electronic health records adoption phase so that the systems acquired will be ready to exchange information as soon as possible. Health information exchange funds should therefore be provided for both planning and implementation.

The federal government should provide primarily planning grants in the first three years and gradually replace them with implementation grants over time. The federal government should support these grants with an equivalent commitment of technical assistance support through contracts to private technology assistance vendors who would help states and localities work through the technical and political challenges facing health information exchange networks. It is important to realize that there will be ongoing costs to maintain information exchange in local markets, but there will never be a business case to make such exchange self-sustaining. Therefore, ongoing public subsidy of health information exchange will be necessary.

Ensure the privacy of electronic health information. Recent efforts to enact legislation to support health information technology have foundered in part due to concerns about assuring the privacy of electronic health information. Dramatic examples of theft and careless release of private health and non-health information have sensitized the public to this problem, and unless policymakers address it forcefully, progress in wiring the U.S. health care system will be slow.

The Health Information Security and Privacy Act, S 1814, introduced in the last session of Congress, provides a useful template for addressing some of these concerns. Lawmakers are also considering new health IT-related legislation that includes a variety of privacy guarantees. It will also be essential for the federal government to extend the provisions of current privacy law, notably Health Insurance Portability and Accountability Act, to cover the many new entities, such as Microsoft and Google, that are now attempting to become aggregators and vendors of health information.

CONCLUSION

All Americans, regardless of their health care needs, will benefit from a skilled, flexible workforce that reflects our health care priorities and has

the tools and knowledge it needs to make the best treatment decisions and system improvements.

Federal action is needed to transform our health infrastructure for the 21st century. In particular, priority goals such as improving the nursing and geriatric care workforces, expanding the primary care workforce, funding comparative effectiveness research, enhancing the use of electronic health records, and creating local health information exchange networks, depend on an active federal role.

Without vigorous federal investment in and promotion of health information technology, for example, the high acquisition and operation costs for electronic health records and the financial disincentives for information exchange will continue to stymie health information technology development. Similarly, comparative effectiveness research is a public good; it makes little sense for private actors to develop and utilize this information on an independent, isolated basis. The federal government, as a major payer for health services, has an interest in expanding this knowledge base, and as a guardian of the public interest, it has a compelling rationale for ensuring that this information is developed in the first place.

These health infrastructure recommendations should provide a particular benefit to people with acute and chronic illnesses, and subpopulations such as those with long-term care needs. Improving provider training in geriatrics should improve the quality of care for older adults with chronic illness. Building the knowledge base of which treatments, drugs, and devices work best for expensive chronic conditions will help providers manage these health problems correctly and cost-effectively. And better coordinating care using information-sharing tools will improve patient outcomes, while lowering costs and improving quality. Patients who use health services the most, yet are most poorly served by our existing system, will have the most to gain from a more highly skilled, flexible, and appropriate workforce and better information and information-sharing tools.

The recommendations in this chapter are necessary, but not sufficient, to achieve a more effective, efficient health care system. A workforce can have the right tools at its disposal, but it also needs the proper incentives and motivation to use those tools. At the same time, patients have a role to play in managing their own health and health care, and improving their own health status.

ENDNOTES

- 1 National Institutes of Health, *Summary of the FY 2008 President's Budget*, February 5, 2007, available at www.nih.gov/about/director/budgetrequest/pressinfofy2008.pdf; The Pharmaceutical Research and Manufacturers of America, "R&D Spending by U.S. Biopharmaceutical Companies Reaches a Record \$55.2 Billion in 2006," Press Release, February 12, 2007, available at www.pfma.org/news_room/press_releases/r%26d_spending_by_u.s._biopharmaceutical_companies_reaches_a_record_%2455.2_billion_in_2006/.
- 2 J.H. May et al, "Hospitals' Responses To Nurse Staffing Shortages," *Health Affairs*, June 26, 2006, available at <http://content.healthaffairs.org/cgi/content/full/25/4/W316?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&author1=may&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT> [28 May 2008].
- 3 K. Yordy, "The Nursing Faculty Shortage: A Crisis for Health Care" (Robert Wood Johnson Foundation, Spring 2006), available at <http://www.rwjf.org/files/publications/other/NursingFacultyShortage071006.pdf>; Health Resources and Services Administration, "What is Behind HRSA's Projected Supply, Demand and Shortage of Registered Nurses?" [September 2004], available at <http://www.gao.gov/new.items/d07492r.pdf>.
- 4 Committee on the Future Health Care Workforce for Older Americans and Institute of Medicine, *Retooling for an Aging America: Building the Health Care Workforce* [Washington: National Academies Press, 2008].
- 5 A.H. Goroll, et al, "Fundamental Reform of Payment for Adult Primary Care: Comprehensive Payment for Comprehensive Care," *Journal of General Internal Medicine* 22 (3) (March 2007): 410–415.
- 6 American Medical Association, "Physician Characteristics and Distribution in the US, 2007," (2007), available at <http://www.bls.gov/oco/ocos074.htm>.
- 7 Karen E. Hauer, MD; Steven J. Durning, MD; Walter N. Kernan, MD; Mark J. Fagan, MD; Matthew Mintz, MD; Patricia S. O'Sullivan, EdD; Michael Battistone, MD; Thomas DeFer, MD; Michael Elnicki, MD; Heather Harrell, MD; Shalini Reddy, MD; Christy K. Boscardin, PhD; Mark D. Schwartz, MD, "Factors Associated With Medical Students' Career Choices Regarding Internal Medicine," *Journal of the American Medical Association*, 300 (10) (2008): 1154–1164.
- 8 J.K. Iglehart, "Grassroots Activism and the Pursuit of an Expanded Physician Supply," *The New England Journal of Medicine*, 358 (16) [April 17, 2008]: 1741–1749; Organization for Economic Cooperation and Development, OECD Health Data 2007, Chart 1, "Practising Physicians per 1000 population, OECD countries, 2005" (2007), available at www.oecd.org/dataoecd/53/12/38976551.pdf.
- 9 Iglehart, "Grassroots Activism."
- 10 A.K. Jha, et al., "How Common Are Electronic Health Records In The United States? A Summary Of The Evidence," *Health Affairs*, October 11, 2006, available at <http://content.healthaffairs.org/cgi/content/full/25/6/w496?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&author1=jha&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT>.
- 11 Congressional Budget Office, "CBO's March 2008 Baseline: MEDICARE," March 12, 2008, available at <http://www.cbo.gov/budget/factsheets/2008b/medicare.pdf>.
- 12 Health Resources and Services Administration, "FY 2009 Budget Justification: Nursing Education Loan Repayment and Scholarship Programs" [U.S. Department of Health and Human Services, 2008], available at <http://www.hrsa.gov/about/budgetjustification09/nursingeducation.htm>.
- 13 K. Yordy, "The Nursing Faculty Shortage."
- 14 U.S. Department of Health and Human Services, "Recruiting and Retaining a Quality Paraprofessional Long-term Care Workforce: Building Collaboratives with the Nation's Workforce Investment System" (May 2004); U.S. Department of Health and Human Services, "Effects of the Workforce Investment Act of 1998 on Health Workforce Development in the States" (November 2004) p. 5–8.
- 15 Congressional Budget Office, "Research on the Comparative Effectiveness of Medical Treatments" (December 2007), available at <http://www.cbo.gov/ftpdocs/88xx/doc8891/12-18-ComparativeEffectiveness.pdf>.

Center for American Progress



The Center for American Progress is a nonpartisan research and educational institute dedicated to promoting a strong, just and free America that ensures opportunity for all. We believe that Americans are bound together by a common commitment to these values and we aspire to ensure that our national policies reflect these values. We work to find progressive and pragmatic solutions to significant domestic and international problems and develop policy proposals that foster a government that is “of the people, by the people, and for the people.”



The Institute on Medicine as a Profession seeks to shape a world inside and outside of medicine that is responsive to the ideals of medical professionalism. IMAP supports research on the past, present, and future roles of medical professionalism in guiding individual and collective behavior. It aims to make professionalism in medicine relevant to physicians, leaders of medical organizations, policy analysts, public officials, and consumers.