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INFORMATION AND TECHNOLOGY AT THE VA: IS IT READY FOR THE 21ST CENTURY?

HEARING

BEFORE THE

COMMITTEE ON VETERANS' AFFAIRS UNITED STATES SENATE

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

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INFORMATION AND TECHNOLOGY AT THE VA: IS IT READY FOR THE 21ST CENTURY

THURSDAY, OCTOBER 20, 2005

U.S. SENATE,
COMMITTEE ON VETERANS' AFFAIRS,
Washington, D.C.

The committee met, pursuant to notice, at 10:05 a.m., in room SR–418, Russell Senate Office Building, Hon. Larry Craig (Chairman of the committee) presiding.

Present: Senators Craig, Thune, Isakson, Akaka and Salazar.

OPENING STATEMENT OF HON. LARRY CRAIG, CHAIRMAN, U.S. SENATOR FROM IDAHO

Chairman CRAIG. Good morning, everyone. The Committee on Veterans' Affairs meets this morning to receive testimony on VA's effort to reorganize both the internal management structure of its information technology programs and the financing of its IT development projects. This is a critically important topic for oversight, I think, by this committee.

I say in all seriousness to my colleagues that VA's ability to provide quality health care, timely and accurate benefits decisions and compassionate readjustment counseling for our veterans in the future rests largely on its ability to modernize its IT infrastructure. Tomorrow's modernization requires strong, qualified, rigorous management today.

I want to stress that this is not a hearing intended to chide VA for failures in its IT program management. In fact, VA has had numerous successes in its IT programs, and I think we can be proud of those successes. For example, I do not think there is a person in the health care industry that is not overwhelmed by, and frankly, jealous of VA's electronic health records. Just recently, during the events of Hurricane Katrina, we saw firsthand how important the electronic records can be for our veterans.

That success did not go unnoticed to even *Time Magazine*, which recently wrote in a story about medical care during Hurricane Katrina,

> "Throughout the chaos of Katrina, doctors treating displaced patients in the Veterans Affairs system have had access to information that those outside the VA are dreaming of: up to 20 years of lab results and 6 years worth of x-rays, scans, doctors' notes and medication records, available for all 5.2 million active patients."

This is truly a remarkable achievement.

Still, there have been some shortcomings in the management of VA's IT projects. Most recently there was a failure for the core fi-

nancial and logistics system VA attempted to implement at the Bay Pines Medical Center in Florida. In that case taxpayers spent hundreds of millions of dollars, and VA spent thousands of man hours. Still, at the end of the day, taxpayers and VA had nothing to show for it. Clearly, Congress cannot continue to fund failures, especially ones of that scale.

To the end, the Senate, through the Appropriations bill for MilCon/VA, recently took action to protect taxpayers from large scale project management failures. The fiscal year 2006 MilCon/VA Appropriations bill places VA's IT budget under one person. Further, and perhaps more importantly, the bill withholds VA IT project monies for the new Health-e-Vet project until VA reorganizes its IT management, to make certain that the project is run by a well-qualified project manager.

Changes such as this one will have consequences large and small all across the Agency, and it is important that this committee understand those consequences and any tradeoffs that may come from such a move. As has been pointed out to me on more than one occasion, VA is one of the largest agencies in Government. A change in management structure that will affect over 200,000 people must be done in a thoughtful manner and implemented correctly.

The question before the committee today, that I hope we have answers by our witnesses, is a very special one: How can we ensure that the Department undertakes very costly projects to both upgrade its IT programs and build newer programs so we see more successes like those in the electronic health records systems, and less very expensive failures such as the one that took place with Core FLS?

To answer that question, and perhaps many others, we will hear from witnesses from VA, the Government Accountability Office and the Information Technology Association of America.

Before I call upon our witnesses, I would like to turn to my Ranking Member, Senator Akaka, for any opening comments he would like to make.

Danny.

OPENING STATEMENT OF HON. DANIEL K. AKAKA, U.S. SENATOR FROM HAWAII

Senator AKAKA. Thank you very much, Mr. Chairman. I want to thank you for this hearing. A hearing on this issue is long overdue, as you state, and I am with you on your statement that you have just made, and to let our witnesses know that we are doing this to try to improve the system.

I also want to welcome all of our witnesses to this hearing.

In the recent past I can recall one IT hearing. I believe it was a field hearing 2 years ago, chaired by my predecessor's Ranking Member, which focused on VA's failed $300 million financial and logistics IT system. By now we all have heard the story. It is a story of unrealistic expectations and complete mismanagement of a contractor, and it is a costly story, one which wasted taxpayer dollars and caused failures in the delivery of medical care.

I would remind my colleagues that VA paid the contractor a bonus after they knew that the system had failed. This was shameful.

Some would argue that we may soon have at our feet another IT disaster. VA is in the midst of a major initiative to modernize its VISTA system. Fortunately, VA had the wisdom to hire an expert to evaluate the project and to identify the problems before they go too far down this expensive road. Carnegie Mellon found major problems with VA's approach. The analysts at Carnegie Mellon wrote, and I quote, "Current plans are not realistic given the complexity and magnitude of the project and VA's ability to carry them out." Hopefully, VA will be able to reverse course and solve these problems.

I must question if VA had bitten off more of an IT solution than it can chew, especially because the system which it was designed to replace, is still in much demand in the health care sector. The VA has had its IT successes. A much mentioned example is the world class electronic medical records system, which proved its viability and robustness in the days following Hurricane Katrina. Yet with each endeavor, we must be cognizant of the bottom line. Given VA's limited health care budget, we cannot afford to sink millions into IT solutions that may not be viable.

We have to figure out how we can become smarter and better in the way we plan for and implement new or replacement IT solutions. It is extremely important for our veterans and for taxpayers that Congress ensures effective management of information technology within VA. It is all the more important because all veterans have come to rely on IT solutions every day to faultlessly deliver their benefits and services.

For me, the question confronting the committee today is whether or not VA should be directed through legislation on how to solve its IT problems.

Mr. Chairman, I look forward to this hearing and to eventually continuing to work with you on this problem. Thank you very much.

Chairman CRAIG. Senator Akaka, thank you very much. We have been joined by our colleague, Senator Salazar.

Ken, do you have any opening comment?

OPENING STATEMENT OF HON. KEN SALAZAR, U.S. SENATOR FROM COLORADO

Senator SALAZAR. Thank you, Chairman Craig and Senator Akaka. Today we will discuss proposals to centralize VA's information technology system. I want to use my opening statement to offer a cautionary note to all of you who will work on this very important project for the VA.

I agree that a centralized IT structure has the potential to eliminate waste as much as $345 million a year, and to improve the care of veterans. This is a notable and a very important goal. However, wonder about the VA's ability to make this transformation quickly. I fear that if we push VA too hard and too fast we may set the agency up for failure and waste hundreds of millions of dollars in the process, as we have some with many agencies at both the Federal and State level as they implement new IT projects over the last decade.

These Federal IT programs are expensive and we do have a record of failure with many of these projects. The IRS and the FBI

are recent examples of failures. VA has also seen major IT problems with Core FLS, which was scrapped last year after $342 million was wasted. HR Links was cancelled after $300 million was spent. These are warning systems about what we had to do, or warning signs about what we had to do as we move forward to centralization.

In addition, there is a deeply entrenched culture of decentralization of VA. VA's IT structure is inherently decentralized because of its history. VistA, VA's biggest IT success story, is a 30-year-old outgrowth of DHCP. This program was developed by individual VA programmers working without permission from VA Headquarters. It worked because it was developed locally and was flexible. To this day individual hospitals have excellent IT systems because of VistA. I do not suggest that this system is perfect. Individual hospitals have trouble sharing records, but transformation is especially risky because the VA may not have the capacity to make such a large change.

I want to note four or five concerns that I have in terms of the transition. First, this kind of transition requires buy-in from top management. The VA's record here is not particularly encouraging. It took 5 years after the Clinger-Cohen Act before VA appointed a full-time CIO. The VA CIO has since been slow in implementing major reforms. VA's leadership is opposed to the centralized model espoused in the Gartner Report and in the House legislation as I understand it.

Second, the transition cannot succeed without cooperation and input from the individualized service networks and hospitals that will use the product. In the past individual VA hospitals have been reluctant to work with VA's CIO or cede any budget authority.

Third, funding. VA's CIO currently directly controls $50 million, only 3 percent of VA's total IT budget, 3 percent of the entire IT budget for VA. The CIO's office recently has had to cancel conferences because of budgetary constraints. The CIO does not currently have the capacity to spend significantly more money.

Fourth, good contracting is a keystone to a successful project. One of the main reasons VA's recent IT have failed is the VA did not have the capacity to establish good contracts and to oversee them. Just last month, VA's CIO, Robert McFarland, testified candidly that contracting delays held up the Gartner study for months.

Fifth, the length of service. GAO reported that it often takes as many as 5 years for a CIO at a Federal agency to make an impact, but the average tenure of a CIO is only 2 years. Mr. McFarland testified that a centralized model is best long term for VA, but he does not think he can accomplish this in his tenure. He likened this task to, "pouring concrete with good rebar."

I am raising these cautions now because I am pessimistic or have given up on reforming the VA on this system. The VA definitely needs to move forward towards centralization. Congress, however, must work with the VA, and we must move forward with caution.

Given the VA CIO more budget authority and oversight would be a step in the right direction, in my view, if it is done right and it is done at the appropriate pace.

I thank the Chair, and I look forward to the hearing.

Chairman CRAIG. Ken, thank you very much.

Now let us turn to our first panel. We have the Hon. Gordon H. Mansfield, Deputy Secretary, Department of Veterans Affairs. He is accompanied by the Hon. Robert N. McFarland, Assistant Secretary for Information Technology and Chief Information Officer, Department of Veterans' Affairs.

We have two additional witnesses seated at the table: Dr. Robert Lynch, VISN 16 Director, VHA; and Jack McCoy, Associate Deputy Under Secretary for Policy and Program Management.

Welcome, gentlemen. We appreciate you being with us this morning. Before I ask your thoughts, we have just had another one of our colleagues arrive.

Senator Thune, do you have any opening comments prior to us going to the first panel?

OPENING STATEMENT OF HON. JOHN THUNE, U.S. SENATOR FROM SOUTH DAKOTA

Senator THUNE. Mr. Chairman, I just want to thank you for holding this hearing. I am very interested in the subject of information technology and its application to health care, and I appreciate the good work the VA has done in leading the way and pioneering some of the technologies, and I am also pleased that they are making some of those same technologies available to nongovernment doctors and hospitals, and I am hopeful that in today's high tech world that it will become more possible to rapidly exchange information electronically, and that these exchanges will, in fact, do a lot to help the health care sector of additional patients.

I want to congratulate you for holding this hearing, and am anxious to hear the testimony from our panelists today, and look forward to working with the VA to continue to improve the quality of care that they deliver to America's veterans, and hope that we can take some of the things that are happening in the area of electronic medical records that is already under way at the VA and see that more readily applied in other areas of our health care economy in this country.

That is all I have, Mr. Chairman. Thank you.

Chairman CRAIG. Senator, Thank you very much.

Now we will turn to the panel, and Gordon, we will start with your testimony first. Please proceed.

STATEMENT OF GORDON H. MANSFIELD, DEPUTY SECRETARY, DEPARTMENT OF VETERANS AFFAIRS, ACCOMPANIED BY: ROBERT N. MCFARLAND, ASSISTANT SECRETARY FOR INFORMATION TECHNOLOGY AND CHIEF INFORMATION OFFICER, DEPARTMENT OF VETERANS AFFAIRS; ROBERT LYNCH, M.D., VISN 16 DIRECTOR, VHA; AND JACK MCCOY, ASSOCIATE DEPUTY UNDER SECRETARY FOR POLICY AND PROGRAM MANAGEMENT, VBA

Mr. MANSFIELD. Thank you, Mr. Chairman, and Mr. Akaka and Members of the committee. I am pleased to be here this morning to discuss the VA's ongoing activities in reorganization of our information technology programs.

Before I start, I would just like to make the point that Dr. Lynch, who is here with me, is the head of our largest health care network, VISN 16, and this is the man who was on the scene in the

efforts in Katrina and Rita, and he was the one that we were talking to from the VA Ops Center, and he was in charge of the folks on the scene down there. I have to tell you that he is a personal hero of mine for all the efforts he has done down there.

Chairman CRAIG. He certainly deserves our congratulations. It was a job very well done.

Mr. MANSFIELD. Sir, I request that my full statement be entered in the record, and I also request that the articles noted in the formal statement be entered into the record, with your permission.

Chairman CRAIG. Without objection, all of your statements will be a full part of the record.

Mr. MANSFIELD. Thank you. In starting I want to emphasize that IT is a tool to be utilized to assist us to carry out the Department's reason for existence, to deliver services and benefits to our Nation's veterans. Last year we provided health care to 5.2 million veterans out of 7.1 million that are enrolled. We provided compensation and pension benefits to more than 3.5 million veterans and dependents. We provided over 500,000 veterans and family members education benefits, and 95,000 received vocational rehabilitation. We buried 95,000 veterans in our cemeteries. These large numbers are made up of individuals who have earned the benefits we are charged with delivering.

I believe we have an obligation to these millions of veterans who operate by the principle that we must first do no harm, a part of the Hippocratic oath that doctors take when they are treating patients, to do no harm. Secondly, we should deliver these services and benefits that they require in a timely and efficient manner. Our current IT system is assisting us in doing that now. We are delivering those benefits each day, each month, and throughout the year.

You mentioned the history. In the past we decentralized this system, and this action gained us effectiveness. However, that effectiveness has come with a loss of some efficiencies. For example, we have situations where all three administrations, Benefits, Health Care and Cemetery, are co-located on the same campus, yet each is running a separate IT system.

For example, as an illustration, I point to the Hines VA Medical Center in Chicago, where the Veterans Health Care Administration has a major computing center, and within a few hundred yards the Veterans Benefits Administration runs another major IT center. These facilities are separated by a chain link fence, but that is instrumental in the picture because their IT systems are not connected and we are not gaining efficiencies that are available.

Another example is Milwaukee, where we have a Cemetery Office, a Benefits Regional Office and a hospital all on the same campus, and the same thing is true.

As a result, when Mr. McFarland came to the VA in 2004, he recommended, and I agreed based on the history that has been discussed here in the introduction, that we had major issues in IT and that we needed an outside consultant to review the total IT program. The goal was to give us an "as is" view of the organization, and we chose Gartner Corporation as a consultant to help us do that. That consultant's report also gave us not only an "as is", what the existing efforts were, but some recommendation or options on

a "to be" position. They confirmed that the VA's IT resources are currently operated and managed within a highly decentralized structure.

Assistant Secretary McFarland, our CIO, oversees right now a staff, as mentioned, of about 350 individuals on a budget of roughly 40 to 50 million. While responsible for ensuring the success of all the VA's IT operations, he has no direct management control or organizational authority over the great majority of VA's IT resources. We can only provide policy guidance, budgetary review and general oversight via indirect supervision.

Following a briefing on the Gartner Report, Secretary Nicholson asked me to review the options provided with the CIO and the Under Secretaries for Administration and recommend a course of action. The senior management, the Secretary, myself, the CIO, the Under Secretaries, believe that the federated model presented in that report is the best answer for the VA. All IT operational service delivery personnel and the budget associated with their support to include all non-medical IT equipment, maintenance and contract support, will come under the direct supervision of a national organization that reports directly to the CIO's office.

For example, all cyber security personnel and programs will be centralized to the Office of Cyber Security under the CIO. This organization will deliver all IT-related operational services to all elements of the VA based upon negotiated and formerly agreed upon set of specific standard IT services delivered according to a clearly understood and documented set of service level agreement standards.

The CIO clearly maintains overall responsibility for the successful management of these resources and continues to provide budget oversight policy and program management direction for the Department in the model that we have chosen. Budget authority would be centralized to the CIO. We know that this is a concern of the Appropriations Subcommittee and we are in agreement with the approps they have taken. Most IT employees will be under the CIO's authority, running the IT operations infrastructure for the VA.

The chief difference is, one, selection, and our selection is that administration IT employees will continue to do software development and software application selections that are vital to health care or benefits function. This will ensure that proper planning, design, integration and standardization requirements are followed throughout the Department as we build our next generation systems. CIO will still have budget decision authority over all development projects.

Let me close by pointing out why VA believes this plan is going to work. First, we have reviewed and learned from the lessons of the past, some of the incidences that have been presented here in your introductory statements. We know that we must communicate to our workforce the backing of the entire departmental leadership from the Secretary on down, and I would make the point that while the CIO is present for maybe only 2 years, if he has the direct backing of the Secretary, then I believe that he can move forward a lot quicker and get the job done, and that is part of what we are depending on.

Second, we need to take the time needed to explain this process to the whole workforce. We also need to involve workforce in the actual planning process to define changes needed and the timelines needed to make effective change.

Third, we need to have a check, a recheck, and a third check to make sure that all aspects of the plan and how, in being implemented, are checked each and every step of the way. We must be prepared to make adjustments as necessary, as we learn from our implementation plan.

Fourth, we need to report to outside entities as appropriate, to the Congress, to the VSO partners and to others who would be interested in this area.

Fifth, we need to ensure right from the start all the way through the finish, that senior leadership from the Secretary on down, are continually following through on all planning and implementation.

Sixth, as mentioned, more than IT is being reorganized. Our Procurement Office is also undergoing a change of leadership to better enable us to deal with contracts and implementation.

The Secretary has recently made a decision to proceed with implementing the federated model and reorganizing VA IT, and the leadership represented here at this witness table is committed to making that happen.

Thank you for inviting us here to discuss these important matters, and we look forward to answering your questions.

[The prepared statement of Mr. Mansfield follows:]

PREPARED STATEMENT OF GORDON H. MANSFIELD, DEPUTY SECRETARY, DEPARTMENT OF VETERANS AFFAIRS

Thank you, Mr. Chairman. I am pleased to appear before this Committee on behalf of the Secretary and the Department to discuss with you the Department of Veterans Affairs (VA) information technology infrastructure reorganization assessment.

The Department's business is the health and well-being of our nation's veterans. To ensure mission success, it is imperative that we employ all means at our disposal, including information technology, in the most effective way possible.

Some history of how VA's IT infrastructure and organization have evolved may prove useful to the Committee. For at least 25 years prior to 1990, VA's IT program was centralized. In July 1990, under a belief that decentralized operations provide for better management of VA facilities, the Department decentralized resources to the Administrations and staff offices for VA's IT systems design and applications development, systems operations, and systems oversight, along with four data processing centers. The remaining IT oversight program was placed under the Chief Financial Officer (CFO). Then, in accordance with the Clinger-Cohen Act of 1996, VA formally established the position of Assistant Secretary for Information and Technology (CIO), but the IT oversight program remained aligned under the CFO and decentralization of VA's IT program continued.

At his confirmation hearing in January 2001, Secretary-designee Principi stated that he was committed to ending stove piped systems in VA.

Secretary Principi directed the centralization of the Department's IT program, including authority over personnel and funding, in the Office of the Assistant Secretary for Information Technology effective October 1, 2002. A team of executives from across VA was convened to design a centralized IT organization for VA. The Secretary approved a centralized reorganization plan on May 14, 2003.

The result of this reorganization was a matrix organization which, over time, VA came to realize was not best suited for a large, geographically dispersed organization that is highly dependent on information technology to deliver services.

Robert N. McFarland was confirmed by the Senate on January 22, 2004 as the second Assistant Secretary for Information and Technology and Chief Information Officer (CIO). Under his leadership, a rigorous IT review process, disciplined project management methodology and an IT portfolio management system have continued to evolve. We are in the final phase of rebuilding our nationwide telecommuni-

cations infrastructure, beginning the consolidation of some infrastructure assets, and implementing aggressive cyber security and privacy programs to ensure the protection of our information assets, infrastructure, and veterans' personal information. We submitted the VA Enterprise Architecture design to OMB in June 2005 and received a score of 3.0, significantly higher than the previous score of 1.25. We continue to refine it.

A strong Enterprise Architecture is critical to any effort to bring down our stove piped systems and replace them with integrated systems. The score of 3.0 demonstrates progress in this information technology area and signals that we are steadfastly working to build a foundation for systems integration and standardization.

In the wake of the difficulties with CoreFLS, as a new Deputy Secretary, I asked Assistant Secretary McFarland to undertake a study of our IT system and resources and to pursue outside assistance, if necessary. In December 2004, he contracted with The Gartner Group to conduct an Organizational Assessment of VA IT.

This assessment was to enhance the effectiveness of VA's IT by first baselining how it operates today, then developing organizational models to increase VA's IT value (in terms of greater efficiencies, economies of scale, and added business value), and finally, charting the path VA IT can follow to deploy its new organizational model to truly deliver value. The completed assessment was delivered to the Assistant Secretary for Information and Technology and CIO in May 2005.

The study proposed five different alternatives, as follows.

Option 1—*Status quo*. Currently, VA IT resources are operated and managed within a highly decentralized management structure. The Department's CIO manages a central office staff of approximately 350 government employees and a direct budget of approximately $40 million per year. While the CIO is charged with overall responsibility for the successful management of all VA IT resources (in fiscal year 05, $1.8 billion and approximately 5400 IT FTE) the CIO has no direct management control or organizational authority over any of these resources. The CIO provides policy guidance, budgetary review and general oversight via indirect supervision (dotted line) of the Administration and staff office CIO's. Within some of the Administrations, the CIO does not directly supervise or have authority over the majority of IT resources in the field and must also provide policy guidance, budgetary review and general oversight via indirect supervision.

Option 2—*Regional Option*. Under this option, VA would be divided into three to five geographically based subdivisions. Within each of these, a Deputy CIO would control all IT assets (Operations, Staff Functions, and Systems Development) and be responsible for all service delivery within that region. These Deputy CIO's would report directly to the VA CIO.

Option 3—*Administration-Centric Option*. Under this option, VA would be divided by Administration and Staff Offices and a Deputy CIO for each would control all IT assets (Operations, Staff Functions, and Systems Development) and be responsible for all service delivery within that Administration or Staff Office. These Deputy CIO's would report directly to the VA CIO.

Option 4—*Federated Option*. Under this option, VA would separate operational responsibilities and IT systems development responsibilities into separate domains. All IT operational service delivery personnel and the budget associated with their support (to include all non-medical IT equipment, maintenance, and contractor support) would come under the direct supervision of the CIO. This organization would be charged with delivering all IT-related corporate services (such as electronic mail, financial systems, telecommunications) to all elements of VA based upon a negotiated and formally agreed upon set of specific standard IT services delivered according to a clearly understood and documented set of service-level-agreement standards. Under a federated approach, IT mission/program systems development responsibility remains with the Administrations or staff office business units. The Administrations and staff offices directly manage all mission/program systems—development FTE and budget authority. The CIO clearly maintains overall responsibility for the successful management of these resources and continues to provide IT budget oversight, policy, and program management direction for the Department.

Option 5—*Centralized Option*. Under this option, all VA IT personnel resources, assets, and budget would be under the direct supervision of the VA's CIO. This centralized IT organization would be charged with delivering all IT-related corporate operation and mission systems development services to all elements of the VA based upon a negotiated and formally agreed upon set of specific standard IT services and systems development standards delivered according to a clearly understood and documented set of service level agreement standards. Under this option the Administrations remain responsible for system and user requirements definition, service de-

livery standards development, and end user participation in systems development acceptance criteria development and testing.

The consultant's report delivered an "as is" assessment that VA's IT resources are currently operated and managed within a highly decentralized structure. While the Assistant Secretary for Information and Technology, our CIO, oversees a staff of approximately 350 VA employees and a budget of over $40 million, total VA IT resources are approximately 5,400 full-time-equivalent employees with a budget of some $1.8 billion. Despite having overall responsibility for ensuring the success of VA's IT operations, the Assistant Secretary has no direct management control or organizational authority over the great majority of VA's IT resources. He can only provide policy guidance, budgetary review and general oversight via indirect supervision.

We are determined to move sequentially towards a "to be" model under the Federated Concept.

In the model we have chosen, the budget will be centralized to the CIO. Security will be centralized under the control of the CIO. Development will require the CIO's review and budget approval. This model will also include a migration of most workers to the control of the CIO, while leaving some employees under the control of the administrations.

This will move us closer to greater efficiencies, centralized planning and standardization. VA will bring in the necessary expertise to plan and manage this transition. We will communicate our plans up and down the line so every employee understands what is to be done. We will train and test to ensure employees can perform the tasks at hand, and keep them motivated during the transition. We will have timelines and goals that are agreed upon throughout the organization.

This is a plan that VA can execute.

It is important to note that the IT operation today has evolved over time and has included the services of many talented and dedicated professionals. Their efforts are paying off. For example, in terms of cyber security, VA IT systems are certified and accredited for the first time. Additionally, external independent gateways have been reduced.

We will build upon our successes. It is vital that any reorganization not adversely impact services to veterans or unnecessarily affect our employees. Keeping in mind that our department exists to serve veterans and their families, our first principle will be to "do no harm" to the patients in our world class health care system, or to the millions of beneficiaries that depend on checks being dispatched in a timely and accurate manner. We know there are no simple "light-switch" solutions to be found in any model, but we are committed to managing these changes for the good of the Department.

Mr. Chairman, top-level executives of this Department have been involved in the evaluation of alternative organizational models, and understand the importance of this endeavor. There is an understanding that cultural change has to take place and buy-in must occur at the lower-worker level. We also know that it isn't just the IT reorganization that is involved. The Department is considering changes at the CFO level, in logistics, in finances, in our collections, and our efforts to comply with OMB's Circular A-123, "Management's Responsibility for Internal Control." We are mindful of lessons learned and know for this change to be successful, we must collaborate.

As we implement this reorganization, we remain mindful of the successes recently acknowledged—accomplishments with which our IT team had considerable involvement. For example, in just the past 6 months, no fewer than five major publications have attested to VA's leadership of private and Government health care providers across almost every measure.

- A Rand report published in the Annals of Internal Medicine ranked the overall quality of VA medical care as significantly higher than any other health care system in the country.
- An article in the Washington Monthly, entitled, "The Best Care Anywhere," rated VA as the recognized leader in the health care industry. It pointed out that, 10 years ago, veterans' hospitals were in deep crisis—but that today, and I quote, "VA is producing the highest quality care in the country. VA's turnaround points the way towards solving America's health care crisis."
- An editorial in the prestigious Journal of the American Medical Association, referred to VA as 'a bright star' within the health care profession for its cutting-edge dedication to patient safety.
- Last month, in their review of 'America's Best Hospitals,' U.S. News and World Report titled their article on VA as, 'Military Might: VA Hospitals are Models of Top-Notch Care.'

• And just on August 22, on the front page, the Washington Post ran a headline that read, "Revamped Veterans' Health Care Now a Model."

Further, on April 27, 2004 President Bush chose the VA Medical Center in Baltimore to announce his commitment to ensuring that all U.S. citizens have an electronic health record in the next 10 years. In doing so, he held out VA's fine example. The reorganization of our resources will enable VA to be the benchmark in the development and implementation of Health information technology solutions and standards as envisioned by the President's Initiative for Health IT as both an example and national leader in this arena.

I would say all those assessments are right on target. We view the Veterans Health Administration as the vanguard for national standards for electronic medical records, now the rest of the nation does as well. Our health IT systems—and the quality of our employees—helped us reap these headlines. Clearly, we are delivering more services to more veterans each and every year. And, this was accomplished under our current structure.

Our IT successes are also facilitating the business of claims processing and benefit delivery in the face of daunting demands:

• VA provides monthly compensation and pension benefits totaling $32 billion to over 3.5 million veterans and beneficiaries. Disability claims increased by 33% from 2000 to 2004. Last year alone, VA added nearly 240,000 new beneficiaries to the compensation and pension rolls.

• By the end of fiscal year 2005, over 750,000 veterans received decisions on their disability claims, with VA processing an additional 1.5 million pension, dependency, and other adjustments to beneficiaries' accounts. Even with the increased claims volumes, we have reduced by 30 percent the length of time veterans must wait for decisions on their claims over the last 3 years.

• We are also providing in excess of $2.5 billion in Education benefits to over 500,000 beneficiaries, and are working to rehabilitate nearly 95,000 service-disabled veterans through our Vocational Rehabilitation and Employment Program.

I would also note that in December 2004, the American Customer Satisfaction Index announced the National Cemetery Administration earned a customer satisfaction rating of 95 out of a possible 100 points—the highest score ever received by a federal agency or private organization. In the survey, both the ratings for respect shown to loved ones and maintenance of VA cemeteries as National Shrines received a score of 97.

The report called this finding "an outstanding score by any standard of ACSI measurement and for any context, public or private." NCA was able to achieve this milestone through the support of IT in all aspects of cemetery and memorial services, from the timely acquisition of veteran headstones with accurate inscriptions to the nationwide gravesite locator available to the public on the World Wide Web.

This concludes my statement. Thank you, Mr. Chairman, for the opportunity to discuss these important matters. I am prepared to answer any questions you might have.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DANIEL K. AKAKA TO GORDON H. MANSFIELD

Question 1. VA's IT budget will be centralized under the Chief Information Officer. Development of IT will require the CIO's review and budget approval. How will the CIO facilitate communication within VA to meet the individual IT of its health, benefits and burial administrations?

Response. There are several points at which requirements for information technology (IT) on the part of the Department of Veterans Affairs (VA) administrations and staff offices are communicated to the VA Chief Information Officer (CIO). First, there is the development of the IT portfolio, which determines resource requirements, both financial and otherwise, for all of the projects, programs, and investments in IT throughout VA. Administrations and staff offices develop capital asset plans (Exhibit 300s) for major investments, and provide funding information for minor investments. These investments are deliberated by the VA Enterprise Information Board (EIB), which is comprised of representatives from each administration and major staff office. Decisions are made by this group as to whether investments should be undertaken, modified, or cancelled. The EIB will also be the entry point for a portfolio to become part of the program management milestone review process.

Once the IT portfolio is created, the EIB meets regularly to monitor the progress of investments. Semi-annual program management reviews (PMRs) will be conducted, one at mid-year to determine adherence to spend plans and to check year-of-execution progress; and one at the receipt of the new fiscal year budget to ensure

continued adequate resources for program execution. Emergent reviews will be performed whenever programs break management thresholds that indicate negative variance to sound program execution

Finally, the federated IT approach leaves development activity centered in the most logical place—with the organization that will benefit from the results of the development. The VA CIO will control the flow of funds based upon the information provided through the EIB in the IT portfolio and program management monitoring processes

Question 2. The Government Accountability Office recommended that the Secretary develop a plan that describes how VA intends to use data from the Rating Board Automation 2000. GAO recommended that VA conduct studies of the impairments for which data reveal inconsistencies among VA regional offices. Please tell the Committee if such a plan has been developed. VA's computer programs are tools that can be used to determine where inconsistencies exist and to develop better training methods for VA employees.

Response. Veterans Benefit Administration (VBA) concurred in the Government Accountability Office's (GAO) recommendations. VBA's Compensation and Pension (C&P) Service initiated a pilot review selecting three disabilities for consideration, including cases involving knees, hearing loss, and service connection for post traumatic stress disorder (PTSD). For those decisions where service connection was granted, the evaluation assigned to the condition was also reviewed. A random sample of ratings completed on or after October 1, 2004, was selected for the study. The data source was Rating Board Automation 2000 (RBA2000).

Integral to the pilot review was development of checklists to collect data to determine if there was inconsistency among raters and, if so, the cause of the variance. VBA asked members of the Veterans Health Administration (VHA's) Tennessee Valley Healthcare System Center for Health Services to assess the value of the checklists that were developed, to analyze the review process and results, and to provide recommendations for improvement.

Ultimately, the process was judged too lengthy and costly to continue with other reviews. As an alternative course of action, VBA's Office of Performance Analysis and Integrity (PA&I) is working with C&P Service to gather data through RBA2000 to identify possible inconsistencies among regional offices in the award and denial of compensation benefits for specific impairments.

PA&I and C&P are prioritizing body systems and/or diagnostic codes to be reviewed. Data will be extracted from the corporate database for specific diagnostic codes in the rating schedule. PA&I has also extracted data for grants/denials of service connection, and evaluations of service-connected conditions for the remaining mental disorder diagnostic codes that use the General Rating Formula for Mental Disorders. Data pulls for the most prevalent diagnostic codes for each subsequent body system occur monthly and the projected completion date is June 2006.

Other data runs will be analyzed in conjunction with these body system data runs to determine possible factors that may be affecting rating variance. Variables to be analyzed include veteran characteristics, station characteristics, station performance, legal/representational issues, rating characteristics, and staff characteristics.

Question 3. The Gartner Report found that VA's IT culture was resistant to change. For example, in May 2003, the Secretary approved a plan for reorganization of VA's IT management structure. Yet, to date this reorganization has not yet been implemented fully. What steps can you take to make VA more receptive to change and allow you to fully implement pending and future IT management changes?

Response. The Secretary of VA has made a decision to proceed with implementing the federated model in reorganizing VA IT and the leadership represented at the Senate Committee on Veterans' Affairs hearing on October 20, 2005, witness table is committed to making it happen. An Information and Technology Realignment Office (ITRO) has been established to lead and manage the development and implementation of a federated information and technology program. The Executive Director of the ITRO, reports to the Assistant Secretary for Information and Technology, and will work in collaboration with VA's Strategic Management Council in the developing and executing of the reorganization of IT in VA. The Strategic Management Council is chaired by the Deputy Secretary and comprised of the Deputy Under Secretaries, Assistant Secretaries, the General Council and other key senior officials. Also, internally, and in parallel, a task force, comprised of senior budget officials representing each administration and major staff office, has been working together to develop a process for developing, implementing, monitoring, and managing a single VA IT budget.

Question 4. How can VA provide incentives to contractors to take on the costly and risky development work for IT programs, software, and systems?

Response. VA will use the full range of contracting options open to it to provide high quality information technology solutions that benefit our administrations and staff offices and, ultimately, the Nation's veterans. VA will choose the contracting approach that makes the most sense based on a determination of technical, schedule and cost risks involved in the particular program. If the particular contract involves a well-proven commodity, VA will use a firm-fixed price vehicle. If there is increasing risk, VA may choose to accept some of that risk through use of cost incentives. If the effort is very risky, VA might use a time and materials approach. VA is not committed to a "one-size-fits-all" approach when it comes to contracting for IT equipment, software, and services. Each effort will be evaluated on its own merits and the appropriate determination made to deliver the intended results in a timely manner, staying within budget. Contracts would also be reviewed to ensure that the contracting solution selected enhances the ability of the program to execute by considering innovative approaches such as performance-based maintenance concepts in the upkeep of legacy software programs.

Question 5. One of the significant contributing factors to the problems associated with the CoreFLS program was that the same contractor hired by VA to provide independent advice and assistance were also given responsibility to implement the program. One of the conclusions of the Carnegie Mellon report on CoreFLS was that in allowing this, VA created a conflict of interest. What is VA doing to prevent contractors hired to provide independent IT advice and assistance from then being hired to implement the work and approach they recommend?

Response. VA's program management and contracting personnel are trained in Government ethics and work closely together to identify conflicts of interest and the appearance thereof. Additionally, the one VA Enterprise Program Management Office (EPMO) was formed on August 8, 2004. It is designed to improve and standardize the management of IT projects and the IT portfolio by defining VA-wide policies, procedures and best practices, and providing tools to facilitate the successful management, reporting an oversight of VA's IT projects. When fully implemented, EMPO will conduct periodic program management reviews (PMRs) of all major projects. A key component of reviews will focus on the acquisition strategy, supporting acquisition plans and implementation. This will provide a greater level of scrutiny of the contracting process and ensure that contracting strategies are sound and proper. Administrations will be encouraged to implement similar internal reviews to ensure appropriate contracting methodologies are used.

Question 6. VBA has undertaken many steps to identify and reduce the significant backlog in C&P claims processing application and adjudication. It still seems that much more might be done to streamline and shorten this process, as well as to ensure that decisions are standardized across the nation. Using technology throughout to enhance this process, incorporating industry best practices has seemed to lag in VBA's efforts. Has VBA considered using a rules-based decision engine, such as is used throughout the insurance industry, to help standardize at least the bodily injury component of the claims adjudication process?

Response. From 2001 to 2003, VBA worked on the Compensation and Pension Evaluation Redesign (CAPER) project, an initiative to enhance the disability evaluation process and the exam request/return process for VBA claims adjudication. CAPER explored the use of rules-based decision-making technology in evaluating medical symptoms (the bodily injury component) under the VA Schedule for Rating Disabilities (38 C.F.R., Part 4). Although VBA's Information Technology Investment Board (ITIB) determined in 2004 that IT resources should be redirected from CAPER to other higher priority IT initiatives, some of the concepts developed for CAPER were integrated into other VBA applications, such as the Compensation and Pension Records Interchange (CAPRI) and medical examination templates.

Question 7. I understand a pilot program is underway at the Ft. Bragg BDD site to include the compensation program in VBA's efforts to automate some of the application, exam and adjudication process. Please explain what is involved in this effort and what role if any, Commercial-Off-The-Shelf (COTS) or other IT tools will play.

Response. Virtual VA will be used to pilot the paperless processing of (Benefits Delivery at Discharge) BDD claims. Virtual VA is a web-based computer application designed to electronically maintain all the documents in a veteran's claims folder and to simulate the paper workflow process of compensation claims. While Virtual VA's interfaces are custom designed, the solution employs widely accepted imaging software, web components, and hardware. Predominantly, Virtual VA uses commercial-off-the-shelf software (COTS) including:

FileNet, Macromedia, Oracle, Xerox software, Microsoft, Kodak scanners, Adobe, Sun Servers, Active PDF Conversion Services, and IBM Servers.

To create the plan for a paperless BDD claims process, VBA reviewed the current BDD business process and the existing functionality of the Virtual VA application.

Specific IT enhancements/interfaces to existing applications are required to support the paperless BDD business process, including:

1. Modification of existing Virtual VA workflow tracking functionality.
2. Automatic import of rating decisions created in RBA 2000
3. Data feeds from the Defense Manpower Data Center and creating a web interface inquiry so that users can retrieve verified military history reports.
4. Automatic import of Compensation and Pension medical examination reports generated by QTC (the contract provider of C&P exams at BDD sites).
5. Import of Compensation and Pension medical examination reports generated by VHA.
6. Creation of a web interface to capture imaged records from the Defense Personnel Records Imaging System.

Question 8. Please provide a detailed explanation of what VBA is doing to improve the C&P application and exam process and adjudication. How are industry best practices, such as rules-based decision engines and performance management tools, being incorporated into these program enhancements?

Response. Modern Award Processing—Development (MAP-D) is a nationally deployed application designed to facilitate and automate the development phase of claims processing. MAP-D provides standard development paragraphs to use in composing letters. In addition, it provides automatic and manual claims development. The automatic development is rules-based development logic that was proven in a prior beta application trial for original compensation claims. The automatic development feature allows users to answer questions and enter basic veteran information. The system determines what development needs to be initiated and generates it in the form of letters, messages, and automatic requests for service information. The goal of MAP-D was to provide an easy way for users to create and amend development letters. To facilitate fast reaction to changes in policy or procedures, the paragraphs were stored centrally. Currently, the MAP-D application is being maintained through process improvements made with regular quarterly releases. The most recent change was released on November 14, 2005. VBA is focused on improving the letter generation capability over the next year, and expects to revalidate automatic development and make modifications mandated by changes in the applicable laws and regulations that govern the claims process. Compensation and Pension Records Interchange (CAPRI) provides online access to veterans' electronic health records (EHRs) contained in the VHA system of records. It is also the IT application that VBA uses to request and print VHA C&P examinations. The VA regional offices (ROs) have used CAPRI since 2001 to electronically request C&P examinations from VA medical centers (VAMCs). Upon receiving the electronic VBA C&P examination request, VAMC personnel schedule the veteran for the required medical examinations. Once all requested C&P medical examinations and corresponding worksheets have been completed, the exams are loaded and stored electronically in CAPRI. Individual C&P examination reports become a permanent record in the veteran's EHR, where they can be viewed and/or printed by claims adjudication personnel. C&P Service has taken steps through CAPRI to standardize the VBA C&P examination request. The CAPRI exam request organizes the 57 medical examination worksheets by 14 body systems identified in the VA Schedule for Rating Disabilities. CAPRI also gives VBA users a template that contains language common to requests for increased evaluations, pension benefits claims, representation by a power of attorney, and medical opinion requests. The "General Remarks" portion of the CAPRI C&P exam request allows the user to customize exam requests as necessary. CAPRI also uses rules-based technology to prevent a user from requesting a duplicate C&P medical examination worksheet when a request for that particular exam is pending.

VBA and VHA continue to improve the exam process through the work of the jointly funded and staffed Compensation and Pension Examination Program (CPEP) office. The CPEP office is in the process of developing templates that map to the CAPRI worksheets. The goal of the template development is to provide rules-based technology to ensure that medical examiners complete the required information and accurately reflect the information requested in the worksheet. It is hoped that use of rules-based technology in the C&P medical examination report will decrease the number of inadequate VHA medical examinations. Upon satisfactory completion of the templates, VBA will work with VHA to determine whether to make use of the template mandatory for VHA examiners.

VBA has also initiated a critical review of the QTC (VA exam contractor) templates to ensure that they track VBA's examination protocols and properly solicit medical evidence. The review will ensure that VBA decision makers receive accurate and consistent medical evidence whether the examination is performed by VHA or QTC. Under the terms of its contract with VA, QTC must reprogram its templates to be consistent with VBA policy.

Question 9. What thought has VA given to incorporating IT planning into new hospital construction to ensure new VA medical facilities will be "digital hospitals"—to included "smart" HVAC, security, diagnostic, operating rooms, personnel information, etc. that will allow VA to take advantage of an integrated facility infrastructure prior to opening the facility to patients?

Response. VA does in fact design in digital capability into our new and renovated facilities. In the development of IT systems for new VA facility construction, VA uses an integrated process with extensive coordination and communication among the design team members. These teams include representatives from the local VAMC, the Veterans Integrated Services Network (VISN) office, the Office of the Assistant Secretary for Information and Technology, and the Office of Facilities Management as well as a knowledgeable architectural and engineering consultant. IT system configuration and integration are developed by the VAMC and IT staffs. Supporting the IT systems with infrastructure systems are a range of design criteria, including design manuals and master specifications, which outline VA requirements. The systems and supporting infrastructure are coordinated and implemented by the design team for each specific project. Infrastructure elements, such as advanced heating ventilation and air conditioning, electrical and security system controls, are outlined in VA criteria. System elements are important as is privacy, control of assess to data, HIPAA requirements, redundancy, procurement regulations, and ease of use. For a new addition or renovation project at an existing VAMC, integration into existing systems and maintenance of ongoing operations are critical elements to consider. This project management approach results in IT systems that function well and meet VA operational needs. In addition, VA regularly consults with manufacturers to keep abreast of changes and improvements in all related technologies.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN D. ROCKEFELLER IV TO GORDON H. MANSFIELD

Question 1. As VA works to improve and upgrade its IT, will there be a process and consideration given to research opportunities? Will there be a sensitivity to develop electronic records in such a way that the development of registries and sharing of research data will be possible and affordable? Will an effort be made to find IT solutions to provide access to valuable research and information about many diseases facing both veterans and the general population, such as Alzheimer's and dementia?

Response. VA is developing and implementing a Health Data Repository (HDR) to provide integrated views of patient data across VA sites of care. The HDR functionality will include all of the domains of clinical data as well as notifications, clinical reminders, decision support, and alerts. Additionally, VA is creating a Corporate Data Warehouse (CDW) that will allow users to aggregate information from the HDR and other sources to look at particular disease cohorts and population-based health issues. The availability of the HDR and CDW promise to greatly enhance research opportunities and facilitate the creation of data marts and special population registries for such things as Alzheimer's, dementia, diabetes, etc. Demographics and vital sign measurements are available today in the HDR/CDW. Allergies, outpatient pharmacy and hematology and chemistry laboratory tests will be available by the middle of 2006 and other clinical domains will be added as they are standardized. Restrictions on IT funding may slow down development and full deployment of the HDR and CDW.

When the HDR and CDW are fully deployed, researchers will greatly benefit from the following: (1) accessibility of national data clinical data; (2) improved data base design that facilitates analyses; (3) economies of scale in data collection and processing; (4) centralized authoritative data source; and (5) standardized data and definitions.

Question 2. Please explain how the new system will cover IT issues dealing with medical devices at local VAMCs and security issues.

Response. In collaboration with the Office of Cyber and Information Security (OCIS), VHA mandated that all facilities create virtual local area networks (VLANs) to isolate medical devices from the rest of the facility's IT network by September 30, 2004. This was a starting point in VA's defense-in-depth approach to networked medical devices, which added a layer of protection to the medical devices across VHA. By isolating all of the networked medical devices within the IT networks, VHA has effectively reduced the exposure of critical hospital equipment and data to risk of penetration by a worm, virus, or other cyber attack. VHA will continue to work with OCIS' Health Information Security Division (HISD) to develop sound

guidance and provide direct assistance to VA facilities regarding security protections for networked medical devices.

Question 3. How could the Office of Health Data and Informatics use automated coding and automatic coding audits software from the commercial market to improve the coding and auditing of VA records? Will part of the IT restructuring include a process to consider such opportunities?

Response. VA already evaluates and uses commercial off-the-shelf products and will continue to do so under the new IT structure. The Office of Health Data and Informatics has been involved with a number of vendors, reviewing coding products that suggest they can automatically review and code inpatient and outpatient records by using natural language processing tools. We are in discussions with several VA sites and other non-VA organizations to undertake testing of these products. The testing will help validate whether the benefits projected by the vendors can be achieved in the VA environment.

Re-engineering the Computerized Patient Record System (CPRS) is a major VHA initiative. The re-engineering of CPRS will include requirements that address creating a foundation for the concept of coded data as a by-product of documentation, in order to minimize or eliminate provider involvement in the coding process. We plan to provide automated coding audit functionality within CPRS that would auto-review and code provider documentation and validate the accuracy of already coded records. This type of functionality could provide audit results that would be used to provide educational material for providers and coders, and, importantly, would provide needed leverage to challenge insurance companies on denied claims. As VA pursues automated coding, we must maintain awareness that, as yet, automated coding is not an industry standard.

Again, VA is concerned that limits on IT funding will delay development and deployment of the re-engineered CPRS.

Question 4. How could VA better use IT to more accurately audit inpatient and outpatient records to more effectively recover funds through third party payers under the Medical Care Cost Recovery provisions?

Response. All VA medical center facilities have installed the same Encoder/claim scrubber product (Quadramed) which allows sites to ensure more consistency and accuracy in bills submitted to third party payers. All claims go through a scrubber with edits to ensure that the most accurate and complete claim is submitted to third party insurers. VA continues to enhance the capabilities of this system and to further train users to maximize system capabilities.

Chairman CRAIG. Gordon, thank you very much for that opening statement and testimony.

Now let us turn to Robert McFarland, as I have introduced him, Assistant Secretary for Information Technology, Chief Information Officer, Department of Veterans Affairs, or should we just say the person in charge?

Oh, I see, you are all together. The word has gone forth. All right. With that in mind, now that I have introduced you again, Bob, do you have any comments? I mean we have shifted all the burden to you anyway.

Mr. MCFARLAND. Mr. Chairman, I have no prepared statement, but I will be happy to answer any questions that you have. I am excited to be here and talk about some of the things that we are trying to do.

Chairman CRAIG. I think questions we do have, and thank you all for being here. Your testimony describes the federated option as put forth by the Gartner Report. Your testimony then goes on to say that VA is determined to move towards a federated concept. What is the difference, if any, between what Gartner recommended you do under a federated option and what you have outlined as the federated concept that you are moving towards? Can you bring us into context on that?

Mr. MANSFIELD. Mr. Chairman, I was referring to the fact that we understand that whatever we do here, there is not a light switch answer. We cannot just flip a switch and it will happen. No

matter what we do we have to take it by phases. We have to make sure that the planning part of it is done correctly, and as I mentioned, checked and rechecked as we go forward. The comment about moving towards is that we are going to plan, and then we are going to start implementing, and that implementation will be by phases, we believe, as we move forward, but we will go with the federated model as outlined.

Chairman CRAIG. Was there universal agreement within the Agency to go this way?

Mr. MANSFIELD. No, sir.

Chairman CRAIG. Who made the final decision?

Mr. MANSFIELD. As I mentioned, the Secretary tasked me with working with the administrations and the CIO and our management office to come up with what was the best consensus on how to move forward, and I then brought that consensus to him, and he made the decision that we would go forward with the federated model.

Chairman CRAIG. I appreciate your broadly outlining the mechanics of the federated concept and your assurances that the goals that are agreed upon throughout the organization will be cost effective and met with success. I intend to follow up with you and hold you, and all of you, accountable for those assurance.

Will you commit to providing this committee with periodic reports on your progress? What I am saying to you, to all of you, and certainly to you, Gordon, is that we are going to work through this with you. We want to know where you are and where you have moved along the way. We do not want a report a year or two from now that we spend hundreds of millions of dollars and somehow it is not working.

Mr. MANSFIELD. Mr. Chairman, let me make the point that—to preface my answer, which is yes—that we appreciate, No. 1, the bipartisan support we have gotten from this committee in your efforts to help us along the way, and we understand that we do have an obligation when taxpayer dollars are appropriated and given to us to spend, that they be spent the way they should be spent, and the results that we should get are gained. I would make the point that we would be more than happy to provide whatever periodic reports that you requested, and as I mentioned in my oral statement, we intend to do that.

Chairman CRAIG. As you know, the Senate version of the MilCon/VA Appropriation Bill points out the fact that no individual or office has final budget or programmatic authority to oversee the Department's IT effort, and the legislation suggests an internal reorganization. Your testimony states that VA's first goal of any reorganization is to do no harm. First, do you believe the appropriation bill's language could do no harm to your current IT programs?

Mr. MANSFIELD. Yes, sir, I do believe that. We have had an opportunity to have extensive discussions with the staff of the committee, and we are in agreement with where they are going. We have had an opportunity to be involved in how that language is being put forth, and we also have done some preliminary planning inside to be able to affect that if and when the bill is passed. We believe that that is where we want to go, and this will help us centralize authority in the CIO and that will be an effective tool in us

going forward to make the changes we want. As I said, we are going through a process right now to plan to be able to implement what would be required.

Chairman CRAIG. Secondly, how does this language complement or compete with VA's recent internal efforts to reorganize?

Mr. MANSFIELD. I think that it complements it in the fact that if you look at the Gartner Report, one of their findings is that there needs to be centralized control of the dollars to be able to make sure that the standardization and efficiencies that we are looking for are gained, and that is a part of the way to get there.

Chairman CRAIG. Senator Akaka, questions?

Senator AKAKA. Thank you, Mr. Chairman.

Secretary Mansfield, some in Congress are pursuing legislation to direct VA to consolidate IT functions under the CIO. What progress has VA made that would indicate if it can get its own IT house in order without requiring Congress to get involved and provide a legislative solution?

Mr. MANSFIELD. Sir, as I mentioned, the VA went out and hired the Gartner Consulting Group to come in and do the study. They made presentations to myself and Mr. McFarland. We then briefed the Secretary. Following that, he directed that I go forward and come up with a consensus agreement if possible, and since then we have been looking at ways to implement one of the options that was presented, and we believe that we can start doing that very soon. The Secretary has signed off on that as a directive to move forward, to start the implementation of the federated model.

Senator AKAKA. The study that you mentioned, when was that study done?

Mr. MANSFIELD. Finished in late May, sir.

Senator AKAKA. Of this year?

Mr. MANSFIELD. Yes, sir.

Senator AKAKA. Mr. Secretary, one of the problems identified with some VA IT systems is the lack of effective and expert program management during the design and fielding of IT systems. How can VA compete with private industry to attract the best and brightest minds in the IT field to ensure that we have effective program management for current and even future IT initiatives?

Mr. MANSFIELD. Mr. Akaka, you point out a very big problem that we have, not only in this area, but in many of the specialized areas, in getting competent people into the system, given the hiring system that exists and how we have to go through that. We have started moving forward in this area, and I think I would ask Mr. McFarland to talk about his setting up of a program management office as we anticipate moving forward.

Mr. MCFARLAND. Sir, when I came here some 20 months ago, one of the things that disturbed me was we were in a mode of educating and trying to build project managers, but we did not have what I would call something similar to DOD, which is an enterprise project management office, where you have extremely experienced project management people who have overseen large projects and understand how to find the pitfalls through the process.

I came to the Secretary and the Deputy, and since I was only able to affect the 2006 budget at that particular time, I inserted some dollars and a structure in the 2006 budget to start to build

such an office to oversee these large at-risk projects. The Deputy and the Secretary were very much in favor of that idea, and have since pulled that into the 2005 budget, and I have just recently been able to hire a recently retired Navy captain that will head up the enterprise project management office. He is extremely experienced in managing extremely large programs, understands the complexity of large programs, understands how to deal with risk, and to be candid with you, we are going to supplement that office with more of that kind of talent.

Now, we have an advantage here that we can compete in this area with private industry. No. 1, we have the best mission in Government, and that is to serve our veterans. We can attract retiring, very experienced ex-military to this environment because of that mission, and in fact, I stole this gentleman from private industry, and we were able to steal him because of this mission. I feel very confident that we can bring in talent that can help us oversee these projects in the future. It will take some time to build that office. It will not be built overnight. We will have to deal with the most at-risk projects in the beginning, and ultimately I would like to put it through all of our projects.

Senator AKAKA. Thank you.

Dr. Lynch, I also want to add my commendation to you for your actions during and after Hurricane Katrina. As we all know, the Department of Veterans' Affairs was lauded for what it did after the disaster, and we are delighted to have you with us today. We have been waiting for sometime to get an idea of how much it would cost to rebuild the infrastructure. Where are you in your assessment, and can you give an estimate of the related costs?

Dr. LYNCH. Thank you, Senator. First off, I very much appreciate the kind words everybody has given to me personally regarding our response to Katrina, but I want to say that all the VA responded to Katrina, not just VISN 16. Certainly within my network, I shall say I am very proud of the people that work for me, and I think I have the real heroes working for me, and I think they deserve all the credit. I am just the figurehead that gets to stand up in front of them, and I want to make sure they get recognized.

I want to be sure I understand your question. Is the infrastructure, the physical infrastructure of the medical facilities that have been damaged, not specifically IT issues.

We are working on those costs right now, and there have been a number of engineering teams, for example, in New Orleans assessing the viability of restoring that building. It looks like the timelines for doing that, to fully bring it back to pre-Katrina, will be several years, and the costs are quite significant. Of course, we are assuming we want to try to mitigate the kind of vulnerabilities that the flooding caused this time around. You have to realize that while I am not aware of any final decision on the fate of the levees in New Orleans, if there is an attempt to repair those levees to a stronger strength, it will be, I am told, many, many more years before those are up to that level.

I think if you are going to restore a large health care facility in New Orleans, you should mitigate your vulnerabilities. That is going to be the approach we are recommending.

The costs for that could run as high as $200 million, maybe even go above that. There is a big debate about how much it is going to cost to rebuild in the environment in a disaster areas because costs are not normal.

The other options we are looking at are the possibility of partnering with other entities down there, but that is in a very preliminary stage. I wish I could say we had final answers to all of this. I am dependent on the engineers to give me reports, and I am just kind of sharing with you the best knowledge I have at this point.

In Biloxi and Gulfport, I think everybody in the room is aware of the CARES recommendation the Department put forward some time ago, and it was already recommending that Gulfport ultimately be closed and the services that were at Gulfport be recapitulated on the Biloxi campus. There were projected costs associated with that. We will again have the issue of doing that in a post-disaster environment. We are exploring moving that ahead, if you will, at this point. Again, no final decision has been made.

There is a great demand for good, firm, hard numbers at this point, and things change almost every day, and that is sort of where the status stands right now. I appreciate the interest though.

Senator AKAKA. Thank you very much. My time has expired.

Chairman CRAIG. Senator Akaka has asked an important question. We plan on November 3rd to have the VA back—the Secretary will be here—to give a detailed report on all aspects of Katrina costs and possibilities of change and adjustment and what we do to get everything back up to where it was or what adjustments we make. At that time also, Danny, we will invite the Senators from the affected States to be with us at that hearing. We wanted to give VA plenty of time to get their arms around these figures and to assess and give us the detail that I think all of us want to have to try to understand the impact of that. Is that a tentative date or is that a real date now? It is a real date now, November 3rd.

With that, let me turn to Senator Salazar.

Ken.

Senator SALAZAR. Thank you, Chairman Craig.

Mr. McFarland, last month you appeared before this committee, and as I recall, the comment that you gave to this committee was that you personally believed that a centralized system would be the best option, and I am sure you discussed your position with the VA. What I would like to ask you to do is two things, first, explain to me in layman's language what the difference is between the federated system versus a centralized system in terms of IT. And then second, what is it that changed your position from where you were when you came before the committee?

Mr. MCFARLAND. Sir, I made those statements before the House committee at a hearing I believe about a month ago, when I was asked for my professional opinion on the Gartner study. I had stated then, and I will state now, my professional opinion was in line with the Gartner study, based on my prior experience and having worked in this industry for some 33 years.

The issues of the differences between a centralized approach and a federated approach are clearly, in layman's terms, under a centralized approach, all development, application, selection and infrastructure is run through one organization. In the most successful environments, with that approach you wind up writing some very detailed service level agreements with your customers, you have a customer mentality, meaning the people that you provide service to, and you build around their needs, and you bring them in to the process of both development and operational control, and you deliver services based on the needs of your customers.

In a federated approach what you have is a IT infrastructure, meaning the operations, the running of the tools, and the infrastructure meaning the equipment and all the aspects that go along with keeping the service running under a centralized management structure, and you leave the development and application program selection and the development of software, user-specific software, to the administration in this case or to another organization. The federated approach is a step towards centralization, but it is clearly delineated by having users continue in the administration to develop their own specific software requirements, while the operational aspects of running applications and providing IT services is managed through a central group.

Senator SALAZAR. Are you, Mr. McFarland, now at a point in this position, comfortable that the centralized system is not something that is the best option, and that moving forward with the federated system is the best?

Mr. MCFARLAND. In my opinion, my personal opinion, the centralized option for the VA is a very big bang. This is a culture steeped in decades of decentralized environment. You do not make those kind of changes in any organization, especially one as deeply rooted as this, overnight.

I still believe that in the long run, having IT centrally managed is the successful way to run it. I believe you have to take steps to get there, and the consensus with management is that the federated approach is the first step to do that, and I have agreed to support what management wants to do.

Senator SALAZAR. Let me ask in terms of the dollars that you now will have responsibility for, your organization is going to grow very significantly in terms of the dollars that you would have responsibility for, as I understand it, from 1.4 billion that the CIO has direct control, to I guess—no, from 50 million to 1.4 billion. So your 50 million will go to 1.4 billion. Are you ready to assume that kind of responsibility for those kinds of dollars as the CIO?

Mr. MCFARLAND. I am not familiar with——

Senator SALAZAR. Or are you scared?

[Laughter.]

Mr. MCFARLAND. No.

Senator SALAZAR. That is a lot of money.

Mr. MCFARLAND. Sir, I come from a corporation where I managed far more than that, so I am not particularly afraid of that size number. To be candid with you, that will take setting up an infrastructure that does not exist in my office today. I am in the process right now, and have just reviewed yesterday the first draft of the IT Controllers Office, which will allow me to not only disburse the

money, but be able to track it. That has not been something we have done very successfully in the past.

It is my intent that I have responsibility to manage that kind of sum, I will track that kind of sum one way or the other, and I will make sure that that money will be spent on what it is designed to be spent on, and nothing other than what it is designed to be spent on. It will take some effort to do that. It will take some staff to do that, and it will take process, which is currently not in place, but it is possible and we have had some pretty good minds working it now for about 2 weeks, and I think we are getting very close to putting an organization together that could manage the money.

Senator SALAZAR. One more question, if I may, Mr. Chairman.

Is now the time to do this, or would it be best if you, in your current position, and Secretary Nicholson and Secretary Mansfield were to take another year to study and to figure out how you are moving forward on this approach, as opposed to launching into what seems to be such an expensive and difficult undertaking, given the culture that we are dealing with here of independence on each one of the systems that we deal with? I mean talk to me a little bit about the timing question.

Mr. MCFARLAND. Sir, I am not an experienced Government employee. I come from the private sector, so I do not have the benefit of history and how long it takes Government to get things done.

Senator SALAZAR. Do you have a comment on that, Secretary Mansfield?

Mr. MANSFIELD. Yes, sir. It has been a part of the discussion on how we arrive at the decision and how we look at how we are going to implement it. In my testimony I believe I pointed out that it is going to take us 12 to 18 months to get this done. I recognize, as Mr. McFarland has indicated, we do not have all the people that we need in house to be able to get this done. The first thing we will have to do is to look for some consultants to come in and help us arrange the plan, and then decide where along the way we may need some outside help to get it done, as we move forward.

It is not something that is going to happen overnight, but I believe that it is time to say this is what we are doing. The decision has been made by the Secretary, and as I said, the senior management of the Department, working together to come up with an agreement. You cannot always get 100 percent of what you want. What you have to do is get the most you can. Mr. McFarland has bought into this. The Health Care Administration has bought into this. The Benefits Administration has bought into this. The Office of Management has bought into this, and we are prepared to move forward.

It will not be, as Mr. McFarland says, with a light switch approach, it will be done gradually. We need to send the word to the organization that we are doing this. Then the next thing we need to do is—a lesson learned from the last time—we need to involve the people all the way down to the users in the planning process, so they feel that what is going on here is something that they have a part in and that the success of it is going to be something that they are committed to, and that is going to take us a little bit of time, as Mr. McFarland mentioned, in the cultural aspects.

Then the other part of it too, and one of the reasons that I believe that we should choose this model, is my "do no harm" comment. We are dealing with health care. We are dealing with patients. We are dealing with people in clinics or hospital beds, and medical doctors with hands-on treatment, some of it assisted with, helped with the tool of IT. In those areas we have to make sure we do no harm, and that is a part of what we have to play into here too.

Senator SALAZAR. Thank you. I very much look forward to working with Senator Craig and Senator Akaka and this committee, and you to monitor the situation as you move forward.

Mr. MANSFIELD. If I might follow up, sir, I just would also make the point that when you see in the report or when you hear the big bang, then you want to stop and look at what this is. That report gave us a risk versus rewards graph too that we talked about. Even if we were going to complete centralization with everything in Bob's pocket, we still would have to go through the steps to get there, and this is one of the steps to get there.

Right now the only difference that I see is that the development phase, again with those clinical people involved and making sure that the treatment of patients that they do is part of the process for development and the benefits is a part of it. That is the one step that is different. Security gets centralized in IT. The budget dollars get centralized in IT. The standardization requirement gets centralized in IT. That is how we get the efficiencies out of this system and make it work better and deliver better services, and hopefully save some dollars that can then be translated into additional benefits and additional health care.

Senator SALAZAR. Thank you.

Chairman CRAIG. Ken, thank you.

Senator Thune.

Senator THUNE. Thank you, Mr. Chairman.

I appreciate all of your responses and answers and testimony very much, and I credit you for not resting on your laurels. I think that in order to stay on the creative cutting edge, you have to constantly be thinking of ways that you can approve and do things better, and the VA has been recognized, as you have all noted, for their many successes and improvements in the area of patient safety, and much of it related to the things that you are doing in terms of technology.

I am especially interested in the technology component part of health care for a lot of reasons. One is I represent a very diverse—a very large area with a lot of real estate and not a lot of people, and health care facilities all across the State. You have a big network as well. I am also interested in it, because I think that electronic medical records has been proven to improve patient safety to save lives. It has also been proven to save money, and those are two things that are very important in terms of where we are headed in health care.

I guess what I would like to ask you—and I appreciate the update on where you are headed and look forward to working with you and looking forward to working with the Chairman and this committee as we provide the oversight that is necessary for you all to deliver the very best possible health care services to America's

veterans. Looking at it in a broader context, we are having a debate in this country too about how to take the model of what you have done and duplicate that and use it in other areas of health care.

One of the big issues that is raised is in operability standards and how do different software packages in different health care facilities communicate with each other, thereby enabling them to have one integrated system or database whereby a patient's record can be accessed from any particular facility, whether they are somewhere in California or somewhere in South Dakota.

I am curious to know what you all have done—I am told at least that you are working to provide or distribute scaled-down versions of your software to nongovernment hospitals and doctors and physicians—I am curious to know what has been the result of that effort? To what extent do hospitals have it? How many of them are using it? Is there any indication that there is an effort to use the software by doctors and hospitals that might be receiving it?

Dr. LYNCH. I think the release you are referring to is—some people refer to it as VistA Lite, a basically available Federal code that is given to the private sector, but it is a partnership with Health and Human Services that was just announced in the last couple of months. I believe August is when that went out. It is really in a test phase in the community, so it would be premature to tell you how that is going, but that is the intent of the test phase.

There are other Federal and private sector organizations that have used VistA in its current iteration or various iterations of it, the Indian Health Service for one. Some of the public health agencies in this town are using VistA.

I think the thing that is probably most—when you realize how many physicians and other allied health professionals in training spend some time in their training in a VA medical center, you will find that almost every physician who left their residency program or medical school—nurses, what have you—in the last 6 to 10 years is very familiar with VistA in one form or another. They just have a hard time not laying hands on it at one time or another.

I think probably that is the biggest push for getting health care providers to use the electronic health record, and I think you will see—what I am hoping we will see is a consumer-driven demand driven by providers, and it is generational. Within VA, I think it was 6 years ago really, we put out the current version from the providers' perspective that we have now. That was when things really blossomed, and we found that young physicians who grew up at a time when the Internet and PCs were always part of their lives had no problem adapting to it. Folks like myself, maybe a little bit more of a struggle. I think we are going to see that this is the natural trend of things.

What your question really gets to is will we have the tools ready for them when the demand is there, and that is the standards that I think that VA is participating with in Health and Human Services and a lot of the President's push towards the electronic medical record, that will drive it. How that will exactly shake out, I don't know. What you are looking for is sort of what you have with the Internet. It does not matter which brand of computer, which operating system, even which attachment you put to your operating

system. They all talk to each other because there are common standards that allow them to communicate. That is what we are pushing for.

Senator THUNE. I appreciate that. I would welcome, as this particular, I guess, new arrangement or relationship with some of the non-government hospitals, as you start getting data back about who is using it and how they are using it and what level of—what sort of results they are getting, it would be very helpful.

Again, I appreciate the Chairman's interest in the subject with respect to the VA and the good work that you are doing there. I also know that in an area like my State, technology can do wonderful things, and telemedicine, things we are doing in that field as well. I also believe when it comes to efficiency, saving money, and saving lives, moving more toward electronic—and it is generational. There is no question about that. One of the things you hear most often is it is hard to get physicians and doctors who have always transcribed things the old-fashioned way to actually—and how do we provide incentives for them to be a part of the solution. I would welcome any additional insights that you have about that as we go forward.

Thank you, Mr. Chairman.

Chairman CRAIG. Senator Thune, thank you.

Senator Isakson, you arrived while the panel was underway, so please proceed. Do you have any opening comments along with your questions?

Senator ISAKSON. I was here earlier and then had to step out for a call, which I apologize for, and I came back in.

No, I have no opening statement. I do have——

Chairman CRAIG. Please proceed.

Senator ISAKSON. I do bring greetings from my 91-year-old father-in-law, a retired Navy Commander, who in 1999 when I was elected to the House lectured me on all the VA needed to do, particularly with regard to health care improvement, and he told me last week it was remarkable how well they had done since I got to Congress.

[Laughter.]

Senator ISAKSON. Being he is my father-in-law, I took total credit for it, but I deserve none. I thought I would pass it on to all of you because he is an absolute—Commander Davidson is an absolute critic, and he has been very happy with the medical improvement, Dr. Lynch and all the others.

I did come in during the testimony, so I had to go back and read, and I just really have maybe one question and a follow-up.

In the federated model, it says here in Option 4 describing it as, "All IT operational service delivery personnel and the budget associated (to include all non-medical IT equipment, maintenance, and contractor support) would come under the direct supervision of the CIO." Does that mean that the medical side of IT is not under that direct supervision?

Mr. MCFARLAND. It means that all the medical devices and all of the various medical pieces of equipment will stay under the supervision of the hospital. Candidly, even—in my opinion, even in a centralized form, that would be the same. No IT organization should be making decisions on medical equipment that is needed

to carry out health care. We should aid and support and try to help with security, but we should never be in the mode of making those decisions.

Senator ISAKSON. I concur with that, and to the best of my recollection, most of the concerns about IT at VA have been non-medical IT concerns. Is that not correct?

Mr. MCFARLAND. I believe that is correct.

Senator ISAKSON. Which brings me to my next question. On the next page, it says, "This model will . . . include a migration of most workers to the control of the CIO, while leaving some employees under the control of the administrators." How many administrators are there?

Mr. MCFARLAND. The breakdown, I can't give you exact numbers, but the breakdown is somewhere around 4,500 to 1,500 approximately. Most of the employees are operational in nature, meaning they are involved in running and maintaining the infrastructure that is out there. Those that would stay under the administrations are those who are programmers and developers of the applications themselves of the software that is designed to manage and run the medical applications.

Mr. MANSFIELD. Sir, if I may interrupt, I think you are talking about the number of administrations. We are pointing out there that the health care, the Veterans Health Administration, would maintain the development for products in their area. The Veterans Benefits Administration would maintain the same for their area of expertise, and then the Cemetery Administration. They would be aligned under those three administrations.

Senator ISAKSON. Are any of those stovepipes integrated at any point?

Mr. MANSFIELD. Not now, but under the federated model, the operational infrastructure would be integrated.

Senator ISAKSON. Then therein lies me to my point, I guess, which is more of a statement. Mr. McFarland, I have great respect for Dell and what you did and what that great company does. In one of my jobs in my life, I was asked to take over the Department of Education in Georgia in a crisis, which was the Y2K crisis where they were trying to become compliant. They had 187 school systems, a State board of education. They had decided to select—the software of their preference was SAV, which is very complicated software. They had made the terrible mistake of letting all 187 systems attempt to customize the student information and the financial system, which led to a catastrophic $45 million disaster and a last-minute patch to become Y2K compliant.

Anytime I read that we are going to centralize, but some of the employees are going to be under the supervision of the administrators and not the CIO, I worry that a department or an administrator working with a consultant or an outside vendor trying to customize could take what otherwise should be a baseline system and cause not only irreparable difficulty but tremendous cost. You can comment on that any way you want to.

Mr. MCFARLAND. I share your concern more than you realize. Let me say that under where I think we are headed, I will have budgetary control. I can promise you this. I will not sign off on any budgeted item, including development projects, that do not keep in

concert with an enterprise architecture, and if they are looked at as being custom solutions that do not fit the environment, I simply won't fund them. We may have some battles in that area, and I welcome them. I share your concern.

If you look at the big recent failure of Core FLS—you have described a little bit what happened in Georgia—lack of standardization will eat you alive in this world in IT. Without standardization and without standard practices, you cannot apply automation. It does not matter whether we would have made Bay Pines work or not. You could not have picked that system up and laid it into another hospital or another facility without customizing it again. That is because we did not have any standardization in place.

Those are the areas that I think we can manage, and I intend to manage those through the budget process.

Senator ISAKSON. I am glad to hear that, because in the end, not because people would intentionally want cost overruns, but most administrative people are closer to my age and they do not have the computers that my kids have that allow them to do all these things instinctively. They start customizing or start asking consultants to provide things which can be done but run you off into some unbelievable cost overruns and problems. Your knowledge is very satisfying to me, and if you can manage through that process in the budget, then I think this federated model will work.

Thank you, Mr. Chairman.

Chairman CRAIG. Thank you, Senator Isakson. The question is: How did you do?

Senator ISAKSON. How did I do?

Chairman CRAIG. In the Department of Education in Georgia. Now that you have led us down that path——

Senator ISAKSON. I got elected to Congress, Mr. Chairman. I don't know whether that is because they wanted to get rid of me or because it worked.

[Laughter.]

Senator ISAKSON. I will share with Mr. McFarland actually the results of that, but not on camera.

[Laughter.]

Chairman CRAIG. In other words, special expressions belie the camera.

All right. A couple of last questions of this panel. You had mentioned the enterprise architecture design. I see OMB scored it at a 3 in contrast to a previous 1.25 score. Mathematically, that is a 100-percent improvement.

Now, what does that exact—what does that tell us about enterprise architecture? How much better and is it good enough?

Mr. MCFARLAND. I'd love to tell you that getting a 100-percent improvement in my grade was a wonderful thing, but I would have to be honest and fair with you and tell you that when I got here, we were nowhere where we needed to be. We have made great progress. I was very lucky to attract an enterprise architect to the agency some 9 or 10 months ago, and he has done incredible work in getting us moving towards where we need to go. We are not there yet. We still have to try to reach, I believe, a 4.0, and that additional one point is a significant enterprise. I believe we will get there.

Enterprise architecture is an evolving thing. You just don't get one and then put it in the drawer and everything is fine. It will continue to evolve. It will have to evolve based on the needs of the agency, and we will have to evolve it based on the needs of the Government, because the Government has, OMB has a very strict interpretation of enterprise architecture, and we have had some challenges in getting ourselves in line with that. We will get there, and that is the umbrella that fits over all of our applications and all of our environment to make sure there is commonality. We will never break up these stovepipes if we do not have a strong enterprise architecture to do it with.

Chairman CRAIG. Okay. I thank you for that comment, Mr. McFarland, and I think all of us recognize the difficulty of change, especially inside organizations as old, with the positive reputation that VA has; at the same time, a frustration on the part of all of us of costs and cost overrun and the inability to get our arms around them and manage them. It is pretty hard sometimes to go home to the taxpayer and try to explain why a couple hundred million dollars or more just got blown away, or it is no longer operating or it is non-functional. We went through this with, you know, other agencies of Government as we try to make these changes and bring them into modern approaches.

Consultants are brought in, and sometimes effectively used, sometimes not. Gordon, we talked about the Gartner study and its costs. What were its costs in reality?

Mr. MANSFIELD. The costs were between $800,000 and $1 million, I believe. Is that right?

Mr. MCFARLAND. Yes, sir. It was somewhere, if I remember correctly, around $875,000, I believe.

Chairman CRAIG. That is viewed as money well spent?

Mr. MANSFIELD. Yes, sir.

Mr. MCFARLAND. Yes, sir, I believe it was.

Chairman CRAIG. I don't ever want the record to show that that is pocket change, but it was pocket change well spent in the context of things. Thank goodness that you feel it was appropriately spent, and that is a manageable amount of money in most of our view when it comes to what we are doing here.

Gentlemen, thank you very much. We will have you back again—and again, and I say that because we want to know what you are doing and how it is going on. I will only ask you to leave with this note: As I have told the Secretary, there don't deserve to be surprises in any of this. We are all in this together because we have one goal in mind, and I think, Secretary Mansfield, you expressed it well in your opening statement. The wiser we can spend the dollars, the more dollars we can get to the ground to serve veterans. We thank you all for being here this morning.

Mr. MANSFIELD. Thank you, Mr. Chairman.

Chairman CRAIG. Our second panel is made up of Paul Wohlleben?

Mr. WOHLLEBEN. Very good, Mr. Chairman.

Chairman CRAIG. Did I pass the test, Paul?

Mr. WOHLLEBEN. You did. That was fantastic. Thank you.

Chairman CRAIG. Partner, Grant Thornton, on behalf of the Information Technology Association of America; and Linda Koontz,

Director of Information Management for Government Accountability Office.

With that, Paul, Linda, thank you for being with us. Please proceed. Paul, we will start with you.

STATEMENT OF PAUL WOHLLEBEN, PARTNER, GRANT THORNTON, LLP, ON BEHALF OF THE INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA

Mr. WOHLLEBEN. Thank you, Mr. Chairman. Good morning. My name is Paul Wohlleben. I am a Partner with Grant Thornton of Chicago, Illinois, an international accounting and management consulting firm.

In my role as a witness before you this morning, however, I am representing the Information Technology Association of America. ITAA provides global public policy, business networking and national leadership to promote the continued rapid growth of the information technology industry. ITAA consists of approximately 350 corporate members throughout the United States in a global network of 67 country's IT associations. ITAA members range from the smallest IT start-ups to industry leaders.

Modern organizations, whether Government or commercial, use IT to help them achieve their missions. For most organizations, IT is both a major component of cost and a key resource in managing business operations and in satisfying customers. This morning I will describe how many of ITAA's member companies employ, align and operate their IT assets to best align them with the organization's missions, improve productivity and maximize the return on their investments. Additionally, this discussion will address our position on the placement and the role of the Chief Information Officer in any large enterprise.

Let me begin by stating that leading companies operate using an organizational strategy drawn from their major business and mission objectives. In developing such a strategy, leading companies consider the role of all key resources in accomplishing that strategy, including information technology. It is a position of ITAA that in most cases a successful organization's CIO will be part of the senior management team that develops that overarching strategy. Such involvement by the CIO increases the probability that IT will be properly leveraged to achieve the desired outcomes.

Once an organization's business and mission strategy had been defined, including the basic contributions expected from IT, the CIO needs to develop the strategies and plans that define how IT will be best deployed across the organization to make those contributions. I will refer to this as the IT strategy. The CIO must ensure that the IT strategy is aligned to the organization's business and mission strategy, meaning that each IT investment can be linked back to the organizational goal or objective that it supports.

A key component of the IT strategy is the enterprise architecture. The enterprise architecture provides views into how the organization operates, its key desired outcomes, the technology infrastructure that provides computing capability, the data that is used in the organization in the application systems that support the organization. ITAA believes it is imperative for the CIO to have sufficient authority to produce, deploy and maintain the IT strategy, in-

cluding the enterprise architecture. It is particularly important that the CIO be able to keep them current with a changing business and mission environment, and to ensure that they serve as the standard road map for all IT investment, planning and execution.

The development of the IT strategy and the use of the strategy to guide the organization during the implementation projects designed to move the organization from the current to the target states cannot be accomplished by the CIO organization alone. The entire enterprise will be affected by the IT strategy. The entire enterprise must be represented in the process that develops and oversees the execution of the strategy. This is, in effect, a component of organizational governance. ITAA believes that the CIO must have appropriate authority, organizational placement, and peer relationships to ensure that an effective process exists for this organizational governance.

I have touched on a number of key roles that must be successfully addressed to ensure that an organization's IT investments are both efficiently and effectively utilized. The CIO must have effective control over the planning, authorization, resourcing and implementation of all IT. Effective control means that the CIO can delegate the implementation of IT as long as the CIO retains oversight and sufficient management mechanisms in place to ensure compliance with CIO approved plans. We believe the CIO should not delegate enterprise level planning, authorization and resourcing responsibilities.

Let me turn my attention to the organizational placement of the CIO. While ITAA recognizes the impact that attributes like culture and management style have on determining how to organize to optimize effectiveness, we believe that an organization is best able to leverage its IT if a CIO reports to the organization's most senior official. Such placement sends an important signal to the rest of the organization about the value of information technology in its management, and better enables the CIO to ensure an effective IT governance process. It better positions the CIO to develop working relationships with other key senior executives in an organization's leadership.

We also believe that with such high organizational placement comes a responsibility to reach out to the organization to develop effective collaboration and governance processes. A seat at the executive table must be used to inject IT into the strategic mainstream, and not to isolate it from the rank and file. Elevating the CIO in combination with effective collaboration will help ensure that the broad needs of the organization are reflected in the IT requirements, and that efforts to standardize both IT and business processes receive appropriate representation.

To summarize, IT is a critical component in helping organizations like VA realize their strategic objectives. To harness the value of IT, the CIO maps agency mission and business process objectives to an information technology strategy. An enterprise architecture translates IT strategy into an actionable blueprint for moving from the here and now to where we want to be. Although the CIO is ultimately responsible for the effective alignment of IT performance with agency mission, goals and objectives, this individual does not

and must not operate in a vacuum. To be effective, the process must enjoy widespread agency support and buy-in, and must originate from the top down.

I thank you for the opportunity to testify before the committee this morning. I will be pleased to answer any questions you may have. ITAA will also be glad to meet with Members of the committee and their staffs on the important issues that are raised during this hearing.

Thank you.

[The prepared statement of Mr. Wohlleben follows:]

PREPARED STATEMENT OF PAUL WOHLLEBEN, PARTNER, GRANT THORNTON, LLP, ON BEHALF OF THE INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA

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Modern organizations, whether commercial or government, use IT to help them achieve their missions. For most organizations, IT is both a major component of cost and a key resource in managing business operations and satisfying customers. This morning, I will describe how many of ITAA's member companies employ, align, and operate their IT assets to best align them with their organization's missions, improve productivity, and maximize the return from their investments. Additionally, this discussion will address our position on the placement and role of the Chief Information Officer (CIO) in any large enterprise.

Let me begin by stating that leading companies operate using an organizational strategy drawn from their major business and mission objectives. In developing such a strategy, leading companies consider the role of all key resources in accomplishing that strategy, including IT. It is the position of ITAA that in most cases, a successful organization's CIO will be part of the senior management team that develops that overarching strategy. Such involvement by the CIO increases the probability that IT will be properly leveraged to achieve the desired outcomes.

Once an organization's business and mission strategy has been defined, including the basic contributions expected from IT, the CIO needs to develop the strategies and plans that define how IT will be best deployed across the organization to make those contributions. I will refer to this as the IT strategy. The CIO must ensure that the IT strategy is aligned to the organization's business and mission strategy, meaning that each IT investment can be linked back to the organizational goal or objective that it supports. Ideally, the contribution of the IT investment can be measured in terms of how well it supports the relevant overarching organizational goal or objective.

A key component of the IT strategy is the enterprise architecture (EA). The EA provides views into how the organization operates, its key desired outcomes, the technology infrastructure that provides computing capability, the data that is used in the organization, and the application systems that support the organization. In leading organizations, the EA consists of both a current snapshot of the organization's IT infrastructure, called the 'as is' architecture, and a snapshot of the target infrastructure, called the 'to be' architecture. IT modernization plans are then developed with the intent to move from the 'as-is' to the 'to-be' states. ITAA believes it is imperative for the CIO to have sufficient authority to produce, deploy and maintain the IT strategy, including the enterprise architecture. It is particularly important that the CIO be free to keep them current with a changing business and mission environment and to ensure that they serve as the standard roadmap for all IT investment planning and execution.

The development of the IT strategy, and the use of the strategy to guide the organization during the implementation projects designed to move the organization from the current 'as-is' to the target 'to-be' states, cannot be accomplished by the CIO's organization alone. The entire enterprise will be affected by the IT strategy; the en-

tire enterprise must be represented in the process that develops and oversees the execution of the strategy. This is, in effect, a component of organizational governance. ITAA believes that the CIO must have appropriate authority, organizational placement, and peer relationships to ensure that an effective process exists for organizational governance.

I have touched on a number of key CIO roles that must be successfully addressed to ensure that an organization's IT investments are both efficiently and effectively utilized. The CIO must have effective control over the planning, authorization, resourcing, and implementation of all IT. Effective control means that the CIO can delegate the implementation of IT as long as the CIO retains oversight and sufficient management mechanisms in place to ensure compliance with CIO-approved plans. We believe the CIO should not delegate enterprise-level planning, authorization and resourcing responsibilities.

Let me turn attention to the organizational placement of the CIO. While ITAA recognizes the impact that attributes like culture and management style have on determining how to organize to optimize effectiveness, we believe that an organization is best able to leverage its IT if a CIO reports to the organization's most senior official. Such placement sends an important signal to the rest of the organization about the value of IT and its management and better enables the CIO to ensure an effective IT governance process. It better positions the CIO to develop working relationships with other key senior executives in an organization's leadership.

We also believe that with such high organizational placement comes a responsibility to reach out to the organization to develop effective collaboration and governance processes. A seat at the executive table must be used to inject IT into the strategic mainstream, not isolate it from the rank and file. Elevating the CIO will help ensure that the broad needs of the organization are reflected in IT requirements and that efforts to standardize both IT and business processes receive appropriate representation.

To summarize, IT is a critical component in helping organizations like the VA realize their strategic objectives. To harness the value of IT, the CIO maps agency mission and business process objectives to an information technology strategy. An enterprise architecture translates IT strategy into an actionable blueprint for moving from the here and now to the where we want to be. Although the CIO is ultimately responsible for the effective alignment of IT performance with agency mission, goals and objectives, this individual does not and must not operate in a vacuum. To be effective, the process must enjoy widespread agency support and buy-in, and must originate from the top down.

I thank you for the opportunity to testify before the Committee on Veterans' Affairs. I will be pleased to address any questions you may have. ITAA will also be glad to meet with the Members of the Committee and their staffs on the important issues raised in this hearing.

Chairman CRAIG. Thank you very much for that testimony, and also thank you for that invite. We will continue to work with you as we go through this.

Now, Linda, let us turn to you, Linda Koontz, Director of Information Management, GAO.

STATEMENT OF LINDA D. KOONTZ, DIRECTOR, INFORMATION MANAGEMENT ISSUES, UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

Ms. KOONTZ. Thank you, Mr. Chairman. I am pleased to be here today to discuss the organization of VA's information technology program. I will be discussing our previous work on the role of Chief Information Officers in the Federal Government and in the private sector, as well as providing information on the evolution of the CIO position at VA.

As you know, under the Clinger-Cohen Act the Congress has mandated that Federal CIOs play a central role in managing information technology within Federal agencies. In this way CIOs can help ensure that agencies manage their information functions in a coordinated and integrated fashion, and thus improve the efficiency and effectiveness of Government programs and operations.

In 2004 we reported that Federal CIOs were responsible for most of the key management areas we identified as required by statute or critical to effective information and technology management. All the CIOs were assigned responsibility for five key areas, for example, enterprise architecture and IT investment management, although they sometimes reported that they shared responsibility for these areas with other organizational units.

Our past work also identified a number of organizational characteristics that contribute to CIO success. First, successful CIOs work with supportive senior executives who embrace the central role of technology in accomplishing mission objectives, and include the CIO as a full participant in senior decision-making.

Second, successful CIOs have legitimate and influential roles in leading top managers to apply IT to business problems and needs. Placement of the position at an executive management level in the organization is important, but in addition, CIOs earn credibility and produce results by establishing effective working relationships with business units.

Third, successful CIOs structure their organizations in ways that reflect a clear understanding of business and mission needs. This understanding is a prerequisite to aligning the CIO's office to best serve the agency. To do this, CIOs also need knowledge of business processes, market trends, the agency's current systems and available IT skills.

To be successful, Federal CIOs must overcome a number of challenges. For example, according to a little over 80 percent of the CIOs, one major challenge is implementing effective IT management practices in such areas as information security, enterprise architecture, investment management, and e-Government.

In a study that we recently released, CIOs at leading private sector organizations reported responsibilities and challenges that were similar to those of their Federal counterparts. These private sector companies used both centralized and decentralized organizational structures, and several of the CIOs spoke of their efforts to achieve the right balance. In addition, most private sector companies had executive committees with authority and responsibility for governing major IT investments.

In recent years the CIO position at VA and the Department's IT management, have received increased attention from VA leadership. For 2½ years after the passage of the Clinger-Cohen Act in 1996, the Department went without a CIO. For 2 years after that the CIO role was held by an executive who also had other major responsibilities. The Department then had an acting CIO for 1 year, and in August 2001 it appointed a full-time permanent CIO.

Subsequently, the Department proposed further strengthening the CIO position and centralizing IT management, recognizing that aspects of the VA computing environment were particularly challenging and required substantial management attention. In particular, the Department's information services and systems were highly decentralized, and a large proportion of the Department's IT budget was controlled by the VA's administrations and staff offices.

To address these challenges the Secretary issued a memo in 2002 announcing that IT functions, programs and funding would be centralized under the Department level CIO.

Although we have not reviewed the current status of this proposed realignment or VA's current organizational structure, it remains our view that this realignment held promise for building a more solid foundation for investing in IT resources and improving the Department's accountability over those resources.

The additional oversight afforded the CIO could have a significant impact on the Department's ability to more effectively account for and manage its approximately $2.1 billion in planned IT spending.

Mr. Chairman, that completes my statement. I would be happy to answer questions.

[The prepared statement of Ms. Koontz follows:]

PREPARED STATEMENT OF LINDA D. KOONTZ, DIRECTOR, INFORMATION MANAGEMENT ISSUES, UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

Mr. Chairman and Members of the Committee:

Thank you for inviting us to take part in your discussion of the information technology organization at the Department of Veterans Affairs (VA) and the role of the Chief Information Officer (CIO). In carrying out its mission of serving our nation's veterans, the department relies heavily on information technology, for which it is requesting about $2.1 billion in funding for fiscal year 2006. The CIO will play a vital role in ensuring that this money is well spent and that information technology is managed effectively. As we have previously reported, an effective CIO can make a significant difference in building the institutional capacity that is needed to improve an agency's ability to manage information and technology and thus enhance program performance.

At your request, we will discuss the role of CIOs in the Federal Government, present for comparison the results of our study of private-sector CIOs, and provide a historical perspective on the roles and responsibilities of VA's CIO.

In developing this testimony, we reviewed our previous work in this area. All work covered in this testimony was performed in accordance with generally accepted government auditing standards.

RESULTS IN BRIEF

Since the Clinger-Cohen Act established the CIO position in 1996, federal CIOs have played a central role in managing information and technology within federal agencies. According to CIOs at major departments and agencies,' they generally held wide responsibilities and reported to their agency heads or other top level managers. In general, CIOs reported that they were responsible for key information and technology management areas; for example, all the CIOs were responsible for five key areas (capital planning and investment management, information security, IT human capital, strategic planning for information technology and information resource management, and enterprise architecture). In carrying out these responsibilities, the tenure of federal CIOs was often less than the length of time that some experts consider necessary for them to be effective and implement changes: the median tenure was about 2 years, and the most common response regarding time required to be effective was 3 to 5 years. In contrast, CIOs were generally helped in carrying out their responsibilities by the background and experience they brought to the job. Although their background was varied, most had background in information technology (IT) or related fields, many having previously served as CIOs; many also had business knowledge related to their agencies, having previously worked either at the agency or in an area related to its mission. Other factors that help CIOs meet their responsibilities effectively are described in guidance that we have issued; key among these are (1) being supported by senior executives who recognize the importance to their missions of IT and an effective CIO; (2) playing an influential role in applying IT to business needs; and (3) being able to structure their organizations appropriately. At the same time, CIOs cited several challenges, of which the two most frequently mentioned were implementing effective IT management and obtaining sufficient and relevant resources.

Private-sector CIOs reported responsibilities, challenges, and approaches to information and technology governance that are similar but not identical to those of their federal counterparts. Most of the private-sector CIOs we contacted had either sole or shared responsibility for the key management areas we explored, which corresponded to those that we reported on in our federal agency review. Among the

areas in which most of the private-sector CIOs had or shared responsibility, 18 or more of the 20 we contacted cited five information and technology management areas (capital planning and investment management, information security, human capital for managing information resources, systems acquisition, and e-commerce); the first three of these were also responsibilities of all federal CIOs, and the last two were responsibilities of 90 percent of federal CIOs. The challenges cited by the private-sector CIOs were also similar to those cited by federal CIOs. Both private-sector and federal CIOs noted improving various IT management processes (e.g., IT investment decision making), developing IT leadership and stalls, working with enterprise architectures, and ensuring the security of systems. To manage their IT, the private-sector companies used both centralized and decentralized organizational structures: in some, authority is centralized in the CIO's office, while in others, it is decentralized in the business units, depending on other events in the company such as strategic realignments and acquisitions. Most of the private-sector companies had executive committees with authority and responsibility for governing major IT investments. Many private-sector CIOs also told us that they were making efforts to move toward common business processes, such as by instituting cross-organizational teams to work on developing enterprise wide systems and standards.

With regard to VA, both the CIO position and IT management have received increased management attention over time. After going for 2 years after the passage of the Clinger-Cohen Act without a CIO, followed by 2 years with an executive whose time was divided among CIO and other major duties, and then 1 year with an acting CIO, the department appointed a full-time permanent CIO in August 2001. Since then, the department proposed further strengthening the position and centralizing IT management, recognizing that aspects of its computing environment were particularly challenging and required substantial management attention. In particular, the department's information systems and services were highly decentralized, and a large proportion of the department's IT budget was controlled by the VA's administrations and staff offices. To address these challenges, the Secretary issued a memo in 2002 announcing that IT functions, programs, and funding would be centralized under the department-level CIO. Although we have not reviewed the current status of this proposed realignment or VA's current organizational structure, it remains our view that the proposal held promise for improving IT accountability and enabling the department to accomplish its mission. The additional oversight afforded the CIO could have a significant impact on the department's ability to more effectively account for and manage its approximately $2.1 billion in planned IT spending.

VA comprises three major components: the Veterans Benefits Administration (VBA), the Veterans Health Administration (VHA), and the National Cemetery Administration (NCA). VA's mission is summed up in its mission statement, a quotation from Abraham Lincoln: "to care for him who shall have borne the battle and for his widow and his orphan." VA carries out this mission by providing benefits and other services to veterans and dependents.

The department's vision is to be a more customer-focused organization, functioning as "One VA." This vision stemmed from the recognition that veterans think of VA as a single entity, but often encountered a confusing, bureaucratic maze of uncoordinated programs that put them through repetitive and frustrating administrative procedures and delays. The "One VA" vision is to create versatile new ways for veterans to obtain services and information by streamlining interactions with customers and integrating IT resources to enable VA employees to help customers more quickly and effectively. This vision will require modifying or replacing separate information systems with integrated systems using common standards to the information across VA programs and with external partner organizations, such as the Department of Defense. Accordingly, effective management of its IT programs is vital to VA's successful achievement of its vision and mission.

Table 1 shows a breakdown of VA's approximately $2.1 billion IT budget request for fiscal year 2006. Of the total, VHA accounted for approximately $1.8 billion, VBA approximately $150 million, and NCA approximately $11 million. The remaining $84 million was designated for the department level.

Table 1.—Breakdown of VA's Fiscal Year 2006 Information Technology Budget Request

[in millions]

Organization Request		In percent
VHA	$1835	88%
VBA	150	7%
NCA	11	<1%

Table 1.—Breakdown of VA's Fiscal Year 2006 Information Technology Budget Request—Continued

[in millions]

Organization Request		In percent
Department	84	4%
Total	$2,080	

Spune: GAO analysis VA data.

CIO PLAYS MAJOR ROLE IN FEDERAL IT MANAGEMENT

The Congress has long recognized that IT has the potential to enable federal agencies to accomplish their missions more quickly, effectively, and economically. However, fully exploiting this potential presents challenges to agencies. Despite substantial IT investments, the federal government's management of information resources has produced mixed results. One of the ways in which the Congress has addressed this issue was to establish the CIO position; an agency's CIO is to serve as the focal point for information and technology management within an agency. In 1996, the Clinger-Cohen Act established the position of agency CIO and specified responsibilities for this position. Among these responsibilities, the Act required that the CIOs in the 24 major departments and agencies have information resources management (IRM) as their "primary duty."

The Congress has mandated that CIOs should play a key leadership role in ensuring that agencies manage their information functions in a coordinated and integrated fashion in order to improve the efficiency and effectiveness of government programs and operations."

CIO RESPONSIBILITIES AND REPORTING RELATIONSHIPS

CIOs have responsibilities that can contribute significantly to the successful implementation of information systems and processes. In July 2004, we reported on CIO roles, responsibilities, and challenges (among other things) at 27 major agencies. For this work, we identified major areas of CIO responsibilities that were either statutory requirements or critical to effective information and technology management. Altogether, we identified the 13 areas shown in table 2.

Table 2.—Major Areas of CIO Responsibility

Area of responsibility	IT capital planning and investment management
Description	Planning and management of IT capital investments
Applicable laws	44 U.S.C. 3506(h), 40 U.S.C. 11312 & 11313
Records management	Ensuring that agency implements and enforces records management policies and procedures under the Federal Records Act 44 U.S.C. 3506(f)
Information dissemination*	Ensuring that information dissemination activities meet policy goals such as timely and equitable public access to information 44 U.S.C. 3506(d)
Information disclosure*	Ensuring appropriate information 44 U.S.C. 3506(g) access under the Freedom of Information Act
Privacy	Ensuring agency compliance 44 U.S.C. 3506(g) with the Privacy Act and related laws
Area of responsibility	Description
Statistical policy and coordination	Performing statistical policy and coordination functions, including ensuring the relevance, accuracy, and timeliness of information collected or created for statistical purposes
Applicable laws	44 U.S.C. 3506(e)

Source: GAO analysis.

"Three areas of responsibility-enterprise architecture; systems acquisition, development, and integration; and government initiatives—are not assigned to CIOs by statute; they are assigned to the agency heads by law or guidance. However, in virtually all agencies, the agency heads have delegated these areas of responsibility to their CIOs.

For our later private-sector study, we combined Information dissemination and Information disclosure into a single function in order to increase these functions' relevance for private-sector CIOs.

According to our report, CIOs were generally responsible for the key information and technology management areas shown in the table, although not all CIOs were completely responsible for all areas." For example:

All the CIOs were responsible for the first five areas in the table (capital planning and investment management, enterprise architecture, information security, IT/IRM strategic planning, and IT/IRM human capital).

More than half had responsibility for six additional areas (major government initiatives, systems acquisition, information collection/paperwork reduction, records management, information dissemination, and privacy).

Fewer than half were responsible for two areas (information disclosure and statistics).

It was common for CIOs to share responsibility for certain functions, and in some cases responsibilities were assigned to other offices. For example, systems acquisition responsibility could be shared among the CIO and other officials, such as a procurement executive or program executive; disclosure could be assigned to general counsel and public affairs, while statistical policy could be assigned to offices that deal with the agency's data analysis. Nevertheless, even for areas of responsibility that were not assigned to CIOs, agency CIOs generally reported that they contributed to the successful execution of the agency's overall responsibilities in that area.

In carrying out their responsibilities, CIOs generally reported to their agency heads. For 19 of the agencies in our review, the CIOs stated that they had this reporting relationship. In the other 8 agencies, the CIOs stated that they reported instead to another senior official, such as a deputy secretary, under secretary, or assistant secretary. In addition, 8 of the 19 CIOs who said they had a direct reporting relationship with the agency head noted that they also reported to another senior executive, usually the deputy secretary or under secretary for management, on an operational basis. According to members of our Executive Council on Information Management and Technology, what is most critical is for the CIO to report to a top level official.

TENURE AND BACKGROUNDS OF CIOS

Federal CIOs often remained in their positions for less than the length of time that some experts consider necessary for them to be effective and implement changes. At the departments and agencies included in our review, the median time in the position of permanent CIOs whose time in office had been completed was about 23 months. For career CIOs, the median was 32 months; the median for political appointees was 19 months. To the question of how long a CIO needed to stay in office to be effective, the most common response of the CIOs (and former agency IT executives whom we consulted) was 3 to 5 years. Between February 10, 1996, and March 1, 2004, only about 35 percent of the permanent CIOs who had completed their time in office reportedly had stayed in office for a minimum of 3 years. The gap between actual time in office and the time needed to be effective is consistent with the view of many agency CIOs that the turnover rate was high, and that this rate was influenced by the political environment, the pay differentials between the public and private sectors, and the challenges that CIOs face.

In contrast, the CIOs at the 27 agencies were generally helped in carrying out their responsibilities by the background and experience they brought to the job. The background of the CIOs varied in that they had previously worked in the government, the private sector, or academia, and they had a mix of technical and management experience. However, virtually all had work experience or educational backgrounds in IT or IT-related fields; 12 agency CIOs had previously served in a CIO or deputy CIO capacity. Moreover, most of them had business knowledge related to their agencies because they had previously worked at the agency or had worked in an area related to the agency's mission.

SUCCESS FACTORS AND CHALLENGES OF CIOS

To allow CIOs to serve effectively in the key leadership role envisioned by the Congress, federal agencies should use the full potential of CIOs as information and technology management leaders and active participants in the development of the agency's strategic plans and policies. The CIOs, in turn, must meet the challenges of building credible organizations and developing and organizing information and technology management capabilities to meet mission needs.

In February 2001, we issued guidance on the effective use of CIOs, which describes the following three factors as key contributors to CIO success:

• Supportive senior executives embrace the central role of technology in accomplishing mission objectives and include the CIO as a full participant in senior executive decision making.

• Effective CIOs have legitimate and influential roles in leading top managers to apply IT to business problems and needs. Placement of the position at an executive management level in the organization is important, but in addition, effective CIOs earn credibility and produce results by establishing effective working relationships with business unit heads.

• Successful CIOs structure their organizations in ways that reflect a clear understanding of business and mission needs. Along with knowledge of business processes, market trends, internal legacy structures, and available IT skills, this understanding is necessary to ensure that the CIO's office is aligned to best serve agency needs.

The CIO study that we reported on in July 2004 also provides information on the major challenges that federal CIOs face in fulfilling their duties. In particular, CIOs view IT governance processes, funding, and human capital as critical to their success, as indicated by two challenges that were cited by over 80 percent of the CIOs: implementing effective information technology management and obtaining sufficient and relevant resources.

EFFECTIVE IT MANAGEMENT

Leading organizations execute their information technology management responsibilities reliably and efficiently. A little over 80 percent of the CIOs reported that they faced one or more challenges related to implementing effective IT management practices at their agencies. This is not surprising given that, as we have previously reported, the government has not always successfully executed the IT management areas that were most frequently cited as challenges by the CIOs-information security, enterprise architecture, investment management, and e-gov.

SUFFICIENT AND RELEVANT RESOURCES

One key element in ensuring an agency's information and technology success is having adequate resources. Virtually all agency CIOs cited resources, both in dollars and staff, as major challenges. The funding issues cited generally concerned the development and implementation of agency IT budgets and whether certain IT projects, programs, or operations were being adequately funded.

We have previously reported that the way agency initiatives are originated can create funding challenges that are not found in the private sector. For example, certain information systems may be mandated or legislated, so the agency does not have the flexibility to decide whether to pursue them. Additionally, there is a great deal of uncertainty about the funding levels that may be available from year to year.

The government also faces long-standing and widely recognized challenges in maintaining a high-quality IT workforce. In 1994 and 2001, we reported on the importance that leading organizations placed on malting sure they had the right mix of skills in their IT workforce. About 70 percent of the agency CIOs reported on a number of substantial IT human capital challenges, including, in some cases, the need for additional staff. Other challenges included recruiting, retention, training and development, and succession planning.

In addition, two other commonly cited challenges were communicating and collaborating (both internally and externally) and managing change.

COMMUNICATING AND COLLABORATING

Our prior work has shown the importance of communication and collaboration, both within an agency and with its external partners. For example, one of the critical success factors we identified in our guide focuses on the CIO's ability to establish his or her organization as a central player in the enterprise. Ten agency CIOs reported that communication and collaboration were challenges. Examples of internal communication and collaboration challenges included: (1) cultivating, nurturing, and maintaining partnerships and alliances while producing results in the best interest of the enterprise; and (2) establishing supporting governance structures that ensure two-way communication with the agency head and effective communication with the business part of the organization and component entities. Other CIOs cited activities associated with communicating and collaborating with outside entities as challenges, including sharing information with partners and influencing the Congress and OMB.

MANAGING CHANGE

Top leadership involvement and clear lines of accountability for making management improvements are critical to overcoming an organization's natural resistance to change, marshaling the resources needed to improve management, and building and maintaining organization-wide commitment to new ways of doing business. Some CIOs reported challenges associated with implementing both changes originating from their own initiative and changes from outside forces. Implementing major IT changes can involve not only technical risks but also non-technical risks, such as those associated with people and the organization's culture. Six CIOs cited dealing with the government's culture and bureaucracy as challenges to implementing change. Former agency IT executives also cited the need for cultural changes as a major challenge facing CIOs. Accordingly, in order to effectively implement change, it is important that CIOs build understanding, commitment, and support among those who will be affected by the change.

Effectively tackling these reported challenges can improve the likelihood of a CIO's success. Until these challenges are overcome, federal agencies are unlikely to optimize their use of information and technology, which can affect an organization's ability to effectively and efficiently implement its programs and missions.

The CIO Position in the Private Sector Has Similarities to the Federal CIO Position.

In September 2005, we reported the results of our study of CIOs at leading private-sector organizations, in which we described the CIOs' responsibilities and major challenges, as well as private-sector approaches to information and technology governance.

The set of responsibilities assigned to CIOs in the private sector were similar to those in the federal sector. In most areas, there was little difference between the private and federal sectors in the percentage of CIOs who had or shared a particular responsibility. In 4 of the 12 areas—enterprise architecture, strategic planning, information collection, and information dissemination and disclosure—the difference between the private- and federal-sector CIOs was greater; in each case, fewer CIOs in the private sector had these responsibilities. In all, the six functions least likely to be the CIO's responsibility in the federal sector were equivalent to the five functions least likely to be his or her responsibility in the private sector. Some of the federal CIOs functions, such as information collection and statistical policy, did not map directly to the management areas in several of the private-sector organizations we contacted.

Figure 1 compares federal and private-sector CIO responsibilities for the 12 areas, showing the percentage of CIOs who had or shared responsibility for each area.

FIGURE 1: COMPARISON OF THE EXTENT TO WHICH PRIVATE-SECTOR AND FEDERAL CIOS ARE RESPONSIBLE FOR MANAGEMENT AREAS.

Federal CIOs Private CIOs.

Source: W.

Among the private-sector CIOs, it was common to share responsibility with either business units or corporate functional areas; these sharing relationships accounted for almost a third of all responses. Among federal CIOs, the sharing of responsibility was not described in as many areas.

CHALLENGES IDENTIFIED BY PRIVATE-SECTOR CIOS

Approximately half of all the private-sector CIOs described four major challenges:

• Aligning IT with business goals was cited by 11 of the CIOs. This challenge requires the CIOs to develop IT plans to support their companies' business objectives. In many cases this entails cross-organization coordination and collaboration.

• Implementing new enterprise technologies (e.g., radio frequency identification, enterprise resource planning systems, and customer relationship management systems) was cited by 8 of the CIOs. This challenge requires the broad coordination of business and corporate units.

• Controlling IT costs and increasing efficiencies was cited by 9 of the CIOs. Several CIOs explained that by controlling costs and providing the wane or better service at lower cost, they are able to contribute to their companies' bottom lines. A few CIOs also said that they generate resources for new investments out of the resources freed up by cost savings.

• Ensuring data security and integrity was cited by 9 of the CIOs. Closely associated with this challenge was ensuring the privacy of data, which was raised by 6 CIOs.

Additional management challenges commonly raised by the private-sector CIOs included:

- developing IT leadership and skills (7),
- managing vendors, including outsourcing (7),
- improving internal customer satisfaction (5).

Additional technical challenges commonly raised by the private-sector CIOs included:

- implementing customer service/customer relationship management (CRM) systems (7),
- identifying opportunities to leverage new technology (6),
- integrating and enhancing systems and processes (5), and
- rationalizing IT architecture (5).

The challenges mentioned by the private-sector CIOs overlapped with those mentioned by Federal CIOs in our previous study. Improving various IT management processes was mentioned by several private-sector CIOs (e.g., IT investment decision making) as well as by federal CIOs, as was developing IT leadership and skills. In technology-related areas, both private-sector and federal CIOs mentioned working with enterprise architectures and ensuring the security of systems as challenges. Although the challenges mentioned by private-sector CIOs resembled those mentioned by federal CIOs, there were a few differences. Private-sector CIOs mentioned challenges related to increasing IT's contribution to the bottom line—such as controlling costs, increasing efficiencies, and using technology to improve business processes—while federal CIOs tended to mention overcoming organizational barriers and obtaining sufficient resources.

IT GOVERNANCE IN THE PRIVATE SECTOR

When asked to describe how the governance of information management and technology is carried out in their companies, 16 of the 20 private-sector companies told us that they had an executive committee with the authority and responsibility for governing major IT investments. As part of the governance of IT assets in their companies, nine of the CIOs said that they shared responsibility for IT investment management and that their involvement ranged from providing strong leadership to reviewing plans to ensure that they complied with corporate standards.

Many of the private-sector CIOs were actively working to increase coordination among business units to enhance their governance process. Seven of the CIOs described efforts under way to implement enterprise-wide financial and supply chain systems, which will move the companies to common business processes. Six CIOs also described using cross-organizational teams (sometimes called centers of excellence), which drive these broad collaborative efforts and others, such as the establishment of standards and common practices.

With regard to the governance of the development of new systems, many of the private-sector CIOs described a process in which they collaborated closely with business units and corporate functional units in planning and developing systems to meet specific needs.

The extent of the CIOs' involvement ranged from providing strong leadership and carrying out most activities to reviewing the other components' plans to ensure that they complied with corporate standards.

With regard to sharing authority for decisions on the management of IT assets, several CIOs spoke of balancing between centralization and decentralization of authority and described their efforts to move between the two extremes to find the right balance. The appropriate balance depended on other events occurring in the companies, such as major strategic realignments or acquisitions. For example, one CIO described his current evolution from a relatively decentralized structure—an artifact of a major effort to enable growth in the corporation—to a more centralized structure in order to reduce costs and drive profits.

ROLES AND RESPONSIBILITIES OF THE CIO POSITION AT VA HAVE EVOLVED OVER TIME

Since enactment of the Clinger-Cohen Act in 1996, the roles and responsibilities of VA's Chief Information Officer have evolved. From lacking a CIO entirely, the department has taken steps to address the challenges posed by its multiple widespread components and its decentralized information technology and services. In June 1998, VA assigned CIO responsibility to a top manager. However, we reported in July 1998 that the person holding the CIO position at VA had multiple additional major responsibilities, as this person also served as Assistant Secretary for Management, Chief Financial Officer, and Deputy Assistant Secretary for Budget. According to the Act, the CIO's primary responsibility should be information and technology management. Noting that VA's structure was decentralized, its IT budget was large,

and its CIO faced serious information and technology management issues, we recommended that the Secretary appoint a CIO with full-time responsibilities for IRM. Concurring with the recommendation, VA established the position of Assistant Secretary for Information and Technology to serve as its CIO.

As of May 2000, however, the position of Assistant Secretary for Information and Technology was vacant, and as we reported at the time, it had been unfilled since its creation in 1998. The Secretary then created and filled the position of Principal Deputy Assistant Secretary for Information and Technology, designating that person as VA's acting CIO until an Assistant Secretary could be appointed. The Secretary also realigned IRM functions within VA under this position, which reported directly to the Secretary.

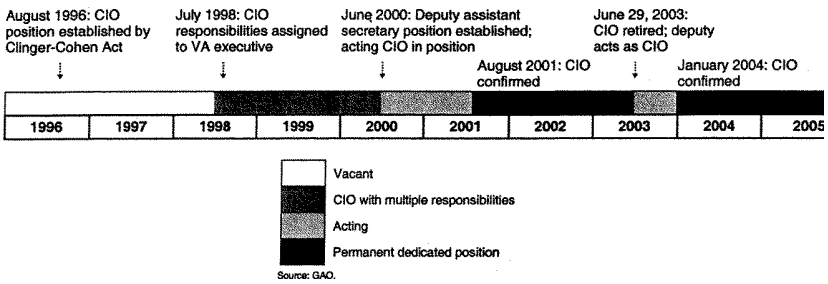
As we reported, the Principal Deputy Assistant Secretary was involved in IT planning issues across the department. In addition to advising the Secretary on IT issues, he served as chair of the department's CIO Council and as a member of the department's Capital Investment Board, and he worked with the CIOs in VBA and VHA (at the time, NCA had no CIO). According to this official, one of his priorities was to ensure that IT activities in VBA and VHA were in concert with VA's department-wide efforts.

In August 2001, VA filled the CIO position. In March 2002, we testified that this hiring was one of the important strides that the Secretary of Veterans Affairs had made to improve the department's IT leadership and management, along with malting a commitment to reform the department's use of IT.

On June 29, 2003, the CIO retired after a tenure of almost 2 years (about the median length of tenure for federal CIOs, as discussed above); the current CIO was confirmed in January 2004.

Figure 1 is a time line showing the history of the CIO position at VA since the passage of the Clinger-Cohen Act.

Figure 1: Time Line of CIO Tenure at VA



Source: GAO.

VA PROPOSED TO REALIGN ITS IT ORGANIZATION IN RESPONSE TO IT MANAGEMENT CHALLENGES

Our prior work highlighted some of the challenges that the CIO faced as a result of the way the department was organized to carry out its IT mission. Among these challenges was that information systems and services were highly decentralized, and the VA administrations and staff offices controlled a majority of the department's IT budget. For example, in VA's information technology budget for fiscal year 2002 of approximately $1.25 billion, YHA controlled about $1.02 billion (over 80 percent), whereas the department level controlled about $60.2 million (less than 5 percent).

In addition, we noted that there was neither direct nor indirect reporting to VA's cyber security officer—the department's senior security official—thus raising questions about this person's ability to enforce compliance with security policies and procedures and ensure accountability for actions taken throughout the department. The more than 600 information security officers in VA's three administrations and its many medical facilities throughout the country were responsible for ensuring the department's information security, although they reported only to their facility's director or to the chief information officer of their administration.

Given the large annual funding base and decentralized management structure, we testified that it was crucial for the departmental CIO to ensure that well-established and integrated processes for leading, managing, and controlling investments are commonplace and followed throughout the department. This is consistent with the finding in our CIO review that implementation of IT management practices was a

challenge; over half of federal CIOs identified IT investment management specifically.

Recognizing weaknesses in accountability for the department's IT resources and the need to reorganize IT management and financing, the Secretary announced a realignment of the department's IT operations in a memorandum dated August 2002. According to the memorandum, the realignment would centralize IT functions, programs, workforce personnel, and funding into the office of the department-level CIO. In particular, several significant changes were described:

• The CIOs in each of the three administrations-VHA, VBA, and NCA—were to be designated deputy CIOs and were to report directly to the department-level CIO. Previously, these officials served as component-level CIOs who reported only to their respective administrations under secretaries.

• All administration-level cyber security functions were to be consolidated under the department's cyber security office, and all monies earmarked by VA for these functions were to be placed under the authority of the cyber security officer. Information security officers previously assigned to VHA's 21 veterans integrated service network would report directly to the cyber security officer, thus extending the responsibilities of the cyber security office to the field.

Beginning in fiscal year 2003, the department level CIO would assume executive authority over VA's IT funding.

In September 2002, we testified that in pursuing these reforms, the Secretary demonstrated the significance of establishing an effective management structure for building credibility in the way IT is used, and took a significant step toward achieving a "One VA" vision. The Secretary's initiative was also a bold and innovative step by the department—one that has been undertaken by few other federal agencies. For example, of 17 agencies contacted in 2002, 8 reported having component level CIOs, none of which reported to the department level CIO. Only one agency with component-level CIOs reported that its department-level CIO had authority over all IT funding.

We also noted that the CIO's success in managing IT operations under the realignment would hinge on effective collaboration with business counterparts to guide IT solutions that meet mission needs, and we pointed out the importance of the three key contributors to CIO success described in our 2001 guidance (discussed earlier).

Although we have not reviewed the current status of this proposed realignment or VA's current organizational structure, it remains our view that the proposed realignment held promise for building a more solid foundation for investing in and improving the department's accountability over IT resources. Specifically, under the realignment the CIO would assume budget authority over all IT funding, including authority to veto proposals submitted from sub-department levels. This could have a significant effect on VA's accountability for how components are spending money.

To sum up, the CIO plays a vital role in ensuring that VA's funds are well spent and in managing information technology to serve our nation's veterans. In our view, the realignment of VA's IT organization proposed in 2002 held promise for improving accountability and enabling the department to accomplish its mission. The additional oversight afforded the CIO could have a significant impact on the department's ability to more effectively account for and manage its proposed $2.1 billion in planned IT spending.

Mr. Chairman, this concludes my statement. I would be pleased to respond to any questions that you or other Members of this Committee may have at this time.

Chairman CRAIG. Thank you very much, Linda.

Paul, you stated in your testimony that the CIO should not delegate enterprise level planning, authorization or resourcing responsibilities, and that the CIO should report to the organization's most senior officer. Can you cite an example of another government entity with whom ITAA organizations have contracted, that from your vantage point, have achieved this organizational structure, and how has that led to a successful IT strategy?

Mr. WOHLLEBEN. Mr. Chairman, I do not believe that I can cite a single large department that has achieved all aspects of that. There are some small independent agencies that I think have moved in the direction where the CIO is charged, responsible, and executes against all of those.

By the same token, I have not pursued a study of all of those organizations. I am sort of speaking from an ad hoc basis.

Chairman CRAIG. All right. Also in your testimony you stated that the IT business process must originate from the top down. VA, however, believes that much of the credit for its success in electronic health records is directly due to some very decentralized initiatives. Do you believe that there is an appropriate balance to be struck between planning, authorization, resourcing and implementation of a macro-program level, and less centralization at a micro-project level? In short, should VA vest total control in its CIO?

Mr. WOHLLEBEN. My experience with Government organizations in general—and I would prefer not to speak to VA specifically because I do not claim to be an expert on their internal culture—but in general, our position at ITAA is that the planning that involves the vision and the strategy needs to be centrally controlled and that should be a duty of the CIO. That involves the control of the strategy and the budgeting and resourcing of that strategy in terms of execution plans.

Depending on the nature of an organization and its mission, the execution of that plan could be accomplished centrally or could be accomplished in a more decentralized approach where those responsibilities are delegated.

If I could further explain that, where you have an organization that has, across the enterprise their mission is either the same or has attributes of a common mission, the centralized model is one that can be executed. Where you have missions that differ, where people at the local level who are executing that mission understand how you carry out that mission much better, it is imperative that those people be involved in the design of the systems that are going to support them. If they are not, our finding, and I believe the finding in both commercial and in Government sectors over time, has been that those systems are not able to be developed to meet those requirements of the people who are actually executing the work and carrying out the mission.

Chairman CRAIG. Linda, your testimony has indicated that the average tenure of Federal CIOs is less than the length of time that any consider necessary to implement the policies that a CIO is expected to implement. VA is certainly no exception. With that said, should the Government expect CIOs to do less, or do we believe that there are any strategies the Government can implement to encourage CIOs to remain in their positions longer?

Ms. KOONTZ. When we did our study on Federal CIOs that we issued in 2004, I think that we said the average tenure was around 23 months, which was about 2 years. CIOs at the same time said that staying in a position for about 3 to 5 years was really the amount of time that was needed in order to show any kind of results or to make an impact.

Some of the major things that were cited in terms of the turnover by CIOs were the differences in salary between the private sector and the public sector, and also the scope of responsibilities that are involved in being a public sector CIO. We actually have some ongoing work looking at various governance models, and we are continuing to study the appropriate responsibilities for a CIO in a public setting.

Chairman CRAIG. Most private sector companies authorize and govern major IT investments by executive committees, we are told, and I think you reference that also, Paul. The Federal Government is not a private sector corporation. Still, do you believe the Government should consider management of large IT investments through the use of an executive committee, and do you think this could help our continuity efforts, given that different committee members may stay with Government employment for longer tenures than the average CIO? I mean in examining this, has that been a part of your consideration?

Ms. KOONTZ. Yes, that has clearly been part of our consideration. When we talk about an executive committee responsible for overseeing IT investments, I think what we are talking about is having some kind of IT investment process. What we have noted from our studies is that, just as my colleague here mentioned in his testimony, that developing systems is a collaborative process, and both the CIOs and the business units need to be involved. Bringing together the executives who all have a stake in this, including the CIO, to make decisions about investments, is very, very important. If you have a strong investment process in place, I think it actually transcends changes in individual personnel or even maybe changes in administrations that take place because you have a strong process for bringing the right people to the table.

One feature that we think is critical though in an investment management process is that the CIO have veto power over proposed investments, and the reason is, is that in that way the CIO can ensure that any proposed projects that are brought to him by the administrations or that are centrally proposed, fit with the enterprise architecture and they meet the various network and other standards that are in place, and that they meet security requirements. He uses an enterprise architecture in order to ensure that there is an enterprise approach, and that systems are not duplicative, but they are integrated.

So, yes, that is a feature that is important in both the private and the public sectors, and can help any organization do more effective IT management.

Chairman CRAIG. Paul, any comments on that question?

Mr. WOHLLEBEN. I would agree, Mr. Chairman. The way I would describe the introduction of the enterprise architecture into an organization and the utility, the enterprise architecture, if agreed to by the senior leadership team as capturing the intended business processes and the use of technology that the organization is moving towards, it gives the CIO and whatever governance committee is being used to look at IT investments, something to compare the investments, and gives them a very, very strong tool to enforce compliance to a blueprint to move to the future, or to veto investments that are not in compliance, and it is a tool that is just now coming onto the scene in the Federal Government, but maturing to the point where it is useful.

Chairman CRAIG. We have a unique challenge here in transitioning government into the 21st century, gaining the efficiencies that we see in the private sector in these areas, and still sustaining core missions as attended. Even with executive commit-

tees, the reality of the politics involved when you have an executive committee of 575 Members of the United States Congress——

[Laughter.]

Chairman CRAIG. Yet, I would suggest in all of that frustration the absolute need for continuance, continuity and all of that for the sake of those who these agencies serve, but also the efficiency of the resources that are employed in these agencies.

We appreciate your testimony, and we will more than likely be back, ask you to revisit this along the way, as we stay in tune with what the VA is doing. We are not going to say "attempting to do," but "will be doing" to get the kind of changes necessary, and the evolution of the culture to where it is most efficient.

Thank you all very much for being with us today, and the committee will stand adjourned.

[Whereupon, at 11:40 a.m., the committee was adjourned.]

APPENDIX

IMPROVING PATIENT CARE

Comparison of Quality of Care for Patients in the Veterans Health Administration and Patients in a National Sample

Steven M. Asch, MD, MPH; Elizabeth A. McGlynn, PhD; Mary M. Hogan, PhD; Rodney A. Hayward, MD; Paul Shekelle, MD, MPH; Lisa Rubenstein, MD; Joan Keesey, BA; John Adams, PhD; and Eve A. Kerr, MD, MPH

Background: The Veterans Health Administration (VHA) has introduced an integrated electronic medical record, performance measurement, and other system changes directed at improving care. Recent comparisons with other delivery systems have been limited to a small set of indicators.

Objective: To compare the quality of VHA care with that of care in a national sample by using a comprehensive quality-of-care measure.

Design: Cross-sectional comparison.

Setting: 12 VHA health care systems and 12 communities.

Patients: 596 VHA patients and 992 patients identified through random-digit dialing. All were men older than 35 years of age.

Measurements: Between 1997 and 2000, quality was measured by using a chart-based quality instrument consisting of 348 indicators targeting 26 conditions. Results were adjusted for clustering, age, number of visits, and medical conditions.

Results: Patients from the VHA scored significantly higher for adjusted overall quality (67% vs. 51%; difference, 16 percentage points [95% CI, 14 to 18 percentage points]), chronic disease care (72% vs. 59%; difference, 13 percentage points [CI, 10 to 17 percentage points]), and preventive care (64% vs. 44%; difference, 20 percentage points [CI, 12 to 28 percentage points]), but not for acute care. The VHA advantage was most prominent in processes targeted by VHA performance measurement (66% vs. 43%; difference, 23 percentage points [CI, 21 to 26 percentage points]) and least prominent in areas unrelated to VHA performance measurement (55% vs. 50%; difference, 5 percentage points [CI, 0 to 10 percentage points]).

Limitations: Unmeasured residual differences in patient characteristics, a lower response rate in the national sample, and differences in documentation practices could have contributed to some of the observed differences.

Conclusions: Patients from the VHA received higher-quality care according to a broad measure. Differences were greatest in areas where the VHA has established performance measures and actively monitors performance.

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As methods for measuring the quality of medical care have matured, widespread quality problems have become increasingly evident (1, 2). The solution to these problems is much less obvious, however, particularly with regard to large delivery systems. Many observers have suggested that improved information systems, systematic performance monitoring, and coordination of care are necessary to enhance the quality of medical care (3). Although the use of integrated information systems (including electronic medical records) and performance indicators has become more common throughout the U.S. health care system, most providers are not part of a larger integrated delivery system and continue to rely on traditional information systems (4).

An exception is the Veterans Health Administration (VHA). As the largest delivery system in the United States, the VHA has been recognized as a leader in developing a more coordinated system of care. Beginning in the early 1990s, VHA leadership instituted both a sophisticated electronic medical record system and a quality measurement approach that holds regional managers accountable for several processes in preventive care and in the management of common chronic conditions (5, 6). Other changes include a system-wide commitment to quality improvement principles and a partnership between researchers and managers for quality improvement (7).

As Jha and colleagues (8) have shown, since these changes have been implemented, VHA performance has outpaced that of Medicare in the specific areas targeted. Nevertheless, whether this improvement has extended beyond the relatively narrow scope of the performance measures is unknown. Beyond that study, the data comparing VHA care with other systems of care are sparse and mixed. For example, patients hospitalized at VHA hospitals were more likely than Medicare patients to receive angiotensin-converting enzyme inhibitors and thrombolysis after myocardial infarction (9). On the other hand, VHA patients were less likely to receive angiography when indicated and had higher mortality rates after coronary artery bypass grafting than patients in community hospitals (10, 11). Kerr and colleagues found that care for diabetes was better in almost every dimension in the VHA system than in commercial managed care (12). More extensive comparisons, especially of outpatient care, are lacking. To address these issues, a more comprehensive assessment of quality is needed.

Using a broad measure of quality of care that is based on medical record review and was developed outside the

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VHA, we compared the quality of outpatient and inpatient care among 2 samples: 1) a national sample of patients drawn from 12 communities and 2) VHA patients from 26 facilities in 12 health care systems located in the southwestern and midwestern United States (13). We analyzed performance in the years after the institution of routine performance measurement and the electronic medical record. Using the extensive set of quality indicators included in the measurement system, we compared the overall quality of care delivered in the VHA system and in the United States, as well as the quality of acute, chronic, and preventive care across 26 conditions. In addition, we evaluated whether VHA performance was better in the specific areas targeted by the VHA quality management system.

METHODS

Development of Quality Indicators

For this study, we used quality indicators from RAND's Quality Assessment Tools system, which is described in more detail elsewhere (14–17). The indicators included in the Quality Assessment Tools system are process quality measures, are more readily actionable than outcomes measures, require less risk adjustment, and follow the structure of national guidelines (18, 19). After reviewing established national guidelines and the medical literature, we chose a subset of quality indicators from the Quality Assessment Tools system that represented the spectrum of outpatient and inpatient care (that is, screening, diagnosis, treatment, and follow-up) for acute and chronic conditions and preventive care processes representing the leading causes of morbidity, death, and health care use among older male patients. The Appendix Table (available at www.annals.org) lists the full indicator set, which was determined by four 9-member, multispecialty expert panels. These panels assessed the validity of the proposed indicators using the RAND/University of California, Los Angeles–modified Delphi method. The experts rated the indicators on a 9-point scale (1 = not valid; 9 = very valid), and we accepted indicators that had a median validity score of 7 or higher. This method of selecting indicators is reliable and has been shown to have content, construct, and predictive validity (20–23). Of the 439 indicators in the Quality Assessment Tools system, we included 348 indicators across 26 conditions in our study and excluded 91 indicators that were unrelated to the target population (for example, those related to prenatal care and cesarean sections). Of the 348 indicators, 21 were indicators of overuse (for example, patients with moderate to severe asthma should not receive β-blocker medications) and 327 were indicators of underuse (for example, patients who have been hospitalized for heart failure should have follow-up contact within 4 weeks of discharge).

Two physicians independently classified each indicator according to the type of care delivered; the function of the indicated care (screening, diagnosis, treatment, and follow-up); and whether the indicator was supported by a randomized, controlled trial, another type of controlled trial, or other evidence. Type of care was classified as acute (for example, in patients presenting with dysuria, presence or absence of fever and flank pain should be elicited), chronic (for example, patients with type 2 diabetes mellitus in whom dietary therapy has failed should receive oral hypoglycemic therapy), or preventive (for example, all patients should be screened for problem drinking). In addition, we further classified the indicators into 3 mutually exclusive categories according to whether they corresponded to the VHA performance indicators that were in use in fiscal year 1999. Twenty-six indicators closely matched the VHA indicators, 152 involved conditions that were targeted by the VHA indicators but were not among the 26 matches, and 170 did not match the VHA measures or conditions. We performed a similar process to produce a list of 15 indicators that matched contemporaneous Health Plan Employer Data and Information Set (HEDIS) performance measures (24). Table 1 shows the conditions targeted by the indicators, and Table 2 gives an example indicator for each of the conditions or types of care for which condition- or type-specific comparisons were possible.

Table 1. **Conditions and Number of Indicators Used in Comparisons**

Condition	Type of Condition	Indicators, n
Alcohol abuse	Chronic	5
Asthma	Acute or chronic	25
Atrial fibrillation	Acute or chronic	10
Benign prostatic hyperplasia	Chronic	4
Cancer pain and palliation	Chronic	3
Cerebrovascular disease	Chronic	10
Colorectal cancer	Chronic	12
Community-acquired pneumonia	Acute	5
Chronic obstructive pulmonary disease*	Acute or chronic	20
Coronary artery disease*	Acute or chronic	37
Depression*	Chronic	14
Diabetes*	Chronic	13
Dyspepsia and peptic ulcer disease	Chronic	8
Headache	Acute or chronic	21
Congestive heart failure*	Chronic	36
Hip fracture	Acute	9
Hyperlipidemia	Chronic	7
Hypertension*	Chronic	26
Low back pain, acute	Acute	6
Orthopedic conditions	Acute or chronic	10
Osteoarthritis	Chronic	3
Prostate cancer	Chronic	6
Senile cataract	Chronic	10
Sexually transmitted diseases	Acute	9
Urinary tract infection	Acute	12
Preventive care*	Preventive	27
Total	Overall	348

* Targeted within the Veterans Health Administration indicator set.

Identifying Participants

Patients were drawn from 2 ongoing quality-of-care studies: a study of VHA patients and a random sample of adults from 12 communities (13). The VHA patients were drawn from 26 clinical sites in 12 health care systems lo-

Table 2. Example Indicators of Quality of Care*

Indicator	Condition	Function
CT or MRI for patients with new-onset headache and abnormal results on neurologic examination	Acute care	Diagnosis
Avoidance of nifedipine for patients with acute MI	Coronary artery disease	Treatment
Aspirin after MI	Coronary artery disease	Treatment
Theophylline levels during exacerbation if receiving theophylline therapy	COPD	Diagnosis
Diet and exercise counseling	Diabetes	Treatment
Follow-up after hospitalization	Depression	Follow-up
Change in treatment when blood pressure is persistently uncontrolled	Hypertension	Follow-up
Acetaminophen trial for patients with new diagnoses who need pharmacotherapy	Osteoarthritis	Treatment
Screening for colorectal cancer	Preventive care	Screening

* A full list of the indicators is included in the Appendix Table (available at www.annals.org). COPD = chronic obstructive pulmonary disease; CT = computed tomography; MI = myocardial infarction; MRI = magnetic resonance imaging.

cated in 2 Veterans Integrated Service Networks in the midwestern and southwestern United States. These networks closely match the overall Veterans Affairs system with regard to medical record review and survey-based quality measures (25, 26). We selected patients who had had at least 2 outpatient visits in each of the 2 years between 1 October 1997 and 30 September 1999. A total of 106 576 patients met these criteria. We randomly sampled 689, oversampling for chronic obstructive pulmonary disease (COPD), hypertension, and diabetes, and were able to locate records for 664 patients (a record location rate of 96%). Because of resource constraints, we reviewed a random subset of 621 of these records. Since this sample contained only 20 women and 4 patients younger than 35 years of age, we further restricted the sample to men older than 35 years of age. Thus, we included 596 VHA patients in the analysis. All of these patients had complete medical records.

The methods we used to obtain the national sample have been described elsewhere (13) and are summarized here. As part of a nationwide study, residents of 12 large metropolitan areas (Boston, Massachusetts; Cleveland, Ohio; Greenville, South Carolina; Indianapolis, Indiana; Lansing, Michigan; Little Rock, Arkansas; Miami, Florida; Newark, New Jersey; Orange County, California; Phoenix, Arizona; Seattle, Washington; and Syracuse, New York) were contacted by using random-digit dialing and were asked to complete a telephone survey (27). To ensure comparability with the VHA sample, we included only men older than 35 years of age. Between October 1998 and August 2000, we telephoned 4086 of these participants and asked for permission to obtain copies of their medical records from all providers (both individual and institutional) that they had visited within the past 2 years. We received verbal consent from 3138 participants (77% of those contacted by telephone). We mailed consent forms and received written permission from 2351 participants (75% of those who had given verbal permission). We received at least 1 medical record for 2075 participants (88% of those who had returned consent forms). We excluded participants who had not had at least 2 medical visits in the past 2 years to further ensure comparability with the VHA sample. Thus, our final national sample included 992 persons. The rolling abstraction period (October 1996 to August 2000) substantially overlapped the VHA sampling period. The average overlap was 70%, and all records had at least 1 year of overlap. Seven hundred eight (71%) of the 992 persons in the national sample had complete medical records. On the basis of data from the original telephone survey, we determined that participants in the national sample were more likely to be older, white, and better educated; to have higher income levels; and to have less than excellent health compared with eligible nonparticipants (13).

Chart Abstraction

We sent photocopies of all of the medical records to 1 of 2 central areas for abstraction. For VHA patients, we abstracted data on all care received between October 1997 and September 1999; for patients in the national sample, we abstracted data on all care received in the 2 years before the date of recruitment. We used computer-assisted abstraction software on a Microsoft Visual Basic 6.0 platform (Microsoft Corp., Seattle, Washington), which allowed us to tailor the manual chart abstraction to the specific record being reviewed and provided interactive data quality checks (consistency, range), calculations (for example, high blood pressure), and classifications (for example, drug class). Twenty trained registered nurse abstractors collected the data. To assess interrater reliability, we reabstracted charts for 4% of the participants selected at random. According to the κ statistic, average reliability in the national sample was substantial to almost perfect (28) at 3 levels: presence of a condition ($\kappa = 0.83$), indicator eligibility ($\kappa = 0.76$), and indicator scoring ($\kappa = 0.80$) (13).

Statistical Analysis

All analyses were conducted by using SAS, version 8.2 (SAS Institute, Cary, North Carolina). The unit of analysis was adherence to a given indicator in a given patient. For each indicator, we determined the criteria that made participants eligible for the process specified in the indicator (yes or no). We then determined whether participants had received the specified process each time an indication was noted in their medical record (yes, no, or proportion). We determined aggregate indicator scores for each summary category (that is, acute, chronic, and preventive care;

Table 3. **Veterans Health Administration and National Sample Characteristics***

Characteristic	Unweighted VHA Sample (n = 596)	Unweighted National Sample (n = 992)	Standardized VHA Sample (n = 596)	Standardized National Sample (n = 992)	Standardized P Value
Average age, y	62.6	57.1	62.0	61.4	>0.2
Average acute conditions, n	0.27	0.40	0.26	0.38	<0.001
Average chronic conditions, n	2.47	1.55	2.22	2.12	>0.2
COPD, %	17	6	12	12	>0.2
Coronary artery disease, %	26	18	23	25	>0.2
Depression, %	17	13	17	14	>0.2
Diabetes, %	39	19	30	30	>0.2
Hyperlipidemia, %	28	21	26	26	>0.2
Hypertension, %	67	47	66	66	>0.2
Osteoarthritis, %	29	16	29	19	<0.001
Annual outpatient visits, n	9.4	7.1	9.2	7.9	<0.001

* COPD = chronic obstructive pulmonary disease; VHA= Veterans Health Administration.

screening; diagnosis; treatment; and follow-up) by dividing all instances in which participants received recommended care by the total number of instances in which the care should have been received. We constructed the scores as proportions ranging from 0% to 100%, adjusting for clustering of indicators within patients. Because of clustering of the data, we used the bootstrap method to estimate standard errors for all of these scores (29).

We applied sampling weights to represent the original populations from which the 2 samples were drawn and to adjust for nonresponse. We also used weights to standardize the patients for characteristics common among the VHA population: COPD; hypertension; diabetes; and age categories ranging from 35 to 50 years of age, 51 to 65 years of age, and older than 65 years of age. Sampling weights were applied at the individual level; indicators were implicitly weighted on the basis of prevalence of eligibility. Although we report weighted results because we believe they are most representative, weighting did not affect the direction or significance of any reported results.

We used t-tests or chi-square tests with bootstrapped standard errors to compare the standardized VHA and national samples according to population characteristics; aggregate quality of care; subsets of indicators related to acute, chronic, and preventive care; subsets of indicators related to function of care; subsets of indicators supported by randomized, controlled trials; subsets of indicators similar to those used by the VHA in its performance measurement system; and chronic conditions that affected more than 50 patients from both samples, including COPD, coronary artery disease, depression, diabetes, hyperlipidemia, headache, hypertension, and osteoarthritis. We used logistic regression to compare the rates at which the respective samples received the care specified in the indicators. This allowed us to adjust for factors beyond the standardization, including age as an integer variable, number of chronic and acute conditions, and number of outpatient visits. We calculated adjusted scores after taking into account clustering of indicators at the individual patient level. For the logistic regression models, standard errors and confidence intervals were adjusted for the clustering of indicators within patients by using the sandwich estimator (30).

To test the sensitivity of our results to geography and insurance, we also estimated models confining the national sample to the 6 communities nearest the 2 VHA regions and to respondents with insurance. To test the sensitivity of our results to completeness of documentation, we estimated models restricted to patients with complete records and to the subset of indicators with high likelihood (laboratory tests and radiology) and less likelihood (counseling and education) of complete documentation. Since the number of visits could represent an intervening variable between the comparison samples and quality, we also ran models that did not adjust for the number of visits. Finally, to test the sensitivity of our results to the type of indicator set used, we compared the adjusted performance of the VHA and the community on the subset of indicators that matched the widely accepted HEDIS indicator set.

Role of the Funding Source

The funding agencies (Veterans Affairs Health Services Research and Development Service, the Robert Wood Johnson Foundation, the Centers for Medicare & Medicaid Services, the Agency for Healthcare Research and Quality, and the California HealthCare Foundation) did not participate in the data collection or analysis or in interpretation of the results. Veterans Affairs officials received advance copies of the manuscript for comment.

RESULTS

Characteristics of the Study Samples

Table 3 presents the characteristics of the VHA and national samples, with and without weighting for sampling, nonresponse, and standardization for age categories and the prevalence of COPD, hypertension, and diabetes in the VHA sample. After standardization, there were no statistically significant differences in the age of the participants or the number of chronic conditions, although patients in the national sample had slightly more acute conditions. There were also no significant differences in the rates of chronic conditions between the 2 samples, with the

Table 4. **Adjusted Adherence to Indicators by Category***

Indicator Category	VHA Sample				National Sample				Difference (95% CI), *percentage points*
	Indicators, *n*†	Patients, *n*	Eligible Events, *n*‡	Mean Score, %	Indicators, *n*†	Patients, *n*	Eligible Events, *n*‡	Mean Score, %	
Overall	294	596	11 449	67	330	992	18 961	51	16 (14 to 18)
Chronic care	202	561	5924	72	222	824	7396	59	13 (10 to 17)
COPD	17	103	465	69	19	62	668	59	10 (−2 to 23)
Coronary artery disease	31	93	557	73	37	179	1117	70	3 (−3 to 16)
Depression	14	96	266	80	14	131	497	62	18 (11 to 26)
Diabetes	13	232	1309	70	13	186	1683	57	13 (8 to 18)
Hyperlipidemia	7	169	256	64	7	204	346	53	11 (1 to 21)
Hypertension	24	405	1147	78	24	468	1681	65	13 (8 to 20)
Osteoarthritis	3	173	216	65	3	154	236	57	8 (−1 to 18)
Preventive care	27	596	4721	64	32	991	9169	44	20 (12 to 28)
Acute care	60	153	804	53	76	334	2396	55	−2 (−9 to 4)
Screening	15	597	2254	68	16	991	5598	46	22 (20 to 26)
Diagnosis	145	594	3762	73	139	992	6502	61	12 (8 to 16)
Treatment	103	596	3155	56	126	992	4845	41	15 (12 to 18)
Follow-up	37	477	2016	72	43	524	2278	58	14 (10 to 18)
VHA performance measures	26	596	3976	67	26	992	6699	43	24 (21 to 26)
VHA performance conditions	144	596	5875	70	152	992	8590	58	12 (10 to 15)
Non-VHA performance conditions	124	394	1598	55	152	579	3672	50	5 (0 to 10)

* Adjusted for age, number of chronic conditions, number of acute conditions, and number of outpatient visits. COPD = chronic obstructive pulmonary disease; VHA = Veterans Health Administration.
† Number of unique indicators in category with at least 1 eligible patient.
‡ The number of eligible events is the number of times indicators in the category were triggered.

exception that VHA patients had a somewhat higher prevalence of osteoarthritis. Patients from the VHA also had a significantly greater number of outpatient visits per year (9.2 vs. 7.9; $P < 0.001$).

Comparisons of Quality of Care

Table 4 presents the results of our analyses comparing the quality of care between the standardized VHA and national samples, adjusting for age and for the number of chronic conditions, acute conditions, and outpatient visits. Sixteen of the 348 indicators had no eligible patients in either sample, leaving 294 indicators and 596 patients on which to base the VHA scores and 330 indicators and 992 patients on which to base the national scores. Overall, VHA patients were more likely than patients in the national sample to receive the care specified by the indicators (67% vs. 51%; difference, 16 percentage points [CI, 14 to 18 percentage points]). Performance in the VHA outpaced that of the national sample for both chronic care (72% vs. 59%; difference, 13 percentage points [CI, 10 to 17 percentage points]) and preventive care (64% vs. 44%; difference, 20 percentage points [CI, 12 to 28 percentage points]), but not for acute care (53% vs. 55%; difference, −2 percentage points [CI, −9 to −4 percentage points]). In particular, the VHA sample received significantly better care for depression, diabetes, hyperlipidemia, and hypertension. The VHA also performed consistently better across the entire spectrum of care, including screening, diagnosis, treatment, and follow-up. These differences in quality of care held true when we considered only those indicators ($n = 72$) supported by randomized, controlled trials (57% vs. 45%; difference, 12 percentage points [CI, 3 to 20 percentage points]).

Associations with Performance Measurement

To test the association between performance and performance measurement within the VHA, we restricted the analysis of overall quality to processes and conditions specifically addressed by the VHA performance measurement set. When we restricted the analysis to specific indicators that closely matched the performance measures targeted by the VHA, VHA patients had a substantially greater chance of receiving the indicated care than did patients in the national sample (adjusted scores, 67% vs. 43%; difference, 24 percentage points [CI, 21 to 26 percentage points]). Patients from the VHA were also more likely than national patients to receive care in the conditions or areas specified by the VHA indicator set, even when the processes covered by the indicators were substantially different (70% vs. 58%; difference, 12 percentage points [CI, 10 to 15 percentage points]). The difference between VHA patients and national patients in conditions or areas not covered by the VHA performance measurement system barely reached conventional levels of statistical significance (55% vs. 50%; difference, 5 percentage points [CI, 0 to 10 percentage points]).

Sensitivity Analyses

Confining the analyses to patients in both samples who had complete records did not change the direction or significance of any reported results. The VHA advantage was largest in indicators most likely to have possible underdocumentation (adjusted performance for counseling and education, 45% vs. 26%; difference, 19 percentage points [CI, 14 to 30 percentage points]), but even in laboratory tests and radiology, an area that would be less sensitive to documentation differences, there was also a substantial difference (67% vs. 52%; difference, 15 percentage points [CI, 11 to 19 percentage points]). Confining the analysis to the 6 nationally sampled metropolitan areas closest to the 2 VHA regions also did not change the direction or significance of any result, nor did excluding uninsured patients from the national sample. Models that did not adjust for the number of visits had the same VHA effects as those that did adjust for number of visits. Patients from the VHA also still received more indicated care (adjusted rates, 60% vs. 39%; difference, 21 percentage points [CI, 16 to 26 percentage points]) when the analyses were confined to the overlap of our indicator set and HEDIS measures, the most commonly used national performance indicator set for managed care.

DISCUSSION

Using the RAND Quality Assessment Tools broad measure of quality of care, we found that adherence to recommended processes of care in 2 VHA regions typically exceeded that in a comparable national sample in 12 communities. These findings persisted when we adjusted the samples for age, number of acute and chronic conditions, and number of outpatient visits and when we examined only processes supported by randomized, controlled trials. In addition, we found that the differences between the VHA and national sample were greatest in processes subject to the VHA performance measurement system. The "halo effect" of better VHA care extended to measures of processes in the same condition or area that were not specifically measured by the VHA performance system; however, this effect decreased greatly in unrelated areas. Acute care, COPD care, osteoarthritis care, and coronary artery disease care were exceptions to the pattern of better care in the VHA, although our power to distinguish quality differences was limited by the small number of patients with COPD in the national sample ($n = 62$).

To date, the VHA has not targeted acute care or osteoarthritis care as part of its intensive performance measurement system (6). Coronary artery disease, on the other hand, has been the subject of quality improvement efforts both inside and outside the VHA, including those sponsored by the American Heart Association (31–33). Indeed, many previous comparisons between VHA and national samples outside the VHA performance set have involved patients with coronary artery disease and have yielded mixed results (10). That we found little difference between the care provided to patients with coronary artery disease in the VHA and in a national sample is consistent with other findings and could be the result of comparable quality measurement programs for this condition in the United States and in the VHA. On the other hand, predominantly outpatient-based quality improvement efforts for diabetes have also been implemented in both the VHA system and other institutions, and our analyses showed that the VHA outperformed the national sample for diabetes care. The difference may be due to more effective outpatient VHA quality improvement for diabetes, but further research is needed to investigate the roots of this discrepancy.

Although our study is one of the most comprehensive comparisons between VHA patients and national patients, it has limitations. First, our analysis is based on a comparison of 2 different study samples. Although we used robust statistical techniques to account for any differences between the samples, we could not adjust for the somewhat different geographic distributions or abstraction periods, although there was a great deal of overlap in both areas. Furthermore, in other analyses, we have not observed any large geographic variations in the aggregate indicator scores for the national sample, and our results did not change when we confined the national sample to the 6 communities closest to the 2 Veterans Affairs regions (34). Our study also relied on patient recollection of provider visits in the national sample. It is possible that patients received care from additional providers but did not recall or that we did not receive all available charts. However, we found that confining our analyses to patients with complete records did not change the results, and persons with missing charts were likely to have higher quality scores (13). We lack data on whether patients in the national sample were also receiving care at the VHA, or vice versa. Other studies have found evidence of co-management between VHA and non-VHA providers (35). To the extent that this co-management occurred, it would probably lead to an underestimate of the differences between the 2 groups. An additional limitation of our study is that there were too few men younger than 35 years of age and too few women in our VHA sample to analyze care for these subgroups. For women, limited data from other studies indicate a VHA advantage in breast cancer screening (7). While the Quality Assessment Tools system is quite broad, it cannot represent all of medical care, and there are probably gaps in the indicator set. Last, the evidence grading system for Quality Assessment Tools is based on a simple measure of research design. More precise evidence categories might have altered our analysis of the effect of level of evidence on the comparison between the VHA and national samples, but it is difficult to tell whether the differences would be accentuated or diminished.

Several unmeasured patient characteristics could have biased our results. The response rate was lower in the national sample than in the VHA sample, underrepresenting

ethnic minorities and the poor and exacerbating the natural difference in prevalence between the VHA and the United States as a whole. Ethnic minorities and people with low incomes generally receive lower-quality care (36, 37), although these disparities have not yet been examined by using the Quality Assessment Tools system. If we had been able to adjust for these variables, the differences in quality of care that we observed may have been even greater. Patients from the VHA also tend to have more severe disease than patients outside the VHA, and it is possible that severity of disease influences care quality (38). However, the process indicators we used are clinically precise, and all eligible patients should have received the indicated care regardless of disease severity. In any case, our findings persisted even when we adjusted for number of conditions.

One of the purported advantages of the electronic medical record (which was universally available in the VHA sites) is more thorough documentation. Indeed, the volume of the VHA medical records we reviewed was larger than that of the national sample; it took almost one and a half times longer to abstract data from the VHA sample, although some of this difference was no doubt due to the higher number of visits and conditions. Some of the observed differences may be due to more thorough documentation for VHA patients rather than more thorough medical care. In constructing the indicator set, expert panelists were instructed to include indicators only where the absence of documentation itself would be evidence of poor care. Even so, 1 VHA study found gaps of only approximately 10% between documentation in the medical record and actual care provision among standardized patients (39, 40). Furthermore, the VHA patients received more care both in indicators that are sensitive to documentation practices (counseling and education) and those that are insensitive (laboratory tests and radiology). Therefore, it seems unlikely that different documentation practices alone could account for all of the differences we observed. Instead, other aspects of the electronic medical record, such as notation templates that structure physician–patient interaction or computerized reminders targeting performance measures, may account for the difference.

The implications of these data are important to our understanding of quality management. The VHA is the largest health care system to have implemented an electronic medical record, routine performance monitoring, and other quality-related system changes, and we found that the VHA had substantially better quality of care than a national sample. Our finding that performance and performance measurement are strongly related suggests that the measurement efforts are indeed contributing to the observed differences. Performance measurement alone seems unlikely to account for all the differences; the VHA scored better even on HEDIS measures widely applied in managed care settings (but not in other settings) outside the VHA. Our study was not designed to determine which other mechanisms might be acting to improve VHA care, but other studies have suggested that they might include computerized reminders, standing orders, improved interprovider communication, facility performance profiling, leveraging of academic affiliations, accountability of regional managers for performance, and a more coordinated delivery system (5, 6, 41, 42). More research is needed to estimate the relative effects of these practices. As more coordinated systems of medical care delivery develop, our data support the use of the types of information and quality management systems available in the VHA.

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Revamped Veterans' Health Care Now a Model

By Gilbert M. Gaul
Washington Post Staff Writer
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For years, the Department of Veterans Affairs' sprawling health care system was criticized by veterans groups and government investigators as a dangerous backwater of medicine. Report after report portrayed it as suffocating from top-heavy bureaucracy, dirty and unsafe hospitals, and little or no accountability. Thousands of eligible patients opted to get their care elsewhere.

But in the past decade, largely unnoticed by the public, the system has undergone a dramatic transformation and now is considered by some to be a model.

Researchers laud the VA for its use of electronic medical records, its focus on preventive care and its outstanding results. The system outperforms Medicare and most private health plans on many quality measures, including diabetes care, managing high blood pressure and caring for heart attack patients. Demand at veterans clinics and hospitals is soaring -- so much so that Congress last month appropriated $1.5 billion in emergency funds to cover a budget shortfall that the department did not anticipate.

Some experts point to the VA makeover as a lesson in how the nation's troubled health care system might be able to heal itself.

"If you take a five- or six-year perspective, I think what the Veterans Health Administration has done is stunning," said Donald M. Berwick, president and chief executive of the Institute for Healthcare Improvement. "It's especially impressive because this is a massive system that works in a fishbowl, is under tremendous scrutiny and has constrained resources."

Since 1995, the VA says, the number of patients it is treating has doubled, to about 5.2 million. At the same time, the department reports that it has trimmed its staff by about 12,000 people, opened hundreds of outpatient clinics and shifted its focus to primary care, while cutting costs per patient by about half.

"If we've proved anything . . . in the last 10 years, it is that quality is less expensive," said Jonathan B. Perlin, the acting undersecretary for health.

The VA's new medicine is on display at the bedside. One recent morning in Room 148 on the third floor of the Baltimore VA Medical Center, nurse Diane Bailey prepared to give Francis Xavier Lee, 79, a World War II veteran, medication for asthma.

In most hospitals, Bailey would rifle through charts attempting to decipher a physician's scrawled instructions. At Lee's bedside, she logged on to a laptop computer containing the patient's medical history and a list of medication he was scheduled to receive.

Bailey scanned Lee's bar-code bracelet to ensure his identity, then typed in the time and dose of each

medication. If she were to hit the wrong key or enter the wrong information, the computer program would signal her to correct the mistake.

Initially, Bailey said, she was concerned about using the computer, but now she is a huge fan. "It's all right here," she said, pointing to the patient's electronic medical record. "Everything I need. It makes my job a lot easier."

The VA's metamorphosis began in the early 1990s, when it was under attack and worried about its future. Officials turned to Kenneth W. Kizer. A physician and former Naval Reserve officer, Kizer had earned kudos for helping restructure health services for the state of California.

"Everyone said, 'You're a fool,' " he recalled. " 'There isn't an agency in the government as sclerotic as the VA. Why go in and waste your time?' "

But Kizer was looking for a new challenge. Over the next five years, he and aides reorganized the VA's unwieldy network of 172-plus hospitals and 132 nursing homes into 22 self-contained systems responsible for providing all patient care. The VA also shifted some specialists to its new outpatient clinics.

At the same time, the department invested heavily in computers and software. They link distant clinics to urban teaching facilities and allow VA physicians to access patient records wherever they happen to be.

These days, computers are used to measure everything at VA sites with an aim toward improving care. Dorothy A. Snow, acting chief of staff in Baltimore, pores over pages of weekly statistics on how her facility compares with others in the area as well as its own performance over time. Areas requiring attention are highlighted in yellow. Most are blue or red, signaling that Baltimore has met or exceeded its targets.

In 1990, before Baltimore began tracking its performance, rates of screening for breast and cervical cancer were 50 percent and 17 percent, respectively. In 2003, they were 88 percent and 87 percent. "The computers are an effective way of driving performance," Snow said.

By contrast, private physicians in Medicare's sprawling fee-for-service system receive little feedback from the huge federal insurance program and lag behind VA doctors on numerous quality indicators, according to half a dozen recent studies by VA and academic researchers.

Medicare officials point out that the VA has the advantage of being an integrated delivery system -- that is, a health plan in which most of the doctors are salaried employees and all care is coordinated and tracked. In Medicare, physicians work for themselves and patients are free to pick and choose their services. Still, Perlin pointed out, "we were an integrated delivery system before, and no one said we had an advantage."

Veterans organizations applaud the VA makeover, saying surveys show that most of their members are satisfied with the medical care they get. At the same time, they worry that tight budgets are forcing some veterans to wait months for an appointment.

"The quality of care has improved greatly, and we are grateful for that," said Peter S. Gaytan, director of veterans affairs for the American Legion. "But the timeliness of care is suffering. We have vets waiting in line because the funding is inadequate to meet the need."

Unlike Medicare, the VA is expected to work within a budget. Recently, Congress criticized the department's leaders for underestimating the demand for services in light of the fighting in Afghanistan and Iraq. At June hearings, VA officials said the model they used to develop the 2005 budget relied on three-year-old data.

In June, the Bush administration told Congress that the VA would need more money this year, and revised its request for fiscal 2006, boosting the department's health budget by $2 billion . Still, much of the increased demand for services predates Afghanistan and Iraq, and appears to coincide with the department's new reputation for quality.

A large part of that shift is the result of the investment in computers. The 75,000 physicians who are full-time, salaried doctors or affiliated with the Veterans Health Administration have access to a detailed electronic record of every patient. It includes every visit, prescription, surgery and test a patient receives. Doctors can call up prior visits, enter blood pressures and blood sugar levels, access the latest research, and tap into treatment guidelines -- all with the click of a mouse.

If a patients moves -- say, from Baltimore to San Francisco -- her record follows. If a physician in the VA's Pocomoke City, Md., outpatient clinic wants to check how his patient is faring after surgery in Baltimore, he can read the notes online. In the past, only one doctor could access a chart at a time. Now anyone can, at any time.

"If I want to check one of my patients from home, I can do it before I go to bed," Snow said. "It's made my job so much more fun. I'm more effective."

Perlin estimated that it costs the VA about $78 per patient per year to operate the electronic health record. "Roughly the equivalent of not repeating one blood test," he said.

Later this year, the VA plans to allow patients to access their electronic medical records over the Internet through its My HealtheVet. "The patient is often the forgotten partner in health care," Perlin said. Sharing the records "recognizes a person has interests in how his care is managed."

The target for the rollout: Veterans Day in November.

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BRIEF REPORT: Quality of Ambulatory Care for Women and Men in the Veterans Affairs Health Care System

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BACKGROUND: Gender differences in inpatient quality of care are well known. However, whether men and women receive equivalent ambulatory care is less well understood.

OBJECTIVE: To study gender differences in quality of care for patients receiving primary care in the Veterans Affairs (VA) Health Care System.

DESIGN: Cross-sectional samples of VA enrollees during fiscal years 1999 to 2000.

PARTICIPANTS: Samples of 6,442 to 86,405 men and women treated at VA facilities for whom at least 1 of 9 quality measures was available.

MEASUREMENTS: Appropriate general preventive services (pneumococcal vaccination, influenza vaccination, colorectal cancer screening), and specific services for diabetes (annual hemoglobin A1c [HbA1c] testing, good glycemic control, annual diabetic eye exam), hypertension (good blood pressure control), or prior myocardial infarction (use of β-blockers or aspirin).

RESULTS: In adjusted analyses, there were no substantial gender differences in rates of appropriate care. For women compared with men, the adjusted relative risk for appropriate care ranged from 0.96 for blood pressure control (95% confidence interval: 0.93 to 0.99; $P=.02$) to 1.05 for HbA1c ≤ 8.0% (95% confidence interval: 1.03 to 1.07; $P<.01$). Analyses stratified by age demonstrated equivalent care between men and women in 9 of the 14 subgroups evaluated.

CONCLUSIONS: In this large national health care system that predominantly serves men, the quality of ambulatory care is equivalent for women and men on numerous measures.

KEY WORDS: gender; quality; veterans; prevention; diabetes mellitus.
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Men and women do not always receive equivalent care,[1,2] and these differences may be because of nonclinical factors. Women often receive poorer care after admission for congestive heart,[1] coronary heart disease,[3–5] and other common medical conditions.[2] In contrast, gender differences in the quality of ambulatory medical care are largely unexplored, although limited data suggest that disparities may exist in this setting as well.[6]

The Department of Veterans Affairs (VA) runs the largest integrated health care system in the United States. Although men make up a large majority of veterans who receive care in the VA, women now comprise nearly 10% of the 4 million users and are a rapidly rising group. Given the rising numbers of women in military service in recent decades, the number of women seeking care in the VA is expected to grow. While recent data suggest dramatic improvement in quality of care for veterans,[7] it is unclear whether men and women have shared equally in this advancement. Using common indicators, we sought to determine whether gender differences exist in the quality of ambulatory care in this large, national health care system.

METHODS

Design

We used data from VA External Peer Review Program[8] to assess quality of care during fiscal years 1999 to 2000 (October 1, 1998 to September 30, 2000). External Peer Review Program data are derived from cross-sectional samples of medical records reviewed by trained abstractors with high interrater reliability scores (κ 0.90)[7] and oversight both from the Congressional committees of VA and the Government Accounting Office.[9] The study protocol was approved by the Institutional Review Boards of the Boston VA Health Care System and Brigham and Women's Hospital.

Patients with 2 years of continuous enrollment in the VA and at least 1 ambulatory visit in the previous 12 months were eligible for sampling. A random sample of all patients within each of the 22 regional networks was obtained annually in adequate numbers to ensure reproducible precision for estimated rates in each network.[10] In addition, random samples of patients with prevalent chronic diseases (e.g., diabetes, ischemic heart disease, and chronic obstructive pulmonary disease) were selected in each network, and women were oversampled.

Quality Indicators

We studied 9 quality measures that are equally appropriate for women and men, including 3 preventive measures (vaccinations and cancer screening tests) and 6 chronic disease management measures (e.g., annual retinal exams in diabetics) (Appendix, available online). These indicators were developed by the VA and are similar to measures developed by the National Committee for Quality Assurance to assess health plans in the Health Plan Employer Data and Information Set

The authors have no conflicts of interest to declare.

The results were presented at the 2004 Society of General Internal Medicine annual conference and the annual meeting of VA Health Services Research and Development.

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(HEDIS).[11] Each of the quality measures reflects recommendations made in national guidelines.[12-14]

Statistical Analysis

We measured the association between gender and individual quality measures using prevalence ratios and χ^2 tests. This study had a statistical power of greater than 95% power to detect a 3% difference in adherence rates in each of the quality markers, except for patients with prior myocardial infarction (MI) (aspirin and β-blocker use), where this study had 80% power to detect a 6% difference in rates.

Subsequently, using multivariate logistic regression and generalized estimating equations to adjust for age and institutional characteristics (number of housestaff, number of hospital beds, and region of the country), we assessed whether gender was independently associated with each quality measure and converted odds ratios (ORs) to relative risks using standard methods.[15] We tested for interactions of gender with age and hospital characteristics as predictors of adherence to quality indicators. Because we were aware a priori that women were younger and that age was related to adherence to quality indicators, we chose to stratify our multivariate analyses by age (<65 vs ≥65 years), except for post-MI use of aspirin and β-blockers because fewer than 100 women were eligible for these measures. All analyses were performed using Stata 7.0 (College Station, TX).

RESULTS

The sample sizes for the 9 quality measures ranged from 6,695 post-MI patients to 86,405 patients eligible for pneumococcal vaccination (see Appendix). Women represented between 13% and 23% of the samples (Appendix) for most of the quality measures, except for post-MI patients (1.4%). Women were younger than men. There were small although statistically significant differences in facility and geographic characteristics for men and women sampled for these quality measures (Table 1).

Adherence to quality indicators ranged from 47% for blood pressure control to 98% for aspirin among patients with a prior MI (Table 2). In unadjusted analyses, women were less likely to receive 5 of the 9 appropriate services and more likely to receive the other 4. Adjusting for differences in age and hospital characteristics, we found that women and men received comparable care, with relative risks for women compared with men ranging from 0.96 for adequate blood pressure control to 1.05 for good glycemic control (Table 2). While some of the differences between men and women were statistically significant, the magnitude and differences direction of these differences were small and inconsistent.

In additional multivariable analyses stratified by age, men and women received comparable care in nearly all subgroups (Fig. 1). Among the 14 subgroups, women had higher rates of appropriate care for 7 measures, while men had higher rates for the other 7. The odds ratios (women compared with men) for the subgroups ranged from 0.78 (pneumococcal vaccination among those less than 65 years old) to 1.13 (hemoglobin A1c (HbA1c) control among those younger than 65 years old). Differences in 5 of these 14 subgroup analyses were statistically significant. Among those younger than 65 years of age, women were more likely to receive appropriate HbA1c testing (OR 1.13, 95% confidence interval 1.03 to 1.25) and adequate hypertension control (OR 1.09, 95% confidence interval 1.00 to 1.18) but less likely to receive a pneumococcal vaccine (OR 0.78, 95% confidence interval 0.73 to 0.83). Among older patients, women were less likely to receive adequate hypertension control (OR 0.82, 95% confidence interval 0.75 to 0.90) and pneumococcal vaccination (OR 0.92, 95% confidence interval 0.86 to 0.99).

Table 1. Baseline Characteristics of Men and Women in the EPRP Sample*

Characteristics	Women, % (n)	Men, % (n)	P Value
Age (y)	59.9	66.4	<.001
Region			<.001
Northeast	25 (2,000)	21 (15,006)	
Midwest	25 (1,934)	33 (23,450)	
South	26 (2,063)	27 (19,335)	
West	24 (1,847)	20 (14,244)	
Hospital size (no. of beds)	309	307	.85
Urban hospital % (n)	38 (9,027)	34 (72,879)	<.001
High technology % (n)	32 (7,615)	33 (69,429)	<.001
Academic hospital % (n)	40 (10,114)	42 (69,445)	<.001

*For those eligible for the pneumococcal vaccine.
EPRP, External Peer Review Program.

DISCUSSION

Among patients treated in the VA health care system, we found remarkably similar quality of ambulatory care for women and men for both preventive services and chronic disease management. Quality of care was high for most services, but even in situations where care was less than optimal (e.g., blood pressure management), men and women received similar care.

Although gender differences in the quality of ambulatory care are largely unexplored, prior studies suggest that women may receive lower quality of care in these settings. Women receive low rates of secondary cardiac prevention,[16] although few studies have performed direct comparisons with men. Among known gender differences in the quality of ambulatory care, women with coronary heart disease have lower rates of cardiac referral[17,18] after an admission for an MI and may receive lower rates of appropriate diabetes care[19] than men. One recent evaluation of 10 commercial and 9 Medicare health plans found that women were less likely to receive β-blockers after an MI and that women receive lower rates of diabetes preventive measures.[6] Herlholz et al.[20] similarly found lower rates of critical cardiovascular drug use among women discharged with an acute MI. Schneider et al.[21] found no variation in HEDIS measures by sex among Medicare managed care patients.

Equal care for men and women should be interpreted in the context of significant gains in quality that the VA has achieved over the past 8 years.[7,22,23] In the middle of the 1990s, the VA undertook a major reengineering program to improve quality by decentralizing clinical management to 22 regional networks, instituting performance measurement programs, and creating a data collection system to monitor quality.[7] Further, in an effort to improve care to women, VA dedicated special primary care clinics for women only. Over half of VA hospitals have specialized Women's Health Clinics, although a majority of women enrollees receive most or nearly all their care in general medical clinics.[24] Veterans Affairs

Table 2. Percentage of Enrollees Receiving Appropriate Care by Gender with Prevalence Ratios

Quality Indicator	Women, %	Men, %	Unadjusted Relative Risk	P Value	Adjusted Relative Risk (95% CI)	P Value
Pneumococcal vaccination	74.0	79.7	0.93	<.01	0.98 (0.97–0.99)	<.01
Influenza vaccination	73.4	76.5	0.96	<.01	0.99 (0.97–1.00)	.03
Colorectal cancer screening	68.9	69.9	0.99	.03	0.99 (0.97–1.00)	.10
Diabetic eye exam screen	67.0	68.6	0.98	.01	0.98 (0.96–1.00)	.10
Annual HbA1c	94.7	94.3	1.01	.30	1.00 (0.99–1.01)	.71
HbA1c <8.0 %	61.1	62.0	0.99	.20	1.05 (1.03–1.07)	<.01
Aspirin after MI	97.8	97.3	1.01	.74	1.00 (0.96–1.02)	.72
β-blocker after MI	95.7	95.0	1.01	.78	1.01 (0.95–1.03)	.75
Blood pressure ≤ 140/90 mmHg	48.0	47.4	1.01	.47	0.96 (0.93–0.99)	.02

MI, myocardial infarction; HbA1c, hemoglobin A1c; CI, confidence interval.
Adjusted for age, region of country, hospital size, hospital location (urban vs nonurban), academic status of hospital or clinic.

quality improvement efforts targeted gender-specific measures, which led to VA outperforming the private sector with higher rates of both mammography and cervical cancer screening.[7] It may be that broad-based quality improvement efforts may reduce variations in care and this may help explain the gender parity in quality of ambulatory care.

Our study has important limitations. First, we were unable to adjust for several potentially important confounders such as socioeconomic status, comorbidities and health status, and utilization rates, all of which could be associated with quality of care. However, female enrollees in the VA are more likely to be poor and unemployed,[25] have lower functional status[24], and health status[26] than male enrollees. Further, adjusted for age, women enrollees have lower rates of VA utilization than their male counterparts.[27] Therefore, these factors are likely to bias us toward finding worse care for women. Second, while we found generally high-quality care, there were still areas where men and women both received less than optimal care, such as hypertension management. While the quality of hypertension care improved in the VA from 1995 through 2000, and while rates of adequate blood pressure control in the VA are comparable with the private sector,[22] these are still areas that require improvement. Finally, because we used process measures to assess quality of care, we could not discern whether women and men have equal outcomes.

In conclusion, we found remarkably similar quality of care for women and men in outpatient preventive services and chronic disease management in the VA. This equal care may be related to the large strides in quality that the VA has achieved in the past decade.

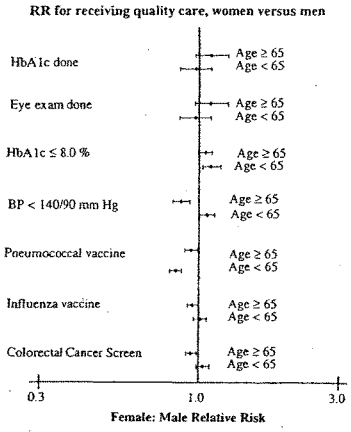

FIGURE 1. Risk ratio with 95% confidence interval (CI) for receiving quality care, stratified by age. Post-myocardial infarction (MI) patients not analyzed in subgroups because of small sample size and lack of interaction by age group.

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Supplementary Material

The following supplementary material is available for this article online:

Appendix. Quality Indicators and Sampling Frame for Men and Women in the EPRP Dataset.

SPECIAL COMMUNICATION

Five Years After *To Err Is Human*
What Have We Learned?

Lucian L. Leape, MD
Donald M. Berwick, MD

Five years ago, the Institute of Medicine (IOM) called for a national effort to make health care safe. Although progress since then has been slow, the IOM report truly "changed the conversation" to a focus on changing systems, stimulated a broad array of stakeholders to engage in patient safety, and motivated hospitals to adopt new safe practices. The pace of change is likely to accelerate, particularly in implementation of electronic health records, diffusion of safe practices, team training, and full disclosure to patients following injury. If directed toward hospitals that actually achieve high levels of safety, pay for performance could provide additional incentives. But improvement of the magnitude envisioned by the IOM requires a national commitment to strict, ambitious, quantitative, and well-tracked national goals. The Agency for Healthcare Research and Quality should bring together all stakeholders, including payers, to agree on a set of explicit and ambitious goals for patient safety to be reached by 2010.

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FIVE YEARS AFTER THE INSTITUTE of Medicine (IOM) reported that as many as 98 000 people die annually as the result of medical errors and called for a national effort to make health care safe, it is time to assess our progress. Is health care safer now? And, if not, why not?

The IOM's report, *To Err Is Human: Building a Safer Health System*,[1] galvanized a dramatically expanded level of conversation and concern about patient injuries in health care both in the United States and abroad. Patient safety, a topic that had been little understood and even less discussed in care systems, became a frequent focus for journalists, health care leaders, and concerned citizens.

Small but consequential changes have gradually spread through hospitals, due largely to concerted activities by hospital associations, professional societies, and accrediting bodies. All hospitals have implemented some new practices to improve safety. Fewer patients die from accidental injection of concentrated potassium chloride, now that it has been removed from nursing unit shelves[2]; fewer patients have complications from warfarin, now that many taking anticoagulants are being treated in dedicated clinics[3]; and serious infections have been reduced in hospitals that have tightened infection control procedures (J. Whittington, written communication, March 2005; K. McKinley, Geisinger Clinic, written communication, April 2005; and P. Pronovost, Johns Hopkins Hospital, written communication, January 2005).[4]

Although these efforts are affecting safety at the margin, their overall impact is hard to see in national statistics. No comprehensive nationwide monitoring system exists for patient safety, and a recent effort by the Agency for Healthcare Research and Quality (AHRQ) to get a national estimate by using existing measures showed little improvement.[5] Although that estimate was largely based on insurance claims data, measures known to have low sensitivity for detecting quality improvement, little evidence exists from any source that systematic improvements in safety are widely available.

Perhaps inevitably, critics have pushed back against viewing safety as a problem of science—of system design. Public support for improving patient safety often turns instead on fixing blame. Despite the widely disseminated message from the IOM that systems failures cause most injuries, most individuals still believe that the major cause of bad care is bad physicians, and that if miscreant clinicians were removed everything would be all right.[6] Some have claimed that the emphasis on systems, and particularly, not blaming individuals for errors, will weaken accountability for physician performance.[7] Related concerns have led to legislation imposing stricter reporting requirements on hospitals and physicians.[8] The latest surge in the malpractice premium crisis has deflected interest of lawmakers from error prevention to an effort to put caps on malpractice settlements.

Although the proven measured fruits of the IOM report so far are few,

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its impact on attitudes and organizations has been profound. In addition, thanks to research sponsored by AHRQ, health care leaders have also learned a great deal about safety that they did not know in 1999. In sum, the groundwork for improving safety has been laid these past 5 years but progress is frustratingly slow. Building a culture of safety is proving to be an immense task and the barriers are formidable. Whether significant progress will be achieved in the next 5 years depends on how successfully those barriers are addressed.

Our goal is to summarize what has happened, analyze the reasons why improvement has not been greater, and make recommendations for what needs to be accomplished to realize the IOM's vision.

What Have We Accomplished?

The effects of the IOM report are evident in at least 3 important areas: viewing the task of error prevention, enlisting the support of stakeholders, and changing practices.

Viewing the Task of Error Prevention. First, the IOM report profoundly changed the way many health care professionals and managers think and talk about medical errors and injury. It truly changed the conversation. Although a substantial minority among both clinicians and the lay public continue to doubt that injury and mortality rates are as high as the IOM claimed,[6,9,10] subsequent data from various sources suggest that the IOM may have substantially underestimated the magnitude of the problem.[11-16] Nosocomial infections alone, most of which are preventable, account for more than 90 000 deaths per year,[17] and hospital-acquired bloodstream infections alone may rank as the eighth leading cause of death in the United States.[18] Few individuals now doubt that preventable medical injuries are a serious problem. Far more physicians and nurses today ask not whether there is a problem but rather what they can do about it.

The concept that bad systems, not bad people, lead to the majority of errors and injuries, which is a crucial scientific foundation for improvement of safety in all successful high-hazard industries, has become a mantra in health care. Skeptics abound but more and more health care leaders appear to accept the corollary that blaming individuals is usually neither fair nor effective as a mainstay approach in pursuit of safety. Interest in technologies to support safer care has increased, most especially with respect to computer-assisted physician order-entry systems; the decades-old stalled discussions about electronic health care records have acquired new life. Before the IOM report, deficient safety was simply not a problem widely known in the health care industry. Now, it is.

Some ambiguity exists about the relationship between safety as a desired characteristic of health care and the broader issues of health care quality in general. The IOM Roundtable on Quality of Care categorized threats to quality in 3 broad families: overuse (receiving treatment of no value), underuse (failing to receive needed treatment), and misuse (errors and defects in treatment).[19] In its narrowest form, a focus on safety addresses only the third family, that is, a subset of the whole domain of quality of care.

However, mistakes by caregivers that lead to physical injuries are much less acceptable to patients than overuse or underuse, and cause far more emotional reaction. Indeed, the focus on active harm—misuse—may help explain the intense public interest in safety compared with quality improvement in general. Health care professionals, too, may feel far worse if they harm a patient directly than if they provide inappropriate care.

As attention to patient safety has deepened, the boundaries among overuse, underuse, and misuse have blurred. It seems logical that patients who fail to receive needed treatments or who are subjected to the risks of unneeded care are also placed at risk for injury every bit as objectionable as direct harm from a surgical mishap. Operationally, the terrain of quality is becoming more unified. Importantly, it is much clearer now that the most effective method to improve either safety or quality overall is to change the systems.

Enlisting the Support of Stakeholders. The second major effect of the IOM report was to enlist a broad array of stakeholders, some quite surprising, to advance patient safety. The first stakeholder was the federal government. Responding to the IOM recommendation, the US Congress in 2001 appropriated $50 million annually for patient safety research. That support, although a tiny fraction of the $28 billion budget for the National Institutes of Health, was enough to enlist hundreds of new investigators into patient safety research, essentially launching the academic base for that work. Research in error prevention and patient safety became a legitimate academic pursuit.

Unfortunately, in 2004 after only 3 years of support, federal funding for patient safety research through AHRQ became almost entirely earmarked toward studies of information technology. As crucial as such technologies are, this reallocation revealed a serious misunderstanding of the broad array of research that will be needed to address the safety problem, and is quickly starving the new recruits who would have pursued aspects of safety other than information technology.

Congress, however, did codify AHRQ as the lead federal agency for patient safety and AHRQ established a Center for Quality Improvement and Safety, which has become the leader in education, training, convening agenda-setting workshops, disseminating information, developing measures, and facilitating the setting of standards. Despite its limited budget, AHRQ has been an important voice for safety through its support for evaluating best practices, demonstrations to enhance reporting of adverse events, errors and near misses, its development of patient safety indicators now used by many hospitals, and its development of a roadmap of evidence-based best practices used by the National Quality Forum (NQF).

The Veteran's Health Administration quickly emerged as a bright star in the constellation of safety practice, with system-wide implementation of safe practices, training programs, and the establishment of 4 patient-safety research centers.[20,21]

A host of nongovernmental organizations have made safety a priority. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has led the way, tightening up accountability within health care organizations and requiring hospitals to implement new safe practices.[22] The NQF, a public-private partnership to develop and approve measures of quality of care, developed a consensus process that generated standards for mandatory reporting[23] and created a list of high-impact evidence-based safe practices that the JCAHO and other organizations are now beginning to require hospitals to implement.[24] The Centers for Medicare & Medicaid Services and the Centers for Disease Control and Prevention have joined with more than 20 surgical organizations in a new program to reduce surgical complications,[25] and many other specialty societies, particularly the American College of Physicians, have incorporated safety topics into their meetings, education, and research.

The National Patient Safety Foundation, originally housed by the American Medical Association, has become a major force in increasing awareness. Although the National Patient Safety Foundation remains short of stable funding, it has gained a national following and the annual conferences are a wellspring of education and research findings in patient safety.[26] The Accreditation Council on Graduate Medical Education and the American Board of Medical Specialties are engaged in a massive effort to define competencies and measures in each specialty, both for residency training and continuing evaluation of practicing physicians.[27]

The Institute for Healthcare Improvement has helped hospitals redesign their systems for safety through demonstration projects, system changes, and training in implementation of safe practices for thousands of physicians, nurses, and pharmacists. Several Quality Improvement Organizations have become skilled at helping hospitals reduce medication injury rates and other hazards.

Regional coalitions have sprung up across the country to facilitate stakeholders to work together to set goals, collect data, disseminate information, and provide education and training to improve safety. The original list of medication safety practices for hospitals was disseminated in 1999 by the Massachusetts Coalition for the Prevention of Medical Errors and later adopted by the American Hospital Association. Several large, integrated health care systems, notably Kaiser-Permanente, Ascension, and the Veteran's Health Administration, have been leaders in implementing new safe policies and practices. Hospital group-purchasing organizations, such as VHA and Premier, have made major commitments to disseminating safety information and practices.

Purchasers and payers have entered the arena, particularly the Leapfrog Group, formed by a number of major US corporations. The Leapfrog Group has strongly encouraged the adoption of a number of safer practices in hospitals, including computerized physician order entry systems, proper staffing of intensive care units, and the concentration of highly technical surgery services in high-volume centers. The most recent "Leap" focuses on implementation of the NQF's Safe Practices.

But the most important stakeholders who have been mobilized are the thousands of devoted physicians, nurses, therapists, and pharmacists at the ground level—in the hospitals and clinics—who have become much more alert to safety hazards. They are making myriad changes, streamlining medication processes, working together to eliminate infections, and trying to improve habits of teamwork. The level of commitment of these frontline professionals is inspiring. Most are making changes, not primarily in response to mandates, but rather to improve the quality of care for their patients.

Changing Practices. The third effect of the IOM report was to accelerate the changes in practice needed to make health care safe. Initially, adoption of new safe practices was entirely voluntary. Some hospitals responded to recommendations for medication safety from regional coalitions or the American Hospital Association. Other organizations sent teams to Institute for Healthcare Improvement programs that trained them in rapid cycle improvement and the application of human factors principles in the redesign of their processes. Still others began to change practices in response to the Leapfrog Group mandate.

Following the 2002 publication by the NQF of a list of 30 evidence-based safe practices ready for implementation, the JCAHO in 2003 required hospitals to implement 11 of these practices, including improving patient identification, communication, and surgical-site verification.[22] Additional practices have been added for implementation in 2005.

It is too soon to evaluate the effect of the JCAHO requirements, and few large controlled studies of previously implemented changes have been performed. However, time-series data from hospitals and systems that have been working to improve safety are encouraging. The results achieved in implementing 12 practice changes are presented in the TABLE.[4,28-35] If these results were replicated nationwide, the impact would be substantial.

Finally, a major practice change occurred in teaching hospitals in 2003 when all residency training programs implemented new residency training work hour limitations. These limitations were promulgated by the Accreditation Council on Graduate Medical Education and based on strong but not previously acknowledged scientific information on the relationships between fatigue and errors at work.[36-39] While these work hour restrictions are an enormous step forward, they do not

address the most important cause of fatigue: sleep deprivation due to extended duty shifts. Recent studies have provided specific evidence of the pernicious effect of sleep deprivation on resident performance.[40]

Barriers to Progress

The diversity and level of engagement in improving safety in health care is impressive. Ten years ago, no one was talking about patient safety. Five years ago, before the IOM report, a small number in a few pioneering places had developed a strong commitment, but its impact was limited and most of health care was unaffected. Now, the majority of health care institutions are involved to some extent and public awareness has soared. A growing patient safety movement is afoot.

But if so much activity is going on, why isn't health care demonstrably and measurably safer? Why has it proved so difficult to implement the practices and policies needed to deliver safe patient care? Why are so many physicians still not actively involved in patient safety efforts? What needs to be done to accelerate the pace of improvement in patient safety?

The answers to these questions are to be found in the culture of medicine, a culture that is deeply rooted, both by custom and by training, in high standards of autonomous individual performance and a commitment to progress through research. It is the same culture that in the latter half of the 20th century brought profound advances in biomedical science and delivered unprecedented cures to millions of US individuals. This culture is technically audacious and productive; many of today's most powerful drugs and treatments were not available as recently as 2 decades ago.

However, these advances created challenges to safety not faced by other hazardous industries that have succeeded far better than medical care in becoming safe, even ultra-safe. The first such challenge is complexity. Modern health care technology is almost certainly more complex than that of other industries. The dean of safety researchers, Professor James Reason, has observed that health care is also more complex than any other industry he knows in terms of relationships, with more than 50 different types of medical specialties and subspecialties interacting with each other and with an equally large array of allied health professions (oral communication, October 2003). The more complex any system is, the more chances it has to fail.

Table. Clinical Effectiveness of Safe Practices

Intervention	Results
Perioperative antibiotic protocol	Surgical site infections decreased by 93%*
Physician computer order entry	81% Reduction of medication errors[28,29]
Pharmacist rounding with team	66% Reduction of preventable adverse drug events[30]
	78% Reduction of preventable adverse drug events[31]
Protocol enforcement	95% Reduction in central venous line infections†
	92% Reduction in central venous line infections‡
Rapid response teams	Cardiac arrests decreased by 15%[32]
Reconciling medication practices	90% Reduction in medication errors[33]
Reconciling and standardizing medication practices	60% Reduction in adverse drug events over 12 mo (from 7.6 per 1000 doses to 3.1 per 1000 doses)[33]
	64% Reduction in adverse drug events in 20 mo (from 3.8 per 1000 doses to 1.39 per 1000 doses)[4]
Standardized insulin dosing	Hypoglycemic episodes decreased 63% (from 2.95% of patients to 1.1%)[34]
	90% Reduction in cardiac surgical wound infections (from 3.9% of patients to 0.4%)§
Standardized warfarin dosing	Out-of-range international normalized ratio decreased by 60% (from 25% of tests to 10%)[33]
Team training in labor and delivery	50% Reduction in adverse outcomes in preterm deliveries‖
Trigger tool and automation	Adverse drug events reduced by 75% between 2001 and 2003[35]
Ventilator bundle protocol	Ventilator-associated pneumonias decreased by 62%*

*J Whittington, written communication, March 2005.
†P. Pronovost, Johns Hopkins Hospital, written communication, January 2005.
‡R. Shannon, written communication, January 2005.
§K. McKinley, Geisinger Clinic, written communication, April 2005.
‖B. Sachs, Beth Israel Deaconess Medical Center, written communication, October 2004.

A second challenge is medicine's tenacious commitment to individual, professional autonomy. Creating cultures of safety requires major changes in behavior, changes that professionals easily perceive as threats to their authority and autonomy. Overlay this demand to change individual behavior with the challenges of learning a nonblaming systems-oriented approach to errors and establishing new lines of accountability, and it is not surprising that progress in achieving safety in health care is slow.

Fear poses a third major challenge. Many physicians greeted the horrendous mortality data published by the IOM with disbelief and concern that the information would undermine public trust. The normal human resistance to change was amplified by fear of loss of autonomy, antipathy toward attempts by others outside the profession to improve practice, and skepticism about the new concept that systems failures are the underlying cause of most human errors. An understandable fear of malpractice liability inhibits willingness to discuss, or even admit, errors.

The combination of complexity, professional fragmentation, and a tradition of individualism, enhanced by a well-entrenched hierarchical authority structure and diffuse accountability, forms a daunting barrier to creating the habits and beliefs of common purpose, teamwork, and individual accountability for successful interdependence that a safe culture requires.

In addition to these powerful cultural factors, lack of leadership at the hospital or health plan level impedes progress. Changing the culture, even

changing a few practices and policies, requires that all personnel share a common vision and personally own safety. This cannot happen without commitment at the top level of the organization. Although the JCAHO requires all hospitals to implement safe practices, and the NQF has issued a clear statement about the responsibility of boards,[41] few of the chief executive officers and boards of hospitals and health plans have made safety a true priority in their institutions or committed substantial resources toward safety.

Another key barrier to making progress is a paucity of measures. Identifying problems, measuring progress, and demonstrating that improvement has been achieved all depend on the availability of robust measures. Some exist, such as measures of specific types of infections, certain laboratory tests (blood glucose), AHRQ's recent promulgation of a set of patient safety indicators,[42] and the Institute for Healthcare Improvement's trigger tools for measurement of harm,[43] but many more measures are needed. More global measures are especially necessary, such as the Adverse Outcomes Index developed by the Quality Assurance Committee of the American College of Obstetricians and Gynecologists, which is used in labor and delivery and includes weighted values for all complications (B. Sachs, Beth Israel Deaconess Medical Center, written communication, October 2004). Measures are crucially necessary to be able to demonstrate that changes improve safety and decrease costs.

The current reimbursement structure works against improving safety and actually rewards less safe care in many instances. For example, insurance companies sometimes will not pay for new practices that reduce errors, such as anticoagulation clinics operated by nurses, new information technologies, or counseling of patients by retail pharmacists. However, payers often subsidize unsafe care quite well, although unknowingly. In most industries, defects cost money and generate warranty claims. In health care, perversely, under most forms of payment, health care professionals receive a premium for a defective product; physicians and hospitals can bill for the additional services that are needed when patients are injured by their mistakes.[44]

What Do We Need to Do?

Despite these formidable barriers, health care is well poised to increase the pace of improving patient safety in the near future. As a result of the advances by the many stakeholders over the past 5 years, a critical mass of informed and concerned physicians, nurses, pharmacists, administrators, risk managers, and other individuals is in place to help organizations make substantial changes. Not only do these highly motivated individuals have the skills and knowledge needed to make changes, they have the tools they need in the form of tested and effective safe practices awaiting implementation.

Dramatic advances are likely within the next 5 years in at least 4 important areas: implementation of electronic health records; wide diffusion of proven and safe practices, such as those approved by the NQF; spread of training on teamwork and safety; and full disclosure to patients following injury.

The electronic health record may be, finally, an idea whose time has come. Many of the technical problems, such as the lack of standards for data elements and ensuring interoperability that have held back adoption, are resolved or well on their way to solution. The federal government has appointed an information technologies czar, Dr David Brailer, within the Department of Health and Human Services to oversee and stimulate dissemination. Major payers and health care systems have begun to realize that the substantial up-front investment that is required to put systems in place in every hospital and every physician's office will be paid back handsomely within a few years by increases in efficiency and decreases in charges for costly adverse events.

The pace of adoption of safe practices will almost certainly accelerate. The JCAHO and several payers, including Centers for Medicare & Medicaid Services, have indicated their interest in furthering the adoption of the NQF proven safe practices. As hospitals have wrestled with implementing the initial set of practices required by the JCAHO over the past 2 years, they have developed considerable expertise in making changes, and the capacity of the Quality Improvement Organizations to help them has also grown. Hospitals will now be able to implement new practices faster, and will find increasing incentives to do so.

Training physicians, nurses, and other professionals to work in teams is another idea whose time seems to have come. The interest in team training has grown rapidly over the past several years, abetted by the adoption of simulation techniques. The Accreditation Council on Graduate Medical Education has now articulated practice-based learning and systems-based practice as 2 of the core professional skills to be inculcated in all approved residency training schemes. Whole systems and hospitals are now providing team training to their entire medical staffs.

Finally, the ethically embarrassing debate over disclosure of injuries to patients is, we strongly hope, drawing to a close. Although actual practice still lags far behind the rhetoric,[45] few health care organizations now question the imperative to be honest and forthcoming with patients following an injury. As evidence accumulates that full disclosure does not increase the risk of being sued, it is becoming easier for physicians and nurses to do what they know is the right thing—tell the patient everything they know when they know it.

These advances will be welcomed and will have a measurable impact on reducing medical errors and injuries over the next 5 years. However, these advances represent only a small fraction of the work that needs to be done. A truly national response to the IOM's call to reduce preventable patient injuries by 90% requires that every health care board, executive, physician, and nurse make improving safety an absolutely top strategic priority—fully equal

to the corporate priority of financial health. At a national level, such a commitment has yet to emerge; indeed, it is not in sight.

If the experience of the past 5 years demonstrates anything, it is that neither strong evidence of ongoing serious harm nor the activities, examples, and progress of a courageous minority are sufficient to generate the national commitment needed to rapidly advance patient safety. Such a commitment is not likely to be forthcoming without more sustained and powerful pressure on hospital boards and leaders—pressure that must come from outside the health industry.

Mobilizing Pressure for Change

Where will this pressure come from? In England, the governmental response has been to establish a National Patient Safety Agency under the National Health Service, charged with stimulating and coordinating safety efforts throughout the system.[46] In the current US political climate, it is hard to imagine a similar effort by the federal government within the foreseeable future.

Can public outrage provide the pressure needed for change? Although surveys continue to show the public is concerned about medical errors and sensational cases provoke bursts of outrage, public concern is evanescent and thus an inadequate motivator for change. Even campaigns from patient advocacy groups[47,48] have failed to stir many boards of trustees of hospitals to call for major organizational changes.

What about regulation? One of the star players in the safety movement over the past 5 years has been the JCAHO, which has steadily increased the demands on hospitals to take patient safety seriously and indicated its commitment to continue to press for adoption of more proven safe practices. But regulation works as a sustainable force for change only when those organizations being regulated see those changes to be in their longer-run self-interest. The threat of decertification can produce evanescent, compliant behaviors, but it seems insufficient to do the job of transforming cultures, where the deeper solutions lie.

Can reimbursement provide the pressure for change? The current method of financing health care not only fails to provide incentives for safe care, it rewards unsafe care. That can change, and in fact, is changing. The pay for performance movement is gathering steam. Experiments with bonuses for physicians and plans who achieve goals of providing needed care, such as annual eye examinations for patients with diabetes mellitus, are well under way. Under the recent Medicare Modernization Act, the Centers for Medicare & Medicaid Services is launching some important and promising demonstration experiments that may offer evidence on the effect of improved payment schemes on safety efforts.

Whether these schemes will result in measurable improvements in safety remains to be seen. An important concern is whether current performance measures have sufficiently high sensitivity and specificity to accurately identify safer care when used in report cards or reimbursement plans. A second question is whether we have a sufficient number of validated measures to have a significant impact on safety, or on reimbursement. Finally, it seems likely that pay for performance, like all other methods of reimbursement, will have its own unanticipated perverse incentives that could undermine its effectiveness.

A better approach would be to favor in-payment hospitals and physicians who actually achieve high levels of safety. What about incentive bonuses for driving levels of ventilator-associated pneumonia, surgical site infections, or central line infections to zero, or close to zero? These levels have already been achieved in a small number of hospitals committed to safe care (P. Pronovost, Johns Hopkins Hospital, written communication, January 2005).[4] Payment incentives could accelerate widespread adoption of these practices with savings in life and money that would be enormous.

It may be equally important to begin to create negative financial consequences, or at least disincentives rather than financial rewards, for hospitals and other health care organizations that continue to tax the public and their patients with the burden of unsafe practices and resulting complications. Payment should not reward poor safety. In this regard, the recent decision by payers in Minnesota to cease paying hospitals for serious preventable adverse events[49] makes good sense and should be emulated by payers nationwide.

Setting Safety Goals

But for nationwide impact, we cannot rely on these piecemeal efforts to provide the pressure needed for change. If the payers and other parties are to have a significant impact on patient safety in the next 5 years, their efforts must be aligned behind common national safety goals. The most important single step that should be taken by the United States to align the forces of change would be to set and adhere to strict, ambitious, quantitative, and well-tracked national goals.

In November 2004, at the Commonwealth Fund–IOM meeting commemorating the fifth anniversary of the IOM report, participants called for a concerted effort to set clearly defined achievable goals for improving patient safety over the next 5 years—goals with measurable end points.

We call upon the AHRQ to bring together the JCAHO, NQF, American Hospital Association, American Medical Association, Leapfrog Group, and all of the major payers, including the Centers for Medicare & Medicaid Services, to agree on a set of explicit and ambitious goals for patient safety to be reached by 2010. The list provided by the Commonwealth Fund–IOM would be a good place to start. It is short, concrete, and achievable. This list called for a 90% reduction in nosocomial infections, a 50% reduction in medication errors, a 90% reduction in errors associated with high-harm medications, and 100% elimination of

the NQF "never" list.[24] In its 100 000 Lives campaign,[50] the Institute for Healthcare Improvement has adopted these as well as so-called rapid response teams to prevent failures to rescue.[51] Not only would these results measurably improve safety overall, but also achieving them would require institutions to make a high-level commitment and to develop effective teams, 2 critical elements of the culture change that is needed.

Technically, results like these are not out of reach. With sufficient will and leadership, they lie entirely within our grasp. The primary obstacles to achieving these results for the patients who depend on physicians and health care organizations are no longer technical; the obstacles lie in beliefs, intentions, cultures, and choices. All of those can change. The most important lesson of the past 5 years since the IOM spoke out on one of the major public health issues of our time is that we will not become safe until we choose to become safe.

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Respond to this Article

January/February 2005

The Best Care Anywhere

Ten years ago, veterans hospitals were dangerous, dirty, and scandal-ridden. Today, they're producing the highest quality care in the country. Their turnaround points the way toward solving America's health-care crisis.

By Phillip Longman

Quick. When you read "veterans hospital," what comes to mind? Maybe you recall the headlines from a dozen years ago about the three decomposed bodies found near a veterans medical center in Salem, Va. Two turned out to be the remains of patients who had wandered months before. The other body had been resting in place for more than 15 years. The Veterans Health Administration (VHA) admitted that its search for the missing patients had been "cursory."

Or maybe you recall images from movies like *Born on the Fourth of July*, in which Tom Cruise plays a wounded Vietnam vet who becomes radicalized by his shabby treatment in a crumbling, rat-infested veterans hospital in the Bronx. Sample dialogue: "This place is a fuckin' slum!"

By the mid-1990s, the reputation of veterans hospitals had sunk so low that conservatives routinely used their example as a kind of reductio ad absurdum critique of any move toward "socialized medicine." Here, for instance, is Jarret B. Wollstein, a right-wing activist/author, railing against the Clinton health-care plan in 1994: "To see the future of health care in America for you and your children under Clinton's plan," Wollstein warned, "just visit any Veterans Administration hospital. You'll find filthy conditions, shortages of everything, and treatment bordering on barbarism."

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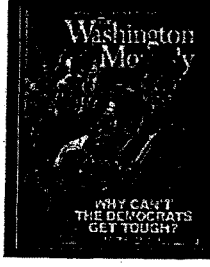

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—James Carville

And so it goes today. If the debate is over health-care reform, it won't be long before some free-market conservative will jump up and say that the sorry shape of the nation's veterans hospitals just proves what happens when government gets into the health-care business. And if he's a true believer, he'll then probably go on to suggest, quoting William Safire and other free marketers, that the government should just shut down the whole miserable system and provide veterans with health-care vouchers.

Yet here's a curious fact that few conservatives or liberals know. Who do you think receives higher-quality health care. Medicare patients who are free to pick their own doctors and specialists? Or aging veterans stuck in those presumably filthy VA hospitals with their antiquated equipment, uncaring administrators, and incompetent staff? An answer came in 2003, when the prestigious *New England Journal of Medicine* published a study that compared veterans health facilities on 11 measures of quality with fee-for-service Medicare. On all 11 measures, the quality of care in veterans facilities proved to be "significantly better."

Here's another curious fact. The *Annals of Internal Medicine* recently published a study that compared veterans health facilities with commercial managed-care systems in their treatment of diabetes patients. In seven out of seven measures of quality, the VA provided better care. It gets stranger. Pushed by large employers who are eager to know what they are buying when they purchase health care for their employees, an outfit called the National Committee for Quality Assurance today ranks health-care plans on 17 different performance measures. These include how well the plans manage high blood pressure or how precisely they adhere to standard protocols of evidence-based medicine such as prescribing beta blockers for patients recovering from a heart attack. Winning NCQA's seal of approval is the gold standard in the health-care industry. And who do you suppose this year's winner is: Johns Hopkins? Mayo Clinic? Massachusetts General? Nope. In every single category, the VHA system outperforms the highest rated non-VHA hospitals.

Not convinced? Consider what vets themselves think. Sure, it's not hard to find vets who complain about difficulties in establishing eligibility. Many are outraged that the Bush administration has decided to deny previously promised health-care benefits to veterans who don't have service-related illnesses or who can't meet a strict means test. Yet these grievances are about access to the system, not about the quality of care received by those who get in. Veterans groups tenaciously defend the VHA and applaud its turnaround. "The quality of care is outstanding," says Peter Gayton, deputy director for veterans affairs and rehabilitation at the American Legion. In the latest independent survey, 81 percent of VHA hospital patients express satisfaction with the care they receive, compared to 77 percent of Medicare and Medicaid patients.

Outside experts agree that the VHA has become an industry leader in its safety and quality measures. Dr. Donald M. Berwick, president of the Institute for Health Care Improvement and one of the nation's top health-care quality experts, praises the VHA's information technology as "spectacular." The venerable Institute of Medicine notes that the VHA's "integrated health information system, including its framework for using performance measures to improve quality, is considered one of the best in the nation."

If this gives you cognitive dissonance, it should. The story of how and why the VHA became the benchmark for quality medicine in the United States suggests that

much of what we think we know about health care and medical economics is just wrong. It's natural to believe that more competition and consumer choice in health care would lead to greater quality and lower costs, because in almost every other realm, it does. That's why the Bush administration—which has been promoting greater use of information technology and other quality improvement in health care—also wants to give individuals new tax-free "health savings accounts" and high-deductible insurance plans. Together, these measures are supposed to encourage patients to do more comparison shopping and haggling with their doctors; therefore, they create more market discipline in the system.

But when it comes to health care, it's a government bureaucracy that's setting the standard for maintaining best practices while reducing costs, and it's the private sector that's lagging in quality. That unexpected reality needs examining if we're to have any hope of understanding what's wrong with America's health-care system and how to fix it. It turns out that precisely because the VHA is a big, government-run system that has nearly a lifetime relationship with its patients, it has incentives for investing in quality and keeping its patients well—incentives that are lacking in for-profit medicine.

Hitting bottom

By the mid-1990s, the veterans health-care system was in deep crisis. A quarter of its hospital beds were empty. Government audits showed that many VHA surgeons had gone a year without picking up a scalpel. The population of veterans was falling sharply, as aging World War II and Korean War vets began to pass away. At the same time, a mass migration of veterans from the Snowbelt to the Sunbelt overwhelmed hospitals in places such as Tampa with new patients, while those in places such as Pittsburgh had wards of empty beds.

Serious voices called for simply dismantling the VA system. Richard Cogan, a senior fellow at the Center on Budget and Policy Priorities in Washington, told *The New York Times* in 1994: "The real question is whether there should be a veterans health care system at all." At a time when the other health-care systems were expanding outpatient clinics, the VHA still required hospital stays for routine operations like cataract surgery. A patient couldn't even receive a pair of crutches without checking in. Its management system was so ossified and top-down that permission for such trivial expenditures as $9.82 for a computer cable had to be approved in Washington at the highest levels of the bureaucracy.

Yet few politicians dared to go up against the powerful veterans lobby, or against the many unions that represented much of the VHA's workforce. Instead, members of Congress fought to have new veterans hospitals built in their districts, or to keep old ones from being shuttered. Three weeks before the 1996 presidential election, in part to keep pace with Bob Dole's promises to veterans, President Clinton signed a bill that planned, as he put it, to "furnish comprehensive medical services to all veterans," regardless of their income or whether they had service-related disabilities.

So, it may have been politics as usual that kept the floundering veterans health-care system going. Yet behind the scenes, a few key players within the VHA had begun to look at ways in which the system might heal itself. Chief among them was Kenneth W. Kizer, who in 1994 had become VHA's undersecretary for health, or, in effect, the system's CEO.

A physician trained in emergency medicine and public health, Kizer was an outsider who immediately started upending the VHA's entrenched bureaucracy. He oversaw a radical downsizing and decentralization of management power, implemented pay-for-performance contracts with top executives, and won the right to fire incompetent doctors. He and his team also began to transform the VHA from an acute care, hospital-based system into one that put far more resources into primary care and outpatient services for the growing number of aging veterans beset by chronic conditions.

By 1998, Kizer's shake-up of the VHA's operating system was already earning him management guru status in an era in which management gurus were practically demigods. His story appeared that year in a book titled *Straight from the CEO: The World's Top Business Leaders Reveal Ideas That Every Manager Can Use* published by Price Waterhouse and Simon & Schuster. Yet the most dramatic transformation of the VHA didn't just involve such trendy, 1990s ideas as downsizing and reengineering. It also involved an obsession with systematically improving quality and safety that to this day is still largely lacking throughout the rest of the private health-care system.

Amercia's worst hospitals

To understand the larger lessons of the VHA's turnaround, it's necessary to pause for a moment to think about what comprises quality health care. The first criterion likely to come to mind is the presence of doctors who are highly trained, committed professionals. They should know a lot about biochemistry, anatomy, cellular and molecular immunology, and other details about how the human body works—and have the academic credentials to prove it. As it happens, the VHA has long had many doctors who answer to that description. Indeed, most VHA doctors have faculty appointments with academic hospitals.

But when you get seriously sick, it's not just one doctor who will be involved in your care. These days, chances are you'll see many doctors, including different specialists. Therefore, how well these doctors communicate with one another and work as a team matters a lot. "Forgetfulness is such a constant problem in the system," says Berwick of the Institute for Health Care Improvement. "It doesn't remember you. Doesn't remember that you were here and here and then there. It doesn't remember your story."

Are all your doctors working from the same medical record and making entries that are clearly legible? Do they have a reliable system to ensure that no doctor will prescribe drugs that will interact harmfully with medications prescribed by another doctor? Is any one of them going to take responsibility for coordinating your care so that, for example, you don't leave the hospital without the right follow-up medication or knowing how and when to take it? Just about anyone who's had a serious illness, or tried to be an advocate for a sick loved one, knows that all too often the answer is no.

Doctors aren't the only ones who define the quality of your health care. There are also many other people involved—nurses, pharmacists, lab technicians, orderlies, even custodians. Any one of these people could kill you if they were to do their jobs wrong. Even a job as lowly as changing a bedpan, if not done right, can spread a deadly infection throughout a hospital. Each of these people is part of an overall system of care, and if the system lacks cohesion and quality control, many people

will be injured and many will die.

Just how many? In 1999, the Institute of Medicine issued a groundbreaking study, titled *To Err is Human*, that still haunts health care professionals. It found that up to 98,000 people die of medical errors in American hospitals each year. This means that as many as 4 percent of all deaths in the United States are caused by such lapses as improperly filled or administered prescription drugs—a death toll that exceeds that of AIDS, breast cancer, or even motor vehicle accidents.

Since then, a cavalcade of studies have documented how a lack of systematic attention not only to medical errors but to appropriate treatment has made putting yourself into a doctor's or hospital's care extraordinarily risky. The practice of medicine in the United States, it turns out, is only loosely based on any scientifically driven standards. The most recent and persuasive evidence came from study by Dartmouth Medical School published last October in *Health Affairs*. It found that even among the "best hospitals," as rated by *U.S. News & World Report*, Medicare patients with the same conditions receive strikingly different patterns and intensities of care from one another, with no measurable difference in their wellbeing.

For example, among patients facing their last six months of life, those who are checked into New York's renowned Mount Sinai Medical Center will receive an average of 53.9 visits from physicians, while those who are checked into Duke University Medical Center will receive only 20.9. Yet all those extra doctors' visits at Mount Sinai bring no gain in life expectancy, just more medical bills. By that measure of quality, many of the country's most highly rated hospitals are actually its shoddiest.

Worse, even when strong scientific consensus emerges about appropriate protocols and treatments, the health-care industry is extremely slow to implement them. For example, there is little controversy over the best way to treat diabetes; it starts with keeping close track of a patient's blood sugar levels. Yet if you have diabetes, your chances are only one-out-four that your health care system will actually monitor your blood sugar levels or teach you how to do it. According to a recent RAND Corp. study, this oversight causes an estimated 2,600 diabetics to go blind every year, and anther 29,000 to experience kidney failure.

All told, according to the same RAND study, Americans receive appropriate care from their doctors only about half of the time. The results are deadly. On top of the 98,000 killed by medical errors, another 126,000 die from their doctor's failure to observe evidence-based protocols for just four common conditions: hypertension, heart attacks, pneumonia, and colorectal cancer.

Now, you might ask, what's so hard about preventing these kinds of fatal lapses in health care? The airline industry, after all, also requires lots of complicated teamwork and potentially dangerous technology, but it doesn't wind up killing hundreds of thousands of its customers each year. Indeed, airlines, even when in bankruptcy, continuously improve their safety records. By contrast, the death toll from medical errors alone is equivalent to a fully loaded jumbo-jet crashing each day.

Laptop medicine

Why doesn't this change? Well, much of it has changed in the veterans health-care system, where advanced information technology today serves not only to deeply reduce medical errors, but also to improve diagnoses and implement coordinated, evidence-based care. Or at least so I kept reading in the professional literature on health-care quality in the United States. I arranged to visit the VA Medical Center in Washington, D.C. to see what all these experts were so excited about.

The complex' main building is a sprawling, imposing structure located three miles north of the Capitol building. When it was built in 1972, it was in the heart of Washington's ghetto, a neighborhood dangerous enough though one nurse I spoke with remembered having to lock her car doors and drive as fast as she could down Irving Street when she went home at night.

Today, the surrounding area is rapidly gentrifying. And the medical center has evolved, too. Certain sights, to be sure, remind you of how alive the past still is here. In its nursing home facility, there are still a few veterans of World War I. Standing outside of the hospital's main entrance, I was moved by the sight of two elderly gentlemen, both standing at near attention, and sporting neatly pressed Veterans of Foreign Wars dress caps with MIA/POW insignias. One turned out to be a survivor of the Bataan Death March.

But while history is everywhere in this hospital, it is also among the most advanced, modern health-care facilities in the globe—a place that hosts an average of four visiting foreign delegations a week. The hospital has a spacious generic lobby with a food court, ATM machines, and a gift shop. But once you are in the wards, you notice something very different: doctors and nurses wheeling bed tables with wireless laptops attached down the corridors. How does this change the practice of medicine? Opening up his laptop, Dr. Ross Fletcher, an avuncular, white-haired cardiologist who led the hospital's adoption of information technology, begins a demonstration.

With a key stroke, Dr. Fletcher pulls up the medical records for one of his current patients—an 87-year-old veteran living in Montgomery County, Md. Normally, sharing such records with a reporter or anyone else would, of course, be highly unethical and illegal, but the patient, Dr. Fletcher explains, has given him permission.

Soon it becomes obvious why this patient feels that getting the word out about the VHA's information technology is important. Up pops a chart showing a daily record of his weight as it has fluctuated over a several-month period. The data for this chart, Dr. Fletcher explains, flows automatically from a special scale the patient uses in his home that sends a wireless signal to a modem.

Why is the chart important? Because it played a key role, Fletcher explains, in helping him to make a difficult diagnosis. While recovering from Lyme Disease and a hip fracture, the patient began periodically complaining of shortness of breath. Chest X-rays were ambiguous and confusing. They showed something amiss in one lung, but not the other, suggesting possible lung cancer. But Dr. Fletcher says he avoided having to chase down that possibility when he noticed a pattern jumping out of the graph generated from the patient's scale at home.

The chart clearly showed that the patient gained weight around the time he experienced shortness of breath. This pattern, along with the record of the hip

fracture, helped Dr. Fletcher to form a hypothesis that turned out to be accurate. A buildup of fluid in the patient's lung was causing him to gain weight. The fluid gathered only in one lung because the patient was consistently sleeping on one side to cope with the pain from his hip fracture. The fluid in the lung indicated that the patient was in immediate need of treatment for congestive heart failure, and, fortunately, he received it in time.

The same software program, known as VistA, also plays a key role in preventing medical errors. Kay J. Craddock, who spent most of her 28 years with the VHA as a nurse, and who today coordinates the use of the information systems at the VA Medical Center, explains how. In the old days, pharmacists did their best to decipher doctors' handwritten prescription orders, while nurses, she says, did their best to keep track of which patients should receive which medicines by shuffling 3-by-5 cards.

Today, by contrast, doctors enter their orders into their laptops. The computer system immediately checks any order against the patient's records. If the doctors working with a patient have prescribed an inappropriate combination of medicines or overlooked the patient's previous allergic reaction to a drug, the computer sends up a red flag. Later, when hospital pharmacists fill those prescriptions, the computer system generates a bar code that goes on the bottle or intravenous bag and registers what the medicine is, who it is for, when it should be administered, in what dose, and by whom.

Each patient also has an ID bracelet with its own bar code, and so does each nurse. Before administering any drug, a nurse must first scan the patient's ID bracelet, then her own, and then the barcode on the medicine. If she has the wrong patient or the wrong medicine, the computer will tell her. The computer will also create a report if she's late in administering a dose, "and saying you were just too busy is not an excuse," says Craddock.

Craddock cracks a smile when she recalls how nurses reacted when they first were ordered to use the system. "One nurse tried to get the computer to accept her giving an IV, and when it wouldn't let her, she said, 'you see, I told you this thing is never going to work.' Then she looked down at the bag." She had mixed it up with another, and the computer had saved her from a career-ending mistake. Today, says Craddock, some nurses still insist on getting paper printouts of their orders, but nearly all applaud the computer system and its protocols. "It keeps them from having to run back and forth to the nursing station to get the information they need, and, by keeping them from making mistakes, it helps them to protect their license." The VHA has now virtually eliminated dispensing errors.

In speaking with several of the young residents at the VA Medical Center, I realized that the computer system is also a great aid to efficiency. At the university hospitals where they had also trained, said the residents, they constantly had to run around trying to retrieve records—first upstairs to get X-rays from the radiology department, then downstairs to pick up lab results. By contrast, when making their rounds at the VA Medical Center, they just flip open their laptops when they enter a patient's room. In an instant, they can see not only all of the patient's latest data, but also a complete medical record going back as far as the mid-1980s, including records of care performed in any other VHA hospital or clinic.

Along with the obvious benefits this brings in making diagnoses, it also means that

residents don't face impossibly long hours dealing with paperwork. "It lets these twentysomethings go home in time to do the things twentysomethings like to do," says Craddock. One neurologist practicing at both Georgetown University Hospital and the VA Medical Center reports that he can see as many patients in a few hours at the veterans hospital as he can all day at Georgetown.

By this summer, anyone enrolled in the VHA will be able to access his or her own complete medical records from a home computer, or give permission for others to do so. "Think what this means," says Dr. Robert M. Kolodner, acting chief health informatics officer for the VHA. "Say you're living on the West Coast, and you call up your aging dad back East. You ask him to tell you what his doctor said during his last visit and he mumbles something about taking a blue pill and white one. Starting this summer, you'll be able to monitor his medical record, and know exactly what pills he is supposed to be taking."

The same system reminds doctors to prescribe appropriate care for patients when they leave the hospital, such as beta blockers for heart attack victims, or eye exams for diabetics. It also keeps track of which vets are due for a flu shot, a breast cancer screen, or other follow-up care—a task virtually impossible to pull off using paper records. Another benefit of electronic records became apparent last September when the drug-maker Merck announced a recall of its popular arthritis medication, Vioxx. The VHA was able to identify which of its patients were on the drug within minutes, and to switch them to less dangerous substitutes within days.

Similarly, in the midst of a nationwide shortage of flu vaccine, the system has also allowed the VHA to identify, almost instantly, those veterans who are in greatest need of a flu shot and to make sure those patients have priority. One aging relative of mine—a man who has had cancer and had been in and out of nursing homes—wryly reports that he beat out 5,000 other veterans in the New London, Conn., area for a flu shot. He's happy that his local veterans hospital called him up to tell him he qualified, but somewhat alarmed by what this implies about his health.

The VistA system also helps to put more science into the practice of medicine. For example, electronic medical records collectively form a powerful database that enables researchers to look back and see which procedures work best without having to assemble and rifle through innumerable paper records. This database also makes it possible to discover emerging disease vectors quickly and effectively. For example, when a veterans hospital in Kansas City noticed an outbreak of a rare form of pneumonia among its patients, its computer system quickly spotted the problem: All the patients had been treated with what turned out to be the same bad batch of nasal spray.

Developed at taxpayer expense, the VistA program is available for free to anyone who cares to download it off the Internet. The link is to a demo, but the complete software is nonetheless available. You can try it out yourself by going to http://www1.va.gov/CPRSdemo/. Not surprisingly, it is currently being used by public health care systems in Finland, Germany, and Nigeria. There is even an Arabic language version up and running in Egypt. Yet VHA officials say they are unaware of any private health care system in the United States that uses the software. Instead, most systems are still drowning in paper, or else just starting to experiment with far more primitive information technologies.

Worse, some are even tearing out their electronic information systems. That's what

happened at Cedars-Sinai Medical Center in Los Angeles, which in 2003 turned off its brand-new, computerized physician order entry system after doctors objected that it was too cumbersome. At least six other hospitals have done the same in recent years. Another example of the resistance to information technology among private practice doctors comes from the Hawaii Independent Physicians Association, which recently cancelled a program that offered its members $3,000 if they would adopt electronic medical records. In nine months, there were only two takers out of its 728 member doctors.

In July, Connecting for Health—a public-private cooperative of hospitals, health plans, employers and government agencies—found that persuading doctors in small- to medium-sized practices to adopt electronic medical records required offering bonuses of up to 10 percent of the doctors' annual income. This may partly be due to simple techno-phobia or resistance to change. But the broader reason, as we shall see, is that most individual doctors and managed care providers in the private sector often lack a financial incentive to invest for investing in electronic medical records and other improvements to the quality of the care they offer.

This is true even when it comes to implementing low-tech, easy-to-implement safety procedures. For example, you've probably heard about surgeons who operate on the wrong organ or limb. So-called "wrong site" surgery happens in about one out of 15,000 operations, with those performing foot and hand surgeries particularly likely to make the mistake. Most hospitals try to minimize this risk by having someone use a magic marker to show the surgeon where to cut. But about a third of time, the VHA has found, the root problem isn't that someone mixed up left with right; it's that the surgeon is not operating on the patient he thinks he is. How do you prevent that?

Obviously, in the VHA system, scanning the patient's ID bracelet and the surgical orders helps, but even that isn't foolproof. Drawing on his previous experience as a NASA astronaut and accident investigator, the VHA's safety director, Dr. James Bagian, has developed a five-step process that VHA surgical teams now use to verify both the identity of the patient and where they are supposed to operate. Though it's similar to the check lists astronauts go through before blast off, it is hardly rocket science. The most effective part of the drill, says Bagian, is simply to ask the patient, in language he can understand, who he is and what he's in for. Yet the efficacy of this and other simple quality-control measures adopted by the VHA makes one wonder all the more why the rest of the health-care system is so slow to follow.

Why care about quality?

Here's one big reason. As Lawrence P. Casalino, a professor of public health at the University of Chicago, puts it, "The U.S. medical market as presently constituted simply does not provide a strong business case for quality."

Casalino writes from his own experience as a solo practitioner, and on the basis of over 800 interviews he has since conducted with health-care leaders and corporate health care purchasers. While practicing medicine on his own in Half Moon Bay, Calif, Casalino had an idealistic commitment to following emerging best practices in medicine. That meant spending lots of time teaching patients about their diseases, arranging for careful monitoring and follow-up care, and trying to keep track of what prescriptions and procedures various specialists might be ordering.

Yet Casalino quickly found out that he couldn't sustain this commitment to quality, given the rules under which he was operating. Nobody paid him for the extra time he spent with his patients. He might have eased his burden by hiring a nurse to help with all the routine patient education and follow-up care that was keeping him at the office too late. Or he might have teamed up with other providers in the area to invest in computer technology that would allow them to offer the same coordinated care available in veterans hospitals and clinics today. Either step would have improved patient safety and added to the quality of care he was providing. But even had he managed to pull them off, he stood virtually no chance of seeing any financial return on his investment. As a private practice physician, he got paid for treating patients, not for keeping them well or helping them recover faster.

The same problem exists across all health-care markets, and its one main reason in explaining why the VHA has a quality performance record that exceeds that of private-sector providers. Suppose a private managed-care plan follows the VHA example and invests in a computer program to identify diabetics and keep track of whether they are getting appropriate follow-up care. The costs are all upfront, but the benefits may take 20 years to materialize. And by then, unlike in the VHA system, the patient will likely have moved on to some new health-care plan. As the chief financial officer of one health plan told Casalino: "Why should I spend our money to save money for our competitors?"

Or suppose an HMO decides to invest in improving the quality of its diabetic care anyway. Then not only will it risk seeing the return on that investment go to a competitor, but it will also face another danger as well. What happens if word gets out that this HMO is the best place to go if you have diabetes? Then more and more costly diabetic patients will enroll there, requiring more premium increases, while its competitors enjoy a comparatively large supply of low-cost, healthier patients. That's why, Casalino says, you never see a billboard with an HMO advertising how good it is at treating one disease or another. Instead, HMO advertisements generally show only healthy families.

In many realms of health care, no investment in quality goes unpunished. A telling example comes from semi-rural Whatcom County, Wash. There, idealistic health-care providers banded together and worked to bring down rates of heart disease and diabetes in the country. Following best practices from around the country, they organized multi-disciplinary care teams to provide patients with counseling, education, and navigation through the health-care system. The providers developed disease protocols derived from evidence-based medicine. They used information technology to allow specialists to share medical records and to support disease management.

But a problem has emerged. Who will pay for the initiative? It is already greatly improving public health and promises to bring much more business to local pharmacies, as more people are prescribed medications to manage their chronic conditions and will also save Medicare lots of money. But projections show that, between 2001 and 2008, the initiative will cost the local hospital $7.7 million in lost revenue, and reduce the income of the county's medical specialists by $1.6 million. An idealistic commitment to best practices in medicine doesn't pay the bills. Today, the initiative survives only by attracting philanthropic support, and, more recently, a $500,000 grant from Congress.

For health-care providers outside the VHA system, improving quality rarely makes

financial sense. Yes, a hospital may have a business case for purchasing the latest, most expensive imaging devices. The machines will help attract lots of highly-credentialed doctors to the hospital who will bring lots of patients with them. The machines will also induce lots of new demand for hospital services by picking up all sorts of so-called "pseudo-diseases." These are obscure, symptomless conditions, like tiny, slow-growing cancers, that patients would never have otherwise become aware of because they would have long since died of something else. If you're a fee-for-service health-care provider, investing in technology that leads to more treatment of pseudo-disease is a financial no-brainer.

But investing in any technology that ultimately serves to reduce hospital admissions, like an electronic medical record system that enables more effective disease management and reduces medical errors, is likely to take money straight from the bottom line. "The business case for safety...remains inadequate...[for] the task," concludes Robert Wachter, M.D., in a recent study for Health Affairs in which he surveyed quality control efforts across the U.S. health-care system.

If health care was like a more pure market, in which customers know the value of what they are buying, a business case for quality might exist more often. But purchasers of health care usually don't know, and often don't care about its quality, and so private health-care providers can't increase their incomes by offering it. To begin with, most people don't buy their own health care; their employers do. Consortiums of large employers may have the staff and the market power necessary to evaluate the quality of health-care plans and to bargain for greater commitments to patient safety and evidence-based medicine. And a few actually do so. But most employers are not equipped for this. Moreover, in these days of rapid turnover and vanishing post-retirement health-care benefits, few employers have any significant financial interest in their workers' long-term health.

That's why you don't see many employers buying insurance that covers smoking cessation programs or the various expensive drugs that can help people to quit the habit. If they did, they'd be being buying more years of healthy life per dollar than just about any other way they could use their money. But most of the savings resulting from reduced lung cancer, stroke, and heart attacks would go to future employers of their workers, and so such a move makes little financial sense.

Meanwhile, what employees value most in health care is maximum choice at minimal cost. They don't want the boss man telling them they must use this hospital or that one because it has the best demonstrated quality of care. They'll be their own judge of quality, thank-you, and they'll usually base their choice on criteria like: "My best friend recommended this hospital," or "This doctor agrees with my diagnosis and refills the prescriptions I want," or "I like this doctor's bedside manner." If more people knew how dangerous it can be to work with even a good doctor in a poorly run hospital or uncoordinated provider network, the premium on doctor choice would be much less decisive, but for now it still is.

And so we get results like what happened in Cleveland during the 1990s. There, a well-publicized initiative sponsored by local businesses, hospitals and physicians identified several hospitals as having significantly higher than expected mortality rates, longer than expected hospital stays, and worse patient satisfaction. Yet, not one of these hospitals ever lost a contract because of their poor performance. To the employers buying health care in the community, and presumably their employees as well, cost and choice counted for more than quality. Developing more and better

quality measures in health care is a noble cause, but it's not clear that putting more information into health-care markets will change these hard truths.

Health for service

So what's left? Consider why, ultimately, the veterans health system is such an outlier in its commitment to quality. Partly it's because of timely, charismatic leadership. A quasi-military culture may also facilitate acceptance of new technologies and protocols. But there are also other important, underlying factors.

First, unlike virtually all other health-care systems in the United States, VHA has a near lifetime relationship with its patients. Its customers don't jump from one health plan to the next every few years. They start a relationship with the VHA as early as their teens, and it endures. That means that the VHA actually has an incentive to invest in prevention and more effective disease management. When it does so, it isn't just saving money for somebody else. It's maximizing its own resources.

The system's doctors are salaried, which also makes a difference. Most could make more money doing something else, so their commitment to their profession most often derives from a higher-than-usual dose of idealism. Moreover, because they are not profit maximizers, they have no need to be fearful of new technologies or new protocols that keep people well. Nor do they have an incentive to clamor for high-tech devices that don't improve the system's quality or effectiveness of care.

And, because it is a well-defined system, the VHA can act like one. It can systematically attack patient safety issues. It can systematically manage information using standard platforms and interfaces. It can systematically develop and implement evidence-based standards of care. It can systematically discover where its care needs improvement and take corrective measures. In short, it can do what the rest of the health-care sector can't seem to, which is to pursue quality systematically without threatening its own financial viability.

Hmm. That gives me an idea. No one knows how we're ever going to provide health care for all these aging baby boomers. Meanwhile, in the absence of any near-term major wars, the population of veterans in the United States will fall dramatically in the next decade. Instead of shuttering under-utilized VHA facilities, maybe we should build more. What if we expanded the veterans health-care system and allowed anyone who is either already a vet or who agrees to perform two years of community service a chance to buy in? Indeed, what if we said to young and middle-aged people, if you serve your community and your country, you can make your parents or other loved ones eligible for care in an expanded VHA system?

The system runs circles around Medicare in both cost and quality. Unlike Medicare, it's allowed by law to negotiate for deep drug discounts, and does. Unlike Medicare, it provides long-term nursing home care. And it demonstrably delivers some of the best, if not the best, quality health care in the United States with amazing efficiency. Between 1999 and 2003, the number of patients enrolled in the VHA system increased by 70 percent, yet funding (not adjusted for inflation) increased by only 41 percent. So the VHA has not only become the health care industry's best quality performer, it has done so while spending less and less on each patient. Decreasing cost and improving quality go hand and hand in industries like autos and computers—but in health care, such a relationship virtually unheard of. The more people we can get into the VHA, the more efficient and effective the American

health-care system will be.

We could start with demonstration projects using VHA facilities that are currently under-utilized or slated to close. Last May, the VHA announced it was closing hospitals in Pittsburgh; Gulfport, Miss.; and Brecksville, Ohio. Even after the closures, the VHA will still have more than 4 million square feet of vacant or obsolete real estate. Beyond this, there are empty facilities available from bankrupt HMOs and public hospitals, such as the defunct D.C. General. Let the VHA take over these facilities, and apply its state-of-the-art information systems, safety systems, and protocols of evidence-based medicine.

Once fully implemented, the plan would allow Americans to avoid skipping from one health-care plan to the next over their lifetimes, with all the discontinuities in care and record keeping and disincentives to preventative care that this entails. No matter where you moved in the country, or how often you changed jobs, or where you might happen to come down with an illness, there would be a VHA facility nearby where your complete medical records would be available and the same evidence-based protocols of medicine would be practiced.

You might decide that such a plan is not for you. But, as with mass transit, an expanded VHA would offer you a benefit even if you didn't choose to use it. Just as more people riding commuter trains means fewer cars in your way, more people using the VHA would mean less crowding in your own, private doctor's waiting room, as well as more pressure on your private health-care network to match the VHA's performance on cost and quality.

Why make public service a requirement for receiving VHA care? Because it's in the spirit of what the veterans health-care system is all about. It's not an entitlement; it's recognition for those who serve. America may not need as many soldiers as in the past, but it has more need than ever for people who will volunteer to better their communities.

Would such a system stand in danger of becoming woefully under-funded, just as the current VHA system is today? Veterans comprise a declining share of the population, and the number of Americans who have personal contact with military life continues to shrink. It is therefore not surprising that veterans health-care issues barely register on the national agenda, even in times of war. But, as with any government benefit, the broader the eligibility, the more political support it is likely to receive. Many veterans will object to the idea of sharing their health care system with non-vets; indeed, many already have issues with the VHA treating vets who do not have combat-related disabilities. But in the long run, extending eligibility to non-vets may be the only way to ensure that more veterans get the care they were promised and deserve.

Does this plan seem too radical? Well, perhaps it does for now. We'll have to let the ranks of the uninsured further swell, let health-care costs consume larger and larger portions of payrolls and household budgets, let more and more Americans die from medical errors and mismanaged care, before any true reform of the health-care system becomes possible. But it is time that our debates over health care took the example of the veterans health-care system into account and tried to learn some lessons from it.

Today, the Bush administration is pushing hard, and so far without much success, to

get health-care providers to adopt information technology. Bush's National Coordinator for Health Care Information Technology, Dr. David Brailer, estimates that if the U.S. health-care system as a whole would adopt electronic medical records and computerized prescription orders, it would save as much as 2 percent of GDP and also dramatically improve quality of care. Yet the VHA's extraordinary ability to outperform the private sector on both cost and quality suggests that the rest of the Bush administration's agenda on health care is in conflict with this goal.

The administration wants to move American health care from the current employer-based model, where companies chose health-care plans for their workers, to an "ownership" model, where individuals use much more of their own money to purchase their own health care. But shifting more costs on to patients, and encouraging them to bargain and haggle for the "best deal" will result in even more jumping from provider to provider. This, in turn, will give private sector providers even fewer incentives to invest in quality measures that pay off only over time. The Bush administration is right to question all the tax subsidies going to prop up employer-provided health insurance. But it is wrong to suppose that more choice and more competition will solve the quality problem in American health care.

VHA's success shows that Americans clearly could have higher-quality health care at lower cost. But if we presume—and it is safe to do so—that Americans are not going to accept the idea of government-run health care any time soon, it's still worth thinking about how the private health-care industry might be restructured to allow it to do what the VHA has done. For any private health-care plan to have enough incentive to match the VHA's performance on quality, it would have to be nearly as big as the VHA. It would have to have facilities and significant market share in nearly every market so that it could, like the VHA, stand a good chance of holding on to customers no matter where they moved.

It would also have to be big enough to achieve the VHA's economies of scale in information management and to create the volumes of patients needed to keep specialists current in performing specific operations and procedures. Not surprisingly, the next best performers on quality after the VHA are big national or near-national networks like Kaiser Permanente. Perhaps if every American had to join one such plan and had to pay a financial penalty for switching plans (as, in effect, do most customers of the VHA), then a business case for quality might exist more often in the private health-care market. Simply mandating that all health-care providers adopt electronic medical records and other quality protocols pioneered by the VHA might seem like a good idea. But in the absence of any other changes, it would likely lead to more hospital closings and bankrupt health-care plans.

As the health-care crisis worsens, and as more become aware of how dangerous and unscientific most of the U.S. health-care system is, maybe we will find a way to get our minds around these strange truths. Many Americans still believe that the U.S. health-care system is the best in the world, and that its only major problems are that it costs too much and leaves too many people uninsured. But the fact remains that Americans live shorter lives, with more disabilities, than people in countries that spend barely half as much per person on health care. Pouring more money into the current system won't change that. Nor will making the current system even more fragmented and driven by short-term profit motives. But learning from the lesson offered by the veterans health system could point the way to an all-American solution.

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TODAY'S VA HOSPITALS ARE MODELS OF TOP-NOTCH CARE

By Christopher J. Gearon

Three summers ago, Augustin Martinez's skin was yellow. He was in pain. And physicians at Kaiser Permanente, his usual source of care, were baffled. The frustrated Martinez, a retired Lockheed Martin engineer in San Jose, Calif., asked his brother, a New York physician, for advice. After consulting colleagues, his brother advised him to go to the Department of Veterans Affairs hospital in nearby Palo Alto. Martinez, a former Navy petty officer 2nd class, was entitled to VA care (eligibility depends on several factors, including date and length of military service, injury, and income). But his brother's recommendation took him by surprise. Better care at a VA hospital? But he went—and was quickly diagnosed with pancreatic cancer by Sherry Wren, chief of general surgery, who operated on him within days. He has relied on VA hospitals and clinics ever since. "They run a good ship," says Martinez, now age 72.

That they do, say healthcare experts. Routinely criticized for decades for indifferent care, attacked by Oliver Stone in *Born on the Fourth of July*, the VA health system has performed major surgery on itself. The care provided to 5.2 million veterans by the nation's largest healthcare system has improved so much that often it is the best around. And in the new VA, patient safety is a particular priority. Before making the first incision, for example, surgeons conduct a five-step audit to be sure they don't cut into the wrong body part or person. Doctors and nurses are unusually conscientious about hand hygiene, to reduce infections caused by carrying germs from one patient to another.

Technology helps, as would be expected. Martinez is particularly impressed by the computerization of patient records. When he visits, his doctors and nurses instantly call up his medical records, including test results (his cholesterol is high and he suffers from asthma), CT scans, and medications via laptop, which has become as ubiquitous a tool at VA facilities as a stethoscope.

AT A GLANCE. Caregivers at the Veterans Affairs Medical Center in Washington, D.C., can call up a patient's brain scan.

Paper delay. But computerized records are more than a convenience. If all patient information could be reviewed on a computer screen and updated with each new test and observation, studies suggest that many of the medical errors that kill hospital patients would be prevented. Keeping everything on paper has been shown to delay care, force 1 in every 5 lab tests to be repeated, and cause unnecessary hospitalizations. But switching to computerized records can cost millions of dollars at a single hospital, so relatively few medical centers outside the VA have changed over.

"The information is right at your fingertips, right at the bedside, right when you're making decisions," Wren says. Besides giving her a quick snapshot of a patient's progress, the system automatically displays the latest and best studies and guidelines for that patient's condition. The screen also prompts her about preventive measures. If she calls up the record of a diabetic patient, for example, she is reminded to perform or schedule foot and eye exams, which diabetics must have regularly to prevent amputation or blindness.

Such prompting is largely why the VA vaccinates 92 percent of patients ages 65 and older against pneumonia versus 29 percent 10 years ago, says Jonathan B. Perlin, the top doctor in the Department of

Photography by Jim Lo Scalzo for *USN&WR*

Veterans Affairs. Outside the VA, he says, the rate averages below 55 percent. "The increase not only has saved the lives of 6,000 patients with emphysema," says Perlin; "we've halved hospitalizations for [patients with] community-acquired pneumonia."

And the computerized system reduces medication errors, blamed for thousands of deaths in hospitalized patients, by flagging an order if there's a possible drug interaction, if the dosage doesn't match a doctor's order, or if there is a potential allergic reaction. Retired Army Sgt. Maj. Lance Sweigart of Laurel, Md., takes six medications for arthritis, high cholesterol, and depression. The 61-year-old Sweigart says he has "never gotten the wrong medication" at VA facilities in Baltimore.

All drugs carry bar codes, as do patients' ID bracelets. Both are scanned before a medication is administered to make sure the drug and patient match and last-minute order changes are caught. It's not yet sophisticated enough to offer the appropriate dosage, but Isabel Sotomayor, a nurse at the VA Medical Center in Washington, D.C., says the system snags one or two potential errors every day during her medication rounds.

The impact of such changes is real, says Harvard School of Public Health professor and renowned patient-safety advocate Lucian Leape. "Recent evidence shows [that care at the VA system] is at least as good as, if not better," he says, than care delivered elsewhere. In the 1990s, for example, the VA began using a new way—since adopted by the American College of Surgeons—to evaluate surgical quality. It enabled VA surgeons to reduce postoperative deaths by 27 percent and post-surgical complications by 45 percent. Recently published studies have found that the VA rates much better than Medicare fee-for-service providers in 11 basic measures of quality, such as regular mammograms and counseling for smokers. Late last year, the *Annals of Internal Medicine* published a study showing that the VA had "substantially better quality of care" than other providers in many of nearly 350 indicators of quality, such as screening and treating depression, diabetes, and hypertension.

HELLO, HYGIENE. To avoid infections, VA staffers strive for clean hands.

Routinely criticized for indifferent care, the VA health system has performed major surgery on itself.

Overhauling a system of 157 hospitals, 134 nursing homes, and 887 clinics is never finished. Recent reports by the inspector general of the Department of Veterans Affairs have highlighted such problems as cancellation of surgeries, unexpected deaths, and radiology backups at VA facilities in Florida. Surgeries have had to be canceled at some facilities because surgical supplies were unavailable or improperly sterilized. But John Daigh, who as assistant inspector general for healthcare inspections is responsible for exposing such flaws, says that VA top

SOLUTIONS: TREATING MAJOR PROBLEMS

These are a few of the changes the VA has put in place to make patients safer.

FALLS

PROBLEM: In older patients, falls were the top cause of injury and the No. 1 cause of deaths resulting from injury.
SOLUTION: Bedside floor mats. Putting the bedside table, call button, and light switch within easy patient reach. Outfitting at-risk patients with hip protectors.
DID IT WORK? In a six-month trial at 31 VA facilities, there were 62 percent fewer major injuries from falls.

INFECTIONS

PROBLEM: Infections caused by an antibiotic-resistant strain of *Staphylococcus aureus*, largely spread by healthcare workers' hands, were killing patients or making them very ill.
SOLUTION: In 2001, the VA's Pittsburgh Healthcare System mounted a hand hygiene campaign, raising awareness of the need for disinfecting hands and for gloving and using gowns and masks, and making sure such supplies were always at hand. At the same time, infection monitoring was increased.
DID IT WORK? Such infections have been cut 85 percent in the general surgical unit, 50 percent in the surgical ICU.

BLOOD THINNERS

PROBLEM: Delays in follow-up care for discharged patients taking blood thinners such as warfarin, which can cause bleeding complications if patients are not carefully monitored.
SOLUTION: The VA Ann Arbor Healthcare System in Michigan recently required doctors to ensure that these discharged patients are seen within a week in one of its clinics. Their blood levels and medication dosage can be checked, and they can be counseled about diet, because certain foods interfere with blood thinners.
DID IT WORK? It's too early for clinical results, but reportedly all such patients have had follow-ups, lab tests, and counseling within one week of discharge.

BEST PRACTICE: At the Veterans Affairs Medical Center in Washington, D.C., bar codes on drugs and patient IDs reduce errors.

brass haven't retreated into denial. They "have stepped up to the plate and fixed the problems" that his investigators uncover.

That, too, is evidence of a seismic shift, brought about not by high-tech breakthroughs but by a fundamental change in VA culture. A new emphasis, on patient safety and on a work ethic that stresses constant examination of the processes and procedures that go into caregiving, arrived in 1994 when Kenneth Kizer, former director of California's Department of Health Services, was tapped to run the VA health empire. His mission, as he saw it, was to remake the unwieldy system into one of the world's safest and finest. Kizer started holding doctors, administrators, and managers directly accountable for the quality of their patient care, linking, for example, how many heart-attack patients received recommended beta blockers and aspirin to job reviews. And the performance for each facility was made public, which turned out to be a major motivator. "People competed like hell," says Kizer, now president of the nonprofit National Quality Forum, which develops national standards for assessing the quality of healthcare.

> The VA rates much better than Medicare fee-for-service providers in 11 basic measures of quality.

Kizer was immersed in studies of patient safety years before the Institute of Medicine's jolting report in 1999 of hospital errors that kill tens of thousands of patients. To cultivate a "culture of safety" at the VA, he created a National Center for Patient Safety, and to head it up he brought in James Bagian, a former astronaut who had investigated the space shuttle Challenger accident for NASA.

Bagian's hire was "one of the smartest things [Kizer] did," says Leape. Both an engineer and physician, Bagian brought to the VA unique skills and a zealous commitment to safety. "It was like being in two different worlds," Bagian says of the move from NASA to the VA. "One had a very constructive and methodical approach to how we identify problems, decide whether they are worth fixing and then fix them versus one that was done much more like a cottage industry, where decisions are based on

BALANCING ACT. Bedside floor mats and easy-to-reach call buttons cut down on patient slips and falls.

what's my opinion or how do I feel about it today, which is not how you should run healthcare today."

Out loud. Bagian wanted people to report mistakes or close calls in treating patients. Such intelligence was crucial if safety was to be improved, because many errors happen because of a flawed system rather than a careless individual—a chart mix-up that could have ended in surgery on the wrong patient, the incorrect medication given to a patient because it was stored next to another one with nearly the same name. At today's VA hospitals, patient safety teams identify every step that led up to a blunder or close call to determine needed changes. For example, the VA has instituted a process to ensure that surgeons operate on the correct person or body part. One step includes asking patients to say their full names and birth dates out loud and to identify the body part to be cut.

Bagian's greatest challenge was shifting the attitudes of VA staffers. Few people reported a gaffe, for fear that they or the person who made it would suffer. "The VA had the most punitive, hardest culture I had ever seen," says Kizer; he and Bagian wanted to change the VA's punishment-oriented ways to an open, nonpunitive environment. But the staff didn't begin to respond until top managers showed they were serious. In the new VA, for example, managers could be fired, fined, and even jailed for retaliating against workers who file mistake reports.

Reports began coming in. More than 200,000 close-call and error reports have been filed at the VA without anyone being punished. "Staff gets to have input about how to provide better care," says Sotomayor, a VA nurse for 15 years. "The attitudes of people have changed." They take pride in the results, such as a decline in patient falls and a pacemaker redesigned by the manufacturer because of a close call. And other hospitals have noticed. Jennifer Daley, chief medical officer and senior vice president of clinical quality at Tenet Healthcare Corp., is using the VA as a blueprint to improve performance at the nation's second-largest for-profit hospital operator.

"There is room for improvement," says Bagian. "We're not perfect, make no mistake about it." But now the drive to enhance safety has become an accepted part of the VA. Caregivers on the front lines turn in a steady flow of ideas, such as requiring that doctors key in the full name rather than the first few letters when ordering a prescription. That minimizes the chance, say, that a patient who needs clonidine, a blood-pressure medicine, will get clozapine, an antipsychotic.

Augustin Martinez simply appreciates that he took his brother's advice. "I was fortunate I was a veteran. Otherwise, I don't know what else I would have done," Martinez says. "I don't think I would be here today." ●

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