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INTERVIEW

Guiding The Health Information Technology Agenda

The national coordinator for health information technology, David Blumenthal, discusses the challenges and opportunities of moving America's hospitals and physicians into the digital era.

The Office of the National Coordinator for Health Information Technology (ONC) was established in May 2004, by an executive order signed by President George W. Bush. President Bush named David J. Brailer as the nation's first national coordinator for health information technology. Brailer, a health information technology expert who holds doctoral degrees in both medicine and economics, was charged with launching a new push to bring America's hospitals and physicians into the digital era. At the time, the U.S. government did not have a national health information technology strategy, and there was limited funding, public support, or policy context for such an effort. Brailer describes "setting up the foundation that subsequent national coordinators could build upon."

Since then, there has been considerable progress toward the creation of a national health information infrastructure to improve the quality, safety, and cost-effectiveness of health care.

President Barack Obama pushed for substantial funding for health information technology in the American Reinvestment and Recovery Act (ARRA), enacted into law in February 2009. Then, in June 2009, the president tapped David Blumenthal to lead this effort. Blumenthal, an internist by training, was serving as a physician and director of the Institute for Health Policy at Massachusetts General Hospital/Partners HealthCare System in Boston, Massachusetts, as well as the Samuel O. Thier Professor of Medicine and Professor of Health Care Policy at Harvard Medical School. An adviser to the Obama presidential campaign, he also had extensively researched the dissemination of health information technology.

Health Affairs asked Brailer to interview his colleague and successor Blumenthal for his perspective on the pace of progress and on the issues ahead. "David Blumenthal inhabits a different world than I did," Brailer says. "But many of the challenges and issues remain the same." Here are excerpts of their conversation.

David Brailer: You worked on Capitol Hill for the late Sen. Ted Kennedy many years ago, but have been in academia until last year when you returned to Washington as the national coordinator. What's it like for you to come back?

David Blumenthal: It's been exciting and it's been educational. Working on Capitol Hill is a completely different experience during any time than working in the bureaucracy of the executive branch of government. On Capitol Hill you have much less-defined relationships, you have much more freedom of maneuver and much more scope, especially if you work for an entrepreneurial senator like Sen. Ted Kennedy, who at that time had enormous influence over the health care agenda. You moved around a lot from issue to issue. Right now, as the national coordinator, I have very defined responsibilities and very specific legal authorities, and that makes it a very different kind of experience.

There's also a higher level, I think, of accountability and visibility in the executive branch than as a staff member in Congress. You are a person holding office with responsibilities to the public that are direct, and not mediated through the person and office of an elected representative.

Brailer: Congress has become one of the principal actors in health information technology policy, which is very different from the role Congress played during my time as the national coordinator in Washington. Let's talk about how Congress is engaging on health information technology, particularly in the wake of the passage last year of the American Recovery and Reinvestment Act and its Health Information Technology for Economic and Clinical Health [HITECH] provisions and the huge funding stream it created for implementing health information technology. Is shaping health information technology policy still a rare bipartisan effort, or do you see that issue also falling into the partisan abyss?

Blumenthal: My view is that it remains primar-



David Blumenthal The national coordinator for health information technology, David Blumenthal, believes that expanding health information technology to more hospitals and physicians' offices is not a stand-alone goal, but rather a fundamental necessity for a modern health care system.

ily bipartisan. I don't hear any strong objection from Congress or from most of the stakeholders that we deal with to the agenda that we've set out, or to the goals of using information technology to improve health and health care. I'm sure that we will get increased scrutiny over time, and that's appropriate. Congress gave us a lot of funding, a lot of authority, and they will want to know that we're using them appropriately. I don't expect that it will be just Republicans who will scrutinize us. I expect that Democrats will as well. And I think elements in the executive branch, such as the Office of Inspector General, will also look closely at what we're doing.

Brailer: Do you expect to see Congress take further statutory action on health information technology in the near term?

Blumenthal: My guess is that Congress feels that it has given a huge boost to the health information technology agenda and will want to see what happens with that authority and with those funds. If there is a need for midcourse correction, my hope is that we will be able to have a conversation with Congress about that at a later time.

Brailer: We know that health information technology [IT] policy is heavily influenced by the broader context of health care policy. Let's talk about the interplay between health IT policy and the health reform debate. Will the health information technology effort be slowed or changed if no major health reform is enacted?

Blumenthal: Health care reform of the type that has been proposed and passed by both houses of Congress would be an enormous accelerator to the health information technology agenda. I think that payment reform and emphasis on accountability for performance, both in the area of quality and the area of cost, will make providers and payers much more attentive to the work they do. They will become more attentive to their performance as providers, and that will drive them to embrace information technology as a way to improve their performance.

My hope and belief is that an increasing interest in performance will continue to drive health information technology as the health care system matures, even if we don't get precisely the provisions that are included in the House and Senate bills. But I do think that having comprehensive health reform would support the adoption of health information technology.

Let me put it differently. The purpose of health information technology is to support health reform, and it is part of that larger puzzle. It is not a stand-alone goal or an end in itself.

Brailer: Today's health care reimbursement penalizes behaviors that health information technology advances, including quality and efficiency. Can the health information technology adoption effort be sustained—even with HITECH funding—without reimbursement reform that rewards quality and efficiency? Do we need the whole thing to happen to be able to get us over the top on health IT?

Blumenthal: The adoption of health IT will happen faster, and it will be more effective, with reimbursement reform. But my view is that health information technology is a fundamental tool for modern health care practice. It will soon be as accepted in the daily lives of health professionals as the stethoscope and the examining table.

The use of health information technology will be regarded as a core technical competence for professionals, and there will cease to be any debate over whether it is desirable or achievable. It will just happen.

I have two children in medical school. I can't imagine that they will be practicing medicine twenty years from now without a full array of electronic technologies supporting their decision making, the collection of useful information, and the exchange of information. I think

that will be a fact of life. And it's as inevitable, it seems to me, as any science-based change is to improving practice.

One thing we do absolutely have to address to assure that health information technology achieves its full benefits is to make certain that we protect the privacy and security of health information that is stored and exchanged in electronic form. We are very concerned about protecting personal health information, and if we fail to do that, the public will not give the necessary support to the HITECH agenda.

Brailer: One of the spectacular events in the history of health policy was the funding of health information technology in the HITECH Act. This changed the world of health information technology overnight. In my first year as national coordinator, Congress cut my budget from \$42 million to zero, and we had to struggle to get funds reapportioned to avoid being shuttered. In your first year, congressional funding was estimated to be between \$14 billion and \$27 billion, plus an appropriation of \$2 billion alone for the Office of the National Coordinator. David, how did you do it?

Blumenthal: Well, first let me say that I admire enormously the work that you did, David, and the persistence and strength that drove you forward against all those odds, and I can't imagine how hard it must have been to pursue the agenda you did under the circumstances at that time.

Obviously we have enormously more favorable conditions here with respect to the health technology agenda. Those conditions were handed to me. I can't claim credit for them myself. There were lots of individuals within the Obama administration, lots of congressmen and senators, who worked together to produce the HITECH legislation. So I was the beneficiary. I appreciate the opportunity that I walked into after the passage of the HITECH law. It's a humbling and exciting responsibility, but others deserve credit for the HITECH law itself.

Brailer: Public servants are sometimes remembered by the terms they coin. I am bound to be known for acronyms like ONC, the Office of the National Coordinator; CCHIT, the Certification Commission for Health Information Technology; NHIN for Nationwide Health Information Network; and HIE for Health Information Exchange. But you will forever be known for the phrase "meaningful use," among others. Did you know that this concept would take on such importance in the health care industry?

Blumenthal: Once again, I want to make clear that the term "meaningful use" was coined by Congress, at least to my knowledge. Every success has a thousand parents, and every failure is an orphan, but my understanding is that this

term really originated in Congress.

Having said that, being present at the implementation of meaningful use—the translation of meaningful use into regulatory authority and regulatory guidance—has been an exciting opportunity and a privilege. I hope that the work we're doing will be an example not only for the health care system, but even for other countries as they try to define their own health IT agendas.

It is an incredibly powerful concept. It's a brilliant use of language. It's simple but extremely meaningful, and we've had a lot of very good advice from our health information technology policy committee, from hundreds and hundreds of private and public stakeholders who have commented on the advice that was given to us by the policy committee. We've held listening sessions. The National Committee on Vital and Health Statistics has given us advice.

So what we've produced is really the product of thousands of individuals' and stakeholders' work. I hope and believe that this broad input has made our proposed rule better. We will now, of course, get probably thousands more comments that will, one hopes, make the implementation of meaningful use better still.

Brailer: Having published the proposed regulations, you're now receiving comments about them. Knowing that you can't speak about them individually or in the aggregate, are we going to be able to find a definition for *meaningful use* that sets the bar high enough to create value and quality improvement in health care, yet low enough so that providers across our diverse health care landscape will embrace the technology?

Blumenthal: You've put your finger on precisely the key challenge. The incentives for meaningful-use payments are front-loaded, so that a lot of the influence that the law has over providers' behavior is exerted early in the time period during which meaningful-use incentives are flowing.

That means it's important to make progress when the incentives are most powerful. At the same time, we know that adoption has really been slow in the United States, and meaningful use is harder—much harder—than adoption. So we do have to find that balance.

I commonly refer to this problem as the escalator problem. We have to get providers on the escalator, get them moving up the escalator, keep them on the escalator toward more and more sophisticated and demanding uses of electronic technologies. We don't want them jumping off, we don't want them running back down in terror at what we've asked of them. But we also don't want the escalator to turn into one of those airport moving walkways where you end up after



David J. Brailer David J. Brailer was named the nation's first national coordinator for health information technology by President George W. Bush. He is currently chairman of Health Evolution Partners.

a long trip at precisely the same altitude as where you started.

So we're clearly going to be working to find that balance. We will have a lot of help, I know, from the community. There will be disagreement. We'll try to balance those disagreements, and we will undoubtedly learn from experience, and the next round of regulation, which is currently planned for 2013, will, we hope, learn from experience with the 2011 version.

I've been very encouraged that the basic concept of meaningful use, the concept of making it more demanding over time, the focus on health and on efficiency, the focus on performance—all these have not been questioned by most of the stakeholders and individuals who have expressed views about many of these concepts.

So I think there is a lot of support for the general outline that is included in the proposed regulation. Obviously, I can't comment on the specifics of the regulation, but I'm pleased that the conversation is going forward in a positive, constructive, and forward-looking manner.

Brailer: Some read the Notice of Proposed Rule Making put out by the Centers for Medicare and Medicaid Services [CMS] to suggest that gross federal outlays under HITECH have been lowered from

initial estimates. Are we on track for the HITECH funds to flow as planned?

Blumenthal: We are. The initial estimates were developed before *meaningful use* had been defined, and it was impossible to make good estimates of the amounts of money that would flow to providers without a more refined understanding of the *meaningful use* definition.

That definition, of course, is still in flux, so there will be an enormous amount of uncertainty, and that is reflected in the range of the cost estimates that were included in the Notice of Proposed Rule Making. Also, the program is voluntary, so that participation will be affected by the changing definition that will flow from our rule-making process. Now that the proposed definition is known, the CMS must take into account its effect on the likely number of providers who will qualify. That's, I think, good and sound analysis rather than a retreat from the original concept.

Brailer: Related to that, in February 2010 President Obama announced a domestic spending freeze as part of efforts to narrow the federal budget deficits. Is there any part of HITECH funding or ONC budgets that is affected by the president's domestic spending freeze?

Blumenthal: Our relatively small proposed appropriated budget, which was \$60 million, \$61 million for the previous two or three years, has been increased by the administration to \$78 million. That's a very, very small piece of the total Department of Health and Human Services budget, much less the total federal budget, so it's not as though our particular part of the budget is going to break the bank. Nevertheless, the implications of HITECH, I think, were recognized by the administration. The potential value of information technology has always been recognized by the White House.

The president, as you know, has been a very vocal supporter of electronic technologies. He truly believes, I think, that they will improve the quality of care and reduce the cost of care over time.

Most of our funds have already been appropriated to the Office of the National Coordinator through the funds authorized under the American Recovery and Reinvestment Act. Two billion dollars is already appropriated. And the incentive payments, \$14–\$27 billion in incentive payments, come through the Medicare and Medicaid programs and are entitlement funds.

Brailer: Many of the goals we have for health information technology rely upon portable, standardized health information. The Office of the National Coordinator has not renewed the public-private

Health Information Technology Standards Panel as the entity through which the nation will work to harmonize the nation's health information technology standards. Do we have an alternative apparatus in place to develop and deploy a set of useful and sustainable standards?

Blumenthal: The Health Information Technology Standards Panel has done a huge amount of work. They really have made a huge national contribution. But the Office of the National Coordinator now has to look at the landscape of standards and develop a strategy for standards development going forward, and for standards recognition.

We have, of course, put out an Interim Final Rule incorporating standards and certification criteria for electronic health records. Part of our program under HITECH will involve the development of further standards under contract to the Office of the National Coordinator, and for now that is the process we will pursue.

Members of the Health Information Technology Standards Committee, which is chaired by John Halamka, chief information officer of Harvard Medical School, and Jonathan Perlin, chief medical officer of Hospital Corporation of America, have rendered superb service to the nation and to my office through their participation on the Standards Committee. I have a great deal of confidence in their advice, and we're going to move forward right now with the program that they have recommended to us. And if we need to revive the Health Information Technology Standards Panel in the future, we will do so.

Brailer: A relatively small amount of HITECH funding—less than \$500 million—is set aside to support health information exchange—the movement of clinical information among disparate health care information systems. Without additional funding, is the exchange of health information sustainable?

Blumenthal: The state-grant support for health information exchange is part of a much larger effort to promote the exchange of health information. Above all, we need to create a market for this. If there is a market for using information effectively, there will be a market for health information exchange. The \$500 million you are referring to is actually the \$564 million that we've allocated to states for health information exchange explicitly, and that, of course, is allocated to state governments or entities directly under state leadership.

In effect, though, you can see the entire \$14–\$27 billion under HITECH as support for health information exchange, because it is made available in return for meaningful use. And meaningful use in our view has to emphasize health information exchange.

So I don't think the \$564 million is a ceiling. It's really a relatively modest part of a much larger transformation of the market for information, which we hope the Medicare and Medicaid incentives will sustain, and ultimately health reform will sustain.

Brailer: Do you believe that health information standards should be globalized, or should they be adapted to each country's particular needs?

Blumenthal: We are now beginning to explore with some of our European and other partners what possible ways there are to look at cross-national standardization of information. It's been a big challenge just to develop common standards in the United States. But I suspect that there will over time be a convergence across national borders to common standards for information exchange, especially where those standards prove successful in underpinning information exchange within national borders.

So I'm pretty confident that we'll get there. It's clearly the case that we've focused on, and have to focus on, cross-geographic exchange and cross-institutional exchange in the United States, before we look to systematizing this with international partners.

Just in the last couple of weeks, though, I've met with colleagues from France, Denmark, and Germany, and we will be meeting with colleagues from the other twenty-seven countries in the Organization for Economic Cooperation and Development in a variety of venues as well. We are reaching out much more aggressively than I think has been done in the past to explore common interests in health information technology, to learn from one another, and to harmonize the approaches that we take toward moving information.

Brailer: We encouraged the states to play active roles in health information exchange, but through HITECH and your actions, you have placed additional important responsibilities on states as key actors in the formation of the health information technology agenda. How are states doing?

Blumenthal: I've been impressed at the level of interest and enthusiasm that states have shown. Forty of them recently received their grant awards under our cooperative agreement program to promote state leadership of health information exchange. So it's much too soon to reach any conclusions about how well they're performing.

I do want to say, though, that in health information technology, as in so many aspects of our national agenda in health and other fields, the states are the laboratories of America. There have been remarkable examples of success and inno-

vation at the state level, with the creation of health information exchanges and the provision of leadership for health information technology and health information exchange.

I think of my own home state of Massachusetts. I think of Delaware, I think of Maine, I think of Tennessee, I think of Wisconsin—I think there are just lots and lots of examples that are inspiring for everybody, and we want to make it possible for states to take those activities to a new level.

Brailer: Is our state-based privacy paradigm—in which states can go beyond federal privacy regulations under the Health Insurance Portability and Accountability Act [HIPAA]—robust enough to support our movement into broad health information exchange? Or do you anticipate that we will see a more uniform national privacy policy or other substantial privacy changes in the future?

Blumenthal: Congress had a chance to look at this issue and made a very conscious decision not to preempt the state privacy and security regulations. We have been working for a number of years with selected states that are interested in discussing the harmonization of privacy and security laws and regulations across state boundaries, and we will continue to do that.

A lot of the necessary exchange of health information can occur within state boundaries, and it will be a big achievement to accomplish that. But we clearly can't be satisfied with that. We have to find ways to engineer the exchange of information across state boundaries so that patients can benefit when they move across state boundaries. And I think one of the solutions to that will be to give increasing amounts of control to patients over their health information.

I think that's the intent of the HITECH Act and its HIPAA amendments. It's the intent of the thrust of meaningful use as well. Language in the Notice of Proposed Rule Making encourages providers to give patients electronic copies of their records.

So we will work within the federal system of government that we have in the United States. Health information technology is not the only place where state autonomy poses challenges that need to be managed. There are also advantages in that states do pioneer with innovations that their fellow states and the national government copy over time.

Brailer: One aspect of our national deployment of health information technology is manpower, highly specialized human resources. Congress created the Health Information Technology Extension Program in HITECH. Is this program far enough along to see if it's on track and if it is working, and if not, what do

you expect people to see in the near term?

Blumenthal: In mid-February we announced the first awards for regional extension centers. There are examples in New York and Massachusetts of some centers that have been quite successful. We hope that this track record can be replicated in many communities around the country. We are committed to making extension services available throughout the United States.

We've prioritized certain groups of providers to begin with—primary care providers in small practices, Critical Access Hospitals, providers serving underserved populations—and we will initially focus on certain types of practices and certain types of institutions.

That being said, this is a big novel experiment. Nothing like it has ever been attempted in health care before. It has the precedent of the U.S. Agricultural Extension Service. That example is interesting and promising. Atul Gawande recently wrote in *The New Yorker* about the possibility of using the extension center model more generally in health care. We are not only thinking about it, we're doing it, and we hope it will fulfill its promise. We will be constantly observing and evaluating it to make it better as time goes on.

Brailer: We have seen many reports that the specialized manpower that is needed to implement complex health records and health information exchange is in short supply. Some estimates place the need at 150,000 physicians; others are lower. The Office of the National Coordinator allocated \$118 million to train 45,000 health IT workers. Is this sufficient, and do we need a jobs bill for health IT?

Blumenthal: I think it's a good start. It's going to take a while to train all the people we need to be trained, and, frankly, the market is a very powerful force in the United States. People need jobs. In some senses, the work that the Office of the National Coordinator and the federal government are doing should be seen as pump primers and jump starters, rather than as the only solution to the workforce problem.

There are going to be lots and lots of big companies that are going to be looking for health IT workers, and the Office of the National Coordinator is going to be helping train them. Some of those big companies, if they find a market for health IT, will make sure that they can find the workforce they need.

In some sense, what we're doing is just making sure that in the short term, the folks who are needed to staff extension centers, to support health information exchanges, to work in state government, and to staff hospitals and health centers are available—until the market really becomes robust enough to support the training and deployment of the workforce by itself.

Brailer: Many countries are moving alongside the United States toward a digital health care industry. Some are further ahead and some are further behind, but health information technology is clearly a global phenomenon. What are the common themes that you and your global peers face despite having to operate in the context of different health care systems?

Blumenthal: I think what all of us face is that the effective use of health information technology is a “human ware” problem, not a software problem. Every country that wants to make effective use of health information has to find a way to get human beings who staff and use our health care system to change the way they behave—to use technology to improve practice, rather than just to memorialize electronically what they were doing in a paper world.

So I think all of us—every country in the world, including those that are far more advanced than we are in adoption—all of us face the challenge of using the power of information technology to change practice patterns, to change the flow of work in physician offices and in health care facilities, to hold ourselves accountable for improved performance, to systematically use the power of that information to make human beings more successful.

So I think even the Denmarks of the world and the Australias of the world and the Swedens of the world are still dealing with that challenge. And all of them are still dealing with increasing costs of care, and with opportunities to improve health in their populations and improve the performance of their systems. Information technology is just a means toward those ends, and no one has a patent yet on how to improve health system performance.

Just as we confront political issues, there are also jurisdictional issues in other countries. I was meeting with the Danish minister of health just this past week and learned that they are struggling to create information exchange within their health system. They are far ahead of us, but they feel like they’ve stalled. They have several dozen different software systems working in their relatively small health system, and they are trying very hard to enable them to talk to one another effectively. It sounds very similar to the issues that we are dealing with.

So I think there is an enormous amount of commonality, and it extends from the fact that we’re using the same technologies, and we have the same genetics, and we are all engaged in this incredibly complicated challenging business of making people healthier, and doing it in an efficient way, in a way that doesn’t bankrupt our economies generally.

Brailer: What are the principal lessons that the U.S. can learn from countries that are further ahead in health information technology than we are, with a particular emphasis perhaps on the experience in the United Kingdom?

Blumenthal: I’ve read some and listened some, and the U.K. seems to have tested a top-down strategy for creating health information systems in a modest-size country. The U.S. has a very different set of circumstances, and the federal government is not pursuing a top-down approach. It is trying to stimulate innovation and it’s trying to allow for variation. It’s trying to incentivize change without dictating the path of change. That’s going to create its own problems because there is going to be a lot of variation in the local solutions that organizations and jurisdictions develop to promote information exchange and to meet information needs in localities. We have to find the right balance between directing the path of change and enabling local authorities, local providers, and local stakeholders to choose their own paths adapted to their local circumstances.

One thing that is quite clear to me as I sit in the Hubert H. Humphrey Building in Washington is that no country—none of our Western peers—has attempted to create electronic health information for a country as large, diverse, complicated, wealthy, and dynamic as the United States. We are trying to create a nationwide, interoperable, private, and secure health information system for a country that extends from the Bering Straits to Key West, with more than 300 million people who by history and tradition and culture value local autonomy and need autonomy in order to manage their diverse local situations. And so that’s the tradition we inherit, that’s the method that we have to use, and we are working within those constraints.

Brailer: We have several years of work to do to get electronic health records and health information exchange into place in wide use, but at the same time, health information technology is a platform from which many other technologies and changes in medical practice will grow. Let’s explore a few of these. The technology to support telemedicine and teleradiology is in place, but many have said that state licensure and reimbursement policies hinder their use. Do you foresee changes that will eliminate or reduce the barriers to telemedicine and teleradiology taking place in the near term?

Blumenthal: If by that you mean the barriers that result from problems of licensure, I’m hopeful that will happen. We are funding fifteen so-called beacon communities to support them in using health IT to take their health systems to a new level of performance in quality and effi-

ciency. Some of those beacon communities I expect will cross state jurisdictions, and I'm hopeful that they will be beacons of innovation with respect to licensure and other policies that might inhibit telemedicine.

We have many, many challenges still to come. This is on our list, and we'll have to take these one at a time. Right now we're mostly focused, as we have to be, on the 2011 deadline for meaningful use, making it possible for providers who want to be meaningful users to become meaningful users, making it possible for patients to benefit in the short term from the power of electronic health records and health information exchange.

I hope that the HITECH agenda and the work of the Office of the National Coordinator will go forward for many years to come, and that one of the items on that agenda will be to try to mediate these licensure barriers that make it harder for telemedicine and teleradiology to work effectively.

Brailer: Drug development and research is increasingly dependent on clinically detailed data about patients who receive medications, whether in trials or in postmarket use. There are, though, few reported successes in using electronic health records to get these data. Is this something that the Office of the National Coordinator can address, or that others within federal government can address, to speed this along?

Blumenthal: We are trying to create a health information infrastructure that will support the public health and public policy needs for health information. We are planning quite consciously for the standards and technologies that are essential to enable electronic health records to produce that information, and to do so in a private and secure way.

You're correct in saying there are relatively few examples of this working, especially outside of organized health systems, where there are some very promising cases of using health IT for learning about health and health care. We're going to need to do a fair amount of work developing the technologies that make it possible to do this and to do it cheaply and efficiently on a larger scale.

We are funding a series of so-called strategic health research initiatives. One of them, I think, will be focused on this, and I think that's going to be an important mechanism going forward.

The other thing that we are working very hard on is the Nationwide Health Information Network, both in its initial form—a cooperative of organizations, including some federal agencies, that are developing methods for complex health information exchange—and in other forms that may be more accessible to smaller providers and

others with simpler exchange needs. Through those open networks, we hope to make it possible to mobilize information from broader groups of providers and patients while still protecting privacy and security.

I say all this in the full understanding that the privacy and security of health information is the foundation for making all this happen. We have to start with guarantees of privacy and security before we can begin to develop these other, more sophisticated uses of aggregated data that depend on extracting patient information in deidentified form from electronic systems in local offices and in local institutions.

Brailer: Clinical decision support has enormous potential to improve the quality of care, but it seems as though individual hospitals and physicians have developed their own evidence bases for use in the clinical decision-support systems that many are now putting in place. Is there the need for a national warehouse of medical evidence structured for automatic use in electronic health record systems, or some other way to accelerate access to a common medical evidence pool at the point of care?

Blumenthal: We have, actually, a collaboration across federal agencies to support clinical decision support, and I expect over time that will evolve into a national resource that will work potentially through the national Health Information Technology Research Center—another HITECH program—that is right now being administered by the Agency for Healthcare Research and Quality.

This research center can provide a source of information about clinical decision support that would be available to providers through the work of the regional extension centers. So I think that's one avenue of making such information more widely available.

I also believe, though, that the federal government is not the only important actor in this world—that the professional societies, the hospital associations are going to play a more and more vigorous role in helping their members be better at doing what they do. They're not going to have to work very hard to do it, because the availability of powerful decision-support tools will spread in viral fashion through specialty societies, through annual meetings, through all the channels of innovation that cause practice to improve in so many other ways. As gastroenterologists or cardiac surgeons or other specialists see these applications being used by their colleagues who are empowered by electronic systems, they will adopt them in the same way they adopt new imaging techniques or other technologies.

We have to start seeing health information

systems as a mainstream technology that is part and parcel of medical practice, not something that is appended to it as an afterthought, not something that's imposed on it, but something that will very soon be integrated into it and indistinguishable from all the other work that physicians and other health professionals do every day.

Brailer: Do you expect the Food and Drug Administration to ultimately regulate clinical decision support as it would a drug or device that has an impact on patients?

Blumenthal: At the current time, it's probably premature to make a pronouncement about that. I do think, though, that it is the obligation of those who sell and use electronic technologies to make sure they are as safe as possible. There's no implication there that they're not fundamentally safe or fundamentally beneficial. That's not the question.

Whatever technologies we use in health care or whatever pharmaceuticals we use, no matter how powerful and beneficial they are—and that includes antibiotics, vaccinations, cardiac defibrillators, pacemakers—we always ask the question, “Are they as safe as they could possibly be?” Are there errors, mistakes, defects that could be corrected? And I think we will inevitably ask those questions about electronic health information systems as well. It's normal, natural, and beneficial to keep that perspective in mind.

Brailer: David, before we close, let me ask you this: For people who want to get involved in the effort to move toward a Nationwide Health Information Network, at either the local or national level, if they have something to contribute, what should they do?

Blumenthal: It has been for me enormously gratifying to see how many people want to contribute. It's also been enormously gratifying to be able to use the talents of so many people who

have generously donated their time and effort to supporting implementation of HITECH and of the health information technology agenda more broadly.

I think that we are on the threshold of a new era in health information technology that will create enormous opportunities for people to contribute at many different levels. I think states are going to be desperate for smart people to help them plan and implement health information technology programs. I think local health plans, local health programs, and communitywide improvement programs are going to need the same kind of support.

There's going to be a huge new commercial sector in health information technology, so there are going to be many, many diverse opportunities.

The best way, I think, to prepare is to get trained in a health profession with a technology specialty, or get trained in technology with a health specialty. This, I think, is going to be a great future for young people. It combines the growth potential of health care generally with the growth potential of a powerful, underutilized technology.

So I think getting well trained and then beginning to accumulate diverse experiences is the best way to make your way in this field.

Brailer: Thank you, David. As one of the few people who have walked in your shoes, I know the opportunity we have before us, as well as the pressures and challenges you face. You have made remarkable progress during the past year, which places a strong capstone to our five-year journey on health information technology. I want to tell you that I am very happy to see you in this role, and on behalf of all of us in the United States, thank you for your outstanding efforts.

Blumenthal: Thank you. ■

ABOUT DAVID J. BRAILER & DAVID BLUMENTHAL



David J. Brailer

In 2004, David J. Brailer, who has doctoral degrees in medicine and economics, was named as the nation's first "health information czar" by then President George W. Bush. His official title was National Coordinator for Health Information Technology. The job came with almost no budget and no clearly defined mission.

Today, that same job is held by David Blumenthal, who was a practicing physician, health policy analyst, and scholar before his appointment by President Barack Obama in 2009. The job's scope has grown enormously.

Blumenthal's mission includes working with the Health and Human Services team to implement the provisions of the HITECH Act—an unprecedented effort to modernize the country's health information technology infrastructure.

The Centers for Medicare and Medicaid Services has the leading role in developing procedures for spending HITECH funds, including a projected \$14–\$27 billion for rewarding providers for becoming "meaningful users" of electronic health records. Congress also gave the Office of the National Coordinator what Blumenthal

calls a "challenging task"—developing a nationwide, interoperable, private, and secure electronic health information system.

To Brailer, the limited resources during his tenure were the lemons he used to make lemonade. "I started the Office of the National Coordinator from scratch, which rarely happens in the federal government. That meant drafting the original executive order that created the office, writing the first national strategic plan, assembling a budget from line items in the federal budget, fighting for a budget reapportionment when Congress zeroed out our budget, designing and letting out the first contracts, hiring the staff, and explaining endlessly why health IT is important to Congress, governors, and hospital leaders," he says.

"We worked against inertia, White House infighting, changes in Congress and in Cabinet secretaries, conservatives accusing us of meddling in the markets and liberals accusing us of selling out IT for political gain. It was probably good that we had little money early on, because it forced us to build tools and institutions that money couldn't buy and that took time to develop. This included certification, standards harmonization, policy architectures, budget frameworks, privacy oversight. And it is good that there is major funding now because it ensures the sustainability of the health IT movement."

A self-proclaimed "computer geek" since his early teens, Brailer has enjoyed a career that has

combined medicine, health, and business. He earned his medical degree at West Virginia University, completed his internal medicine residency at the University of Pennsylvania School of Medicine, and earned his Ph.D. in health economics at Penn's Wharton School. He taught in Wharton's master of business administration program for ten years.

He founded his first company, CareScience, a pioneer in assembling health care data sets, and brought online the first Internet-based software product to help physicians use their data to improve quality.

In 2007 he founded Health Evolution Partners, an investment fund, of which he is chairman, that seeks out companies that will lead tomorrow's health care industry. "We are the health care version of a green energy investor, looking for the health care equivalents of wind and solar power," Brailer says.

Brailer calls the challenges faced by Blumenthal "different, but equally hard." For example, Blumenthal has to "develop thoughtful policy in the face of stimulus-bill time pressure, work with Congress despite complicated and partisan health policy efforts, fight off the Washington crowd vying for stimulus money, and make sure that all the pieces of the health IT market and policy apparatus work together," Brailer observes.

The immense challenge of his new role appeals to Blumenthal. "There is a kind of comfort in the very size and unprecedented nature of the task," he says. "Since

nothing like what we are attempting has ever been done before, anywhere on earth, clear-cut solutions to problems are rare. We simply have to learn to do our best, and learn from our successes and failures."



David Blumenthal

Blumenthal's entire career has been leading up to this pivotal moment, drawing on former professional experiences that include: serving as a senior vice president at Boston's Brigham and Women's Hospital, teaching legislative process at Harvard's Kennedy School of Government, working for the late Sen. Ted Kennedy on his health staff, and being a health adviser for four presidential campaigns, including Obama's.

He also practiced for thirty-five years as a primary care physician and worked at Partners HealthCare System in Boston. He graduated from Harvard College and Harvard Medical School and received a master of public policy degree from Harvard's Kennedy School.

Blumenthal's involvement in health IT combines practicing medicine, health policy research, and analysis. "My experience with [electronic health records] convinced me that they could make a huge impact on

the cost and quality of care, and that health IT is the foundation of almost all our aspirations in health system reform," he says.

"Information is the most powerful force in health care, and health IT is the best way to make the correct information about patients and health care available at just the time and place they are needed. Nothing we are trying to do in health care doesn't depend on well-functioning and improving information systems—from access expansion to cost containment to quality improvement."

Blumenthal's commitment to health IT is very much based on his personal experiences. For example, once when discharging a patient, he ordered Bactrim, a sulfa drug, to treat the patient's urinary tract infection. A message in bold red letters flashed across the screen, warning him of the patient's allergy to sulfa.

Another time, he ordered a computed tomography (CT) scan of a patient's abdomen to visualize the patient's kidneys. Thanks to his electronic health record's decision-support tool, called "radiology order entry," which looked in the patient's record for duplicate tests, Blumenthal found a recent x-ray, which answered his question and saved his patient inconvenience, unnecessary radiation exposure, and money.

"These are small victories that, repeated for millions of medical decisions every day, could change the quality and efficiency of health care," he says. "This vision motivates me every day."