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VA ELECTRONIC HEALTH RECORDS: MODERNIZATION AND THE PATH AHEAD

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JULY 14, 2021

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VA ELECTRONIC HEALTH RECORDS: MODERNIZATION AND THE PATH AHEAD

WEDNESDAY, JULY 14, 2021

U.S. SENATE,
COMMITTEE ON VETERANS' AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 3:33 p.m., in Room SR-418, Russell Senate Office Building, Hon. Jon Tester, Chairman of the Committee, presiding.

Present: Tester, Murray, Brown, Manchin, Hassan, Moran, Boozman, Cassidy, Rounds, Tillis, Sullivan, Blackburn, and Tuberville.

OPENING STATEMENT OF CHAIRMAN TESTER

Chairman TESTER. I call this VA hearing to order. Good afternoon. I want to thank you all for being here today. A special thank you to the Secretary of the VA. Thank you for being here, Secretary McDonough.

Nearly nine months ago, the VA rolled out its new electronic health record at Mann-Grandstaff VA Medical Center. At the time, VA officials described the rollout as "flawless." The former Secretary said it was revolutionary, boasted that "we just pulled off the most expensive IT program in government history." He said, we only heard crickets from the critics because it had gone so well.

Well, guess what? Since a lot of those statements were made we are hearing from VA medical staff who are frustrated and demoralized by a new system that is making their jobs far more difficult. We are hearing from GAO that prior to the launch last October—which I might point out was right before the election—VA had not resolved all the critical and high-severity test findings that could result in system failure.

We are hearing that the VA Office of Inspector General and that the VA had not reported to Congress, as required by law, all of the projected costs associated with deploying the EHR nationwide. That includes an estimate $2.7 billion in projected physical infrastructure costs, an additional $2.5 billion in projected costs for IT infrastructure. Taken together, that means the program could potentially cost $21.3 billion over 10 years, not the $16.1 billion as VA previously projected. That is a 32 percent increase, and by the way, that is $5.2 billion.

In January, we heard from a group of senior VHA leaders who visited Spokane and said that they found a dedicated but highly demoralized workforce, communications breakdown in the absence of on-the-ground program and vendor management, and problems leading to patient safety, risks, and productivity loss.

We are also hearing from the IG that the dedicated VA staff in Washington State were not given adequate training on the new EHR. These folks could not fully use the EHR months after the go-live date. They were taught to push buttons but not actually how to use the new system with patients.

In a survey, only 5 percent of the staff reported being able to use all four core functions of the new EHR after training and two to three months of use.

So while there are some who might describe this effort as a flawless rollout, I think most people would use the words "alarming" or something far worse. And frankly, I, for one, am fed up with the amount of taxpayer dollars we are spending on this program without any demonstrated benefits to veterans or VA medical staff. This simply cannot continue. We have literally been working on this for almost my entire time in Congress and on this Committee, 15 years.

Secretary McDonough, I want to commend you for hitting the Pause button in March and taking a look at this program, a fresh set of eyes, through your strategic review. Today, with at least the first phase of that review complete, we want to hear about what you have learned and the path forward. We want to know more about your plans to address all of the issues we have talked about, from management and program leadership to patient safety and technical issues. And I need a commitment the VA will better respect Congress' oversight role over this program than it has the last few years. Transparency and truthfulness, quite frankly, have been absent.

There is simply too much at stake to get this wrong, but before I close I want to touch on one more final thing. In the current law, the VA Deputy Secretary has the lead oversight on EHR modernization, the VA Deputy Secretary. And despite advancing that nomination out of this Committee unanimously, six weeks ago, that position remains vacant as I speak today, because of what I view as political games. This is six weeks in which the VA has not had a Deputy Secretary to manage this effort, to protect taxpayer dollars, and deliver for our veterans and the dedicated employees that serve them.

So I would remind those that want to be critical of Secretary McDonough, of this administration on EHR, to keep that reality in mind. But once we get Mr. Remy confirmed, then we will take the gloves off.

With that I will turn it over to Ranking Member Moran.

OPENING STATEMENT OF SENATOR MORAN

Senator MORAN. Chairman Tester, thank you. I share your exasperation on this topic. It has been around as long as I have been in the Congress. Your point about a Deputy Secretary, I understand will be resolved by tomorrow, and we will have someone specifically to deal with—responsible for—the implementation of electronic health records at the Department of Veterans Affairs.

It is exasperating because the potential benefits that can accrue from this effort are tremendous, and it is potentially cost saving, I suppose, but more importantly, it is the ability for the Department of Veterans Affairs to care for veterans. It is the ability for

our service men and women to more easily transition from active duty to becoming a veteran. And the longer we delay, the longer that we have challenges with this program, the less likely that the veterans who are living today are going to benefit from this dramatic opportunity.

So while I have a prepared opening statement, Mr. Secretary and Mr. Chairman, I just would again offer my assistance, the assistance of this Committee, to see that we get this right. I am critical of the Department of Veterans Affairs. I thought the inspector general's report was very damaging, very damning, and I hope that—actually, I have the expectation; I do not need to hope—I have the expectation that Secretary McDonough will respond appropriately to correct the problems outlined in that inspector general's report.

I am anxious to hear our other witnesses as well. I know that Mr. Probst and his organization has been through this himself and has expertise. I just would think that the challenges that we have often with the Department of Veterans Affairs involves its bureaucracy, and I think we have conflicting aspects of the Department of Veterans Affairs that either are assuming responsibility or refusing to assume responsibility when all need to be working together.

For this to be judged a success, I think the pause was important. A strategic review that produces quality standards for electronic health records gets our VA employees and the practicing medical community trained. All this is important. I just need to see and be convinced that we have a roadmap to get us where we need to be and gain the benefits that our veterans will achieve, will be able to attain as a result of electronic health records. So I look forward to hearing the path forward from you, Mr. Secretary.

[Pause.]

Senator MORAN. [Presiding.] And in the absence of the Chairman I would say that today's hearing will consist of two panels. In the first panel we will hear from Secretary Denis McDonough on the VA's progress at the EHRM rollout and the findings of the strategic review and the Department's proposed path forward. On the second panel we will hear from external experts on VA's EHR transformation efforts, challenges faced, and lessons learned from the private sector.

And, Secretary McDonough, the floor is yours.

PANEL I

STATEMENT OF THE HONORABLE DENIS MCDONOUGH

Secretary MCDONOUGH. Thank you, Senator Moran, Senator Murray, and Senator Hassan. Thank you very much for the opportunity to be here and for your steadfast support for our veterans.

Before I get into today's important topic, I want to highlight a simmering crisis we are dealing with. Over the last month, we at VA have lost four of our dear colleagues to COVID infection, spurred by the highly transmissible Delta variant. We are seeing a surge of infections that has necessitated the deployment of dozens of VA disaster emergency medical personnel to supplement our workforce, a level of deployment that mirrors prior surges and

warns of what is to come. This underscores the critical need for everyone to be vaccinated, especially our VA personnel, to keep our veterans safe.

Now back to today's focus. I appreciate the opportunity to update you on VA's initiative to modernize its electronic health records. The mission of EHRM has always been to create a platform that seamlessly delivers the best access and outcomes for our vets and the best experience for our providers.

But as you, VSOs, members of the press, OIG, GAO, and others have now rightly noted, VA's first implementation of the Cerner Millennium, which occurred in October 2020 at Mann-Grandstaff VA Medical Center in Spokane, Washington, did not live up to that promise, either for our veterans or for our providers.

This has been exemplified for me by a story I heard from one of our great pharmacy staff in Spokane. A few months into implementation, he began hearing disquieting reports from the mail-in pharmacy team that they were receiving duplicate prescriptions at Mann-Grandstaff. The issue, it turned out, was that the veterans' old prescriptions were not automatically being canceled when new ones came in. Recognizing the threat to patient safety, the Mann-Grandstaff team immediately jumped into action, collaborating across VA to create a workaround that eliminated these duplications, and made sure that our veterans did not receive more medication than was necessary or safe. Those efforts were largely successful, but they also demonstrate the lengths to which our staff in Spokane had to go through to simply do their jobs and to care for our vets.

On top of that, I heard from another clinician that helped with the new platform it was not always easy to find, even when you asked for it. When she called the Cerner help desk the person on the other end of the line told her he had just started a week prior. In other words, she had more experience using the platform than the person who was supposed to help her navigate it.

Stories like that are what led me to launch the top-to-bottom review of the EHRM program. Among other challenges, the project was being run in an organizational silo, meaning that some relevant stakeholders did not have a chance to shape its success. In fact, the IG report from Friday found no evidence that our health care experts at VHA had a defined role in decision-making or oversight of the health care record modernization project.

There is also a distinct lack of testing and training for a real-life clinical environment. For some providers, the first time they used the final program was the day it went live. These findings are extremely disappointing, but the strategic review provides reasons for optimism as well, because it also found that we have what we need to succeed, starting with dedicated employees who will stop at nothing to get this right.

Most challenges were not breakdowns of the technology nor of the great people at Mann-Grandstaff who did the best they could in the worst of circumstances, implemented this program in the heart of a pandemic, dutifully shared findings that improved the system, and ensured that our veterans were safe, despite the challenges they faced. Instead, the missteps were ours, at VA and Cerner.

And now that we have identified those problems we can solve them. As a result of the strategic review, we are reimagining our approach to this system. First, we are establishing a unified enterprise-wide governance effort led by our Deputy Secretary, who we just discussed, and I am grateful for Chairman Tester and Ranking Member Moran's work to get him confirmed this week. This structure will incorporate the perspectives of key clinical, technical, acquisition, and finance leaders, thus guaranteeing that everyone who will build this platform, use it, or be affected by it will work in concert with one another from day one.

Second, we will shift from site-by-site deployment of the EHRM to an enterprise-wide readiness and planning approach. This means that we will deploy the program based on evidence of readiness, evidence of which sites are most trained and technologically ready for it, therefore setting each new site up for success.

Third, we will create a fully simulated testing and training environment so veterans and providers can properly evaluate and learn the system before it goes live, not during or after.

By making these changes and the others that are outlined in my written testimony, we can and will get this effort back on track. That means building an EHR system where veterans are able to access their records in one place, from the first day they put on the uniforms until the last day of their lives; a system that empowers vets to receive care anywhere, whether it is from DoD, VA, or community providers, without worry about cumbersome paperwork or potentially harmful gaps in records; a system that helps providers understand injuries that veterans suffered 50 years ago so they can provide those vets with the best care possible today.

That is the end goal, and I know that many folks out there are concerned that we cannot, as I have said, or will not get there. But we can, and we will. We are now in an excellent position to move ahead as one unified organization in partnership with Cerner and DoD, sensitive as Senator Moran suggested, to Congress' critical oversight role, to deliver an EHR system that improves the outcomes for our vets and experiences for our providers, and that is exactly what we are going to do.

So, Senators, Senator Murray, Senator Moran, colleagues, thank you for the opportunity to appear here today. I look very much forward to your questions.

[The prepared statement of Secretary McDonough appears on page 39 of the Appendix.]

Senator MORAN. Secretary McDonough, thank you very much for your testimony.

According to the inspector general, the VA failed to report the program's true cost to Congress as required by the Veterans Benefit and Transition Act of 2018. What actions have been taken to correct this accounting, and what steps has the VA taken to hold those personnel who were responsible accountable?

Secretary MCDONOUGH. So we have taken the beginning steps to ensure that we, as the IG recommended, are in a position to provide a full lifecycle estimate of the cost of this program. The way we are going about it, including by taking a readiness deployment method rather than a geographically based or time-based deploy-

ment effort, will allow us to do a better job of that. So we are getting to the bottom of the facts. We are going to deploy based on the facts. I will continue to report regularly to you on those facts.

And as to the question of accountability, there is that and then another finding that I mentioned to you recently, that was in Friday's inspector general report, which suggests an unwillingness to provide potentially information to the IG. I will not run an organization that withholds information from Congress or the IG, so if I find that to be true there will obviously be consequences.

Senator MORAN. Mr. Secretary, the Electronic Health Records Modernization Program's organizational structure seems to me to be dysfunctional, and I think that was indicated by the OIG in each of their reports. The GAO has also reported on this as well. I think this is the basic premise of the findings you speak to in your written testimony regarding the governance and management.

Will we see a comprehensive reorganization of the program, and when will it happen? I ask this because based on your written testimony it does not appear anything is changing other than the title of the groups.

Secretary MCDONOUGH. Yes, thank you. So you will see it. We do have it. It is not quite done. In all cases, I want to talk to our Deputy Secretary, when confirmed, because, statutorily, he is in charge of this and will manage this as a management question and as a budget question, as statute envisions. I would just ask forbearance to spend a couple of days talking with him about it, and then by next week we will be happy to come up and show that to you.

I think you will see significant change, including reduction of what I consider to be redundant positions, and more importantly, clear accountability among each of us to one another and to you, to ensure that decisions taken are decisions implemented.

Senator MORAN. I can see why you are anxious to have the Deputy position filled.

It is concerning—I do not know that I understand exactly what these words mean, but what you said was, the result of a strategic review, you found persistent issues with the definition of what constitutes a patient safety issue. When can we expect to see VHA's definition of "patient safety issue," and when will it be put into practice?

Secretary MCDONOUGH. So there is a big question now about how quickly we go live at the next sites. The next sites, as envisioned in the program of record, are in what we call VISN 20 and VISN 10, so basically in the Upper Midwest and in the Pacific Northwest. I hope to make a decision on that by the end of this calendar year.

The question you raise about patient safety, both defining it and identifying where concrete issues exist, and importantly, where mitigations are necessary, will be the principal basis on which I make that decision. The other two things I will consider in that decision are access—we are seeing, as I am sure Senator Murray can report, access questions as a result of the EHR in Mann-Grandstaff—and then questions around billing, or the revenue cycle.

I think we can get our hands around those this fall, but I will not go live at those next two sites fully until I have answered those

questions, including this definition of patient safety that you are asking for.

Senator MORAN. Mr. Secretary, I had another question but in the 39 seconds I have left I would highlight what you indicated in your opening comments, my conversations with a VA official earlier this week in regard to COVID–19 and the Department of Veterans Affairs, and particularly in Kansas, the numbers are increasing, increasing in ways that are alarming. And I would again use this opportunity to encourage Kansas veterans, American veterans, and Americans generally to utilize safety that comes by being vaccinated. And every day that goes by, I think increases the chances that there is more risk for more people, including those who we serve, who served our country and now who we care for in our VA facilities.

Secretary MCDONOUGH. Thank you.

Chairman TESTER. [Presiding.] I appreciate those comments, Senator Moran. Senator Murray.

SENATOR PATTY MURRAY

Senator MURRAY. Thank you, Mr. Chairman. Mr. Secretary, thank you for being here, and thank you for visiting Mann-Grandstaff VAMC in Spokane earlier this year. I appreciate your commitment to stay involved in these issues.

But let me just say, back in 2019, I heard about outstanding infrastructure issues and the ongoing staffing challenges that could make implementation of this new EHR system at Mann-Grandstaff more difficult and ultimately threaten patient care. And because of those reports, I cautioned the VA back in January 2020, in a letter, to make sure that they prioritized veterans' access to care and support for the staff.

That was over a year and a half ago, and these issues should have been addressed, as you know. Since the implementation of the Cerner program last October, I have heard, like you just talked about, a number of serious patient safety issues that could put our veterans at risk. And I am also very troubled by reports of exhausted staff who are struggling to use the system because of the workflow design issues, lack of adequate training, and I expect those issues to be resolved. I know you know that as well.

But I would like to ask when the strategic review is completed I would like your team to give us a detailed briefing on how that is going to help folks in Washington State. I know you inherited this multi-year, multi-billion-dollar Electronic Health Record Modernization Program and all the challenges that come with it, but I know we confirmed you for this position because of your management skills and the ability to tackle hard problems. And I know you know, we need leadership to get this back on track.

On the topic of patient safety, I just want to share a few examples for the Committee that I have heard from clinicians and constituents. The Mann-Grandstaff medical director reported, in an April 2021 hearing, that 247 patient safety reports had been documented since go-live, which is a troubling number, to say the least. I have heard cases of veterans not receiving the correct medications, and in other cases, medications that have been sent to incorrect addresses.

I raised that concern about prescriptions during DoD's botched rollout, and I cautioned the VA about it. This could have been foreseen. And whether those problems are because of poor data migration or flaws in the system, this has to be fixed. It is serious, and these problems need to be resolved.

Mr. Secretary, I would like to ask you, who is responsible for reviewing the EHR workflow design, specifically for patient safety?

Secretary MCDONOUGH. Well, right now we have a patient safety team on the ground, and so one of the things that came out of my visit is we sent a team, a patient safety team, to Spokane. We now have a patient safety team resident on the ground. But at the end of the day, I guess my presence here today, I am telling you that I am taking responsibility for these decisions.

Senator MURRAY. Okay. Can you commit to reviewing the system and giving this Committee the results of that?

Secretary MCDONOUGH. Yes.

Senator MURRAY. Okay. And I am also really troubled by staff burnout and attrition. I know you know this. And when it comes to training staff or not being adequately prepared to navigate a system that makes what used to take just a few clicks now is a lot more complicated. Providers are burning out as they try to balance caring for the veterans, which is their charge, and navigating this new EHR system.

How is the VA support staff, through this transition, working to keep morale up and avoid burnout?

Secretary MCDONOUGH. Well, it is a perfect question. I mean, we do have, consistent with the pandemic, as well as with the added requirements of DHR, some management incentives available to our team there, so we are making sure that we are using those. We are trying to be sensitive to the many demands on the team on the ground, so we are trying to manage the obvious intense interest across the enterprise and what is happening there. But we are trying to make sure that people have distance to do their work.

And then I also am trying to communicate directly, as I did earlier today, with the med center director, Dr. Fischer, that they are not in this on their own, that we are in this together.

Senator MURRAY. Okay. I had extensive discussions with the VA before the rollout in Spokane, and I insisted that the VA have plans for mitigating the loss of productivity, so veterans did not lose their access to care, increasing staffing in clinical space to compensate, making sure that the physical and IT infrastructure was ready. And I was told repeatedly that everything was under control, yet the VA could not get additional clinical space, there was not enough staff or providers, even before COVID hit, and that is just one example. The facility actually had to put a tarp over one of the new servers to keep water from leaking on it and destroying it.

So as we transition to other facilities, we have got to make sure that they have space and staffing and infrastructure and anything else they need before they go live.

And my time is out, but I just want to say one thing really quickly. I was very disturbed, that the leaders from the VA EHRM change management withheld some training evaluation data that was requested by the OIG, and altered other data prior to sending

it to the OIG. The integrity and thoroughness of information provided by VA is required by law, and it is critical to the OIG's mission. So lying to, withholding information from the IG, or from Congress for that matter, is really outrageous and unacceptable. I know you agree with me on that. But I just want to say, very clearly, that I expect anyone found doing that to be held accountable immediately.

Secretary MCDONOUGH. Yes. I absolutely commit to that. I was as struck by the finding as you are, and I know you will hear from the Deputy IG in the second panel. But I also know that the IG is looking at that specifically. I will look into it myself, and if it is confirmed, obviously there will be ramifications for that.

Senator MURRAY. Okay. Thank you so much for your attention to all of this.

Secretary MCDONOUGH. Thank you.

Chairman TESTER. Senator Boozman.

SENATOR JOHN BOOZMAN

Senator BOOZMAN. Thank you, Mr. Chairman, and thanks to Senator Moran for having the hearing, and the focus on this so, so very important subject. It is not a very glamorous one, but I think it is the key to getting the VA into this century. So it is going to take a lot of work.

I also appreciate the emphasis on the training aspect of things, and then too, as Ranking Member of the VA Appropriations Subcommittee, I remain committed to providing the VA with the resources that you need to take care of our veterans. However, in order to be helpful, we have got to have accurate costs and execution estimates from the Department.

Last year, the electronic health modernization in the VA system was allocated roughly $2.6 billion. This year the request is for $2.7 billion. Mr. Secretary, was the VA able to execute last year's allocation, despite pauses in the program, and do you believe that the funding request for fiscal year 2022 is executable and appropriately programmed, given what you learned during the review?

Secretary MCDONOUGH. Yes. We were able to execute the appropriation from last year, so thank you for that. The request, we are not asking to alter or to change the request for next fiscal year, based on the review. But in all cases—and as I have said to many of you, I recognize the importance of staying within the budget envelope that we have. I have said to many of you, and I reiterate again today in public, that if there are changes to that we will be early and transparently before you.

Senator BOOZMAN. No, we appreciate that very much.

You mentioned that following the 12-week review of the program, it is clear that training and technology will be a focus of the VA moving forward. Without providers receiving proper training, the program will fail to meet the goals of this modernization, certainly. I appreciate the example, you know, of the person calling and they knew more about the system, regarding, you know, when they were trying to receive help. The other thing I was impressed with is the fact that you knew about that. You know, you're the top guy at the rung, and again, that information getting up as high as you, and you taking that interest, because that is how we are going to get

this solved at your level, and then again, at the committee level, that is doing the same thing.

Secretary MCDONOUGH. I agree.

Senator BOOZMAN. It is so, so very important.

After evaluating the resources allocated to the first test site in Washington, were funding levels and time dedicated to training adequate, and did they contribute to any issues seen with the training of providers?

Secretary MCDONOUGH. So I think a principal finding—I spent a lot of time with the IG report on training, and we have had a lot of feedback on training, including direct feedback that I got. I think there is just no doubt that the training was wanting. I do not believe, however, that was a function of funding. I think that was a function of probably a range of things. I think it is very obvious that the pandemic played into that. And basically you have a system that, in best of examples you have basically an elbow-to-elbow deployment of clinician with trainer. And when you are socially distancing, that is not possible, so that is a big challenge.

I think it is really important, though, going forward, for us to learn the lesson that some more clinically relevant training is necessary in the lead-up to go-live, not just starting at go-live. So one of the things that you have seen in my prepared testimony is a focus from us on a more clinically relevant training module that will allow us to get more people through that, in a more timely way, so that when we do flip the switch to go live, for example, in these next two sites, more broadly in the Upper Midwest, in Senator Brown's state, and back in the Pacific Northwest, more people have had more time on the target in a clinically relevant way, so that they can then intensify that training on the job.

Senator BOOZMAN. Okay. Well, Thank you, Mr. Chairman.

Chairman TESTER. Senator Hassan.

SENATOR MARGARET WOOD HASSAN

Senator HASSAN. Thank you, Mr. Chairman, and thanks to you and the Ranking Member for this hearing, and thank you, Secretary McDonough, for being here today.

I have three questions for you. The first one has to deal with veterans' feedback. It is really important, obviously, that the VA hear about how the new electronic health record system actually impacts the veterans' health care experience. And to build on the comments we heard from Senator Murray, and just now Senator Boozman, a July 2021 VA Office of the Inspector General report found that VA facility patient advocates did not receive direction or training to consistently track and report patient complaints about the new electronic health records system.

So how will the VA go about establishing guidelines, training, and a method to capture patient complaints about the new electronic records, and ensure that it implements improvements to address patient concerns?

Secretary MCDONOUGH. Thank you very much. Just working backward, I think the OIG focus on the patient advocates is really smart. As a general matter, I think an underutilized tool for us. And so they have made some recommendations to us. We have in-

dicated to them that we will take those and implement those, directly relevant to your question.

On the question of vet feedback, more generally, this, I think, is an obvious point, but one of the things we have to make a decision about is the portal into the electronic record. And I remember being confronted relatively early—well, very early in my tenure—where somebody said, "Well, you are going to have to make a decision on the patient portal." And I said, "Well, why would I make a decision on the patient portal? I am neither a patient there nor am I going to be using the portal." So what we did is we pushed that into our Veteran Experience Office. They have just now completed a months-long review, engaged with veteran patients, on what they want to see in the various options of a portal.

We look to, as a general matter at VA, and this will be a particular concern of mine, ensuring that questions around usability are decided not by Cerner and not by us, but informed by the user.

Senator HASSAN. Okay. Good. Thank you. I want to go to a New Hampshire-specific concern now. New Hampshire is going to be one of the last states where implementation occurs. It is currently scheduled for 2026, and that seems pretty optimistic, under the circumstances. That is going to potentially create problems for veterans who move from a state like New Hampshire that has not yet implemented the new system to a state that has. So what is your plan for ensuring that VA health care professionals have consistent access to both old and new electronic health care records so that there will not be gaps in care or medical errors from incomplete medical records?

Secretary MCDONOUGH. Yes, that is a very fair question. I guess what I would say is, as I indicated earlier, this question about the next two go-live sites, VISNs 20 and 10, after we get past those we will be going to a system readiness decision-making matrix, whereby we will make a decision as to where to go next, in which case maybe it is New Hampshire, based on infrastructure readiness. This is also a finding from the IG. Training readiness, we are building this more clinically relevant training facility, and then change management or leadership readiness. So it could be that—this is a long way of saying the deployment schedule itself will change.

Second, as it relates to ongoing training, we recognize that we are going to have to continue to have an ability to walk back and forth between the two. In an ideal world, that does not drag on for more than a decade, after all we have invested in this.

Senator HASSAN. And I appreciate that. I think just focusing on future outreach needs, so that the system is not caught short as veterans begin—you know, veterans move around. We all do. So I appreciate that.

Last issue is cybersecurity. It is a focus of mine on the Homeland Security and Emerging Threats work I do. Hospitals are obviously a big cyber target. So how is the VA prioritizing cybersecurity as it implements the Electronic Health Records Modernization Program and in its continued use of legacy systems?

Secretary MCDONOUGH. So we are continuing to make cyber a fundamental priority. It is a personal priority of mine, and I have had basically regular interactions with our CISO. I have also re-

cently asked the director of the National Security Agency and the commander of Cyber Command to come take a look at our systems to make sure that we are in a position to be confident that our highest priority assets are well protected. And I would be more than happy to make sure that given your personal interest in this that we have a regular back-and-forth with you to assure you that we are asking the right questions and making the right decisions.

Senator HASSAN. That would be great. Thanks so much.

Thanks, Mr. Chairman.

Chairman TESTER. Senator Rounds.

SENATOR MIKE ROUNDS

Senator ROUNDS. Thank you, Mr. Chairman. Mr. Secretary, first of all, thanks for your service. I recognize that in the middle of a rollout of a major system you find yourself coming in and defending and trying to explain major problems with it. I would like to just have a conversation with you about it.

Secretary MCDONOUGH. Sure.

Senator ROUNDS. Let me lay out the concern and the reason for pushing in this particular direction. The VA OIG has released a report regarding the training deficiencies with the new electronic health record system. Employees who went through the training at the first hospital to use the system were given a test afterward to see whether they had learned to use it proficiently. The data provided to the VA OIG showed that 89 percent of the proficiency checks were passed with a score of 80 percent or higher, in three attempts or less. Now that was in the report.

However, it was later discovered that the employees within the Office of Electronic Health Record Modernization had altered this data. In fact, only 44 percent of proficiency checks were passed with a score of 80 percent or higher in three attempts or less.

Have you been able to determine yet what was the reasoning by the folks within the Office of Electronic Health Record Modernization for altering the data?

Secretary MCDONOUGH. I have not. It is obviously a particular interest of mine, as I have indicated a couple of times, and I know the IG has gone back at it too. So it is a particularly pertinent set of facts I want to get to the bottom of.

Senator ROUNDS. Yes. I think it points out—I recognize that any time you move to a new system you have a learning curve, but part of the learning curve requires integrity in the data results, and I think you agree with that as well. Individuals that mess with that, and intentionally dishonor that responsibility, they make the lives of veterans at risk. And I would hope that you would deal very sternly with that type of activity. And I do not even think I have to ask for your commitment. I am just assuming that would be the case.

Secretary MCDONOUGH. Correct.

Senator ROUNDS. Thank you. Correspondence in the OIG's reports notes an exchange between the OEHRM staff regarding the altered data prior to its submission to the OIG. In the correspondence, a VA change management leader asked the VA Director of Change Management, and this is in quotes, "Do we need to add a bullet discussing the outliers, or let it ride and defend it if they

ask?" In response, the VA Director of Change, the OEHRM Director of Change Management, replied, "I'm good with—," he basically said, "the changes. Thanks."

I am concerned that these employees once again willfully chose to literally not tell the whole thing and to hide the information. I presume you are aware of it——

Secretary MCDONOUGH. I am.

Senator ROUNDS [continuing]. And I presume that that will be part of the review that you are doing——

Secretary MCDONOUGH. Yes.

Senator ROUNDS [continuing]. And that will be dealt with.

Secretary MCDONOUGH. Correct.

Senator ROUNDS. Thank you. And then finally, this system, the Cerner system, this was chosen in part because DoD is also going to use it. And so the idea is the transition should be simpler to move from DoD back into VA's, we are hoping seamlessly. Have you found that it is a near-seamless transition for information, or is it substantially a start-over-again process?

Secretary MCDONOUGH. At the moment, I am told by the clinicians that all the data is available to an individual clinician, data from the DoD data pool, data from the VA data pool, and then data from care in the community. Unfortunately, I am also told that it does not all populate the same screen at the moment, so that the place where—and it is not all apples to apples across those three data pools, which is kind of the point.

One doc told me today, reminded me today, that the place where it is all aggregated is in the clinician's head. We obviously have got to get to a place where that is not the case.

Senator ROUNDS. Absolutely. Look, this is not something that we should be reinventing the wheel on, and I know that when it was first put in the intent was, it was a commercially available product and that it would work, and that other systems were using it as well. If that is found not to be the case, and if this really is to the point where it is not doing what was expected, I presume we will hold them accountable and that we will find either a fix for it or we will count our losses and actually get a system that works.

Secretary MCDONOUGH. Yes. So what I would say, Senator Rounds, is, through this review, I have satisfied myself to the answer of that question, which is I think that the technology is basically sound. And I think, as I have talked with a number of you in different settings, so much of these technology questions, in terms of execution, really end up being governance and management challenges, which is why it is, I think, on me. So I do not think we are going to find an answer that says—I have not yet found and I do not believe I will find an answer that says the technology is wanting.

On this question of the three data pools, we have the best data scientists in the government at VA, and we are going to fix that. And we are a learning organization. The part that is so troubling about the anecdotes that you and I are both focused on, and the IG is focused on, is that VA is, I think, uniquely a learning organization that holds itself to a very high standard on performance, and when there are outliers like that it is particularly noteworthy.

So I guess what I am trying to say is I don't anticipate changing this. I have said that publicly. I say it publicly again now. It is now a question of management and execution, and that is on us.

Senator ROUNDS. Thank you. Thank you for your answers, sir, and, Mr. Chairman, thank you for the time.

Chairman TESTER. Thanks for your questions, and I would just say I agree wholeheartedly. If there are people out there that are intentionally changing metrics within the VA, not only will they be held accountable but the people who oversee their physicians need to be held accountable.

Senator Brown.

SENATOR SHERROD BROWN

Senator BROWN. Thank you, Mr. Chairman, and Mr. Secretary, thank you. I have been on this Committee, beginning my 14th year, I think, 15th year, and I have never seen a VA Secretary as responsive as you. Thank you. Your call last night, and just many things you have done. I know Chairman Tester, who came on the Committee the same day I did, shares those sentiments.

You said that the VA has the best data scientists. I hope that the tax commissioner has equally good data scientists to get the child tax credit checks out today, tomorrow, and monthly.

Secretary MCDONOUGH. I get the impression that there is a lot of attention on that.

Senator BROWN. I think there is, yes. A little less on you, but your day will come, if it has not already, so thank you.

Secretary MCDONOUGH. I am reminded of that.

Senator BROWN. I know we have seen, since 2007, we have seen VA has had several EHR update iterations before deciding to go to Cerner four years ago. We know these projects are challenging. I hear from VA employees in Spokane, your first stop, if you will, and Columbus now, about these challenges.

There are concerns in Columbus that VA facilities lack the proper physical infrastructure, server rooms, cable, HVAC to accommodate the new system. Any thoughts on that?

Secretary MCDONOUGH. Yes. I am worried about that too. The IG laid that out quite clearly for us. I will say that the IG, GAO, your letters, your interactions with us helped undergird the strategic review. I think our review confirms much of that. This is why I think it is really important to go to this readiness deployment posture rather than as against a deployment schedule that is tied geographically to DoD.

That was a mistake, I think, for two reasons. One, we are off-kilter with DoD now anyway, geographically. Two, we are not in a position to kind of adequately prepare for the structural and maintenance requirement, and as a result ended up not being as transparent with you all as we should have been in that process.

So, yes, I am worried about it. Yes, this period between now and when we make a decision about go-live in Columbus will allow us to get to the bottom of those concerns. But we are also going to be doing that across the enterprise, to make some determinations on who is ready, when, based on infrastructure, leadership, and training.

Senator BROWN. Okay. Let me drill a little deeper on Columbus. It is the largest city in my state. It is the home of the Chalmers Wylie facility. It is an ambulatory care facility. You know all this.

Secretary MCDONOUGH. Yes.

Senator BROWN. It is not an inpatient hospital, which means veterans have to rely on local hospitals for inpatient care. Maybe that is one of the reasons Columbus was selected. I am not sure on that.

Walk me through the steps you take to ensure interoperability between Cerner and other hospital EHRs, and based on that review, when do you think that these issues will be resolved and go online?

Secretary MCDONOUGH. So we are in the midst of an aggressive process to get Columbus prepared for deployment, and that has been going on, as you have indicated, now for more than a year. That will continue. We are taking, because of the IG investigation, a particular look at infrastructure and make some determinations about readiness. I also indicated earlier that there are three big questions remaining about the experience in Spokane that I need further clarification on before I agree to go live in Columbus.

Lastly, the interface between any other hospital or private care setting and Cerner is a relatively straightforward process, but we will test all of that before we press go-live in Columbus.

Senator BROWN. Thank you. Mr. Chairman, thank you.

Chairman TESTER. Senator Tillis.

SENATOR THOM TILLIS

Senator TILLIS. Thank you, Mr. Chairman. Secretary McDonough, thank you for being here, and thank you for reaching out to me and meeting with me a week ago Friday. It was good information, a good preview to this meeting. You know, when you and I talked it sounded like the kind of problems that large enterprise systems encounter, and so I would expect the next iteration, your readiness assessment.

And I wanted to just ask a question about that. Are you going to be in a position where you have got one or more facilities that you could implement in, so that if Columbus is not ready you could move to one, if it meets the criteria for your readiness assessment, or does it slip to the right?

Secretary MCDONOUGH. No, I think notionally the answer to that is yes, and one of the things that really appeals to me about this readiness assessment, deployment posture, is it draws on something that I have now witnessed in our Health Operations Center, out of how individual facilities are handling the pandemic.

What is really interesting is there is a daily call at 10 o'clock—medical center directors, VISN directors from all around the country sitting there, comparing performance with one another, which is really good information exchange, but as interestingly, it is a pretty competitive group. And if we have a scenario where inside this now increasingly integrated system there is competition for readiness, because our clinicians do, as Senator Boozman suggested, see great promise in the technology. If they are competing on that basis, I think that is a good thing for the vet, at the end of the day.

Senator TILLIS. And so part of the readiness assessment is also the use and proficiency with the same boxes you are creating?

Secretary MCDONOUGH. Correct. Correct.

Senator TILLIS. Good. I wanted to go back to the inspector general's report, particularly with respect to questions that Senator Murray and Senator Rounds asked. You know, a cynical view could be that you had people in the process that were doctoring the records and inflating the preparation, the readiness for implementation up in the Northwest VISN. But to what extent could some of these failures have just been systematic? I mean, to what extent are we talking about somebody who did not do their job, knew what it was, and to what extent could there have been process errors that led to some of the misreporting of information?

Secretary MCDONOUGH. As a general matter, I think that the people who have been carrying out this effort are unbelievably earnest, doing it in a very difficult scenario, and with a very vet-first focus. So I start from the proposition that I think that, whether it is a systemic or a process reason for this, that is where I start. But the enormity of that concept is such, as now several of you have suggested, that I want to get to the bottom of it and answer that question.

Senator TILLIS. Yes, that is why I wanted to ask it. I mean, you may have somebody who acted irresponsibly, but in my experience with reviewing test problem reports and readiness assessments when I was doing things of the scale that you are talking about doing in the private sector, you can find a lot of that is a culmination of process faults, which is why I would not want the people who are out there working today, getting ready for the next deployment, to think that this is some sort of a witch hunt for bad actors. My guess is you are going to find maybe a modicum of bad actors, but probably some processes that need to be tightened up, and I look forward to seeing more reports on that.

The implementation, the longer-term full implementation, how far is it shifting to the right from the last deployment to a VISN?

Secretary MCDONOUGH. I do not have an answer to that question yet.

Senator TILLIS. Do you have to make up for lost time, or do you think there will be slippage?

Secretary MCDONOUGH. You know, I want to be careful to not overpromise there. But, you know, there is a logic to it. But I guess before I am kind of getting over my ski tips here I want to make sure that we can dig into the readiness stuff, to make that determination.

Senator TILLIS. I know it is kind of hard when you are dealing with the first iteration and you have got a lot of other VISNs to implement, but one of the things when you all were going through the Cerner decision, Epic, I think there were a few other platforms that the Department was sorting through, we also recognized this is—I mean, this is Rev 1, and Rev 2, I think, gets into some of the more exciting things where you fill the white space and you have bolt-ons, you have other things that add value to the clinicians and to the veterans and to men and women transitioning from active status or reserve guard status into veteran status. Are you all al-

ready thinking about what Version 2 in the Northwest looks like, what the next gen?

Secretary MCDONOUGH. I think most importantly the clinicians are thinking that through, to be honest with you. I can think of a lot of things, but I guarantee you that I would not be a great value-add in that exercise. But what I do know is, you know, I spent time this afternoon with the VISN directors on this. I see them thinking this through, and I see our clinicians thinking through the possibilities here, and I think that is the exciting part of this.

Senator TILLIS. I think, you know, if you are going to drive up adoption and have more people embrace it, if they see that vision for what you can build on with this platform you are probably going to find a success of VISNs' implementations easier to do.

I have got other questions. I am not going to ask them except for one. How did you do on the opening pitch?

Secretary MCDONOUGH. The announcer said it was a strike.

Senator TILLIS. Okay. He had an opening pitch that Friday afternoon at a ballpark in Charlotte. Thank you.

Chairman TESTER. I assume it was an off-speed pitch.

[Laughter.]

Chairman TESTER. Senator Blackburn.

Secretary MCDONOUGH. It was fast for me.

SENATOR MARSHA BLACKBURN

Senator BLACKBURN. Thank you, Mr. Chairman, and Mr. Secretary, thank you for being here today. The OIG reports have pointed out the VA's continued misrepresentations to Congress, and you have got the cost estimates, the employee training, things that we have discussed here already in this hearing. And, of course, we all want to get us moving toward an electronic health record that would be seamless from the day someone enlists until the last day of their life, there at the VA.

But let me ask you this. With the inadequacies that have been pointed out, has anybody been removed from their position because of the findings that we have?

Secretary MCDONOUGH. No.

Senator BLACKBURN. No one?

Secretary MCDONOUGH. Not yet, no.

Senator BLACKBURN. And why has that not happened, if you have trouble with the talent pool and the training to stand this up? Why are we not viewing that?

Secretary MCDONOUGH. Well, look. I find, as I have said, that, you know, any suggestion of withholding information to an IG or not being fully candid with Congress, I consider to be uniquely important developments, so I am getting to the bottom of those, and I know the IG is also—you will hear from the IG yourselves, but I am told that they are following this up directly themselves. And if I have confirmation of that, yes, there would be consequences.

Senator BLACKBURN. So we can expect accountability to be forthcoming.

Secretary MCDONOUGH. Yes, and I am here because I expect you will hold me accountable.

Senator BLACKBURN. All right. Let me ask you this. The overview, the report you have submitted to us is an overview but not a comprehensive strategic review. Correct?

Secretary MCDONOUGH. Well, there are a lot of different parts of documents. There are a lot of different documents that we have generated here. But we have provided you with our lessons learned, and will obviously, as I have indicated earlier, be talked through some of our management changes in the coming weeks.

Senator BLACKBURN. All right. So when should we expect that fuller review?

Secretary MCDONOUGH. Well, the questions about how we are going to structure, govern, and manage the program will be coming as soon as Donald is confirmed and we have a chance to sit down with him to talk those through. I think I owe that to him, since he is statutorily, if confirmed by you all, in charge of this. And so I want to talk with him and then we will come talk to you guys.

Senator BLACKBURN. And then talking to Senator Boozman you made a comment, "if costs change," talking about the system, but the OIG had already tagged $5 billion in overruns. So you are anticipating additional cost? Is that what I am to infer from that?

Secretary MCDONOUGH. No. You may have inferred something I did not imply. The IG cited a series of technology upgrades that are necessary at facilities and maintenance upgrades necessary at facilities. We, as part of our readiness deployment schedule, will be looking at that across the system. I think it is very fair point that the IG asked, have raised. And, in fact, it helped inform the decision we made to go with this readiness standard.

So as it relates to the question that Senator Boozman asked, I think he was asking specifically about the EHR programmatic money, and our view is that that money—my view is that that money has been executed this year. We just got the last quarter from the Treasury, based on the Appropriations Committee reaction, and we are not changing next year's request either. We think that request is correct.

Senator BLACKBURN. You think that is ample.

Secretary MCDONOUGH. I do, yes.

Senator BLACKBURN. Okay. All right. Now let me ask you, if Cerner is not able to meet your quality standards or metrics—we have talked a couple of times in this hearing about metrics changing. So if they are not able to meet your quality standards then what is your Plan B?

Secretary MCDONOUGH. Well, we took a real hard look at that, at the technology. I have no reason—I have, you know, publicly that we think that the technology is sound, that the remaining challenges, there are technological challenges for us to fix, including these data questions we have just discussed. But really what we face here are management and structural changes, governance changes, and those are on me.

Senator BLACKBURN. Okay. Thank you, Mr. Chairman.

Chairman TESTER. Senator Tuberville.

SENATOR TOMMY TUBERVILLE

Senator TUBERVILLE. Thank you, Mr. Chairman. Thank you, Mr. Secretary, for being here today.

Secretary MCDONOUGH. Hello, Coach.

Senator TUBERVILLE. Thank you for visiting Alabama. I hope your trip went well.

Secretary MCDONOUGH. It was great.

Senator TUBERVILLE. Yes. And I will say this, after being here for five months I get more calls about VA, but I know it is not your fault, to this point—we are not going to blame you to this point. But your situation kind of reminds me of me taking over a football program when I did not have a quarterback and offensive line, and everybody wondered why, you know. It was not my fault but somebody else. But thank you for being here to answer these questions.

I have just got one question here for you. You mentioned the governance and management changes to the EHRM program.

Secretary MCDONOUGH. Yes.

Senator TUBERVILLE. I am concerned about, you know, who is leading the governance and the management of your digital modernization. You know, the medical logistics system, FMBT, the financial accounting systems, all these systems have to work together. You know, there are three legs. How are you going to ensure that, you know, we do not get set aside—these two do not get set aside from the EHRM?

Secretary MCDONOUGH. Yes, so a very fair question. You know, we are undergoing really three fundamental technological upgrades in the building right now—the electronic health record, the business management system, as you suggested, and then our supply chain management. And so each of those is a big piece of action. Each of them touches the other, and so continue to be a major priority for the management team, led by me and the Deputy Secretary. And it will be a major question for the CIO, the chief information officer. That is a vacant position that we are in the process of filling. So that person will be before you hopefully in the coming months.

Senator TUBERVILLE. Thank you. Thank you, Mr. Chairman.

Chairman TESTER. That is it?

Senator TUBERVILLE. Thank you, Mr. Secretary. That is it.

Chairman TESTER. That is it? And we all know that you always had quarterbacks, running backs, whiteouts, a sublime offensive line. There is no reason you should not have won a national championship every year.

Senator TUBERVILLE. You go into a game, you better have—you can miss everything else but you better have a defense.

Chairman TESTER. That is fact.

Senator TUBERVILLE. You better have a defense. Thank you.

Chairman TESTER. Spoken from a true pro.

Okay, Mr. Secretary, once again thanks for being here.

Secretary MCDONOUGH. Thank you.

Chairman TESTER. As I said in my opening statement, recent IG reports show that there are several categories of costs that the VA has not been reporting to Congress related to this EHRM program. And, by the way, those reports are required by law. I do not need to tell you this is not acceptable. From the IG's work, we know that the program is, or likely will be at least $5 billion over budget, as has already been pointed out, when the VA infrastructure and

other IT costs are included. That will likely push this program to more than $21 billion.

I know that you mentioned cost analysis in your testimony, but let me ask you directly. Can I get your commitment that the VA will provide this Committee all projected costs——

Secretary MCDONOUGH. Yes.

Chairman TESTER [continuing]. For the remainder of the EHR project, as well as costs already incurred since the program started?

Secretary MCDONOUGH. Yes.

Chairman TESTER. That is good. So going back to 2017, quite honestly, the VA has not been candid with Congress. I know you are committed to transparency, and I hope that you affirm that commitment, and you already have.

Will you provide the Committee with the following documents, most of which we already have requested but we have yet to have provided to us. They include the complete Institute for Defense Analyses, the IDA, review of the EHR program?

Secretary MCDONOUGH. Yes.

Chairman TESTER. Okay. The Deloitte review of the program?

Secretary MCDONOUGH. Yes.

Chairman TESTER. Any additional reviews of the program done by third parties, including consultants?

Secretary MCDONOUGH. Yes. I am not sure what those are, but yes.

Chairman TESTER. Okay. And VA's action plan in response to those reports.

Secretary MCDONOUGH. Yes.

Chairman TESTER. So I said in my opening statement about how long we have been working on this, and to be honest with you, you are a guy from Minnesota, great dairy industry, and I have had the impression for some time that there are folks out there that are milking the cow. And every day they go out and they see this is a cash cow, and they are getting every dime they can get out of it, and there has been damn little accountability. And, quite frankly, these folks are in this business, okay. We all have our own areas of expertise.

And I would just tell you—and I hope Cerner is watching this—if Cerner is not up to making a user-friendly electronic health medical record, and, in fact, what is transferred here is we are going in the opposite direction, then they ought to admit it and give us the money back so we can start over. And I would just say that this is really important.

What was it, 2001, I think, we started working on electronic health records, 20 years ago, and we are still not where we need to be. This is not all your fault. I do not know if any of it is your fault, yet. But the truth of the matter is that we have not gotten to where we need to go. There have been many administrations between 2001 and today, and none of them have gotten the job done.

And so I would appreciate it, number one, and you have already committed to it, that we get the reports that we are entitled to lawfully and that you are as transparent as possible, and that if this turns into be just another pile of you-know-what, that you let us know.

Secretary MCDONOUGH. Yes. There is no sense managing the status quo on this. There is just zero sense of that.

Chairman TESTER. That is all I have got. Do you have any final statement you want to make before we bring up the second panel?

Secretary MCDONOUGH. No. I just want to underscore the fact that all the questions you asked is a lot of money the taxpayers and you all have entrusted with us is why our partnership with you is so important, why our partnership with the IG, GAO, you as overseers is so important. And if there is any sense that we are not being transparent on that then I hope that you will let us know. And that is bug, that is not design. We will make sure that we are being—we need your help on this.

Chairman TESTER. We are here to help. We all want to see this be successful. We think this could improve the work that the VA does and the experience that the veteran has. We think it is really important. And, by the way, we have not even gotten into the point that if VA is able to do this right it is a game-changer for medicine.

Secretary MCDONOUGH. Hear, hear.

Chairman TESTER. So thank you for being here today, and we will move on to the next panel. I appreciate it. Good luck.

Secretary MCDONOUGH. Thank you, Mr. Chairman.

Chairman TESTER. You bet.

Now as we have concluded our first panel—and thank you again, Secretary McDonough—I want to hear from two independent experts on electronic health records.

First I want to introduce David Case, Deputy Inspector General for the VA's Office of Inspector General, who will discuss oversight efforts related to VA's EHRM. I would also like to commend the IG and the entire staff there for their tireless work examining these issues. They released two EHRM oversight reports just last week, which is very timely for this hearing.

Next I would like to introduce Marc Probst, Chief Innovation Officer at Ellkay. He is an outside expert from health IT world who has actually been through an EHR deployment, so I am interested to hear his advice for the VA.

Fellas, thanks for being here. We will start with you, Mr. Case. You have the floor. You each will have five minutes, and your entire written testimony will be a part of the record.

Go ahead, David.

PANEL II

STATEMENT OF DAVID T. CASE

Mr. CASE. Thank you, Chairman Tester, Ranking Member Moran, and Committee members. Thank you for the opportunity to discuss the Office of Inspector General's oversight of VA's Electronic Health Record Modernization Program.

First, we want to applaud the VA employees working hard at the Mann-Grandstaff VA Medical Center and across VA to ensure veterans receive timely, high-quality health care during the EHR transition, particularly during the pandemic.

Since April 2020, we have issued five reports, primarily focused on planning, system training, and other deployment activities at Mann-Grandstaff. They are meant to help VA leaders improve future deployments. While VA has implemented some of our recommendations from 2020, there is much work remaining. We, like other stakeholders, look forward to the strategic review's results as VA seeks to improve the program.

VA needs to spend billions of dollars on physical and IT-related infrastructure upgrades. The OIG conducted two audits of cost estimates for the infrastructure upgrades. These audits followed our April 2020 report that found VA did not meet its own deadline for infrastructure upgrades at Mann-Grandstaff.

We found the cost estimates were unreliable. They were not comprehensive, not well documented, inaccurate, and not credible. We also found that VA did not report accurate and complete information to Congress in nine congressional reports to date. OEHRM did not report the estimated $2.7 billion for physical infrastructure upgrades and the estimated $2.5 billion for IT infrastructure upgrades, because they believed the upgrades were outside their responsibility, despite VA and GAO guidance requiring lifecycle cost estimates to include all costs, regardless of funding source. That said, we did observe some improvements in IT infrastructure cost estimates.

Last week, we published a health care inspection of the development and delivery of training content to users of the new EHR and the assessment of post-training staff proficiency. We found decision-making did not appropriately engage the VHA staff who will use the system. VA's training program was structured to benefit from the lessons learned after DoD encountered problems with staff training during its initial deployment of the Cerner system. Nevertheless, we found VA suffered many of the same problems.

Training on these new workflows educates the staff on how they fit into the overall delivery of care, but we found that training content was inadequate. We also found the training delivery to be problematic, with issues concerning the time for training, the training domain, the assignment of user roles, and training support.

Finally, VA failed to effectively evaluate its training. When we asked OEHRM to provide training evaluation data, VA initially told us, quote, "Eighty-nine percent of proficiency checks were passed with a score of 80 percent or higher, in three attempts or less," end quote. However, we found an earlier version, drafted by OEHRM staff, showing only, quote, "Forty-four percent of proficiency checks were passed with a score of 80 percent or higher, in three attempts or less," end quote. The OIG concluded the data was removed and altered prior to submission. We are reviewing the issue more thoroughly after informing VA leaders.

Two themes emerge from these reports. First, a need for a governance structure that meaningfully engages all components of VA in a modernization program on a sustained basis. Second, there is a need for better transparency, including between VA's components.

The OIG will continue oversight and has several additional projects ongoing. We are working with the DOD OIG to review the extent to which the new system will achieve interoperability among

departments and community health care providers. We have started a review of the national deployment schedule, and we are reviewing patient care issues and pharmacy operations at Mann-Grandstaff.

Chairman Tester, this concludes my statement. I would be happy to answer any questions you or other Committee members may have.

[The prepared statement of Mr. Case appears on page 44 of the Appendix.]

Chairman TESTER. I appreciate your testimony, Mr. Case. Mr. Probst, you have the floor.

STATEMENT OF MARC PROBST

Mr. PROBST. Thank you and good afternoon, Chairman Tester and members of the Committee. As stated, I am Marc Probst, and I am the Chief Innovation Officer of Ellkay, a health care technology services organization. But likely more relevant to this, I recently retired as the Chief Information Officer of Intermountain Healthcare in Salt Lake City, Utah, where I served for 17 years.

For over 35 years, I have been involved with electronic health record systems. Never have I witnessed a simple implementation of an EHR. My goal today is to share some of the lessons I learned in my career with EHRs and health IT that may be of use to the Committee and to the VA.

For decades, Intermountain Healthcare, where I spent a significant part of my career, relied on internally developed information systems. As these systems aged, we made several attempts to modernize and replace them. After several years, these efforts were stopped, and Intermountain began a process to select and implement a commercial, off-the-shelf EHR solution. Eventually, Intermountain selected the Cerner suite of applications.

Initially, the Cerner project was heavily focused on enhancing and modifying the Cerner solutions to meet the unique needs of Intermountain. In 2018, Intermountain and Cerner executives refocused the EHR implementations projects toward better use of the proven and existing functionality in Cerner. The overall approach changed from, "making the system do whatever the end users wanted," to "how can we best meet the needs of end users with the least modification to the Cerner system."

With the new approach, and under the committed leadership of both organizations, the Cerner set of solutions were successfully implemented, but it was by no means easy. It took a lot of work and time.

From my experience, I have observed several keys that increased the likelihood of success in a major initiative such as this. Number one, you need a strategy for the project. Stephen Covey's second Habit states, "Begin With the End in Mind." The early EHR efforts at Intermountain began with the goal of building the EHR of the future, which is an aspiration, not a strategy. However, we achieved success when we defined a strategy based on actual operational needs, with technology supporting those operational needs. Too many times the strategy is "implement an EHR" versus "im-

proving care and making processes more efficient through the implementation of an EHR."

Number two, accurately understand the current environment. Sir Terence Pratchett, an English author, wrote, "If you do not know where you come from, then you don't know where you are, and if you don't know where you are, then you don't know where you're going. And if you don't know where you're going, you're probably going wrong."

Too many times in a technology implementation such as an EHR the true current state, problems trying to be resolved, are not well understood. In these cases, time, energy, and resources are spent either explaining the misunderstanding or worse, pursuing solutions to a problem that does not really exist.

For example, I have heard a number of times that the way to move medical records in the DoD and VA EHR systems today is manual, through paper charts or flash drives. However, from what I understand, the electronic transfer of records between these systems has been automated for years between VA and DoD. The two organizations transfer medical data electronically today. Significant time is wasted if we do not clearly understand our current environment and the real problems trying to be solved.

Number three, realistic user expectations and detailed requirements. The old saying "measure twice, cut once" is sage advice in implementing EHRs. When my wife and I built our home, we had ideas for what we wanted and how it should look. Like many couples, our ideas did not always match. It took as much time working with the architect on defining our requirements as it took to build the home. Many times the architect would have to manage our expectations, citing the realities of engineering and the cost of what we wanted. However, before the first brick was laid it was clear what we were building.

An EHR must meet expectations of thousands of people. Documenting the requirements to meet these diverse expectations is arduous and time consuming. However, understanding the expectations of users becomes a foundation for either meeting those expectations or for managing them when engineering and cost realities arise.

Number four, a team of qualified, experienced professionals. This almost seems too obvious of a point to even include. However, I cannot overemphasize the importance of relevant experience in successfully implementing an EHR. I doubt many of us would like to fly in a commercial airliner that has been designed and built by car mechanics. Success is much more likely if project leadership has experienced EHR implementations, hopefully several, and has team members who understand the technology and the operational workflows of the medical workforce being automated.

Five, synergy is real. It takes a large team to implement an EHR, and the team is many times composed of multiple organizations. It takes a team, a partnership. It is my experience that partnerships do not happen just because there is a contract. Partnerships are made when incentives are aligned, when leadership demands cooperation, and when all parties involved understand that the project success is the only path to individual success.

Thank you for the opportunity to share my thoughts on successful EHR implementations, and I am happy to answer any questions.

[The prepared statement of Mr. Probst appears on page 67 of the Appendix.]

Chairman TESTER. I appreciate your testimony. Thank you.

Mr. Case, to start out with, you had said that the cost estimates were unreliable. I assume those are cost estimates that the VA had made, or are these cost estimates that came from Cerner, or where did they come from?

Mr. CASE. Yes. Looking at the cost estimates, we break them out between physical infrastructure cost estimates. Those were done by VHA. And if you look at the IT cost infrastructure estimates, those were prepared by OEHRM. And the ones that we have called out in our reports would be funded, though, by VHA and OIT. So, they were VA-prepared cost estimates.

Chairman TESTER. Okay. And when was the last cost estimate you got?

Mr. CASE. The last one we have seen on physical infrastructure was a draft that was dated June of 2020, and I think it needs to be worked to finalized, at least last time we reviewed. And the same on IT cost infrastructure.

Chairman TESTER. Okay. So I am sure you did—did you do an analysis of the rollout in October 2020?

Mr. CASE. So, the three reports we have published, really, the one that does the analysis is focused on training, and that was a window that allowed us to go in and look at several aspects of the rollout. But in our view training illuminated a lot of the issues.

Chairman TESTER. And so going off to Senator Rounds questions, were you the one that found out that stuff had been changed on testing?

Mr. CASE. Not me, personally, but an OIG team did.

Chairman TESTER. So OIG team did?

Mr. CASE. Yes.

Chairman TESTER. Do you have the ability to tell me whether you think that was done because people intentionally did it?

Mr. CASE. We have not addressed motive yet. We felt it was important to identify the issue, the change, and our Office of Special Reviews is now undertaking an in-depth review of that particular incident and the information we got in terms of the rollout.

Chairman TESTER. So what do you think the biggest training deficiency that the VA needs to address is?

Mr. CASE. There are really three, to make it short. One is the training content. It needs to address the workflow changes as part of the training. The second would be the training presentation, which needs more time, and a better training domain. They need better people assisting in training. And the third is they need better evaluation of the training once it is out there. Is it effective? How is it working?

Chairman TESTER. Mr. Probst, thank you for being here today. You oversaw an electronic health record. If it is a health care facility in Salt Lake it is probably a pretty good size, right?

Mr. PROBST. Yes. We had 23 hospitals. We are about a $10 billion operation.

Chairman TESTER. Okay. I mean, that is significant. That is a pretty big outfit in my book. Do you think it is possible for the VA to implement electronic health records, based on what your experience is with those 23 hospitals?

Mr. PROBST. Yes, I absolutely believe that is possible.

Chairman TESTER. And you started out by talking about a number of things—accountability, understanding your environment, a strategy for getting to the end in mind. I do not know how much you know about the VA EHR. You obviously know a fair amount about Cerner, if that is the one that you implemented. But just based on what you know or what you think is correct, what is the issue here? Because, man, I tell you what, we have pumped a lot of money into this bad boy.

Mr. PROBST. So I think the issue—well, it is presumptuous of me, but let me tell you what happened——

Chairman TESTER. That is all right. We like a little presumption.

Mr. PROBST. Yes, well, let me tell you what happened to me. I inherited a project in 2018, that was going tremendously south, and it was the Cerner implementation. And the challenge of it was we hadn't well managed the expectations of the end users, that whole part about defining what the requirements are. So we could never manage those expectations, because they had never been set. And I think that was a key challenge to what we were doing. And from what I understand around the VA implementation, the expectations, the requirements were never done to the level they would need to be done to manage those expectations.

Chairman TESTER. So as you look back on your implementation—and I am going to turn it over to Senator Moran here in a second—but as you look back on your implementation, after it was implemented was it a system that was easier for your employees to utilize and easier for the patients to understand, or was it more difficult?

Mr. PROBST. It absolutely was more difficult, because it did more. So I told you we self-developed our own applications at Intermountain. That took 40 years of development. So these systems were very much modified to the specific needs of individuals and individual departments and individual clinical areas. So when we went to a more standardized system, like Cerner, it required a lot of people to meet us halfway. And that goes back, again, to managing those expectations. You cannot just bring the system to the people and say you are going to do everything they want. There is a give and take. They have got to come to the system as well, and that takes time.

But it was more difficult, and it continues to be more difficult, and to think that every user at Intermountain is happy with the Cerner system, that would be impossible to say. But overall has it been successful? Yes.

Chairman TESTER. So how did you measure success?

Mr. PROBST. We measured success by the number of functions we were able to automate, the standardization we were able to bring across the organization, our ability to better secure the system, be-

cause we did not have so many applications, and overall the use, the ability to automate new functions that we never had before.

Chairman TESTER. Okay. Thank you. Senator Moran.

Senator MORAN. Mr. Probst, thank you for being here. In the circumstance that we are in now, you read or heard, and heard today's testimony where the VA is in its implementation. What should Congress expect from the VA as we try to provide oversight? What should we hear from them six months from now, or three months from now, or a year from now? What should our benchmarks be?

Mr. PROBST. Well, if you do not have a clear vision of what this is going to do, the benefits that you are going to get from it, I would hope that those are well defined, so that you understand the goal, right? What is at the end of the project.

I think you are going to need to see reductions in the number of complaints, or tickets that come through. You know, hopefully, over time, you are going to see that, but you are going to see them pretty heavy up front. In every implementation you are going to see that.

I would like to see, or if I were in your seat, I would like to see real milestones, and are they hitting those milestones, and if they are not, why are they adjusting, because it is very common in these implementations for those milestones to change. But you need to have rationale for why that is happening, so that everyone is aligned with what we are doing.

I would like to see a real partnership develop with each of the parties involved, and that includes the VA, Cerner, and anyone else that is involved in the project, and see that they are well aligned and that that partnership, that synergy is happening.

Senator MORAN. Are there a couple of things—and, you know, it is never easy to boil things down to one or two things, but it is useful as you try to wrap your mind around this big project—are there a couple of things that stand out to you that you would insist on, encourage now, beyond what you have already said?

Mr. PROBST. If I were involved I would want to go back and start to manage those expectations. So even though the requirements were not developed at the beginning, it is not too late to go back and define what those requirements are. So I would love to see that put in place, because that allows everything else to be managed. That would be one.

I would like to see the milestones and the detailed project work plan and the goals that we are trying to achieve.

Senator MORAN. Thank you very much. Mr. Case, your reports mention what costs may actually be as compared to the reported costs. Could you tell me what you are meaning there?

Mr. CASE. Yes, Senator. The reported costs included $10 billion contract cost and $6 billion for IT infrastructure upgrades and for project management. What is missing in the reports to Congress is $2.7 billion in physical infrastructure costs. Now, we have not a lot of confidence—that is not a reliable estimate—but let's just use $2.7 billion. What is also missing in that number is roughly $2.5 billion in IT infrastructure upgrades, which will be funded by OIT and VHA. So that gives you a rough missing number of over $5 billion.

Senator MORAN. Is there a good explanation for why those costs were not reported? Are they so unique or different that someone would not understand they should be included in that report?

Mr. CASE. So VA provided their rationale to us, which was that the costs that were not reported were coming out of different funding sources. It was a VHA funding source, and a VHA and OIT funding source, not the OEHRM funding. We did not find that rationale persuasive. We thought the legislation was clear, from 2018. We think the requirements of a life cycle cost estimate are clear, which is that it is all costs, regardless of funding source. And we also thought it was clear that those costs were necessary to a successful implementation of EHR.

Senator MORAN. Was there some advantage that could be obtained by understating those costs?

Mr. CASE. Not that I am aware. Transparency usually has no disadvantage to it.

Senator MORAN. Well said. Leadership vacancies and changes in personnel impact governance and the follow-on ability to close out the recommendations. My question is, are those problems that exist here in the follow-on?

Mr. CASE. Well, it remains to be seen in the sense of what will happen in the follow-on. We want to see the results of the strategic review that is happening. But we know there has been some consistent leadership at Mann-Grandstaff. We know that the Secretary has undertaken the strategic review to try to get in place a management team that will work together across all components of VA and also, I think importantly, there is going to be transparency across all components of the VA—VHA, OEHRM, OIT, they all need to be transparent as to what is going on.

Senator MORAN. Should we, should you be satisfied with the VA's response to date, and is their response in any way different than a response to other reports in the past?

Mr. CASE. Well, I think the VA has concurred with all our recommendations. We have made 38 recommendations. Some have been implemented. Some they are in the process of developing plans and implementing, and we monitor that on a 90-day basis. And, we have other projects underway already where we are going to be able to look, in part, at how are they doing in implementing our recommendations to date.

Senator MORAN. You are the second inspector general I have spent time with today. Mr. Horowitz was with us on our investigation into the U.S. Olympics amateur athletes and sexual abuse, which report was issued today. I value the work of an inspector general, and I thank you for your testimony and that work.

Mr. CASE. Thank you, Senator, and it is really the teams that did the work here. They deserve all the credit.

Senator TOOMEY. I echo the Ranking Member's comments, as usual. We appreciate the IG and the work you guys do, and appreciate your eyeballs on the agency, which basically we utilize. So thank you very much.

I have one more question. It is for Mr. Probst. In your written testimony you said it was very important to have an experienced team running the EHR project. I agree. You said, and I quote, "I can't emphasize the importance of relevant, experience in success-

fully implementing an EHR. I doubt many of us would like to fly in a commercial airliner that has been designed and built by car mechanics"—nothing against car mechanics, but you are right.

Mr. Probst, can you talk to us a little bit more about what type of skills, qualifications your teams had when you were involved in these projects in the private sector, not just technical but leadership skills? And if you can think back to when the project was going south, what kind of people were you looking for to make it go north, assuming north is a good thing?

Mr. PROBST. Yes. I mean, beyond the specific skills that were required, it started at the top. I had a CEO that was my partner in doing this, and he worked with us. We brought in the CEO of Cerner, and we worked out the plan on how we were going to successfully implement the product.

Now the team itself, we needed people that had implemented electronic health records. These are extremely complex systems. If you think about it, we are automating every function in a health care delivery system. That is hundreds, if not thousands, of functions. So we needed people that were experienced not just in those individual functions but how those individual functions related to each other and processed with each other.

We also needed doctors where we were doing work for doctors. We need technology people that understood physicians and how physicians did their business. Those are physicians, nurses, respiratory therapists, pharmacists. Think about it. For an organization my size, which is a fraction of what the VA is, we had hundreds of people that were relevant in their clinical areas, supporting the implementation of the product. We needed technical expertise because of all the infrastructure problems that we had, that I am sure the VA had. We had people that needed to understand data and data integration. We needed data scientists.

So not just relevant expertise, but relevant experience in doing this, because the problems happen immediately, and we can either go to committee and figure out how we are going to solve the problem or we can have people there that have been through it and understand what to do in those situations. That is what I wanted on my team.

Chairman TESTER. So I would imagine with 23 hospitals you have got a fair number of employees.

Mr. PROBST. We had about 40,000 employees.

Chairman TESTER. And those 40,000 employees, I would imagine, most if not all of them deal with electronic health records. Maybe not your custodial staff, but probably everybody else.

Mr. PROBST. Most everyone but the administrators, yes.

Chairman TESTER. And so if you were going to do an assessment today as to how many people of those 40,000 actually liked this medical record, what would that percentage be?

Mr. PROBST. Wow. Like it—under 50 percent. Tolerate it, will use it, are finding advantage in it—80, 90 percent.

Chairman TESTER. Okay. Wow, that is helpful. Thank you. Go ahead, Senator Moran.

Senator MORAN. You are not done.

Chairman TESTER. I am never done, but I will yield to the honorable Senator from Kansas.

Senator MORAN. Well, it is a follow-up to your question to Mr. Probst. Mr. Case, you heard the description of who is necessary to make this work. Is there anyone at the VA that has that EHR roll-out experience that is involved in this process?

Mr. CASE. There are people at VA that have experience in various aspects of EHR. I do not think there is probably one person or one set of people, and the Secretary referenced this. This is going to require an all-hands effort across VHA, OEHRM, particularly the data scientists who are going to have to deal with the new data streams that Cerner provides, as opposed to the old VistA system. And for a long time VA is going to have to have both data streams and be able to use them both.

So there are people. Whether there is a sufficient number of people, whether they can be best augmented by working with Cerner and subcontractors, that is something I think the strategic plan will have to address.

Senator MORAN. Thank you both.

Chairman TESTER. So to give Senator Cassidy due deference, I am going to hold—oh, there he is right there. You are on this side, Senator. You are right there.

So when the good Senator from Louisiana gets squared away here, you are up to bat, Doctor.

SENATOR BILL CASSIDY

Senator CASSIDY. Folks, if you have answered these questions, because I have been a little bit like Lord Voldemort today, split into six different places, trying to do six different things.

Mr. Case, according to an OIG report on the EHRM training deficit in Spokane, quote, "Facility staff reported an absence of workflow training content—"

Chairman TESTER. You might need your mic on.

Senator CASSIDY. "Facility staff reported an absence of workflow training content and associated reference materials that prevented them from not only understanding how to apply what little they had learned to their daily work but also prevented a basic understanding of the meaning behind the workflow processes."

Well, you know, I am doc. I have been in hospitals where you sit there for an hour and a half, have a training seminar, and you walk out and you go to where you are supposed to be, and you have no clue how to apply it. You are just given a whole chunk of material—now go use it. Very impractical.

So I guess, you know, a couple of questions. You know, didn't somebody think that through? You do not just like load them up. I will start with that one.

Mr. CASE. Yes. It was not thought through adequately. I think the new EHR fundamentally changes how every clinician is going to do their work at VA. Just to use an example, if there is going to be a prescription renewal, how it is communicated to VA by the veteran has changed, how it is communicated to the doctor has changed, how the doctor is going to enter in his or her findings and communicate that prescription to the pharmacy, and how it is going to be delivered has changed.

And so it is that workflow, and how the new electronic health care systems goes into that workflow, is what needs to be addressed. It has not been addressed adequately.

Senator CASSIDY. So then it suggests to me that it is not intuitive.

Mr. CASE. That is the feedback I have heard from our clinicians.

Senator CASSIDY. So then let me ask, were the clinicians involved in the development of the workflow process?

Mr. CASE. Yes, initially they were. There were teams that were put together, amongst the clinicians——

Senator CASSIDY. Now, Mr. Case, let me ask you. There is a key word modifier you used there—initially.

[Laughter.]

Mr. CASE. Yes.

Senator CASSIDY. Were they initially, and then subsequently, and subsequent to the subsequent, et cetera, et cetera, et cetera?

Mr. CASE. You picked up on a deliberate modifier. Yes, they were involved in the design of the workflows, but they were notably not involved in the design of the training and how to present the training to the clinicians at Mann-Grandstaff.

Senator CASSIDY. Okay. That is frustrating, as you might guess, because I have found the EHRs—and my physician colleagues verify that it is not just my anecdotal experience—is a real time killer. That is a real time killer. And so productivity is just squashed by that.

So let me ask, I think under the original law there is supposed to be a quarterly program update on the annual cost, which stated that the life cycle cost estimate should be regularly updated. It does not seem as if that has occurred.

Mr. CASE. That is correct, Senator. It has been understated by roughly $5 billion.

Senator CASSIDY. So is anybody being held accountable for this? Who was responsible, and to what degree is the taxpayer being reassured that the person responsible is being held accountable?

Mr. CASE. The decision on how to hold people responsible lies with the Secretary. I think the Secretary will want to investigate the facts and potential motives involved in this before the Secretary decides, but that is uniquely within his purview. VA did provide a rationale for what they did, or failed to do, but we did not find it persuasive.

Senator CASSIDY. Do we know the individuals who are responsible?

Mr. CASE. We have not identified those individuals for the actual decision not to disclose those. We have heard their rationale and the fact it has not been disclosed.

Senator CASSIDY. Now it seems almost unfathomable that you would not know who the decision-maker was.

Mr. CASE. Well, I think that is part of the issue with the overall management of EHRM, to a degree, is decision-making can be opaque. And we have started an investigation that is separate, that goes into issues of candor and potential manipulation of information, both toward the IG and toward Congress. And as part of that, I think we can try to narrow down the individuals.

Senator CASSIDY. So really then we are talking about even a broader issue than incompetence. It also includes mendacity, if you will.

Mr. CASE. I cannot say that yet, Senator. We have not delved into motive or reached a conclusion as to motive, but all possibilities are open.

Senator CASSIDY. And then I will finish by this, knowing we are almost out of time, and I thank you all for allowing me to be the last. DoD obviously had some problems. Were there any lessons learned from the DoD experience with the EHR, number one. And number two, is the desire to have interoperability, to what degree did that complicate issues?

Mr. CASE. Yes. So there were DoD lessons learned, particularly with their initial rollout.

Senator CASSIDY. There were?

Mr. CASE. Yes, in the Pacific Northwest, and they included the problems with training, insufficient computer-based training, lack of clear role definitions, lack of support, and others, and a lack of content. And those lessons appear not to have been embraced by VA when they did their own training and rollout at Mann-Grandstaff. Some of the same issues have occurred again.

So there are lessons to be learned. There are probably further lessons to be learned, but those lessons have to be attended to and really addressed as VA proceeds on its way forward.

Senator CASSIDY. Can I have one more question?

Chairman TESTER. You bet.

Senator CASSIDY. Now I do not quite understand what I am about to say, but you will totally. I was told that part of the problem in terms of the interoperability is that it was happening—the responsibility lay on a sub-Secretary level. Now there was turnover last administration, in Secretaries of both Departments. But we received a commitment, at some point, that on a Secretary-to-Secretary level that this interoperability was going to be made a priority. And what I was told at the time, led to believe, was that once you had this Secretary and this Secretary responsible, then that is when things would actually begin to move, because it would become a sufficient priority that it would be driven.

Now you may dispute that. You may say, "No, that is not true." But I guess my question is, did this ever rise, the interoperability issue, to being a Secretary-to-Secretary issue with, what I am told, the inherent prioritization and the inherent increased accountability?

Mr. CASE. Senator, we have a joint project ongoing right now with a draft report, looking at the very issue you just described. It is a joint project with the DoD Office of Inspector General looking at the question of interoperability, will this be able to achieve it, and is there a governance structure that can get those two parties together to make sure it is achieved. And we are looking at the governance structure as part of that.

So it is an issue.

Senator CASSIDY. Mr. Case, just so I understand——

Mr. CASE. Yes.

Senator CASSIDY [continuing]. And I thank you for kind of—your hair is as gray as mine. I suspect you have had more frustrations

than me. But my question is—to make sure I understand it—when you speak of governance, did it ever rise to the Secretary-to-Secretary level, but you are still not sure of the governance, or no, it never rose and you are not sure of the governance?

Mr. CASE. I am not sure it ever rose—where the Secretaries were in the same room or on the same call, addressing the interoperability issues with any level of specificity, and I am not sure the current governance structure can really accomplish the mission, in terms of doing that, and bring it to the Secretaries for decisions as they need to make them. So that is one of the strong points of our current joint project with DoD IG.

Senator CASSIDY. Is to see if that actually occurred.

Mr. CASE. Exactly.

Senator CASSIDY. Now one more thing. I mean, there is a parable, or there is, in the gospels, the centurion speaks to Jesus. And Jesus says, "You do not need to come to my house. I am a leader. I can tell somebody to do it for me." So I do not actually expect the two Secretaries, who probably know nothing about EHRs, to speak to themselves, but I do expect that they have a lieutenant who makes it a priority, if you will. So that is what I always assume Secretary-to-Secretary meant. My trusted lieutenant, whom I speak to three times a day, is going to take charge of this and make it happen. Is that what you are describing you are not sure occurred?

Mr. CASE. That is exactly what I am describing as not sure occurring. The Deputy Secretary has the congressional responsibility at VA to make sure this is happening. The buck stops with the Deputy Secretary in terms of VA. Do they have themselves, or people that they trust who are working together with DoD to make the right decisions on interoperability so that it can be accomplished?

Senator CASSIDY. And you are doing that on both sides, the DoD and the VA side?

Mr. CASE. That is correct, Senator. This is one of the few projects where IGs are working together on a strong, cooperative basis to make a joint report, and that is because it is the same Cerner system, or fundamentally, at DoD and at VA.

Senator CASSIDY. I am going to ask one more.

Chairman TESTER. Yes.

Senator CASSIDY. Are you also looking at whether or not Cerner inherently has the ability, the Cerner product inherently has the ability to do the job?

Mr. CASE. Generally, what we found is that the system itself, from a technical basis, is working. Now there are opportunities for us to review—has Cerner done the job so far, and are they going to do it in the future. Those are projects we can try to plan for. We have not made any review or decision on that yet.

Senator CASSIDY. Okay. I thank you all. Thank you for indulging.

Chairman TESTER. I appreciate your line of questioning, Senator Cassidy. I am glad we waited and I am glad you made it. I would also say that at 5:30 we have got a vote on Donald Remy, the Under Secretary of the VA, that is going to be in charge of this. And I can tell you that under the last administration that position was very fluid and open a lot of the time. And I think that could be—I am not saying it is, but I am saying it could be part of the problem. But I would hope that Mr. Remy gets confirmed so that

we have people to hold accountable. And I agree with you. If Remy cannot get the job done he should certainly take it up to the Secretary so they can do it.

It is there to be done. It needs to be made a priority. I think there are plenty of screwups we can point to. I think the IG has given us a roadmap. I do think that with good oversight by this committee we can make serious progress on this, and with your help.

Senator CASSIDY. Thank you, sir.

Chairman TESTER. So thank you all.

Look, I want to say thank you to Mr. Case and Mr. Probst for being here today. I look forward to hearing more details from the strategic review findings and how the VA plans to right the ship in order to properly prepare VA staff for the transition, safeguard taxpayer dollars, keep veterans safe, and improve quality of care. Having proper leadership team in place at the VA to manage this change, the changes this program needs, is also critical, and it also needs, as I pointed out, Deputy Secretary, in this case Donald Remy, which we are going to vote on in about eight minutes.

As I said earlier, the VA must be straightforward with Congress on the cost, the challenges, and the path forward on this program. If they cannot be, there, of course, will be consequences.

The record will be open for a week. Thanks again, fellas. We are now adjourned.

[Whereupon, at 5:21 p.m., the Committee was adjourned.]

A P P E N D I X

Prepared Statements

STATEMENT OF
THE HONORABLE DENIS MCDONOUGH
DEPARTMENT OF VETERANS AFFAIRS
BEFORE THE
SENATE COMMITTEE ON VETERANS' AFFAIRS
HEARING ON
VA ELECTRONIC HEALTH RECORDS MODERNIZATION AND THE PATH AHEAD

JULY 14, 2021

Good afternoon Chairman Tester, Ranking Member Moran, and distinguished Members of the Committee. Thank you for the opportunity to testify today in support of the Department of Veterans Affairs (VA) initiative to modernize its electronic health record (EHR) through the acquisition and deployment of the Cerner Millennium EHR solution. This effort is one of the most complex and transformational endeavors in the Department's history, and VA is committed, in partnership with the Department of Defense (DoD), to realizing the full promise of a modern, integrated record to cultivate the health and well-being of Veterans.

I want to thank Congress and this Committee for your continued support and shared commitment to our Nation's Veterans. The authorities and resources you have provided VA - the Nation's largest integrated health care system - will improve access, outcomes, and excellence for Veterans. Successful deployment of a modern EHR is essential in the delivery of lifetime, world-class health care and benefits for Veterans, as well as to set the standard for U.S. health care writ large, and we will get this right. With unified, seamless, trusted information flow between VA and DoD, we can further empower Veterans and their families, caregivers, and survivors to achieve whole health and wellness. In addition, we can enable care teams to deliver best-in-class access and outcomes while enhancing VA's ability to innovate and advance Veteran care and services.

VA's first implementation of Cerner Millennium occurred on October 24, 2020, at the Mann-Grandstaff VA Medical Center in Spokane Washington. When I began my tenure as Secretary in February 2021, proactive engagement with Veterans, Veterans Service Organizations (VSOs), VA employees, and Members of Congress revealed ongoing concerns with the project. Reports from the Government Accountability Office (GAO) and Office of the Inspector General (OIG) reflected a range of issues, many of which have also been reflected in the press, and it troubled me that multiple stakeholders were citing a perceived lack of transparency on this project as a longstanding issue. On this basis, I directed a top-to-bottom strategic review of the Electronic Health Record Modernization program. President Biden gave me the charge of "fighting like hell" for Veterans, and to that end, this review was necessary.

At my direction, and under the supervision of the Acting Deputy Secretary, Dr. Carolyn Clancy, a diverse group of senior subject matter experts and leaders from across the enterprise conducted the comprehensive strategic review. I also ordered the

review period not exceed 12 weeks, so it did not become an endless bureaucratic process without tangible outcomes we can immediately action. These leaders and subject matter experts swiftly gathered a broad range of internal and external stakeholder perspectives, analyzed findings from GAO and OIG investigations, and conducted deep dives into a plethora of areas, including, but not limited to: patient safety; productivity; governance and management; cost, schedule, and performance; patient portal; testing; data; change management and training.

Additionally, the group consulted with leading private sector health care systems with Cerner experience for their expertise, lessons learned and best practices. They conveyed to us that any EHR implementation is intricate, complicated, and one of the most difficult endeavors in health care. Leaders of those systems described this type of transformation as being fundamentally about people and processes, with technology serving as an enabler for improved efficiencies, operations, and outcomes. They universally described evolving their own management strategies and approach in order to achieve success. Many of them shifted from the use of a singular management entity to an integrated organizational team. DoD uses a similar model to successful effect.

While any EHR implementation is complex, a first implementation during a global pandemic is unprecedented. When I visited the Mann-Grandstaff VA Medical Center (VAMC) in April of this year, I was deeply proud to hear from the dedicated frontline leaders and employees who balanced this work with the demands of responding to COVID-19. Their commitment to Veterans reflects the values that we as an organization uphold.

To recognize the efforts of these employees, incorporate the wisdom and best practices known in this industry, and most importantly deliver the excellence Veterans expect from VA, we still have work to do. The strategic review illuminated a broad range of issues and affirmed many stakeholder concerns. My team continues to synthesize findings, and I commit to keeping you apprised and provide full transparency as we develop the way forward. To begin, we have identified the following issues:

- **Patient Safety:** While available evidence indicates that clear patient safety issues were actioned immediately, there was a lack of clarity across stakeholders on the broader definition, nature, and number of patient safety issues related to the new EHR implementation. In addition, further work is needed to resolve manual and automated elements of key workflows to ensure mitigation strategies fit business needs. The Veterans Health Administration (VHA) is leading an effort to ensure a common definition of what constitutes a "patient safety issue," reflective of industry best practices; and an interdisciplinary team is working to ensure any open issues are resolved.

- **Productivity:** VA identified a significant decrease in productivity post-implementation, compounded by the effects of the Covid-19 Pandemic. VA teams are actively working to ensure Veteran access to care, improve processes, and make necessary technical fixes. In addition to impacts on operational

efficiency, revenue cycle operations were disrupted by the Cerner deployment. While missing functionality has now been deployed to support VA-specific billing needs, issues persist. Currently, many parts of the claims and payments process require manual entry.

- **Governance and Management:** Moving forward, VA is effectuating a unified, enterprise-wide governance that incorporates the perspectives of key clinical, technical, acquisition, and finance leaders, among others. Responsibility for management of the project, including oversight of appropriated funds, will remain with the Deputy Secretary. An interdisciplinary team of key leaders, to include the Under Secretary for Health, Chief Information Officer, Chief Acquisition Officer, and others will contribute joint functional expertise to the program.

- **Cost, Schedule, and Performance:**
    - Cost: The lifecycle cost estimates previously developed addressed the funding request from Congress and the three primary areas of the EHR: the contract with CERNER, the infrastructure readiness requirements above base IT funding, and the program management office. A complete lifecycle cost estimate for the entirety of the project was not created to account for other requirements outside these primary areas. We are now undertaking a lifecycle cost estimate to clearly identify total costs associated with the project, regardless of whether sources of funding currently exist within current programs. This includes all infrastructure costs related to the project, as well as those attributed to VHA and VA's Office of Information and Technology based on the recent OIG findings. Additionally, we are implementing the aforementioned new cost controls and governance processes.

    - Schedule: The size, scope, and complexity of the EHR project requires an integrated master schedule which aligns the multiple functional areas of the project with other major enterprise initiatives. Further, the initial deployment schedule was based on the premise of deployment regionally for both DoD and VA; at this time, deployments are no longer synchronized. Not only are we developing a new project integrated master schedule using best practices, but we are also establishing our first ever VA Integrated Program Strategy linking our other major acquisition and digital transformation efforts with EHR modernization to more efficiently deploy our resources while mitigating risk. On July 1, 2021, VA sent a letter to Congress informing Members of the appropriations committees of a change in the future deployment schedule. Going forward, changes in schedule will be informed by a new enterprise-wide Current State Readiness Assessment.

    - Performance: Key Performance Indicators for the project were not effectively created, maintained, or managed. As part of the strategic review, VA clarified and re-established contractual and functional metrics.

VA is also establishing a Cooperative Research and Development Agreement with Cerner to leverage best practices, foster innovation, and create share value while minimizing costs.

- **Patient Portal:** Upon implementation last October, the patient portal experience was fragmented for Veterans in Spokane. VA's Veterans Experience Office has just completed a study of Veteran experience and preferences to inform decisions on the future of the portal and will also take into consideration legal and contractual obligations.

- **Testing:** Clinical and interdisciplinary workflows were not tested prior to "go-live" in a manner that effectively reflected a real-world environment. VA is working to establish an enterprise testing environment where interdisciplinary teams can rehearse and model the effects of workflow design and changes before future go-lives with Cerner Millennium.

- **Data:** Technology infrastructure was established to migrate and syndicate data between VistA and Millennium. However, gaps remain in our ability to govern and manage data between the two EHRs and with DOD to ensure seamless, Veteran and employee-centric information sharing, and provision of managed, trusted data. Under VA's Data Governance Council, data managers, engineers, scientists, and informaticists across the enterprise are working to strengthen enterprise data management practices and tooling. VA is working to align with DOD more closely and will continue to work to ensure the mission of seamless transition of Servicemembers to Veterans status is accomplished.

- **Change Management & Training:** Change management and training were not effective in ensuring interdisciplinary employees both understood and had effective support in completing the key functions of their roles within the new system. To this end, VA teams are redesigning role-based change management and training strategy. This new effort is critical to ensuring end user adoption of what can be perceived as "disruptive" technology.

On the basis of these initial findings, VA is reimagining our approach to Electronic Health Record Modernization. We are taking swift and decisive action to incorporate the management rigor and enterprise jointness required for this program to deliver on its intended purpose: seamless excellence in VA care for Veterans.

You will see us pursue a surge of activity in the coming weeks and months, intently focused on Veteran experience, patient safety and employee engagement. Specifically, VA will pursue technical-only ("sandbox") deployment of Cerner technology at previously planned sites in Veterans Integrated Service Networks (VISNs) 10 and 20 – ensuring technical readiness without affecting Veterans or frontline clinical employees. In parallel, we will accelerate technical infrastructure upgrades required to deploy the EHR system as well as establish an integrated test and training environment for a dedicated enterprise end user team to continue to evaluate the functionality of the

system. This will enable us to evolve our processes, training, and change management – and test our approach to build evidence-based confidence in the success of our next deployment before we "go-live" again.

VA will also conduct enterprise-wide Current State Reviews, both technically and qualitatively, of all our facilities concurrently which were previously planned to be completed site-by-site over the life of the project - to assist in establishing an evidence-based view of enterprise site readiness and in developing an optimized deployment schedule for facilities beyond VISN 10 and VISN 20. This new approach will result in a shift from sequential site engagements over the next decade, to integrated enterprise readiness and planning.

Prior to deploying to additional sites, VA will also improve our organizational structure and governance to become more responsive and effective as well as invest in training and change management capabilities to better prepare the workforce for the Cerner solution to be implemented at their individual locations. VA is repurposing Fiscal Year (FY) 2021 funds toward these goals.

Closing

I again extend my gratitude to Congress for your continued support and shared commitment to serving Veterans with excellence. Because of your support, VA, in partnership with DoD and Cerner, will realize the full promise of a modern integrated health record to cultivate the health and well-being of the Veterans in our care.

Chairman Tester, Ranking Member Moran, and Members of the Committee, thank you for the opportunity to testify today to discuss our deployment of the EHR solution. I am happy to respond to any questions that you may have.

DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF INSPECTOR GENERAL

STATEMENT OF DEPUTY INSPECTOR GENERAL DAVID CASE
OFFICE OF INSPECTOR GENERAL, *DEPARTMENT OF VETERANS AFFAIRS*
BEFORE THE
U.S. SENATE COMMITTEE ON VETERANS' AFFAIRS
HEARING ON
VA ELECTRONIC HEALTH RECORDS: MODERNIZATION AND THE PATH AHEAD
July 14, 2021

Chairman Tester, Ranking Member Moran, and Committee Members, thank you for the opportunity to discuss the Office of Inspector General's (OIG's) oversight of the Department of Veterans Affairs' electronic health record modernization (EHRM) program. The OIG recognizes the enormity and complexity of converting VA's electronic health record (EHR) systems for millions of veterans receiving VA care and acknowledges the significant work and commitment of VA staff to accomplish this task. This was evident in a variety of contexts, but of note, OIG staff observed that employees at the first deployment site—the Mann-Grandstaff VA Medical Center (VAMC) in Spokane, Washington—and other VA staff consistently demonstrated a commitment to transitioning to a new EHR while continuing to prioritize the care of patients during the COVID-19 pandemic.

The OIG's early oversight efforts of the EHRM program have been primarily focused on VA's preparation and implementation of the initial deployment at the Mann-Grandstaff VAMC, infrastructure for the new system, any impact on patients' access to care, user training, and other critical issues. Deficiencies identified and risk mitigations recommended for this first site revealed corrective measures that need to be addressed as additional facilities go live with the deployment.

As detailed in this statement, we have repeatedly found unreliable and incomplete estimates for upgrades and costs, inadequate reporting affecting transparency to Congress, and stove-piped governance with decision making that does not appropriately engage Veterans Health Administration (VHA) personnel who are the end users of the new EHR system. The 38 recommendations from our five reports published between April 2020 and July 2021 are meant to help VA make modifications to its roadmap for future implementation efforts. If VA does not address identified issues, it is at risk for cascading failures, breakdowns, delays, and poor health care when deploying the new electronic health record (EHR) system nationwide.

BACKGROUND

The OIG's mission is to conduct effective oversight of VA programs and operations to help make certain that veterans receive access to quality health care and benefits in a timely manner, as well as ensure VA funds are appropriately spent. The OIG has been conducting early oversight of the EHRM program because of the tremendous cost and scale of the effort and because prior modernization efforts by VA have been unable to achieve seamless interoperability with the Department of Defense (DoD). Since 2000, the OIG has identified VA's information management as a "major management challenge" because VA has a history of not always properly planning, overseeing, and implementing updates to its critical IT investments.[1]

VA's legacy EHR system, VistA, has served the department for more than 40 years but lacks needed interoperability and is too costly to maintain. While VA has taken steps to modernize VistA, these attempts have not resulted in a single, interoperable EHR system with DoD. Moreover, the Government Accountability Office (GAO) previously reported that these prior efforts have cost VA over a billion dollars.[2] VA determined that using a common EHR system with DoD will drive better clinical outcomes by giving healthcare providers a more comprehensive picture of the veteran's medical history and enhancing collaboration with VA's community healthcare partners.

Then-VA Secretary David Shulkin signed a Determination and Findings on June 1, 2017, authorizing VA to issue a solicitation directly to Cerner to acquire the EHR system being deployed by DoD. VA signed a contract with Cerner for the system on May 17, 2018, planning for an initial deployment in 2020. The new EHR system's initial deployment at Mann-Grandstaff VAMC was scheduled for March 28, 2020, but on February 10, 2020, a VA spokesperson announced that the deployment would be postponed indefinitely because at six weeks prior to the go-live date, it was only 75–80 percent ready. The patient appointment scheduling package was deployed at the Chalmers P. Wylie Ambulatory Care Center in Columbus, Ohio, in August 2020. Ultimately, the new EHR system went live at Mann-Grandstaff VAMC, its affiliated facilities, and the West Consolidated Patient Account Center on October 24, 2020, for clinical and administrative work.

2020 EHRM OVERSIGHT REPORTS

The OIG published two reports about the EHRM effort on April 27, 2020, discussed in more detail below. The first report examines the potential impact of VA's transition to the new EHR system on patients' access to care and the initially available capabilities. The OIG found that the Mann-Grandstaff VAMC lacked adequate staffing to navigate the additional strains of the transition and had not received formal, written guidance on minimizing obstacles to patients' access to care. The OIG also found that

[1] Department of Veterans Affairs, "Inspector General's VA Management and Performance Challenges," Fiscal Year (FY) 2020 Agency Financial Report, sec. III, (2020). The OIG reports annually on VA's major management challenges.

[2] Government Accountability Office, "VA Health IT Modernization: Historical Perspective on Prior Contracts and Update on Plans for New Initiative," July 25, 2019.

the risk mitigations facility leaders would employ during the planned go-live period were inadequate to address the gaps in capabilities and presented a potential yet significant risk to patient safety. The second report focuses on the gaps in VA's efforts to update the Mann-Grandstaff VAMC's physical and information technology (IT) infrastructure to support the new system. The OIG found that VA did not meet its own timelines to complete critical physical and IT infrastructure upgrades at the facility.

Review of Access to Care and Capabilities during VA's Transition to a New Electronic Health Record at the Mann-Grandstaff VA Medical Center

VA expected a productivity drop associated with the facility's preparations for going live with the new EHR system.[3] Mann-Grandstaff VAMC leaders consulted with DoD staff, who transitioned to the Cerner system in 2017 and experienced a 30-percent decrease in productivity for the subsequent 18 months. VA had plans to mitigate the impact on facility personnel for the March 2020 go-live event, including adding facility staff, enhancing clinical space, changing clinic processes, and a greater use of community care. At publication, however, the OIG did not find evidence of VA providing final guidance to Mann-Grandstaff VAMC leaders on carrying out these plans.

Some of the problems that emerged in preparing for going live were foreseeable. VA's Office of Electronic Health Record Management (OEHRM) and Cerner determined in July 2019 that not all anticipated capabilities of the new EHR would be available for the March 2020 go-live date. Mann-Grandstaff VAMC leaders and staff told the OIG of concerns related to the deployment of limited capability sets including

- not knowing what capabilities would be available at the first implementation site;
- VA changing the capabilities to meet the tight go-live timeline, instead of changing the go-live timeline to align with the completion of capabilities;
- challenges in having adequate training due to incomplete information regarding which capabilities would be available;
- an inability to accurately predict patient safety risks due to the lack of clarity around which capabilities would be available;
- limitations in Capability Set 1 (limited subset of functions that would be available to the first implementation site) that present as "significant handicaps at day zero;"
- requiring staff to use two systems (Joint Longitudinal Viewer and new EHR system) while providing patient care to compensate for the new EHR's limited legacy information; and
- feeling compelled to go live in March 2020, without the full capability set being ready.

[3] VA OIG, *Review of Access to Care and Capabilities during VA's Transition to a New Electronic Health Record at the Mann-Grandstaff VA Medical Center Spokane Washington*, April 27, 2020.

The gaps in functionality were significant. For example, the OIG reviewed facility pharmacy refill requests during calendar year 2019 and found the MyHealtheVet portal was the most frequently used method for patients to request prescription refills.[4] At the time of publication, the limited capabilities that were to be made available to patients and facility staff did not include a new patient portal and the VA's present portal, MyHealtheVet, would not be connected to the new system. Facility leaders and staff told the OIG of safety concerns related to losing access to the MyHealtheVet electronic refill portal and that mitigation strategies seemed insufficient to meet patient needs. The OIG was unable to determine all potential patient safety risks associated with the new EHR, but the work-around for the electronic prescription refill process alone presented significant concerns as it could have impacted a given patient's ability to fill a life-sustaining medication after go-live.[5]

The OIG made eight recommendations, of which six remain open as unimplemented. The recommendations were directed to the under secretary for health, the executive director of OEHRM, the VISN director, and the Mann-Grandstaff VAMC director. The recommendations' text and status can be found in appendix A of this statement, as well as on the recommendations dashboard on the OIG website. The OIG routinely requests updates on the status of recommendations published in all oversight reports every 90 days from VA.

Deficiencies in Infrastructure Readiness for Deploying VA's New Electronic Health Record System

To deliver patient care using the new EHR system, significant upgrades are needed to VA's physical and IT infrastructure.[6] The OIG audited VA's infrastructure readiness activities at the Mann-Grandstaff VAMC in anticipation of the initial March 2020 go-live date. OEHRM leaders testified before the House Committee on Veterans' Affairs Technology Modernization Subcommittee in June 2019 that having the infrastructure in place six months before deployment was a program goal to help ensure smooth deployment, meaning that infrastructure upgrades should have been completed by the end of September

[4] My HealtheVet, *Get to Know Rx Refill Options*, https://www.myhealth.va.gov/mhv-portal-web/ss20180423-prescription-refill-options-for-veterans. (The website was accessed on July 6, 2021.) MyHealtheVet is an online personal health portal in which patients can schedule appointments, view medical records, refill prescriptions, and send secure messages to their care providers. VA medical facilities provide patients with several methods to refill VA-prescribed medications: online through the MyHealtheVet portal, by phone through the automated telephone refill line, in person at a VA pharmacy, and by mail through the VA mail order pharmacy.

[5] Currently, OIG staff are conducting a review of Mann-Grandstaff VAMC's pharmacy operations since the October 2020 go-live date after receiving numerous complaints from staff and veterans. The review has identified issues with fragmented data, workflow challenges, and the potential for human error due to the need for significant work-arounds.

[6] VA OIG, *Deficiencies in Infrastructure Readiness for Deploying VA's New Electronic Health Record System*, April 27, 2020.

2019. The OIG found critical physical infrastructure upgrades had not been completed at the facility in October 2019, about five months prior to the planned go-live date.

"Physical infrastructure" refers to the underlying foundation that supports the system, such as electrical; cabling; and heating, ventilation, and air-conditioning. "IT infrastructure" includes network components such as wide and local area networks, end-user devices (e.g., desktop and laptop computers, and monitors), and medical devices.

The OIG found some infrastructure upgrades intended to mitigate diminished system performance were not projected to be completed until months after going live. For example, modifications to telecommunications rooms were not estimated to be completed until up to four months after the planned initial March 2020 go-live date. The audit team also identified deficiencies with the preparedness of IT infrastructure upgrades. In early January 2020, VA had not received about half of the medical devices needed at go live and had not received DoD approval to connect the medical devices to the network.

Infrastructure upgrades were not completed at the facility in a timely manner because VA lacked

- comprehensive site assessments to determine a realistic go-live date,
- requisite specifications for infrastructure and appropriate monitoring mechanisms, and
- adequate staffing.

VA committed to an aggressive, but apparently unrealistic, deployment date of March 2020 without having the necessary information about the facility's infrastructure. On June 26, 2018, VA announced the go-live date of March 2020; however, it was not until May 2019 that an assessment of physical infrastructure needs was performed. Concerningly, OEHRM first made requirements for physical infrastructure available to VHA in April 2019, just five months before the infrastructure was supposed to be ready for the go-live event.

Further, VA lacked some management controls and the adequate staffing needed to effectively monitor infrastructure readiness at the facility. For example, OEHRM's internal tracking tool addressing infrastructure was not put into use until June 2019, three months before VA's goal to have infrastructure upgrades complete. As of November 2019, four of six positions on the infrastructure readiness team were unfilled, while the director position was vacant in August 2019, about two months before VA's goal of having infrastructure upgrades complete.

Finally, OIG staff found some physical security vulnerabilities at the facility, which, if exploited, could have resulted in a campus-wide loss of connectivity and patient care downtime.

The OIG made seven recommendations for corrective action to the executive director of OEHRM, and the eighth to the Mann-Grandstaff VAMC director. These recommendations, of which five remain open as not implemented, can be found in appendix B of this statement.

2021 EHRM OVERSIGHT REPORTS

Thus far in 2021, the OIG has published three reports on the EHRM program. For the new EHR system to operate as intended, it needs to invest in both the physical and IT-related infrastructure upgrades previously discussed. Physical and IT infrastructure upgrades are generally funded from different sources and have different entities responsible for cost-estimating. To develop a more comprehensive picture of the costs and risks, the OIG conducted two audits separately examining cost estimates for the two types of infrastructure upgrades. Reporting reliable cost estimates for upgrades is imperative so that Congress has the information needed to make informed budgetary and investment decisions. Within VA, senior leaders depend on these cost estimates to plan program budgets, make acquisitions, and monitor program execution. For these reasons, VA needs to have cost estimates that are reliable and ensure all program-related costs are reported to achieve program success. For the third report, the OIG conducted a healthcare inspection of the development and delivery of training content to users of the new EHR, and the assessment of post-training staff proficiency.

Deficiencies in Reporting Reliable Physical Infrastructure Cost Estimates for the Electronic Health Record Modernization Program (May 2021)

This audit was conducted to determine if VA developed and reported reliable physical infrastructure upgrade cost estimates for the new EHR system.[7] As discussed previously, VHA medical facilities need significant physical infrastructure upgrades, such as electrical work, cabling, heating, ventilation, and cooling to successfully deploy the new EHR system. The audit examined whether the cost estimates developed by VHA met VA standards and were comprehensive, well documented, accurate, and credible. It also reviewed whether OEHRM reported these cost estimates to Congress in accordance with statutory mandates.

VHA and OEHRM share responsibilities for estimating and reporting physical infrastructure upgrade costs. VHA develops the physical infrastructure upgrade cost estimates, while OEHRM is responsible for reporting all program life-cycle cost estimates to Congress in accordance with the Veterans Benefits and Transition Act of 2018.[8] That Act requires quarterly reporting on the EHRM program's status, including annual and life-cycle cost estimates and defines the program as any activities to procure or implement the new EHR system. In early 2019, VA's Office of General Counsel determined that physical infrastructure upgrades must be funded from accounts specifically available for construction-type purposes, such as VHA's nonrecurring maintenance and minor construction funds. Recognizing the need for more involvement in the completion of these upgrades, VHA created a special team to spearhead the identification of facility deficiencies and develop life-cycle cost estimates for physical infrastructure upgrade work to support the new EHR system.

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[7] VA OIG, *Deficiencies in Reporting Reliable Physical Infrastructure Cost Estimates for the Electronic Health Record Modernization Program*, May 25, 2021.

[8] The law was signed on December 31, 2018 and became Public Law 115-407.

VHA Cost Estimates for Physical Infrastructure Upgrades Needed in Support of the EHRM Program Were Not Reliable

The OIG found VHA's cost estimates were not reliable under VA standards and GAO guidance.[9] These standards and guidance state that cost estimates should be comprehensive, well documented, accurate, and credible. However, neither of VHA's formal cost estimates for physical infrastructure, dated June 2019 ($2.7 billion) and November 2019 ($1.1 billion), fully met these criteria, and thus could be significantly understated. In addition, VA lacked effective quality controls and procedures to evaluate the estimates and had conducted insufficient planning from the start.

1. Cost Estimates Were Not Comprehensive

Comprehensive cost estimates provide management officials with reasonable assurance that all costs are included so they can make well-informed decisions. VHA's November 2019 estimate, totaling about $1.1 billion for physical infrastructure upgrades needed to support nationwide deployment only reflected about 25 percent of nationwide cabling costs, understating the costs by at least $481 million.[10] VHA stated the costs were not included as they were focused on identifying costs for infrastructure needed immediately. However, all cabling costs should be included in the cost estimate because upgraded cabling is required to be completed prior to full system deployment. In addition, both VHA's June and November 2019 estimates omitted estimated costs of upgrades paid with minor construction funds. As of July 2020, the OIG team noted VHA had awarded contracts for two minor construction projects totaling about $11 million for new data centers necessary to support the EHR system at two VA medical facilities.

2. Cost Estimates Were Not Well Documented

Sufficient documentation supports an estimate's validity and provides an audit trail allowing the estimate to be easily recreated and updated. Both June and November estimates lacked documented evidence they were approved by senior leaders. The director of the Special Engineering Projects team explained there is implicit approval from leaders when cost estimates are used for VHA's operating plan, as the November 2019 cost estimate was. Other VA leaders told the OIG team they review and approve operating plans, which include a single year of estimated costs. The OIG believes better controls and a more formal process would help ensure senior leaders approved and documented cost estimates.

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[9] VA Cost Estimating Guide, ver. 2.2, August 17, 2016; GAO, Cost Estimating and Assessment Guide, GAO-20-195G, March 2020.

[10] In September 2019, VHA's executive in charge signed a memo requiring facilities to replace any cabling below category 6 with category 6a cabling before nationwide system deployment is complete. This is consistent with OEHRM requirements and industry standards.

The estimates also failed to comply with the documentation standard because they did not have enough detail to allow an independent party to trace and recreate the costs.[11] As an example, both estimates included $458 million in fiber optic cabling costs but lacked documentation to support how VHA estimated these costs. Both estimates also lacked required supporting documentation that would enable an independent reviewer to ensure costs were not double counted in two cost categories: "other infrastructure" and "miscellaneous." Totaled, these cost categories accounted for about 15 percent and 18 percent of the total June and November estimates, respectively.

3. Cost Estimates Were Not Accurate

Neither cost estimate met the standard for accuracy—that is, free of mathematical errors and not overly conservative or optimistic. First, in the June 2019 estimate, calculation errors omitted about $90 million of fiscal year (FY) 2021 construction design costs, or about 10 percent of total physical infrastructure upgrade costs estimated for the next fiscal year. Second, the November 2019 estimate erroneously omitted about $138 million in escalation costs for upgrades expected to take place in future years, and did not include the cost of completely upgrading the cabling required at VHA facilities nationwide

4. Cost Estimates Were Not Credible

Credible cost estimates identify for decision makers the limitations of the data and assumptions and are to be measured against independent or third-party cost estimates. Under this standard, neither cost estimate was credible.

Both estimates lacked a risk and uncertainty analysis, which is used to disclose the likelihood actual costs may differ from estimated costs. VHA did not conduct this type of analysis because VA did not have accurate assessments of what infrastructure upgrades were needed at its facilities. Both estimates also lacked a sensitivity analysis, which is used to explain how much impact each cost factor has on the overall estimate. It provides leaders with cost ranges for each category and offers an explanation of why the cost estimates could change. Both cost estimates were also not compared to a third-party cost estimate, a best practice in validating the reliability and reasonableness of cost estimates.

Using the planned and obligated costs at VA's three planned initial operating capability sites, the OIG team statistically projected program-wide physical infrastructure costs to be between approximately $3.1 and $3.7 billion.[12] Notably, VHA's June 2020 estimate projects physical infrastructure upgrade costs to be about $3.1 billion, consistent with the OIG team's low-end projection.[13]

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[11] To be well documented, an estimate should be thoroughly documented such that someone unfamiliar with the estimate could easily update or recreate it.
[12] The three facilities were the Seattle, American Lake, and Mann-Grandstaff VAMCs, all located in Washington State.
[13] VHA provided a third, estimate dated June 2020 still in draft form that the OIG team did not review for reliability because its calculations were not finalized.

5. Lack of Effective Quality Controls and Procedures to Evaluate Estimates

Deficient quality controls contributed to the unreliability of both cost estimates. Independent cost estimates—a control used to validate the data and determine the reasonableness of a VA estimate—are required by VA policy to be performed on all major IT programs. However, the office within VA with the responsibility to perform these reviews essentially existed as a group on paper only, and an independent cost estimate was not performed on either estimate.

6. Insufficient Planning at the Program's Start

Consistent with findings from the April 2020 OIG report, the audit team found neither OEHRM nor VHA knew the true state of infrastructure at facilities at the time the Cerner contract was signed, and when this audit was completed in March 2021, VHA was still identifying necessary infrastructure upgrades. As of January 2021, infrastructure requirements continue to be defined, making it difficult for VHA to identify gaps in infrastructure and estimate related costs. Additionally, VHA did not create the group responsible for cost-estimating until 2019, with a director retained six months later.

Continued underestimated or unreliable cost estimates increases the risk that available funding will be insufficient to cover EHRM program-related physical infrastructure upgrades. Underestimates could require VHA to shift funds intended for other medical facility projects to cover the cost of these upgrades. In fiscal years 2019 and 2020 combined, facilities used about $60 million of funds from the medical facilities appropriation to cover EHRM-related physical infrastructure upgrades.

OEHRM Did Not Include Cost Estimates for Upgrading Physical Infrastructure in Reports to Congress

The OIG found that OEHRM did not include the cost of physical infrastructure upgrades in all eight of its quarterly reports to Congress, which are intended to meet the program's requirements under the Veterans Benefits and Transition Act.[14] This is significant, as it understates the program's cost in reports submitted to Congress. The reports gave the impression that these costs were included because seven of the eight reports contained language that infrastructure costs include "physical infrastructure at VA medical centers and other sites." To the contrary, these reports did not include the $2.7 billion for physical infrastructure upgrades as identified in the June 2019 estimate VHA provided to OEHRM.

On numerous occasions, VA officials reported the total program cost to be approximately $16 billion. About two years after the Cerner contract was signed, the VHA executive in charge publicly disclosed to Congress the need for billions of dollars to support physical infrastructure upgrades. Neither OEHRM nor VHA leaders could provide evidence they informed Congress or other public stakeholders of this significant EHR system-related cost prior to this hearing.

[14] OEHRM produced its ninth report after the OIG report was drafted and did not include physical infrastructure upgrade costs in that document.

When questioned by the OIG as to why they had not reported this significant cost in congressionally mandated reports, OEHRM officials explained they did not because these upgrades were outside the office's funding responsibility. OEHRM also said the upgrades had been needed for years and VHA is responsible for them.

The OIG contended that this argument is not supportable for the following reasons:

- The Act requires VA to report on the life-cycle costs of the program, including any activities to implement an EHR system.
- VA and GAO guidance require a life-cycle cost estimate to include all costs, regardless of funding source.[15]
- VHA and OEHRM leaders have defined these upgrades as critical and necessary to support and sustain the new EHR.

OEHRM has since committed to including physical infrastructure upgrade costs in future congressionally mandated EHRM reports.

The OIG made two recommendations to the executive director of OEHRM, one to the assistant secretary for management, and two to the director of special engineering projects for VHA's Office of Healthcare Environment and Facilities Programs. Appendix C contains a list of this report's recommendations made in May 2021, which remain open as of July 2021.

UNRELIABLE INFORMATION TECHNOLOGY INFRASTRUCTURE COST ESTIMATES FOR THE ELECTRONIC HEALTH RECORD PROGRAM (July 2021)

The second audit examined VA's estimates of IT infrastructure upgrades.[16] Of EHRM's estimated $16.1 billion total program cost, VA has estimated about $4.3 billion would be directed for IT infrastructure upgrades, which are distinct from the physical infrastructure costs and include system interfaces and updates to end-user devices like desktop and laptop computers. This audit examined whether OEHRM-developed cost estimates were well-documented, comprehensive, credible, and accurate. The OIG also examined whether OEHRM reported to Congress all IT infrastructure upgrade costs, including future technology updates.[17] The OIG found the $4.3 billion estimate was not reliable, and a lack of complete documentation made it difficult to determine the extent of the estimate's accuracy. The OIG also identified that VA did not report to Congress critical program-related IT infrastructure upgrade costs in congressionally mandated reports and did not update annual IT infrastructure cost estimates.

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[15] *VA Cost Estimating Guide*, ver. 2.2, August 17, 2016; GAO, *Cost Estimating and Assessment Guide*, GAO-09-3SP, March 2009, and GAO-20-195G, March 2020.

[16] VA OIG, *Unreliable Information Technology Infrastructure Cost Estimates for the Electronic Health Record Modernization Program*, July 7, 2021.

[17] Technology refreshment is the process of replacing certain infrastructure on a regular schedule, instead of using the systems or devices until they can no longer function. For example, devices like laptops are replaced every four years.

IT Infrastructure Upgrade Cost Estimates Were Not Reliable but Improvements Have Been Made

As discussed previously, reliable estimates should be well-documented, comprehensive, credible, and accurate. The audit team evaluated two estimates OEHRM provided to Congress dated December 2018 and August 2020—each estimating about $4.3 billion for the IT infrastructure upgrades. Neither met the reliability criteria, and the OIG could not evaluate their accuracy because they lacked documentation to support many of the calculations. Like the physical infrastructure cost audit, VA did not complete an independent cost estimate, which could have revealed the OIG-identified issues sooner.

OEHRM's August 2020 estimate was supported by significantly more details than the initial estimate. For example, the August 2020 end-user device cost category details 20 subcategories including laptops and desktops, monitors, and printers, while the December 2018 estimate only provided end-user device totals by year. Despite that, the August 2020 cost estimate was still not considered well-documented because it lacked information to support most costs, including manually entered amounts for laptop and desktop computer costs. In January 2021, in part due to discussions with the audit team, OEHRM began developing procedures for staff that align with cost-estimating guidance and include controls to help address the issues identified in the OIG report. During the audit, the team noted that VA also began making improvements to the cost model used to develop the estimate, facilitating more detailed support.

IT Infrastructure Costs Were Omitted and Not Updated for Accuracy

The OIG found OEHRM did not include costs for critical program-related IT infrastructure upgrades in the estimates reported to Congress, effectively underreporting program costs by nearly $2.5 billion. The $2.5 billion in costs are for IT infrastructure upgrades that VA's Office of Information and Technology (OIT) and VHA are expected to fund.[18] Like the physical infrastructure costs, OEHRM officials stated they felt the omitted costs were outside their scope of responsibility, but neither OIT nor VHA reported these costs to Congress, despite VA and GAO guidance requiring life-cycle cost estimates to include all costs, regardless of funding source. These costs should have been disclosed by OEHRM.

OEHRM also did not include updates to future year IT infrastructure cost estimates in reports to Congress. In February 2020, OEHRM knew of changes to fiscal year 2021 costs requiring revisions to expected annual costs but did not update the life-cycle cost estimate in any of the four subsequent reports. It was not until August 2020 that OEHRM briefed Congress on the updated estimates. However, as of January 2021, OEHRM had not updated the life-cycle cost estimate in the program's two subsequent reports, contrary to the Act's requirement for quarterly program updates on annual costs, and

[18] OIT is expected to fund some upgrades for the local area network, end-user devices, phones, and Wi-Fi, while VHA is expected to fund upgrades mostly for medical devices.

VA financial policy that states life-cycle cost estimates should be regularly updated to reflect the current status of the program.[19]

This lapse in accurate reporting occurred because OEHRM has not established procedures to assist staff in determining if a cost-estimate update is needed in the program's reports and, if so, when this update should occur. Instead, staff relied on unclear internal guidance. Without all critical IT infrastructure upgrade costs accurately presented, Congress lacks the comprehensive picture of total program costs needed to make informed oversight and investment decisions.

All six recommendations to the executive director of OEHRM are listed in appendix D. However, unlike the other OIG reports discussed in this statement, OEHRM did not provide target completion dates for the action plans but rather stated they would be provided at a later time.

TRAINING DEFICIENCIES WITH VA'S NEW ELECTRONIC HEALTH RECORD SYSTEM AT THE MANN-GRANDSTAFF VA MEDICAL CENTER IN SPOKANE, WASHINGTON (July 2021)

The OIG conducted this healthcare inspection regarding OEHRM's delivery and assessment of the training on the new EHR system for Mann-Grandstaff VAMC staff.[20] OEHRM's Change Management team is charged with reviewing and approving Cerner's development of training plans and materials that Cerner then delivers to VA employees. The centrality of successfully training employees to use the new EHR system cannot be understated—from business operations that help ensure prompt access to quality patient care to employee morale. The importance of reviewing training for the new EHR is heightened given the issues the DoD found with training on the Military Health System GENESIS, which is essentially the same EHR system VA purchased. The DoD found numerous deficiencies with training on the new EHR including the following:[21]

- Undocumented and inconsistent work-arounds
- Poor computer-based training
- Lack of documentation
- "Badly" assigned user roles
- Instructors' lack of both clinical experience and familiarity with the new EHR

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[19] VA Financial Policy, vol. III, chap. 12, "Life Cycle Cost Estimating," May 4, 2017.

[20] VA OIG, *Training Deficiencies With VA's New Electronic Health Record System at the Mann-Grandstaff VA Medical Center in Spokane, Washington*, July 8, 2021.

[21] The Department of Defense's Joint Interoperability Test Command tests and certifies the armed forces' information technology systems and equipment. They completed analyses of the training for the new EHR in April 2018 and July 2020, which identified many concerns. Defense Information Systems Agency, Testing, accessed March 24, 2021, https://storefront.disa.mil/kinetic/disa/service-catalog#/forms/testing.

- Insufficient training to overcome EHR usability problems
- Inadequate resources for content development and continued training

Because DoD's early EHR deployments faced multiple delays and setbacks, VA's transition to the new records system was supposed to be structured to benefit from these experiences. However, the OIG found that VA experienced many of the same problems during its initial deployment.

The OIG identified concerns related to governance challenges with VHA and OEHRM that manifested in these training deficiencies. Notably, the OIG did not find evidence that VHA had a defined role in participating in decision-making or oversight related to training activities. First, near the time of the planned March 2020 go-live period, VHA had concerns regarding the need for an operational readiness assessment that were not were not adequately addressed by OEHRM. Second, the OIG found that during that time, the Mann-Grandstaff VAMC director and acting under secretary for health reported concerns to OEHRM leaders regarding some disturbing feedback from staff on the insufficiency of the training curriculum. With both issues, VHA personnel met resistance from OEHRM leaders or were not included in discussions leading to decisions.

Additionally, the OIG confirmed decreased job productivity due to training. During the OIG's April 2020 review of patients' access to care, the OIG found VHA anticipated "30% [healthcare provider] productivity reduction for [a] nine-month period due to training requirements" of the new EHR. During this review, the OIG found a 30.7 percent decrease in volume in August 2020, a 25.6 percent decrease in September 2020, a 42.1 percent decrease in October 2020, and a 41.5 percent decrease in November 2020. The OIG also found the facility's patient advocates did not consistently track, trend, and report patient complaints to facility leaders about the new EHR, contrary to VHA policy.

The OIG identified training concerns that can be grouped into the following three categories:

1. Training content
2. Training delivery
3. Training assessment

Training Content

The OIG reviewed the training content and materials associated with the system applications, the software programs that end users operate to perform tasks in the new EHR, and the new EHR workflows. New workflows result in changes to how end users perform their jobs, such as the scheduling of consults (referrals) or how a provider performs a physical examination. Workflow training focuses on process changes and results in an end user understanding how their distinct role fits into the overall delivery of patient care.

The OIG found that systems software applications training both in the classroom and through supplemental materials were insufficient. Facility staff used the term "button-ology" to describe the

training content. An end user reported that, "it was just people sitting down and learning to use buttons and not having any context for what they were doing." Without additional training, it is inadequate to effectively demonstrate how the EHR is used in a clinical and administrative context. The OEHRM Change Management Director of Training Strategy acknowledged to OIG staff that not all content was included in formal training course materials and some topics required more time and information. For example, the new EHR has a Message Center function enabling staff to communicate about patients, but it was only discussed generally in class. However, the OIG determined that because the supplemental materials were optional resources, no means existed to ensure staffs' awareness, review, or proficiency.

The OIG found that classroom workflows training was also insufficient. The new EHR introduced more than 900 novel workflows to facility staff. Per the EHR training strategy, Cerner was to ensure that these workflow and process changes were incorporated into training. Facility leaders and staff told the OIG that the workflows classroom training did not prepare them for going live with the new system, teach them how to apply what they learned to their work, or explain the meaning behind the process of which buttons to push. The VA OEHRM director of Change Management corroborated that the classroom workflow training was inadequate to handle the change management needs of the staff.

Training Delivery

The OIG identified four aspects of training delivery that may have negatively affected the new EHR's use: (1) insufficient time for training, (2) limitations with the training domain (a close facsimile of the program for users' practice), (3) challenges with user role assignments, and (4) gaps in training support.

Training Time

The OIG found that facility leaders and staff perceived they did not have enough training hours given the increased complexity of the new EHR and the poor quality of the training content. A primary care EHR user shared that "a lot of other people … were literally crying" over problems with completing training and managing patient care. A facility leader who scheduled staff training described OEHRM's scheduling instructions as chaotic and confusing, which caused staff to show up for classes for which they were not scheduled. These challenges were magnified given the stresses of the global pandemic.

Training Domain

Cerner was contracted to provide a training domain that closely mirrored the new EHR so staff could practice before implementing the system. However, OEHRM materials described the training domain as a "limited use version of the live EHR system used by trainers, super users, and end users" during training courses. An OEHRM Change Management leader confirmed that some EHR functionalities were still being developed after the training domain content was finalized. Facility leaders and staff also said lack of access to the training domain outside of the classroom contributed to the knowledge deficit. OEHRM's director of Change Management opined that not having contact with facility staff for five months due to the COVID-19 pandemic had the biggest impact on training, but acknowledged that staff understood they would have a practice EHR and that "it was a miss from a communication standpoint."

User Role Assignments

VA's legacy VistA EHR system assigns permissions based on each user's needs. However, the new EHR is not permissions-based, but provides access through Cerner-defined user roles. Correctly assigned user roles are a key aspect of training, as the assigned role determines the employee's training. The EHR training strategy required VA to provide Cerner with role-based data, including job descriptions, job titles, and human resources information to classify facility staff positions into over 300 VHA-specific user roles. The OIG found the complex user role assignment process resulted in inaccuracies that also led to end users being given incorrect training. OEHRM's director of Change Management validated concerns about the user role assignment process describing it as "very painful in the beginning" and noted OEHRM had problems with training staff on the user role assignment process.

Training Support

The OIG found that facility leaders and staff largely relied on VHA employees who were "super users" within the medical center to provide training support during the new EHR implementation. They supplemented Cerner's classroom trainers and adoption coaches. The super users received additional training to provide peer-to-peer support during classroom instruction and to facilitate training scenarios. They also provided facility staff with "over-the-shoulder" assistance during and after the go-live period.

Facility leaders and staff identified concerns with Cerner classroom trainers including a lack of clinical knowledge, EHR expertise, and an inability to address questions. Facility staff repeatedly heard Cerner trainers defer questions by stating, "let's put that in the parking lot," but then did not return to the issue. Facility staff felt the trainers and coaches knew how to perform specific tasks but had some difficulty when training deviated from plans.

The OIG administered a survey to Mann-Grandstaff VAMC EHR users two to three months after the go-live date. The users self-reported perceived proficiency level with core applications and workflow functions. Results included the *disagreement or strong disagreement* with the following statements:

- "Relevant patient information is readily available within the new VA EHR and/or JLV [Joint Longitudinal Viewer]"—62 percent of respondents
- "I am able to share patient information within the new VA EHR with other clinicians without difficulty"—53 percent of respondents
- "I am able to navigate the different applications of the new EHR without difficulty"—65 percent of respondents
- "I am able to document patient care in the VA EHR without difficulty"—55 percent of respondents

Only 5 percent of respondents reported they agree or strongly agree to all four items.

While OEHRM's Director of Change Management acknowledged the significant deficits and described ongoing corrective efforts, the OIG could not determine whether they would remediate the identified training content and delivery problems.

Training Assessment

The OIG found that the OEHRM's Office of Change Management completed ongoing assessments of Cerner's training. The OIG's review of OEHRM's documentation of contractor performance from September 2018 through September 2020 revealed the Office of Change Management identified multiple, recurrent contractor weaknesses in staffing, management, meeting project deadlines, and providing high quality products. The director of Change Management reported that dissatisfaction with Cerner's deficiencies was "not a secret" and OEHRM leaders were aware of the concerns.

The OIG found the Office of Change Management failed to effectively evaluate training. OEHRM officials did not determine and track metrics as part of a quality assurance surveillance plan to monitor the training evaluation work. In early 2021, the director of Change Management described the training evaluation plan as "immature" and "in its infancy" but as a priority for the next several months.

The OIG requested "any and all data" from OEHRM's training evaluation plan. Disturbingly, OEHRM staff withheld some data from OIG staff and altered other data before transmission. In particular, OEHRM staff provided information that claimed "89% of proficiency checks were passed with a score of 80% or higher, in three attempts or less." However, the OIG found that an earlier version of proficiency check results drafted by VA OEHRM staff for the OIG's request, but not forwarded, that detailed much lower proficiency check results and showed that "44% of proficiency checks were passed with a score of 80% or higher in three attempts or less" This number was changed when OEHRM leaders urged their staff to "remove outliers" and recalculate the scores. OEHRM's director of Change Management told OIG staff that OEHRM recalculated some results for OIG review "just for cleanliness." However, the OIG concluded that OEHRM leaders removed and altered data prior to submission and provided incomplete and insufficient results of OEHRM's assessment of training. Presently, the OIG is conducting an administrative investigation and informed VA leaders of this matter.

The OIG made eight recommendations to the deputy secretary for veterans affairs and three to the under secretary for health. All recommendations are open as of this hearing and may be found in appendix E.

PENDING OIG REVIEWS

The OIG has several ongoing efforts across its directorates. In addition to the administrative investigation regarding the alleged manipulation of information provided to OIG staff, the Office of Special Reviews is continuing with a joint project with the DoD Office of Inspector General. That joint project examines the extent to which VA's new EHR will achieve interoperability with DoD and community healthcare providers, and the Federal Electronic Health Record Modernization Program Office's role. As previously mentioned, the OIG's Office of Healthcare Inspections is looking at patient care issues, governance, and pharmacy operations during the go-live at Mann-Grandstaff VAMC.

The OIG's Office of Audits and Evaluations recently started examining the EHR system's national deployment schedule because of the impact that delays or a lack of programmatic oversight could have on this program's success and its costs. Additionally, this office is finalizing the report *New Patient*

Scheduling System Needs Improvement as VA Expands Its Implementation. This report assesses the implementation of the EHR system's patient scheduling component at the Chalmers P. Wylie VA Ambulatory Care Center in Columbus, Ohio and the Mann-Grandstaff VAMC.

CONCLUSION

This Committee and VA have focused tremendous resources on the successful transition to the new EHR system. The OIG's work highlighted in this statement reveals there are still considerable challenges, particularly regarding the true costs and scope of critical physical and IT infrastructure upgrades at all VHA facilities and the training and knowledge that VA staff receive before using the new EHR. The OIG is committed to providing thorough and practical recommendations that flow from its oversight work to help VA deploy the new EHR efficiently and in a manner that improves veterans' experiences. The OIG will continue to monitor VA's EHRM efforts to help facilitate the improvements needed to fulfill its promise the veteran community and make the most effective use of taxpayer dollars.

Chairman Tester, this concludes my statement. I would be happy to answer any questions you or other members may have.

APPENDIX A: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *REVIEW OF ACCESS TO CARE AND CAPABILITIES DURING VA'S TRANSITION TO A NEW ELECTRONIC HEALTH RECORD SYSTEM AT THE MANN-GRANDSTAFF VA MEDICAL CENTER* – APRIL 27, 2020

1. The Under Secretary for Health, in conjunction with the Office of Electronic Health Records Modernization (OEHRM), evaluates the impact of the new electronic health record implementation on productivity and provides operational guidance and required resources to facilities prior to go-live.
Status: Open

2. The Under Secretary for Health, in conjunction with OEHRM, identifies the impact of the mitigation strategies on user and patient experience at go-live and takes action, as needed.
Status: Open

3. The Executive Director, OEHRM, in conjunction with the Under Secretary for Health, ensures that clear guidance is given to facility staff on what electronic health record capabilities will be available at go-live.
Status: Closed January 13, 2021

4. The Under Secretary for Health, in conjunction with OEHRM, reevaluates the EHRM deployment timeline to minimize the number of required mitigation strategies at go-live.
Status: Open

5. The Veterans Integrated Service Network (VISN) Director collaborates with facility leaders to implement VA-provided operational guidance and supports required resources needed throughout the transition to the new electronic health record system.
Status: Open

6. The VISN Director ensures that positions required for the transition to the new electronic health record system are staffed and trained prior to go-live.
Status: Closed October 16, 2020

7. The Mann-Grandstaff VA Medical Center Director ensures that community care consults are managed through go-live to ensure accuracy, completeness, and to avoid the need for manual reentry after go-live.
Status: Open

8. The Mann-Grandstaff VAMC Director ensures that patients receive medication refills in a timely manner throughout the transition to the new electronic health record system.
Status: Open

APPENDIX B: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *DEFICIENCIES IN INFRASTRUCTURE READINESS FOR DEPLOYING VA'S NEW ELECTRONIC HEALTH RECORD SYSTEM* – APRIL 27, 2020

Finding 1 Recommendations

1. The executive director of OEHRM should establish an infrastructure-readiness schedule for future deployment sites that incorporates lessons learned from the Department of Defense.
Status: Closed October 1, 2020

2. The executive director of OEHRM should reassess the enterprise-wide deployment schedule to ensure projected milestones are realistic and achievable, considering the time needed for facilities to complete infrastructure upgrades.
Status: Closed October 1, 2020

3. The executive director of OEHRM should implement tools to comprehensively monitor the status and progress of medical devices at the enterprise level.
Status: Open.

4. The executive director of OEHRM should standardize infrastructure requirements in conjunction with the VHA and the Office of Information and Technology and ensure those requirements are disseminated to all necessary staff.
Status: Open.

5. The executive director of OEHRM should evaluate physical infrastructure for consistency with OEHRM requirements and monitor completion of those evaluations.
Status: Open.

6. The executive director of OEHRM should fill infrastructure-readiness team vacancies until optimal staffing levels are attained.
Status: Open.

Finding 2 Recommendations

7.The executive director of OEHRM should ensure physical security assessments are completed and addressed at future electronic health record deployment sites.
Status: Open.

8. The Mann-Grandstaff VA Medical Center director should ensure all access points to physical infrastructure are secured and inaccessible to unauthorized individuals
Status: Closed October 1, 2020

APPENDIX C: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *DEFICIENCIES IN REPORTING RELIABLE PHYSICAL INFRASTRUCTURE COST ESTIMATES FOR THE ELECTRONIC HEALTH RECORD MODERNIZATION PROGRAM* – MAY 25, 2021

Finding 1 Recommendations

1. The executive director for OEHRM should ensure an independent cost estimate is performed for program life cycle cost estimates including related physical infrastructure costs funded by VHA.
Status: Open.

2. The VA assistant secretary for management and chief financial officer should ensure the Office of Programming, Analysis and Evaluation, or another office performing its duties, conducts independent cost estimates as required by VA financial policy, and performs an independent estimate of EHRM program life cycle cost estimates including physical infrastructure.
Status: Open.

3. The director of special engineering projects for VHA's Office of Healthcare Environment and Facilities Programs should develop a reliable cost estimate for EHRM program-related physical infrastructure in accordance with VA cost-estimating standards and incorporate costs for upgrade needs identified in facility self-assessments and scoping sessions.
Status: Open.

4. The director of special engineering projects should also continuously update physical infrastructure cost estimates based on emerging requirements and identified project needs.
Status: Open.

Finding 2 Recommendation

5. The executive director for OEHRM should ensure costs for physical infrastructure upgrades funded by VHA or other sources needed to support the EHRM program are disclosed in program life cycle cost estimates presented to Congress.
Status: Open.

APPENDIX D: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *UNRELIABLE INFORMATION TECHNOLOGY INFRASTRUCTURE COST ESTIMATES FOR THE ELECTRONIC HEALTH RECORD MODERNIZATION PROGRAM* – JULY 7, 2021

Finding 1 Recommendations

1. The executive director of OEHRM should ensure an independent cost estimate is performed for program life-cycle cost estimates related to information technology infrastructure costs.
Status: Open.

2. The executive director of OEHRM should reassess the cost estimate for EHRM program-related information technology infrastructure and refine as needed to comply with VA's cost-estimating standards.
Status: Open.

3. The executive director of OEHRM should develop procedures for cost-estimating staff that align with VA cost-estimating guidance.
Status: Open.

Finding 2 Recommendations

4. The executive director of OEHRM should ensure costs for all information technology infrastructure upgrades funded by OIT and VHA or other sources needed to support the EHRM program are disclosed in program life-cycle cost estimates presented to Congress
Status: Open.
5. The executive director of OEHRM should formalize agreements with OIT and VHA identifying the expected contributions from each entity toward information technology infrastructure upgrades in support of the EHRM program.
Status: Open.

6. The executive director of OEHRM should establish procedures that identify when life-cycle cost estimates should be updated and ensure those updated estimates are disclosed in the program's congressionally mandated reports.
Status: Open.

APPENDIX E: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *TRAINING DEFICIENCIES WITH VA'S NEW ELECTRONIC HEALTH RECORD SYSTEM AT THE MANN-GRANDSTAFF VA MEDICAL CENTER IN SPOKANE, WASHINGTON* – JULY 8, 2021

1. The Under Secretary for Health explores the establishment of a group of VHA staff comprised of core user roles with expertise in VHA operations and Cerner EHR use with data architect level knowledge to lead the effort of generating optimized VHA clinical and administrative workflows.
Status: Open.

2. The Deputy Secretary establishes an EHR training domain that ensures close proximation to the production environment and is readily available to all end users during and following training.
Status: Open.

3. The Deputy Secretary ensures end users receive training time sufficient to impart the skills necessary to use the new electronic health record prior to implementation.
Status: Open.

4. The Deputy Secretary ensures the user role assignment process addresses identified facility leaders and staff concerns.
Status: Open.

5. The Deputy Secretary ensures Cerner trainers and adoption coaches have the capability to deliver end user training on Cerner and VHA EHR software workflows.
Status: Open.

6. The Deputy Secretary evaluates the process of super user selection and takes action as indicated.
Status: Open.

7. The Deputy Secretary reviews OEHRM's performance-based service assessments for Cerner's execution of training to determine whether multiple, recurrent concerns are being accurately captured and addressed.
Status: Open.

8. The Deputy Secretary oversees the revision of an OEHRM training evaluation plan and ensures implementation of stated objectives.
Status: Open.

9. The Deputy Secretary reviews the EHRM governance structure and takes action as indicated to ensure the Under Secretary for Health's role in directing and prioritizing EHRM efforts is commensurate with VHA's role in providing safe patient care.
Status: Open.

10. The Under Secretary for Health establishes guidelines and training to capture new electronic health record-related patient complaints, including patient advocacy.
Status: Open.

11. The Under Secretary for Health ensures an assessment of employee morale following implementation of a new electronic health record and takes action as indicated.
Status: Open.

Testimony of

Marc Probst
Chief Innovation Officer, Ellkay
Retired Chief Information Officer, Intermountain Healthcare

to the

Senate Committee on Veterans' Affairs

"VA Electronic Health Records: Modernization and the Path Ahead"

July 14, 2021
Submitted to Docket July 12, 2021

Good afternoon, Chairman Tester, Ranking Member Moran, and members of the Committee.

Thank you for the opportunity and honor to testify before you today. I am Marc Probst, the Chief Innovation Officer of ELLKAY, a healthcare technology services organization focused on managing and integrating healthcare data. Additionally, I serve as an advisor to provider healthcare systems and Health Information Technology companies.

In July of 2020 I retired from Intermountain Healthcare (Intermountain) where I had served as the Chief Information Officer (CIO) for 17 years. Intermountain Healthcare is one of the countries leading Integrated Delivery Networks, based in Salt Lake City, Utah.

Prior to Intermountain I spent 23 years in professional services companies focused on planning, strategy, procurement, implementation and effective use of healthcare technology. I was a Partner with both Ernst & Young and Deloitte. In my career I have had the opportunity to serve my profession as the Board Chair of the College of Healthcare Information Management Executives (CHIME) and as a member of the Federal Health Information Technology Policy Committee (HITPC) which was formed by the Obama Administration to define the "Meaningful Use" of Electronic Health Records (EHR). I served on the HITPC for seven years.

I have been working with Electronic Health Record (EHR) systems and organizations for over 35 years. I have been involved in the technical development of EHR systems as well as in the implementation of commercial off-the-shelf (COTS) EHR solutions. This breadth of experience has given me a unique perspective of the technology and approaches to achieve value from the implementation of an EHR. Like anyone else that has been involved in these large, complex EHR projects, my experience comes from success and many failures. Never have I witnessed a simple implementation of an EHR.

Based on my experience, success or failure of an EHR implementation cannot be uniquely attributed to a vendor, consultants or to the organization implementing the solution. These programs require true partnership at each level in the project where accountability is understood, assigned and owned and where success and failure are shared.

Experience at Intermountain Healthcare

Our EHR journey at Intermountain Healthcare seems to have some similarities to that of the Department of Veterans Affairs (VA).

When I arrived in 2004, Intermountain was using self-developed applications for inpatient and outpatient medical records. These internally developed and maintained applications, known as HELP and HELP2 were highly customized to meet specific clinical workflows (i.e., the steps to perform a job), and in some instances, individual nurse, doctor, therapist or other unique needs. Because these systems had been in use for many years at Intermountain, the users were very adept in navigating these solutions. The users liked the system because it was comfortable to use and they had developed workflows, encompassing the technology and manual processes, to perform their daily activities. Simply, it worked!

However, HELP and HELP2 were showing their age. These systems were based on older technology and had software that was difficult to maintain. New and many times younger generation clinicians were being exposed to commercial off-the-shelf (COTS) solutions at other organization and medical schools. These COTS solutions included significantly greater functionality (e.g., how to enter orders for services such as lab work, using voice commands to search the record, different drop down menus, etc.), modern user interfaces, web-based access, computerized intelligence and many other "cool" features. As users became aware of these functionally rich solutions, they rightfully began demanding more from our information technology.

In an attempt to meet the growing need of users, Intermountain spent several years working with a COTS vendor to enhance their product with the goal to replace the self-developed HELP and HELP2 products. This was a difficult project and ultimately, Intermountain ceased that project and decided a better route would be to modernize the HELP2 solution.

This modernization effort proved to be too time consuming and difficult as well.

In 2005 Intermountain partnered with a second large technology company to leverage the capabilities of HELP and HELP2 in an effort to build the next generation EHR. After several years of intense effort and for reasons outside of Intermountain's control, this re-build project was stopped and Intermountain began a process to select and implement a COTS EHR solution.

After a very comprehensive selection and procurement process, Intermountain selected the Cerner suite of solutions. The team determined that Cerner provided a robust set of applications that would meet the many documented requirements of our users and was deemed more appropriate for meeting the unique future needs of Intermountain. Cerner also was seen as an organization that would partner well with Intermountain on what everyone knew, would be a long and difficult journey.

The Cerner implementation project was huge, impacting nearly every workflow and area of the organization. Initially, the project was heavily focused on enhancing and modifying the Cerner solutions to meet the unique needs of Intermountain. However, this approach became technically challenging and time consuming. Intermountain users were becoming frustrated with the many new versions of the software and delays in delivery. It became clear that a re-set was needed on the project.

In 2018, Intermountain executives, working closely with Cerner executives refocused the EHR implementation project toward better use of the proven and existing functionality in Cerner. Many changes to Cerner were still required, but the overall approach changed from "*making the system do whatever the end users wanted*," to "*how can we best meet the needs of end users with the least modification to the Cerner system*." It is important to note, that even with this revised approach, Intermountain could not just use Cerner "out-of-the-box." The project

still required hundreds of professionals to manage, design, configure, integrate, build, test, migrate data, train and implement.

With the new approach and under the committed leadership and teams of both organizations, the Cerner set of solutions were successfully implemented. An on-going team was formed to continue enhancing, configuring and updating the Cerner solutions. Although, implementing an EHR is never complete, most would say that the Intermountain Cerner EHR implementation has been a success.

Keys to a Successful EHR Implementation

Healthcare delivery organizations are large, complex and highly regulated. The technology needs of healthcare delivery organizations are massive, with seemingly new solutions being delivered (and needing to be procured, integrated, secured and mastered) at a daily pace. These technologies support hundreds and many times thousands of people. At the VA, that number is a workforce of hundreds of thousands and millions of patients.

There is very little room for error in healthcare information technology. These systems are needed 24 hours a day, seven days a week, 365 days a year. Many times, availability of these systems can determine the quality of care provided and sometimes mean life or death.

EHRs are a foundational set of solutions in a healthcare delivery system and EHR implementations are extremely complex, impacting nearly every workflow and function. These projects are large, time consuming and difficult. From my experience I have observed several keys that increase the likelihood of success in these major initiatives, below I highlight five of these:

1. A strategy for the project and how the technology will support that strategy
2. Accurately understanding the current environment
3. Realistic user expectations documented with detailed requirements
4. A team of qualified professionals experienced in the intricacies of EHR technology and implementation
5. Strong partnerships between the vendor, consultants, technology teams and the user organization

1. A strategy for the project and how the technology will support that strategy

Stephen Covey's 2nd Habit states "*Begin with the end in mind*." A successful EHR implementation requires this discipline. The early efforts at Intermountain began with a goal of "building the EHR of the future," which is an aspiration, not a strategy. However, we achieved success when we defined a strategy based on actual operational needs, with technology supporting those operational needs. Too many times the strategy is "Implement an EHR" versus "Improving care and making processes more efficient through the implementation of an EHR."

2. Accurately understanding the current environment

Sir Terence Pratchett was an English humorist, satirist, and author who wrote; *"If you do not know where you come from, then you don't know where you are, and if you don't know where you are, then you don't know where you're going. And if you don't know where you're going, you're probably going wrong."*

Too many times in a technology implementation such as an EHR the true current state, the problems trying to be resolved are not well understood. In these cases, time, energy and resources are spent either explaining the misunderstanding or worse pursuing solutions to a problem that doesn't really exist.

I have heard a number of times that the way to move medical records in the DoD and VA EHR systems today is manually, via paper chart or flash drives etc.. However, from what I understand the electronic transfer of records between these systems has been automated for years for VA and DoD. The two organizations transfer medical data electronically, today. The question here as it relates to data interoperability is the level of sophistication of the data and whether it can also be exchanged with private or community providers, for example. Certainly, in many health organizations today there are times using a paper chart may be required, but the reason for this paper transfer likely has roots in historical ways of doing work, user preferences or very complex situations.

Significant time is wasted if we don't clearly understand our current environment and the real problems trying to be solved.

3. Realistic user expectations documented with detailed requirements

The old saying "*measure twice, cut once*" is sage advice in implementing EHRs. It takes time to understand user expectations for a complex system such as an EHR. When my wife and I built our home, we had ideas for what we wanted and how it should look and like many couples, our ideas didn't always match. It took as much time working with the architect on defining our requirements as it took to build the home. Many times the architect would have to manage our expectations citing the realities of engineering and the costs of what we wanted. However, before the first brick was laid, it was clear what we were building.

An EHR must meet the expectations of thousands of people. Documenting the requirements to meet these diverse expectations is arduous and time consuming. However, understanding the expectations of users allows for more accurate procurement and becomes a foundation for either meeting those expectations or for managing them when engineering and/or cost realities arise.

4. A team of qualified professionals experienced in the intricacies of EHR technology and implementation

This almost seems too obvious of a point to even include. However, I can't over emphasize the importance of relevant experience in successfully implementing an EHR. I doubt many of us would like to fly in a commercial airliner that has been designed and built by car mechanics.

As I have already stated, these projects are complex with numerous moving parts. Success is much more likely if project leadership has experienced EHR implementations (hopefully several) and has team members who understand the technology and the operational workflows of the medical workforce being automated. I always appreciate having a nurse working on nursing workflows, a physician working on physician workflows, a pharmacist on pharmacy, etc. Relevant subject matter expertise is key.

Retention of team members allowing for continuity of knowledge, is also key.

5. Strong partnerships between the vendor, consultants, technology teams and the user organization

Synergy is real.

It takes a large team to implement an EHR and the team is many times composed of multiple organizations. It takes a team, a partnership. It is my experience that partnerships don't happen just because there is a contract. Partnerships are made when incentives are aligned, when leadership demands cooperation and when all involved parties understand that the project success is the only path to individual success.

There are many tools that need to be in place for managing a project. But these tools will be ineffective if a partnership, a team, is not achieved.

Conclusion

Thank you for the opportunity to share my thoughts on successful EHR implementation. The VA EHR implementation is extremely large and comparable in complexity to other EHR implementations. I believe the practices and principles outlined in this testimony are valid regardless of the project size. I am happy to respond to your feedback and questions.

Statement for the Record

Statement for the Record submitted to

U.S. Senate Committee on Veterans' Affairs

For hearing entitled:

"VA Electronic Health Records: Modernization and the Path Ahead"

July 14, 2021

Mark Braunstein, MD, Professor of the Practice, Emeritus, Georgia Institute of Technology

I am honored to be given the opportunity to participate in your deliberations about the Department of Veterans Affairs' project to install and implement a new electronic health record system.

My Background: In the early 1970's I was on the faculty of the Medical University of SC (please spell out) where I oversaw the development of one of the first ambulatory electronic medical record systems. The pharmacy module of the system attracted Kaiser and the US Military's TRIMIS program both of whom successfully installed a commercial version of it developed by a spin out company I founded. The company was acquired by National Data Corporation in Atlanta where I grew it into a $50 million revenue division with over 600 community, nursing home and hospital clients. In 1991 I co-founded Patient Care Technologies that developed a hand held electronic medical record (EMR) and telehealth system for home health care. In 2007 it was acquired by MEDITECH and I joined the faculty of the College of Computing at Georgia Institute of Technology where I developed the first university level course focused on the Fast Healthcare Interoperability Resources (FHIR) standard and wrote *Health Informatics on FHIR*; the first textbook centered on the standard. I am now Emeritus faculty teaching an eDX based online certificate program, a Visiting Scientist at the Australian eHealth Research Centre in Brisbane, and am working on the 2nd edition of my book.

The OIG Reports: I reviewed the three OIG reports but will confine my remarks to *Training Deficiencies with VA's New Electronic Health Record System at the Mann-Grandstaff VA Medical Center in Spokane, Washington*, the report that I feel my past experience best qualifies me to comment on.

I found this paragraph in the report to be of particular importance:

> "The OIG found significant gaps in training for business and clinical workflows. Workflows describe how end users perform their jobs, such as the scheduling of consults or how a provider performs a physical exam. Facility staff reported an absence of workflow training content and associated reference materials that prevented them from not only understanding how to apply what little they had learned to their daily work, but also prevented a basic understanding of the meaning behind workflow processes. VA OEHRM's Director of Change Management corroborated that the classroom workflow training was inadequate and told the OIG that VA OEHRM "change managed" to the technology but, "we missed more of the process and how that technology sits inside people's like [sic] day-to day work and day-to-day lives. So, folks are struggling…rightfully so."

I also view these as significant training deficiencies:

- the OIG determined the new EHR available for practice by users did not closely match VA's version
- limited assistance and inability of Cerner classroom trainers to answer questions
- adoption coaches were unavailable or of limited utility
- facility leaders and staff reported that they largely relied on super users for training support during the new EHR's implementation
- underestimating ingrained processes oriented around the legacy EHR

These strike me as self-evident problems so I will not comment beyond the last one. In my experience, training users for a new system when they are already automated is typically harder than moving users from manual to automated. Users tend to feel that the familiar system is better even when impartial observers would judge the new system to be superior.

This may well be a larger issue at the VA. To understand why, it is important to discuss the evolution of the major commercial enterprise EMR systems. First it is worth remembering that the late management guru, Peter Drucker, is said to have considered hospitals to be "the most complex human organization ever devised". The information systems that manage them reflect that complexity.

The three dominant providers (Epic, Cerner and Meditech) were all founded in the 'decade' from 1969 – 1990 to support specific hospital department(s) (the clinical laboratory for Cerner and Meditech and practice management for Epic) at a time when there was little demand for clinically sophisticated EMR systems. Once the revenue producing hospital departments (e.g., laboratory, pharmacy, radiology) were automated, interest shifted to making sure charges for tests and procedures were accurately and completely captured to maximize revenue and this led to interest in computing for the physicians so they could be captured when they were ordered. In recent years, as reimbursement is increasingly based on 'value' (e.g., superior outcomes and lower cost), EMR systems are being asked to provide more sophisticated care management capabilities. Over the decades the enterprise solutions offered by these three companies evolved into very large, complex systems *that were designed to be configurable to meet the needs of as many health care enterprises as possible*.

The VistA program began near the end of that same decade and today it is also a complex system consisting of 180 integrated clinical, financial, and administrative applications. However, unlike commercial systems that must meet the needs of a large and diverse set of users, VistA's development was finely honed over many years to the perceived requirements of VA personnel, many of whom participated in aspects of VistA's design. *It is therefore reasonable to assume that VistA, at least in some respects, is a better solution for the VA than any commercial EHR.*

I found the OIG recommendations to be on target. I found the first one to be of particular importance:

> The Under Secretary for Health explores the establishment of a group of Veterans Health Administration staff comprised of core user roles with expertise in Veterans Health Administration operations and Cerner electronic health record use with data architect level knowledge to lead the effort of generating optimized Veterans Health Administration clinical and administrative workflows.

Moving Ahead: Despite the time and financial investments to date, this project is not that far down the road so it seems feasible to consider the various alternatives, as follows, in my view.

1) **If feasible, fix the current Cerner implementation and training approach as recommended by the OIG and install Cerner 'as is'.** This requires careful consideration of whether the VA is staffed or could be staffed to adequately implement the OIG's recommendations, in particular the first one. If not, consideration should be given to procuring help from an outside organization with the requisite skills before proceeding. The ideal candidates for this mission would have considerable experience in analyzing large health system processes and workflows and translating them into information system configuration plans (ideally with the Cerner system). Personnel would also be needed who have considerable experience in developing and implementing large scale health system training programs, again ideally with the Cerner system.
2) **Carefully analyze and identify the areas where VistA is in fact a superior solution for the VA and investigate leveraging Cerner's existing support for third party apps to rectify those deficiencies to the degree that is feasible.** Today, as a result of the federal programs to promote interoperability, it is possible to write 'apps' that connect to the data stored in EMR systems in a similar way to the connection between smartphone apps and the contact, weather, location and other data the phones have access to. All the major hospital enterprise software vendors support this technology so a vehicle exists to 'enhance' Cerner in ways that better suite the VA's processes, workflows or special requirements given its unique mission.
3) **Reconsider whether VistA, by leveraging the technologies referred to in #2 and possibly with other possibly significant modifications, could be a better, more cost-effective solution for the VA.** I realize that to some extent the VA EHR 'modernization' effort was dictated by the need for interoperability with the military's Cerner EMR. However, at the present time and largely due to inspired leadership by the past few administrations, the US is now the world leader in implementing the technologies I referred to in #2 so that health data can be shared. For example, the Blue Button provides access to EHR data to veterans, active military personnel, Medicare recipients and iPhone users whose care derives from more than one health system with more than one EHR to consolidate their medical record data in their iPhone.

   In my view, it should be entirely feasible to use this same technology to create interoperability with the military. In fact, in 2017 a proof of concept has already been done by Georgia Tech and its partners including the VA's Office of Information and Technology, the VHA, the Office of the National Coordinator for Health Information Technology (ONC), and private-sector companies. This collaboration

   > "created 21 interoperable, standardized application programming interfaces to exchange information among different systems, including VistA; Cerner's electronic medical records system, used by the Department of Defense and a community hospital; Duke University Medical Center records; DocSnap records for a Navy medicine pilot project; and personal health monitoring devices via Apple Healthkit and Validic".[1]

   As I mentioned earlier, the technology could allow for further enhancements to VistA and it would also open up VistA to a large number of existing apps, some of which are quite

[1] Team Demonstrates Digital Health Platform for Department of Veterans Affairs (gatech.edu)

sophisticated and might be able to help improve the quality, efficiency and outcomes of care within the VA.

Despite these attractive possibilities, it may well be the case that certain non-clinical aspects of VistA would need considerable work beyond what is feasible via FHIR apps, and the time, effort and cost of doing that work would certainly be a consideration in evaluating this option.

Questions for the Record

Department of Veterans Affairs (VA)
Questions for the Record
Committee on Veterans' Affairs
United States Senate
"VA Electronic Health Records: Modernization and the Path Ahead"

July 14, 2021

Questions for the Record from Chairman Jon Tester:

Question 1: Please provide a list of 50 new functions, tools, capabilities, etc., that the VA/Cerner EHRM will provide VA medical staff, managers, administrators, and officials when live at a location. In your response, please indicate whether the function is one CPRS/VistA already has but is better in Cerner or if it is totally new.

VA Response: Although VA is not aware of the referenced 50 new functions, new functionalities will be provided through the new electronic health record (EHR) solution. Attached is a crosswalk (Attachment 1 – Cerner VistA Crosswalk) comparing the functions of VA's Veterans Health Information Systems and Technology Architecture (VistA) system and functions in the new EHR solution. The intent is to ensure that all clinical and business operations functions related to EHR are mapped from VistA into the new EHR system.

Question 2: Much of the discussion surrounding EHRM's benefits is focused on achieving greater interoperability. VA and DoD have had some form of interoperability going back to at least 2013. Please describe the level of interoperability VA has today (without Cerner). Please describe the level of interoperability that will be achieved by the Cerner system when complete. Please use an industry accepted metric such as from HIMSS etc. for before (pre-Cerner) and after deployment of Cerner. Please describe any limitations to interoperability, and with whom (DoD, other federal, academic affiliates, community care, etc.) that will exist when the Cerner project is complete. What will VA still not be able to do as it relates to interoperability in 2028 (i.e. EHRM project end)?

VA Response: Currently, VA and the Department of Defense's (DoD) legacy systems provide technical and semantic levels of interoperability meeting 2014 National Defense Authorization Act requirements. The joint EHR is a single instance between VA, DoD and U.S. Coast Guard (USCG) that shares a single database and provides foundational and structural interoperability. A single instance also means VA, DoD and USCG are sharing a single configuration, which provides interoperability. Additionally, the governance structures necessary to support a shared EHR, implemented by VA, DoD, USCG and the Federal Electronic Health Record Modernization (FEHRM) program office, contribute to organizational interoperability between agencies by aligning policy, social and legal considerations.

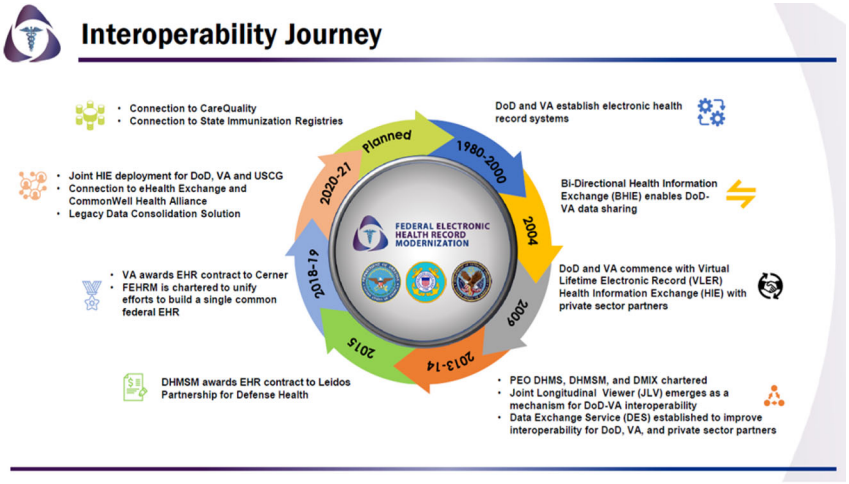
In the future, the enterprise-wide deployment of Cerner, along with appropriate governance and policy evolution, will provide interoperability in line with Healthcare Information and Management Systems Society (HIMSS) Organizational (Level 4) interoperability, a current industry standard. This includes governance, policy, social, legal and organizational considerations to facilitate the secure, seamless and timely communication and use of data both within and between organizations, entities and individuals. These components enable shared consent, trust and integrated end-user processes and workflows.

As part of the new EHR solution, VA, DoD and USCG implemented a fully functioning joint Health Information Exchange in April 2020, enabling a single gateway for exchanges that allows all VA, DoD and USCG providers access to all connected community health providers. The joint Health Information Exchange (HIE) supports all VA sites, regardless of whether they are on VistA or the new EHR solution. Prior to the joint HIE, each agency had their own HIE requiring each agency to initiate and maintain exchanges with providers. The joint HIE allows VA, DoD and USCG to share their connections, allowing providers to see patient health information from its thousands of connected partners including hospitals, pharmacies, clinics, laboratories and nursing homes throughout the Nation.

In October 2020, the joint HIE connected to CommonWell, which expanded bi-directional data exchange to 17,000 more community partners. As a result, participating private sector providers need to query only a single HIE gateway to retrieve records from VA, DoD and USCG to support the continuity of care for their patients.

Additionally, VA has migrated legacy data into Cerner's HealtheIntent to create the longitudinal health record for providers, Veterans, caregivers and beneficiaries. Longitudinal health records have long been an interoperability goal of Congress for DoD and VA. This ensures that all VA clinical data, whether originating in VistA, the Electronic Health Record Modernization (EHRM) solution or Military Health System GENESIS is available to VA, DoD and USCG providers at converted sites.
Exhibit 1 on the next page displays interoperability from the beginning of VA and DoD's EHRs to 2021 and into the future.

Exhibit 1: VA and DoD Interoperability Journey



Question 3: What percentage of exchange of health data between VA and DoD today is done in paper, fax, file transfer via email, etc. today? What percentage is done electronically using VA's current level of interoperability? Please answer the same question but for non-federal care (community care, academic affiliates, others, etc.). What are the limits to care delivery that each method creates (i.e. how does paper/fax/email transfer of data impact quality of care/care coordination and how does the more basic interoperability VA has today limit care coordination, if at all)? Please provide separate answers for VA-DoD care coordination and VA-non-federal care coordination.

VA Response: VA does not maintain statistics on health information exchange data via paper/fax versus electronic means for VA-DoD care coordination. Across and between VA and DoD sites of care, the needed information to deliver care and benefits is available electronically using the Joint Longitudinal Viewer (JLV). More than 100,000 VA staff per month use JLV to access more than five million patients' records. As of July 2021, VA has community connections with over 2,400 hospitals, 34,000 clinics, pharmacies, and laboratories.

Question 4: The Cerner EHRM deployment for VA is often described as a "game changer." Please describe in what ways the Cerner EHRM will be a "game changer" for VA and US healthcare when it is complete. Please break your response into two categories: for 1) VA and 2) US healthcare.

VA Response: Achieving the full promise of a joint record between VA and DoD to enhance care and services for Service members and Veterans will represent a significant opportunity to improve the delivery of health care to Veterans. With unified, seamless, trusted information flow between VA and DoD, VA can further empower Veterans and their families, caregivers and survivors to achieve health and wellness; enable Veterans Health Administration (VHA) care teams to deliver best-in-class access and outcomes as a highly reliable organization and enhance our ability to innovate and advance Veteran care and services.

VA operates one of the largest health care systems in the United States, with multiple points of influence on the Nation's health care sector. Nearly 40% of VA care is delivered by community partners, and nearly 70% of U.S. physicians complete their medical education at VA, which is the largest health care training system in the country. To advance interoperability across the health care sector, VA continues to work in partnership with DoD and the FEHRM program office to develop and support national standards through collaboration with other Federal agencies and stakeholders, including Centers for Medicare and Medicaid Services and Department of Health and Human Services' Office of the National Coordinator for Health Information Technology, which administers the Interoperability Standards Advisory. Among the national standards supported to advance interoperability are those required by ONC's Health IT Certification Program, according to which Cerner is certified. These standards include standardized application programming interfaces (APIs) for patient and population level services leveraging Fast Health Interoperability Resources (FHIR) Release 4, and the use of C-CDA documents leveraging the HL7 CDA® R2 Implementation Guide: C-CDA Templates for Clinical Notes R2.1 Companion Guide, Release 2. Together, the use of standard APIs and more constrained implementation guide for C-CDA-based exchange will improve Veteran's access to their information leveraging modern technology, such as mobile applications, and improving interoperability among VA clinicians. Promoting national interoperability standards will improve the quality of care delivered to Service members, Veterans and all Americans by enhancing clinical workflows, benefits delivery, analytics, research capabilities and clinical decision support.

Question 5: What elements make up the costs for change management for EHRM? Where is change management accounted for in the VHA, OIT, or OEHRM budgets currently? How much has been spent on change management since EHRM program inception, from what accounts, and what are the 10-year projected costs for change management and are those already accounted for in VA's existing LCCE for EHRM? Similar to the challenges VA has had reporting physical and IT infrastructure costs for EHRM to Congress, has VA accurately reported change management costs (both those incurred to date and future costs) to date?

VA Response: VA understands how vital leadership buy-in and cultural acceptance of change is to the success of any new program. VA's existing change management strategy supports the implementation of its new EHR solution and includes the process,

tools and techniques to manage the people side of change in order to achieve the required business outcome. As of July 31, 2021, Office of Electronic Health Record Modernization (OEHRM) has obligated $131 million to Cerner on the VA EHR contract to support change management activities. VA has contracted with the Institute for Defense Analysis (IDA) to prepare an independent lifecycle cost estimate for the EHRM program. The independent cost estimate (ICE) is intended to capture all EHRM lifecycle costs across the enterprise, including change management costs as appropriate for VHA, Office of Information and Technology (OIT) and OEHRM.

Question 6: In future deployments, will VA require that there is at least one physician super user designated at each facility?

VA Response: Yes. VA recognizes the importance of the role of the physician super user in the EHRM efforts.

Question 7: In VA's April 1, 2021, letter to HVAC/SVAC VA indicated that Cerner does not assess and monitor end-user satisfaction for commercial implementations but that "VA has informed Cerner of the need to incorporate an end-user satisfaction measure at future sites." What is the status of this work and what data can you share on end-user satisfaction at the sites where EHRM was deployed as of July 20, 2021 within VA?

VA Response: VA understands the importance of measuring end-user satisfaction at sites that have deployed the new EHR solution. VA designated the VHA National Center for Organizational Development to create and administer an employee satisfaction/morale survey to sites after VA's new EHR solution is deployed. The first survey was administered to field staff at Mann-Grandstaff VA Medical Center (VAMC).

VA anticipates that the survey results from Mann-Grandstaff VAMC will reflect low satisfaction due to several factors. First, Mann-Grandstaff VAMC was in the midst of pre-deployment preparation activities when the COVID-19 pandemic arrived in the Pacific Northwest and facility staff had to balance the demands of responding to the pandemic with pre-deployment activities. Second, as VA's first site to roll out the new EHR solution, as planned in its deployment strategy, VA expected to identify challenges and course corrections prior to continuing deployment across the enterprise.

As a result of the Mann-Grandstaff VAMC deployment, VA is aware there are areas that need improvement and plans to integrate site readiness, training and change management activities into Cerner's deployment methodology. VA also learned that a more integrated governance model is needed, as well as enhancements of VHA's role to ensure field staff continue to be heard, understand the enterprise and interoperability objectives of the EHRM program and receive the support needed to transition to a new EHR. In doing so, VA's goal is to positively affect morale and satisfaction by communicating requirements, facilitating change management activities, fostering collaboration, and conveying the importance of an enterprise-wide, interoperable system versus a highly customized individual system for the one facility. As mentioned

by Mr. Marc Probst of Intermountain during his testimony before the Committee, in his experience, less than 50% of users embrace a new EHR system, but 80 to 90 percent tolerate the new system after its advantages are understood. Mr. Probst also discussed the difficulty of a transition from a highly tailored legacy system to a more standardized system, requiring users to "meet halfway."

Question 8: The organization KLAS, recommends asking EHR users the following questions to evaluate their satisfaction with an EHR system. Will VA commit to running end-user surveys with the following or very similar questions to those below using for the Cerner EHR? If yes, when will VA start using those surveys? If not, please explain.

Do you agree that your EHR:

1. **Is available when you need it (has almost no downtime)?**
2. **Has the fast system response time you expect?**
3. **Provides expected integration within your organization?**
4. **Provides expected integration with outside organizations?**
5. **Has the functionality for your specific specialty or clinical care focus?**
6. **Provides analytics, quality measures, and reporting you need?**
7. **Is easy to learn?**
8. **Makes you efficient as possible?**
9. **Enables you to deliver high-quality care?**
10. **Keeps your patients safe?**
11. **Allows you to deliver patient-centered care?"**

VA Response: VHA partners with the DoD through the FEHRM to conduct a KLAS Research survey, which is nearly identical to the questions above. This specific survey is completed with all VHA sites pre and post implementation.

Question 9: In the July 14, 2021 testimony provided by Mr. Marc Probst, he listed keys actions "that increase the likelihood of success in these major initiatives." They are listed below. Please describe in detail what VA has done and will do in each of these five areas. In addition, please provide the Committee with a document that contains the strategy for the EHRM program. The five areas are: 1) A strategy for the project and how the technology will support that strategy; 2) Accurately understanding the current environment; 3) Realistic user expectations documented with detailed requirements; 4) A team of qualified professionals experienced in the intricacies of EHR technology and implementation; and 5) Strong partnerships between the vendor, consultants, technology teams and the user organization.

VA Response:

1) A strategy for the project and how the technology will support that strategy.

VA has refined its execution of the EHRM program. VA has strengthened integration across the department in support of the EHRM effort, including increased involvement from program offices (e.g., VHA, OIT, Office of Enterprise Integration, Veterans Benefits Administration (VBA), Office of the Chief Financial Officer). This collaboration is leading to enhanced training, change management and deployment preparations prior to any future go-live events. As part of VA's initial operating capability strategy, VA is leveraging feedback from Mann-Grandstaff VAMC to enhance the EHRM deployment strategy. This governance structure will incorporate the perspectives of key clinical, technical, acquisition and financial leaders, guaranteeing that everyone within VA who will build, use or be impacted by the EHR will work in concert to shape it. VA has also reviewed opportunities to strengthen performance management, including revising and developing key operational and performance indicators to track the project's cost performance and take preventive and corrective actions when needed.

In addition, VA is building upon its change management strategy by incorporating additional readiness activities in coordination with VA's stakeholders (e.g., VHA) into Cerner's deployment methodology which will solidify requirements and inform details for fiscal year (FY) 2022 and beyond. In parallel, we will accelerate technical infrastructure upgrades required to deploy the EHR system as well as enhance an integrated test and training environment for a dedicated enterprise end user team to continue to evaluate the functionality of the system. This will enable us to evolve our processes, training and change management—and test our approach to build evidence-based confidence in the success of our next deployment before we go-live again.

2) Accurately understanding the current environment.

To understand our environment, a diverse group of senior subject matter experts and leaders from across the enterprise conducted the 12-week comprehensive strategic review. These leaders and subject matter experts swiftly gathered a broad range of internal and external stakeholder perspectives, analyzed findings from Government Accountability Office (GAO) and the Office of Inspector General investigations and conducted deep dives into a plethora of areas, including, but not limited to patient safety; productivity; governance and management; cost, schedule, and performance; patient portal; testing; data; change management; and training. Additionally, the group consulted with leading private sector health care systems with Cerner experience for their expertise, lessons learned and best practices.

To prepare each site for the Cerner EHR and the workflow changes that will accompany the technology, VA has engaged facility staff in deliberate change management activities. We will deliver a catalog of targeted engagement activities within the facility and Veterans Integrated Service Network (VISN) that complement the contracted Cerner activities; develop a Leadership Academy that prepares facility and VISN leaders to manage the complex change of an EHR installation; and integrate on the Super User orientation program that builds the necessary competencies to support peers and escalate concerns. All change management activities are designed to prepare staff for a successful transition to sustainment of the EHR and its workflows. VA

is ensuring broader change management in both legacy and Cerner EHRs in order to close the gap between the current state and future state.

3) Realistic user expectations documented with detailed requirements.

VA has adopted an integrated approach to EHRM efforts based on the strategic review and, in coordination with key VA stakeholders (e.g., VHA), VA is incorporating additional readiness activities into Cerner's deployment methodology.

4) A team of qualified professionals experienced in the intricacies of EHR technology and implementation.

VA's OEHRM has a diverse staff with the relevant technical and functional skills, including EHR and Cerner experience, needed to implement the new EHR. Additionally, VA will continue to consult with leading private sector health care systems with Cerner experience for their expertise, lessons learned and best practices. VA will also improve our governance to become more responsive and effective as well as invest in training and change management capabilities to better prepare the workforce for the Cerner solution to be implemented at their individual locations.

5) Strong partnerships between the vendor, consultants, technology teams and the user organization.

Activities to support the EHRM effort will be executed in coordination with and through a unified voice. This will enable strong partnerships between VA and key stakeholders.

Question 10: Does VA agree with the general statement that historically, commercial EHRs were designed with financial management and billing as the primary function and care delivery/coordination as a secondary function?

VA Response: VA will not make assertions regarding the historical use of commercial EHRs.

Question 11: Much attention is paid to the interoperability benefits of the EHRM system. Please explain the other key systems that will be replaced and/or enhanced through EHRM (pharmacy, lab, etc.)? In other words, what other aspects of VA care delivery, management, or EHR functions will be improved through deployment of the Cerner system?

VA Response: All health care aspects of the EHR will be replaced through the Cerner implementation and EHRM efforts, including registration, scheduling, billing, insurance capture, enrollments, encounters, beneficiary travel, procedures, clinical documentation, diagnostics, procedures, referrals, consults, pharmacy (all phases from ordering to administration or disbursement) and reports. VA is already seeing enhancements in some of these areas, including the prescription drug monitoring program (PDMP) solution. For example, while most VA health care sites can currently only query a single

state PDMP, the new EHR solution can connect to existing DOJ supported systems and allows deployed sites to simultaneously query PDMPs in all contiguous States to help identify and aid at-risk Veterans.

In addition to the care delivery benefits an integrated EHR instance provides VA, DoD and USCG, the Cerner platform will also enhance interoperability for health care operations and analytics through HealtheIntent. The HealtheIntent platform allows VA, DoD and USCG to combine disparate sources of clinical data (legacy, new and private sector) into a longitudinal health record to support EHR workflows, population health registries, robust analytics capabilities, and additional care management tools.

Question 12: Please provide a list of all VistA / CPRS functions that will not be replaced by the Cerner product and that will remain in use or need to be incorporated by/into other software to ensure the functionality remains after 2028. Or, if the functionality will not be replaced, please indicate.

VA Response: Attachment 1 is a crosswalk comparing functions of VA's VistA system and the current functions of the Cerner EHR products. VA is working to develop a detailed understanding of which Cerner features can fully replace current systems (either as is, or with customizations), which capabilities will be delivered by other commercial products and which capabilities will continue to exist as VA-run systems. VA will base these decisions on the best approach to use based on the specific capabilities in question and the ability of these capabilities to meet VA's core strategic objectives.
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Question 13: Does VA foresee using VHA appropriations for other EHRM needs beyond the previously discussed VHA NRM (Medical Facilities) physical infrastructure costs? If yes, please indicate which accounts within VHA, for what purpose and for what amounts? Please answer the same question but for OIT appropriations other than for EHRM IT infrastructure.

VA Response: VA is currently conducting a historical review of non-OEHRM costs that could be included as part of the life cycle cost estimate (LCCE). In addition, VA has contracted with the IDA to complete an (ICE). Both efforts will inform which VHA and OIT costs should be included and reported as part of the EHRM total cost. Until these reviews are completed, we cannot provide concrete information on what accounts, costs, purposes or amounts will be reported. The kick-off meeting for the ICE contract was October 13, 2021. An interim ICE is due 8 months after the kick-off meeting with a full report due 12 months after kick-off.

Question 14: VHA NRM and OIT accounts are not sufficiently funded accounts in general. For example, the FY22 budget only includes $430 million in new funds for NRM. Based on information supplied by the Department, the remaining FY22 NRM funding is made up of $61.2 million in carryover and $1.7 billion in American Rescue Plan (ARP) Section 8002 funding. Further, VA has indicated that they will use $1.2 billion of the $1.7 billion referenced above for EHRM NRM infrastructure projects. How will VA ensure that diversion of funds from VHA and IT for the

EHRM project, will not hurt OIT and VHA's ability to run existing non-EHRM programs? Will VA increase funding for VHA NRM (Medical Facilities) generally in FY21, FY22, and FY23 so that it can accommodate EHRM and non-EHRM related needs sufficiently? Per the FY 22 budget, VA has identified that it needs between $16.4-$20.0 billion in NRM funding over the next ten years to fulfill identified needs.

VA Response: VA currently is conducting a comprehensive historical review of non-OEHRM costs which will be included as part of the EHRM LCCE. In addition, VA has contracted with IDA to complete an ICE. Both efforts will inform which OEHRM, OIT and VHA costs should be included and reported as part of the EHRM total cost. These reviews must be completed to allow VA to provide concrete information for future reporting. The timeline for completion of the historic review is scheduled for late November 2021 and the ICE will be completed in approximately 12 months.

OEHRM, OIT and VHA closely collaborate to ensure infrastructure readiness and information technology (IT) requirements are met to support the optimal IT needed for VA's new EHR solution. Through this coordination, VA identifies upgrades required to support VA's new EHR solution beyond VA's traditional infrastructure and IT needs, such as systems interfaces, biomedical devices and gaps in IT infrastructure not covered by OIT tech refresh, which are funded by OEHRM. Some traditional infrastructure upgrades that will support EHRM are being reprioritized in the upgrade plans.

VA is committed to ensuring sufficient resources are requested within the VHA and OIT appropriations to support the EHRM deployment alongside the continued management of all other non-EHRM programs.

Question 15: Please provide a list of the "contractual and functional metrics" VA referenced in the July 14, 2021 testimony. Please explain what "VA clarified and re-established" those metrics means in practical terms? Where those metrics not being used? A year from now, how will Congress, VA medical staff, taxpayers, and veterans know if VA is on the right path with the EHRM program? What numbers/metrics will guide VA's evaluation a year from now, July 2022?

VA Response: Attached are the indefinite delivery, indefinite quantity (ID/IQ) Functional and Non-Functional Key Performance Indicators (KPI). ID/IQ Performance Work Statement (PWS) Section 8.6 states, in part, that:

> "The Government may also utilize Cerner's commercially available KPIs and Service Level Agreements to monitor and measure Contractor performance. Contractor performance and reporting requirements will be further defined for individual task order requirements. Additional KPIs may also be defined at later dates for individual task order requirements, or at the ID/IQ level as approved through EHRM governance boards, as needed, and as determined by the government in accordance with the organization's mission."

With respect to clarifying and re-establishing, all KPIs were reviewed and assessed as part of the strategic review and recommendations have been provided.

Recommendations ranged from Contractual KPIs, Implementation Performance KPIs, Operational Performance KPIs and Productivity KPIs. As VA completes the top to bottom analysis from the strategic review, the resulting improvements/changes will be provided and briefed as appropriate to Congress.

Question 16: What is VA's strategy to get a return on investment, quality improvement, and value for the enterprise out of the Cerner EHRM?

VA Response: The enterprise value realization strategy will provide a solution for the entire VA health IT ecosystem, including the current and evolving legacy enterprise systems and applications, the Cerner implementation and the internal and external interfaces to those systems and applications (Community Care, HIE, etc.). The solution will optimize the enterprise-wide technology, business and information/data architecture to: (1) lessen variation; (2) improve functionality, adoption and adherence; (3) enhance clinical and business operations; and (4) advance organizational value for the users, facility, VISN and VA. The value realization strategy uses a whole system, comprehensive evidence-based measurement framework, including qualitative and quantitative measurements, that addresses the transformation and optimization of health care delivery that is required for VA to be a highly reliable environment.

Question 17: Per Appropriations law, the Deputy Secretary is tasked with managing the EHRM budget. How many direct staff of the Office of the Deputy Secretary support him in this EHRM effort? Is this an adequate number of staff for such a large portfolio of work? How many staff support the Deputy Secretary directly and exclusively within the Office of the Secretary regardless of topic (i.e. EHRM, AIR Commission, all matters in the Deputy Secretary's portfolio whether by statute, directed by the Secretary, or practice)?

VA Response: As of September 1, 2021, the Office of the Deputy Secretary has three employees (including the Deputy Secretary). Given the importance of the EHRM effort, VA is hiring a full-time Executive Agent who will assume day-to-day integration responsibilities long term.

Question 18: What steps is VA taking so that now and, in the future, to allow and encourage innovators in the health care space to be able to develop applications to improve health care delivery, management, etc. that can co-exist or integrate with Cerner/EHRM? In other words, there are companies that develop and support VistA compatible applications today that would like to continue to offer services to the VA now and in the future either through existing or new technology. How is VA working with those entities? In addition, what steps is VA taking to ensure third party commercial health care applications, other than those

made by Cerner, are not locked out from the EHRM development process now and in the future?

VA Response: To continuously provide innovative technology solutions for Veterans, VA's ID/IQ contract with Cerner, includes significant innovation requirements for APIs built to a variety of open standards that will promote innovative third-party development. IDIQ PWS section 5.5.4 includes Data Exchange and API Gateways, and section 5.10.4 includes Seamless Interoperability and Joint Industry Outreach. VA has a process in place for interested parties to share information, allowing coordination with companies with the requisite expertise to integrate with the EHR. This plan also includes a commitment to performing ongoing market research to identify small businesses that can provide value to the EHRM program.

VA plans to pursue four different innovation strategies, including:

1. With Cerner and legacy systems through novel configurations;
2. In partnership with Cerner and other vendors;
3. Through Government or market produced products that are compatible with Cerner and legacy EHR systems; and
4. Through the use of modernized data systems.

For instance, VA has an application that helps providers in the emergency department decide how to treat or admit patients with suspected or diagnosed COVID-19, as well as other analytical products for computerized decision support, population health and planning through interfaces, including Fast Healthcare Interoperability Resources. These applications use standards that maintain appropriate security and privacy capabilities. VA intends to integrate this application with the Cerner EHR leveraging standard API interfaces provided by Cerner.

Question 19: Please provide a list of taskings that VA has issued to Cerner, whether within scope or as additional scope, since IDIQ award in May 2018 to develop, build, or modify software interfaces or modify or in any way improve VA, DoD, or third-party software applications. Please indicate the purpose of each of the taskings and the cost of each additional tasking.

VA Response: VA will continue to comply with the Veterans Benefits and Transition Act of 2018 (P.L. 115-407), which requires VA to report, within 5 days, the awarding of any contract, order or agreement including associated costs. For reference, see the link to the entire list of task orders to date of the EHRM program: https://www.ehrm.va.gov/resources/doing-business.

Question 20: What is the VA's process for evaluating and planning for the transition of health care applications in use in VA Medical Centers to the new EHRM?

VA Response: VHA's Office of Health Informatics conducts current state end-to-end (E2E) business process and workflow assessments at every site—VISNs 20, 10 and 12

so far. These assessments include attention to the activities and workflows within the E2E business processes across a comprehensive set of clinical and business domains. For each activity in the E2E business processes, the setting, user roles, systems/applications/devices, data inputs and outputs and other meta data are assessed and documented in formal Business Architecture artifacts. These assessments inform the current state reviews to determine what workflows and which systems/application/devices will start, stop or continue to be used. In addition, where possible gap analyses between the current and future state workflows are conducted informing a host of change management activities to include business process reengineering. Through this repeatable process using formal business architecture artifacts, current state health care applications at each VAMC can be mapped to the new EHRM to inform the transition of health care applications in use in VAMCs to the new EHRM.

Question 21: Does VA have the proper incentives and legislative authorities to hire and retain the experienced and qualified staff to help lead the EHRM effort? For top leaders of the OEHRM program (i.e., the 15 most senior leaders of the program as of March 2021), please provide a list of the relevant experience these individuals have, prior to OEHRM work, in deploying an EHR in the commercial or public sectors. Please detail the scale of the project(s), the responsibilities the individual had, and the number of years working on the project(s).

VA Response: OEHRM developed an incentives strategy to inform and build a diverse, highly skilled workforce to support the delivery of VA's new EHR solution. Using intentional and sustainable hiring processes, coupled with targeted incentives, OEHRM has been positioned to attract, recruit and retain the workforce required to support the EHRM effort. OEHRM has been utilizing many of the available hiring incentives and legislative authorities provided by VA to hire and retain experienced and qualified staff. As across VA, OEHRM has encountered challenges recruiting clinical and IT applicants, but has ultimately been able to fill open positions utilizing the following:

- **Incentive Strategies:** Continued use of incentive strategies for group retention for IT and cybersecurity and above minimum rate has provided leverage for OEHRM to recruit the most qualified employees, offering additional incentives, such as recruitment bonuses or student loan repayment available in VA, for hard to fill positions (e.g., cybersecurity or information security positions). Hiring managers have previously been able to leverage non-pay incentives such as remote work sites to recruit high quality applicants, in particular into title 38 positions under the Chief Medical Officer. There is a potential for some leadership decisions to impact the use of non-pay incentives, which could result in an increased reliance on monetary incentives. Leadership continues to encourage utilization of more non-pay incentives when possible.

- **Hiring Authorities:** OEHRM should continue to strategically utilize multiple hiring authorities (i.e., non-competitive, direct hire, 30% disabled American Veterans) to recruit the most qualified employees. Utilizing these hiring

authorities allows OEHRM to reach a broader pool of potential applicants and, in some cases, onboard new hires in a shorter period of time.

- **Process Updates:** Workforce Management (WFM) has established a process and timeframe for hiring: establishing positions (identify/Position Description writing/classification), creation of package, recruitment, and confirmation. In addition, WFM has worked with the hiring managers to establish position priorities, which has helped to further streamline the process.

- **Partner Organizations:** Continuing to partner with internal and external professional organizations and encouraging hiring managers to utilize these resources is another way to potentially broaden the applicant pool.

VA is working to compile the relevant EHR deployment experience of its 15 most senior OEHRM program leaders and will provide this information once it is complete. Biographies for the five most senior OEHRM program leaders are included below.

John H. Windom – Executive Director

U.S. Navy Veteran John H. Windom is the Executive Director for VA's OEHRM. In that role, he leads VA's effort to improve the delivery of Veteran health care by creating an interoperable EHR solution across VA and DoD. This new EHR solution facilitates the secure transfer of active-duty Service members' health records as they transition to Veteran status, improving data analysis capabilities and leading to better health outcomes. He also successfully led the multibillion-dollar acquisition of the EHR solution under the former Program Executive Office construct.

Prior to his work for VA, Mr. Windom held the rank of captain in the U.S. Navy and was a program manager for Manpower, Personnel, Training and Education Transformation. He developed and implemented an acquisition strategy to transform the Navy's 55 legacy human resource (HR) management systems to a state-of-the-market commercial HR product. Before that position, he served as Defense Healthcare Management Systems Modernization program manager, where he led his team in the acquisition, testing, integration and deployment of a new EHR system to replace DoD's legacy EHR in support of over 9.6 million military Service members and other beneficiaries.

Mr. Windom was awarded the Defense Superior Service Medal and Bronze Star. He was also awarded the Legion of Merit, Defense Meritorious Service Medal, Meritorious Service Medal, Joint Service Commendation Medal, five Navy Commendation Medals, two Navy Achievement Medals and other service, unit and campaign medals, awards and citations. Windom was selected as Defense Contract Management Agency's Field Grade Officer of the Year in 2009.

Joseph "Joe" Hart – Deputy Executive Director

U.S. Navy Veteran Joseph "Joe" Hart is the Deputy Executive Director for VA's OEHRM. In that role, Mr. Hart assists the Executive Director's effort to improve the delivery of Veteran health care by creating an interoperable EHR solution across VA and DoD. This new EHR solution facilitates the secure transfer of active-duty Service members' health records as they transition to Veteran status, improving data analysis capabilities and leading to better health outcomes.

Prior to joining VA in June 2021, Mr. Hart served in the Navy for over 28 years in the Fleet Air Reconnaissance Squadron aviation and acquisition communities. His operational experience includes the following: commanding officer of Fleet Air Reconnaissance Two; flying tours with Fleet Air Reconnaissance One, Special Projects Unit One, Fleet Patrol Squadron 30; and the 7th Fleet staff.

In the acquisition discipline, Mr. Hart had the following assignments: He served as the assistant program manager for logistics for the P-3 airframe; was an IT program manager within the Navy/Marine Corps Intranet program office; and director of the Information Analysis department at the Defense Threat Reduction Agency, where he oversaw IT development of big data engines and led the operational management of a 24/7 watch-floor providing disaster mitigation and targeting solutions to DoD, international partners, as well as Federal, state and local agencies.

His last assignment, from 2018 to 2021, was in the Office of the Under Secretary of Defense for Intelligence and Security at the Pentagon. His awards include the Defense Superior Service Medal, Legion of Merit, Meritorious Service Medal (three awards) and Air Medal (three awards). He holds a Bachelor of Science degree in English from the U.S. Naval Academy and a Master of Arts in defense and strategic studies from the U.S. Naval War College.

Eddie C. Riley – Chief of Staff

Eddie C. Riley serves as the Chief of Staff for VA's OEHRM. Mr. Riley is responsible for the oversight and direction of all HR, administrative, financial and strategic planning for OEHRM. He organizes and prioritizes critical issues and required information for the executive director to facilitate efficient decision making for program management, engagement strategy and fiduciary responsibilities to multiple stakeholders.

He previously served in the Office of the Secretary, where as the director of administrative operations he led HR, budget, logistics, acquisition and information technology and provided overall support to VA's top leadership. He has also served as the director of VA's Veteran Employment Services Office. There, he was responsible for expanding and enhancing recruitment programs to increase the percentage of Veteran employees in VA and the Federal workforce.

Mr. Riley's 34 years of military, entrepreneurial and Federal Government experience have established him with broad and diverse insight. He served 21 years combined on active duty and in the Air Force Reserve.

As a Veteran, business owner, Government consultant and Federal employee, he has successfully led teams across diverse fields and disciplines, including equal employment opportunity, alternative dispute resolution, public affairs and marketing and strategic planning. He also managed a variety of HR functions, including recruitment, staffing, and training in organizations with budgets of over $1 billion. He is committed to leveraging his broad experience with employment in the Government and private sector to advance the OEHRM mission of transforming health care for Veterans and revolutionizing health care for all.

He holds a Bachelor of Science degree in journalism from the University of Maryland and a Master of Arts in communication from the University of Oklahoma.

Lynelle Johnson – Acting Chief Medical Officer

Lynelle Johnson is the Acting Chief Medical Officer for VA's OEHRM. In that role, Ms. Johnson serves as the clinical champion for VA's EHR solution, setting national clinical standards to transform the delivery of Veteran health care. Her responsibilities include oversight of change management, training, deployment, process reengineering, clinical interoperability, data strategy and innovation for the EHR.

Ms. Johnson has served VA for more than a decade. She joined OEHRM in 2018 as its chief nursing informatics officer and associate chief medical informatics officer. In those positions, Ms. Johnson advocated for the clinicians who will train on and use the new EHR. Previously, she served as chief health informatics officer for the Cincinnati VAMC and VISN 10. Prior to joining VA, Ms. Johnson worked as a surgical nurse.

Ms. Johnson is a Registered Nurse. She holds an associate degree and Bachelor of Science in nursing from Northern Kentucky University and a Master of Science in healthcare informatics from the University of Colorado at Denver.

John Short – Chief Technology and Integration Officer

John Short is the Chief Technology and Integration Officer for VA's OEHRM. Through his instrumental leadership, OEHRM has successfully migrated more than 111 billion VistA health records of 23.9 million Veterans to VA's new EHR solution, as of September 2020. This migration of information enables advanced data analytics that will drive stronger connections between military service and health outcomes.

Mr. Short's career in VA began in 2010 with various roles in cyber security, architecture, EHR interoperability and Joint DoD/VA management and implementation. Before he joined OEHRM, Mr. Short managed all aspects of the VistA Evolution (VE) Program strategy, budget planning, development prioritization and briefings to Congress. Mr. Short also served as Acting Deputy Director for the DoD and VA Interagency Program Office (IPO). In this role, alongside the director of the IPO, Mr. Short collaborated with the Office of the National Coordinator for Health Information Technology and Standards

Development Organizations. His work on the VE program and at the IPO fostered the collaborative work required for the future OEHRM vision.

Prior to joining VA, Mr. Short ran his own consulting business. He also worked at Progress Telecom, Florida Power, Sprint, BellSouth, AT&T and Lakeland Regional Medical Center.

Mr. Short served in the U.S. Army as a signal corps officer in the 35th Airborne Signal Brigade and as an infantry officer in the 82nd Airborne Division. He ran the Hurricane Andrew Relief Effort network hub for all communications

Question 22: What is VA's comprehensive plan for re-formulating training for facility staff prior to, and during, EHRM go-live? Please list specific changes that will be made to improve the training experience for staff and how VA plans to evaluate training outcomes and satisfaction.

VA Response: VA and Cerner are conducting extensive training deep dives to better understand the current state of training to prepare front line staff for the EHR solution. Cerner will host a training workshop with VA to outline an improved end user experience, which will result in a comprehensive training plan including process and outcome metrics.

VA continues to implement a series of enhancements to improve the content and delivery of training related to implementation of the new EHR.

a. Beyond planned content maintenance, OEHRM and Cerner utilize formal data collection techniques and processes to capture and action feedback.
b. VA continues to implement deployment training enhancements that support development of knowledge and proficiency, even outside of the training room, across the entire end user learning journey.
c. VA is working to improve the evaluation processes by enhancing our data capture, analysis, reporting and use of subsequent information to achieve the training outcomes envisioned. VA has refined the approach and has further developed the evaluation framework, which incorporates industry standards and best practices from New World Kirkpatrick Four Levels, Best Evidence Medical Education Collaboration and the Learning Transfer Effectiveness Model. We will conduct evaluations at formative and summative levels following the frameworks mentioned above to continuously evaluate satisfaction, effectiveness and outcomes of training. VA will leverage key performance indicators mapped to specific evaluation metrics, and conduct analysis using a broad range of techniques. The findings and recommendations will be used to inform training strategies, tactics, and tools.

Question 23: How will VA mitigate potential access to care issues for veterans during future EHRM go-live events? In other words, how will VA ensure veterans continue to receive timely care when expected and unexpected issues emerge during a deployment (e.g. productivity decrease)? If telehealth will be a major

component, how will VA ensure in-person healthcare services for veterans are maintained for those who require it?

VA Response: VHA medical facilities and VISNs monitor provider deployment and productivity and clinic practice to assure idealized access as part of routine business operations. Additionally, enhanced efforts are underway to address additional facility staffing needed to mitigate access and productivity losses during the transition to the new EHR. Once completed, facilities and VISNs will collaborate on a strategy to address these needs. Such strategies may include, but are not limited to, sharing resources with other medical facilities, hiring up in key areas, utilizing Clinical Resource Hubs, contract/agency staff, consideration of community care capabilities and proactively planning for high-risk patient needs. In addition, the VHA National EHR Modernization Supplemental Staffing Unit (NESSU) is being assembled to provide additional support that will follow the go-live schedule and assist each medical facility across the enterprise during the immediate weeks before and after go-live. This support will focus on the areas of Primary Care, Mental Health (Primary Care – Mental Health Integration (PCMHI)), Pharmacy, Nursing and Scheduling. It is currently planned that 30% of NESSU staff will provide in-person health care services in primary care and inpatient nursing, with 70 percent providing telehealth in the five areas previously stated. VHA has extensive experience in the delivery of telehealth care and has found that Pharmacy, Scheduling and PCMHI Mental Health support are well-suited for 100 percent telehealth care. While telehealth for Primary Care and Nursing services is appropriate in many cases, VHA recognizes the need to support in-person care. Adjustments will be considered as we monitor the deployment cycle.

Question 24: How will VA incorporate patient safety reviews into every aspect of EHRM training, go-lives, and future EHR rollouts? How will medical staff and other users be provided with tools to more easily report patient safety concerns and what will VA's timeliness goal be for addressing these concerns?

VA Response: VA has a proactive approach to evaluating patient safety, which is a top priority. During the EHRM implementation process several patient safety metrics are monitored for their impact. All reported concerns are evaluated and prioritized according to their real or potential impact, and risks to Veterans are always at the top of this list. Patient safety concerns are evaluated within 24 hours to conduct a root cause analysis and course corrections are immediately made to reduce impacts to Veterans.

Department of Veterans Affairs (VA)
Questions for the Record
Committee on Veterans' Affairs
United States Senate
"VA Electronic Health Records: Modernization and the Path Ahead"

July 14, 2021

Questions for the Record from Senator Kyrsten Sinema:

Question 1: The GAO testified before the House Veterans Affairs Subcommittee on Technology Modernization on July 1 outlining continued challenges that the VA has in securing information systems and data. The GAO also stated that if the VA continues to experience challenges and does not take actions to address deficiencies, it may jeopardize its ability to effectively support its Electronic Health Record Modernization efforts. What steps are you taking to address GAO's recommendation? Specifically, how are you identifying areas that need improvement and prioritizing efforts to secure these information systems to ensure the EHRM effort is successful?

VA Response: DoD and VA have been sharing electronic data to support various missions since at least 2002 and have over time improved the way that data are made available to support decision making. There are interagency sharing agreements in place and data is regularly exchanged between the Departments in several different projects. Use of data has continuously improved and the Departments are striving to strengthen and streamline data sharing with the deployment of the joint EHR and Joint Analytics platform. The addition of a common EHR with an integrated data and analytics suite (Cerner Millennium and HealtheIntent) greatly improves data availability and usage for the missions the EHR serves, but it cannot by itself meet all of the Departments' needs to combine and share their health and other data. In the summer of 2020, the Joint Executive Committee tasked DoD and VA to develop recommendations for elevating joint data governance and a joint data and analytics strategy. VA and DoD are in the process of developing a joint data strategy.

Question 2: As the VA proceeds with the EHRM effort, what steps have you taken to ensure cybersecurity is a priority and being addressed at the front end, rather than the backend, of the rollout?

VA Response: VA is working closely with DoD to ensure an integrated approach to monitoring the EHR from source to destination. This includes, but is not limited to, establishing a Joint Cybersecurity Operations Center that consists of both VA and DoD cybersecurity analyst and incident response personnel. VA and DoD have access to all available security logs across the three security boundaries, which are VA Enterprise, Medical Community of Interest network and the Cerner enclave. VA has increased visibility with the implementation and on-boarding of data from passive scanning activities and Medical Internet of Things solutions deployed at over 150 VAMCs.

Furthermore, VA is leveraging the Enterprise Mission Assurance Support Service used by DoD to automate integrated cybersecurity management, reporting and continuous monitoring supporting Risk Management Framework processes. This capability bolsters VA's partnership with DoD and facilitates VA's and the Defense Health Agency's move to one EHR system. Additional use cases and automation are being introduced to further improve response activities when abnormal activities are detected.

VA continually monitors its networks and information technology environments for anomalous activities. Additionally, we are directing and modifying monitoring efforts to specifically address EHRM architecture and the connections with our EHRM partners. If VA identifies an incident that is EHRM-related, VA will coordinate our response with the EHRM monitoring group that includes VA, DoD and Cerner. Under a joint monitoring and incident response plan, the group shares information and identifies a collective response strategy that aligns with each partners' organizational response plan.

Question 3: In his testimony, Mr. Probst said that when he was overseeing the transition to Cerner as CIO of Intermountain Healthcare, he found he not only had to bring Cerner to the employees, but also bring the employees to Cerner. To his point, it is important that the VA leadership is honest about the implementation process, focused on managing expectations, and working to get buy-in from the staff so that they are willing to do the hard work to adopt the system at the user level, even when they encounter challenges along the way. How are you doing that locally and enterprise-wide?

VA Response: VHA is working with enterprise and field partners to establish key awareness activities aligned to the deployment schedule to clearly achieve the following: 1) communicate expectations and resource requirements; 2) build sponsorship and leadership engagement; and 3) improve readiness and adoption. These activities will be ready to execute at the beginning of calendar year 2022.

Question 4: Academic partners and the Community Care Network will certainly be impacted by the modernization effort. What testing and planning has been done to ensure that the Cerner platform will support, and ideally improve, coordination and communication with the CCN and academic partners?

VA Response: VA, DoD and USCG built and deployed a modernized joint HIE platform that currently enables bi-directional health data exchange with over 240 health care organizations and the CommonWell Health Alliance, totaling over 46,000 community providers. Current participants span a vast majority of academic and community care network providers; however, VA, DoD and USCG are contracted with Cerner and continually onboarding additional partners.

Community partners and health care systems can learn more information, validate if they already participate or request to join the VA, DoD and USCG's joint HIE here: For Providers - Veterans Health Information Exchange (VHIE) (va.gov)

Department of Veterans Affairs (VA)
Questions for the Record
Committee on Veterans' Affairs
United States Senate
"VA Electronic Health Records: Modernization and the Path Ahead"

July 14, 2021

Questions for the Record from Senator Patty Murray:

FACILITY PREPARATIONS

Before the roll-out of the electronic health record modernization (EHRM) efforts in Spokane, Washington, there were extensive discussions with VA officials in which they guaranteed that there were plans and preparations in place for a successful roll-out. However, as the roll-out began, many issues arose including inadequate clinical space and insufficient numbers of staff and providers.

Question 1: What will you do to make sure other facilities are truly prepared with the space, staffing, infrastructure, and anything else they need before go-live at new sites?

VA Response: VA is enhancing readiness assessment criteria in coordination with clinical and administrative subject matter experts to evaluate site readiness across a wide array of factors including staffing, clinical measures and employee engagement. VHA leadership will engage with VA facilities to address local concerns from this assessment and support proactive resolutions prior to go-live.

VA is shifting its strategy from a site-by-site deployment of EHRM to an enterprise-wide planning and readiness approach, meaning we will deploy the program based on evidence of which VISNs and sites are most ready.

OEHRM, VHA and OIT meet regularly to discuss site readiness across these categories and to take steps to remedy gaps in a given site's infrastructure readiness.

As a response to lessons learned from DoD's initial implementations, Mann-Grandstaff VAMC upgraded networking and end user device equipment being deployed months in advance of go-live to prevent last minute issues.

INCORPORATING FEEDBACK

Providers in Spokane have reported that staff feedback was not being incorporated appropriately. This resulted in staff resorting to developing their own workarounds and shortcuts to deal with issues as they arose. Any EHR system should be designed with the needs of the staff who will actually use the system in mind.

Question 2: Given what you learned at Spokane, how will VA incorporate clinical and administrative staff in the EHR modernization going forward?

VA Response: Clinical and administrative staff are included in all appropriate activities and necessary communications throughout the transition to the Cerner EHR. All staff feedback is considered through various mechanisms (for example, local workshops, national councils and Change Control Board) throughout the deployment process and following go-live. As necessary in a national rollout, decisions must balance individual preference and the enterprise system solution and evaluate the impact on all sites. As a result, all requests for changes may not be implemented. VA continues to work with leadership at the Mann-Grandstaff VAMC to ensure the process is understood by all staff and that feedback is provided to staff regarding the status of their change requests.

Question 3: Will there be a permanent role on any planning teams or committees for VHA?

VA Response: The Office of the Functional Champion will coordinate closely with OEHRM on VHA's requirements to support VA's new EHR solution.

Department of Veterans Affairs (VA)
Questions for the Record
Committee on Veterans' Affairs
United States Senate
"VA Electronic Health Records: Modernization and the Path Ahead"

July 14, 2021

Questions for the Record from Senator Jerry Moran:

Question 1: Do you still believe the Electronic Health Record Modernization program's overall cost estimate holds water, even in light of the OIG reports?

VA Response: No. VA recognizes the need to have a full and complete perspective of enterprise costs to support the EHRM effort (e.g., non-recurring maintenance).

VA has contracted with IDA to complete an ICE of all EHRM holistic program costs. The ICE will be completed within approximately 12 months of the kick-off meeting, which was held on November 13, 2021.

Question 2: Do you intend to revise the cost estimate, even after the strategic review has ended?

VA Response: Yes.

Question 3: The Electronic Health Record Modernization program's organizational structure is deeply dysfunctional. OIG observed this in each of their reports. GAO has reported on it as well. Has the VA considered establishing acquisition, requirements, and testing centers of excellence similar to the DoD? If no, why not?

VA Response: Yes.

Question 4: As you know, the Deputy Secretary, the Veterans Health Administration, the Office of Information Technology, the Office of Enterprise Integration, and the Chief Acquisition Officer are the key offices involved. How is each of their roles going to change?

VA Response: Responsibility for management of the project, including oversight of appropriated funds, will remain with the Deputy Secretary. An interdisciplinary team of key leaders, to include the Under Secretary for Health, Chief Information Officer, Assistant Secretary for Enterprise Integration, Chief Acquisition Officer and others, will contribute joint functional expertise to the program.

Question 5: The management structure up until now has placed the Deputy Secretary in the top supervisory role. The Deputy Secretary does not have significant staff, so previous Deputy Secretaries have relied on the Office of Enterprise Integration to supervise the program. But that office has fewer than a dozen employees working in this area, so the Office of Electronic Health Record Modernization has been supervising itself in practice. Do you agree this is a problem, and how do you intend to solve it? Would you support legislation removing the Deputy from direct acquisition decision-making?

VA Response: VA established a unified, enterprise-wide governance effort, led by the Deputy Secretary, for the EHR program. This governance structure will incorporate the perspectives of key clinical, technical, acquisition and financial leaders, guaranteeing that everyone within VA who will build, use or be impacted by the EHR will work in concert to shape it. Additionally, given the importance of the EHRM effort, VA is hiring a full-time Executive Agent who will assume day-to-day integration responsibilities long-term. VA does not support legislation removing the Deputy Secretary as the accountable official for the EHRM program. The enterprise-wide governance effort will make the best use of VA resources as the Department implements this system.

Question 6: By law, the Chief Acquisition Officer, Mr. Michael Parrish, is your top advisor on acquisition matters. That includes Electronic Health Record Modernization and all the other major programs it impacts. Previous Chief Acquisition Officers have played minor roles. What will Mr. Parrish's role be going forward? Will you support that office becoming solely responsible for ALL major acquisition decisions from now on? If not, why.

VA Response: As VA's Chief Acquisition Officer and Principle Executive Director of the Office of Acquisition, Logistics and Construction, Mr. Michael D. Parrish is a trusted advisor on all acquisition matters and part of the interdisciplinary team of key leaders who contribute joint functional expertise to the EHRM program. As Secretary of Veterans Affairs, Denis McDonough is responsible for all major decisions affecting the Department, and VA's Deputy Secretary is statutorily charged with oversight of our EHRM effort.

Question 7: The Veterans Health Administration has perhaps the most critical role in Electronic Health Record Modernization. The medical centers and clinics are expected to rely on the Cerner system. What decision-making authority will VHA have in the future?

VA Response: VHA facilitates, coordinates and advocates for all the functional activities that will be impacted by the EHRM implementation. Appropriate decision-making authority will be placed in the correct administrations and offices. At this point, the Department is developing an integrated governance board to take into consideration investment management (budget allocation), risk mitigation and political implications. VHA is eager to be an active partner in determining the appropriate governance structure and how it relates to the VA organizational governance currently in place.

Moving forward EHRM investment decisions made by the Program Office will take into consideration the needs of other equities.

The established joint functional issue resolution process ingests all user issues or request for new functionality. The VA side of this process is currently managed by the EHRM solution experts (working with their DoD counterparts) with subject matter expert input and decision making from the EHRM councils. Through this process, configuration changes within the scope of the current contract are made. Final configuration decision making is determined by a joint group that includes VA and DoD programmatic and functional decision makers. Gaps for which configuration changes cannot resolve are considered new or enhanced requirements and are processed through the established requirements determination process and require formal governance decision making.

Question 8: What VA perhaps needs most urgently, and what we have not seen, is clear quality standards for the electronic health record. In other words, agreed-upon metrics for what improvement looks like. When will quality standards and metrics be available?

VA Response: A core set of quality standards and metrics for the EHRM program are established in the attached Quality Assurance Surveillance Plan. During VA's strategic assessment, and through VA's initial operating capability, the Department identified additional quality standards and metrics that should be monitored and tracked at future EHR deployments across VA's enterprise. Generally, deployment metrics are identified and monitored under each deployment Task Order.

Question 9: When you look at the VA electronic health record system and the modernization project as a whole, do you look at the physician-veteran encounter engagement levels, documentation quality and accuracy, and claims processing capabilities? If so, do you see areas that are ripe for improvement and increased cost efficiencies?

VA Response: Yes, VA is tracking physician-veteran encounter engagement levels, documentation quality and accuracy, and claims processing capabilities. Through enterprise standardization of VA's EHR systems and workflows, VA will use data and reporting capabilities in Lights On Network/Advance, Millennium, and HealtheIntent to assess areas for improvement and cost efficiencies. As we continue to deploy, we will have areas to further improve cost efficiencies. While targeted system optimization activities have been occurring and are continuing at Mann-Grandstaff, Columbus and upcoming deployment sites, the focus has been on user adoption activities (best use of the EHR as configured). Process (workflow) optimization activities will be most beneficial with more focus on user adoption.

Question 10: The VA HAS NOT officially reported the program's new costs to Congress, when will they?

VA Response: It's important to note, VA did provide the costs of the current IT system, infrastructure readiness costs, and associated costs at the start of the program, which has remained primarily the same. However, deferred maintenance and non-modern VA facilities presents a larger risk than initially known. Therefore, VA is currently conducting a historical review of non-OEHRM costs that could be included as part of the LCCE. In addition, VA has contracted with IDA to complete an ICE. Both efforts will inform which VHA and OIT costs should be included and reported as part of the EHRM total cost. Until these reviews are completed, we cannot provide concrete information on what accounts, costs, purposes or amounts will be reported. The kick-off meeting for the ICE contract was October 13, 2021. An interim ICE is due 8 months after the kick-off meeting with a full report due 12 months after kick-off.

Question 11: Going forward, will the VA not start a major modernization program without the requisite 3-5 years of requirements planning?

VA Response: As part of the GAO's enterprise-wide assessment of VA acquisition programs, VA is establishing enhanced governance and oversight requirements. These standards will ensure appropriate oversight throughout the procurement lifecycle and proper alignment with VA's strategic goals. The process begins with an analysis and evaluation of initial requirements, prior to gaining approval from VA leadership to begin a major modernization program. As VA moves from schedule driven program management to event driven, there is no 3-5-year time constraint to preclude planning for a project. All potential major projects in the future will begin once specific milestones are achieved, and VA leadership approves the project to proceed, i.e., after the analysis of enterprise-wide requirements is complete and appropriate cost estimates are submitted.

Question 12: If an immediate, emerging need is identified, will the VA develop rapid requirements, acquisition, testing, fielding framework?

VA Response: Please see the response to question 11. Yes, in an event driven model, small scale rapid prototyping and simplified acquisitions are key vehicles to initial proof of concept actions that could justify and validate larger, major programs. Inherent in the deployment of any project are various stages of appropriate testing throughout the project lifecycle—from developmental to end user evaluations, to user acceptance and validation. Testing as well as training are critical to successful deployment, regardless of the size or speed of a project.

Department of Veterans Affairs (VA)
Questions for the Record
Committee on Veterans' Affairs
United States Senate
"VA Electronic Health Records: Modernization and the Path Ahead"

July 14, 2021

Questions for the Record from Senator Maggie Hassan:

Question 1: The Department of Veterans Affairs' written testimony highlighted that gaps remain in the VA's ability to manage data between the two Electronic Health Record systems and the Department of Defense's system. Furthermore, it is clear from both written and oral testimony that Cerner's system has operational capacity issues impacting veterans' access to care.

Veterans deserve high-quality health care, including access to a comprehensive EHR that eliminates the need to manage cumbersome printed health records and a system that provides seamless access to different providers. The new EHR is supposed to improve the delivery of care and simplify the patient experience, but that is not occurring.

Please provide an update on the gaps found within the new EHR system and how the VA plans to address them to ensure providers have the best system possible and that all veterans have access to high-quality health care.

VA Response: VA is ensuring clinical and practice management systems are functional, with a secure unified person-centered data model under VA data management policy and strategy. This recommendation focuses on activities aimed at improving centrally led data management and related infrastructure. VA's aim is standardization across medical facilities, with a focus on updates to the IT structure as VA continues to improve EHR data captures to depict a holistic view of the Veteran at the point-of-service, enterprise reporting and analytics and an accurate assessment of progress and successes.

VA's EHR Comprehensive Lessons Learned (CLL) report, released in July, captures the gaps found within the new EHR system and how the VA plans to address them through implementation of the VA Data Strategy and Roadmap. The section of the CLL report, "Centralizing Data Management for Workers & Veterans," describes the gaps, progress, measures of success and next steps. Priority Object 2 of the strategy highlights integrating and aligning EHR. Further, the CLL report highlights that VA will publish the VA Data Strategy Implementation Roadmap before the end of December 2021.

The established joint functional issue resolution process ingests all user issues or request for new functionality. The VA side of this process is currently managed by the EHRM solution experts (working with their DoD counterparts) with subject matter expert input and decision making from the VHA EHRM councils. Through this process configuration changes within the scope of the current contract are made. Final configuration decision making is determined by a joint group that includes VA and DoD programmatic and functional decision makers. Gaps which configuration changes cannot resolve are considered new or enhanced requirements, are processed through the established requirements determination process and require formal governance decision making.

VA is implementing new cost controls and a unified, enterprise-wide governance structure that incorporates the perspectives of clinical, technical, acquisition and finance leaders to bring joint functional expertise to the program, provide support and meet overall needs for successful EHR implementation.

The CCL report describes the findings of the strategic review and outlines VA's reimagined approach for EHRM. The Department intends to achieve improvements that will enhance care and services, empower employees to deliver continued excellence, strengthen enterprise program integration and management oversight, as well as ensure operations run as an integrated suite of benefits and services. VA will continue to refine the EHRM roll-out by applying lessons learned and iterate on best practices, much like DoD is doing now.

Department of Veterans Affairs (VA)
Questions for the Record
Committee on Veterans' Affairs
United States Senate
"VA Electronic Health Records: Modernization and the Path Ahead"

July 14, 2021

Questions for the Record from Senator Richard Blumenthal:

VA Data Collection Insights & System Design

Question 1: Mr. McDonough: given some VA data did reveal Black veterans receive disability compensation at disproportionately lower rates, do you expect that the further data analysis across various records will reveal discrimination against Black veterans?

VA Response: VA does not expect that further data analysis would reveal discrimination. Our most sacred duty in VA is to care for all Veterans, their families, caregivers and survivors by ensuring they have safe and equitable access to world-class and compassionate care, benefits and services. VA has zero-tolerance for discrimination.

VBA has codified in our adjudication regulations, particularly in 38 C.F.R. 4.23, a provision regarding the requirement of fair and equitable practices and attitude of VBA personnel. The regulation prohibits VBA rating personnel from allowing any personal feelings to intrude in or influence their decision-making when processing and adjudicating Veterans' claims. In addition, this provision states that fairness and courtesy must be shown at all times to applicants by all employees who handle claims.

If VA identified discrimination, we would take immediate action to review whether new policies or training or other appropriate actions may be necessary to advance equity in agency actions. VBA would consider revising the current adjudication regulations in 38 C.F.R. 4.23 to reinforce and elaborate the prohibition of discrimination and would provide more robust training and updated procedural guidance for VBA personnel to refresh and reiterate VA's zero-tolerance of discrimination.

Question 1a: If discrimination against Black veterans is determined, what will the VA do to resolve this?

VA Response: If VA determines discrimination against Black Veterans is made by an individual, VA will take appropriate personnel action.

Question 2: Mr. McDonough: how are you designing systems to have a standardized field for documenting sexual orientation and self-identified gender identity?

VA Response: The Cerner EHR, Millennium, has standardized fields for sexual orientation and self-identified gender identity consistent with standards set by the Office of National Coordinator (ONC) for Health Information Technology. Clinicians will be able to enter data in these fields based on responses by Veteran patients. The current VistA EHR has lacked sexual orientation and self-identified gender identity fields as noted by GAO Report 21-69 (2020). In response to the GAO report, VA has initiated efforts to create these data fields in VistA EHR with response options consistent with ONC standards. Completion of this work is expected in the next year. Clinicians and administrative staff will be able to enter this information in the VistA EHR. Upon approval of defined standards, VBA can develop business requirements for standardized fields for documenting sexual orientation and self-identified gender identity in its systems.

Question 3: Mr. McDonough: how can the development of a modernized Electronic Health Record system augment equity when disability compensation and other benefits are awarded at the VA?

VA Response: The EHRM will enhance the delivery and experience for Veterans applying for benefits. Electronically sharing certain clinical and service treatment records, as well as rating claims data, will enable all partners to more immediately and equitably address the needs of Veterans and Service members seeking benefits, services, treatment and enlistment.

EHRM also affords claims processors secure access to data and information through automation, seamless integration between systems and real-time information sharing. In addition, electronic transfer of information will empower Veterans to manage their health care and benefits and reduce the administrative burden for Veterans and claims processors.

EHRM captures the required health information for benefit entitlement determinations. At the aggregate level, the availability of robust data across DoD and VA opens new doors to proactive research and analysis, including predictive and preventative opportunities, to improve the Veteran and Service member experience and outcomes.

Department of Veterans Affairs (VA)
Questions for the Record
Committee on Veterans' Affairs
United States Senate
"VA Electronic Health Records: Modernization and the Path Ahead"

July 14, 2021

Questions for the Record from Senator Marsha Blackburn**:**

Question 1: How will leadership increase accountability at the Office of Electronic Health Record Modernization and the VA?

VA Response: VA's Deputy Secretary is statutorily charged with oversight of the EHRM program and leads the unified, enterprise-wide governance effort that has been established for EHRM. This governance structure will incorporate the perspectives of key clinical, technical, acquisition and financial leaders, guaranteeing that everyone within VA who will build, use or be impacted by the EHR will work in concert to shape it. Additionally, given the importance of the EHRM effort, VA is hiring a full-time Executive Agent who will assume day-to-day integration responsibilities long term.

Question 2: When will the VA provide Congress with new lifecycle cost estimate for the ERHM program?

VA Response: VA is currently conducting a historical review of non-OEHRM costs that could be included as part of the LCCE. In addition, VA has contracted with IDA to complete an ICE. Both efforts will inform which VHA and OIT costs should be included and reported as part of the EHRM total cost. Until these reviews are completed, we cannot provide concrete information on what accounts, costs, purposes or amounts will be reported. The kick-off meeting for the ICE contract was October 13, 2021. An interim ICE is due 8 months after the kick-off meeting with a full report due 12 months after kick-off.

Question 3: We need clear quality standards for the electronic health record. In other words, agreed upon metrics for what improvement looks like.

Question 3a: When will clear quality standards and metrics be available?

VA Response: A core set of clear quality standards and metrics for the EHRM program are established in the attached Quality Assurance Surveillance Plan. During VA's strategic assessment, and through VA's initial operating capability, the Department identified additional quality standards and metrics that should be monitored and tracked at future EHR deployments across VA's enterprise. VA anticipates that deployment metrics will evolve over time and will be defined in each deployment Task Order based on lessons learned. Currently, each deployment Task Order requires the creation of site-specific metrics to be monitored and achieved prior to site go-live.

Question 3b: If Cerner is unable to meet your quality standards, what will you do?

VA Response: VA is confident in Cerner and its Millennium system's capabilities and intends to continue with delivering their core EHR. As the prime contractor for this historic endeavor, we are encouraged by their new Chief Executive Officer and will continue to hold them accountable for their performance, while also recognizing our own responsibility to provide them with all the information, access and direction to enable their success. From a contracting perspective, VA can withhold payment on Cerner deliverables or services that do not meet quality standards as evaluated/reported by each task order Project Manager and Contracting Officer Representative.

Question 4: In Testimony, you mentioned that the VA will pursue "technical-only" deployment of Cerner technology at previously planned sites in Veterans Integrated Service Networks (VISNs) 10 and 20.

Question 4a: Please define technical-only deployment.

VA Response: The term "technical-only" deployment referred to VA's plan to implement technical tasks which do not include involvement of the on-site medical staff other than training. This includes the continuing IT upgrades that have been previously planned and budgeted. VA continues to install and even accelerate infrastructure upgrades (both physical and IT) required to deploy the EHR. Once a site is deemed ready, i.e., when the equipment and software are installed, infrastructure upgrades are complete and key staff are proficient with software functionality and end-to-end workflow implications, then the new EHR will be deployed. Recent hearings highlighted our updated deployment schedule which now includes our full contractual requirements beyond just "technical-only."

Question 4b: Who will be utilizing the technology, and will the deployment only be executed by Cerner, or will staff at the VAMC's be involved?

VA Response: VA clinical and administrative staff will use VA's new EHR solution. VA EHRM deployments are led by Cerner and require engagement from VA staff.

Question 4c: How can you determine that the Cerner technology is fundamentally sound?

VA Response: Cerner Corporation's EHR product has proven to be fundamentally sound, as demonstrated through its over 25,000 deployments worldwide. DoD has further demonstrated this through its rollout of the Cerner commercial EHR system with 42,000 active users across more than a dozen states and has deployed at over one-third of its facilities.

EHRM Solution Crosswalk Placemat

Does not reflect "Like for Like" functionality replacement; indicates systems that are, as a whole, equivalent in capability.

Access Management	
Cerner Solution	**VA Solution**
Eligibility Management	VistA - Enrollment Application System
	Patient Appointment Information Transmission (PAIT)
Master Person Index	Master Veterans Index
	Person Services Identity Management
	VHA Support Service Center National SSN Security Database
Registration	Automated Service Connected Designation (ASCD)
	Bio-Point Patient PI Wristband System (bioPoint PI)
	VistA Registration
Scheduling	Mobile Scheduling Applications Suite (MBAA)
	Scheduling
	Medical Appointment Scheduling System
	Electronic Waitlist

Acute Care Delivery	
Cerner Solution	**VA Solution**
Computerized Physician Order Entry	VistA - Computerized Patient Record System (CPRS)
Infection Control	Inpatient Evaluation Center (IPEC)
	MedMined
	Multi-drug Resistant Organisms (MDRO)
	Praedico
	Theradoc Infection Surveillance
	HAI and Influenza Surveillance
Medication Administration Record	Bar Code Medication Administration
Nursing Care (portion of *PowerChart*® capabilities)	Clinical Procedures/CP Flowsheet
	VistA- CPRS
	HDR – Historical (HDR-Hx)
	Health factors & clinical reminders
	Vitals/Measurements
	Intake & Output/Integrated Flow Management Tool (IFMT)
	Mobile Electronic Documentation (MED)
	Social Work
	Veterans Authorizations and Preferences
	Quality Audiology and Speech Analysis and Reporting (QUASAR)
	Shift Handoff Tool
	VistA - Consult/Request Tracking
	Consult Tracking Manager
	VistA - Text Integration Utility
	View Alerts
	Project RED
	FLOW3

Acute Care Delivery (Continued)	
Cerner Solution	**VA Solution**
Physician Documentation (with Voice Recognition – Dragon via *PowerChart Touch*)	Enterprise Wide Speech Recognition
	VistA-CPRS TIU

Ambulatory	
Cerner Solution	**VA Solution**
Ambulatory Referral Management	Community Care Referral & Authorization
Discern *nCode*® (Computer Assisted Coding)	
PowerChart Ambulatory™	Ambulatory Care Reporting
	Patient Care Encounter (PCE)
	Primary Care Management Module (PCMM)
	VistA - Automated Information Collection System
	Occupational Health Record-Keeping System
	VistA - Home Based Primary Care (HBPC)
	Consults
Practice Management: Patient Accounting Practice Management: Registration & Scheduling	Insurance Capture Buffer

Behavioral Health	
Cerner Solution	**VA Solution**
Behavioral Health: Acute Care Behavioral Health: Ambulatory	Disruptive Behavior Reporting System (DBRS)
	Group Notes
	Medora
	Mental Health Assistant/ BAM (Brief Addiction Monitor)
	Mental Health Suite

CareAware & Device Connectivity	
Cerner Solution	**VA Solution**
iBus Device Connectivity	eCareManager
	VistA – Vitals
Manager Driver Library License	

Cardiology	
Cerner Solution	**VA Solution**
PowerChart Cardiovascular™	CART-CL (Clinical Assessment, Reporting, and Tracking System for Cardiac Catheterization Laboratories)
	Eloquist
	Philips Xper
PowerChart ECG™	Facility specific ECG technologies

Case Management	
Cerner Solution	**VA Solution**
Acute Case Management	VistA-CPRS
Post Acute Referrals (includes electronic submission of placement referrals)	VistA-CPRS

Cerner Math	
Cerner Solution	**VA Solution**
Readmission Predictor: CHF	VSSC-IPEC
Readmission Predictor: CAP	VSSC-IPEC
Readmission Predictor: COPD	VSSC-IPEC
Suicide Risk Prevention	VistA-CPRS
Tetralogy of Fallout Index	
Tumor Lysis Syndrome Predictor	

Clinical & Document Imaging	
Cerner Solution	**VA Solution**
Content 360™	Debt Management Center - Front End Scanning
Document Imaging	DocManager
	VistA Imaging System
Image Archive	Central VistA Imaging Exchange

Community & Consumer Health	
Cerner Solution	**VA Solution**
HealtheLife℠ Engagement (Wellness)	PTSD Coach/VetChange, *MOVE!*Coach
HealtheLife Patient Clipboard	Touch Screen Assessment
HealtheLife (Patient Portal)	MyHealtheVet
	Kiosk
Telehealth (Video Visit)	Clinical Video Telehealth

Critical Care	
Cerner Solution	**VA Solution**
APACHE®	VSSC-IPEC
Bedside Critical Care Dashboard	Facility Specific CIS (PICIS, GE, Spacelabs, etc.)
iNet® Critical Care	Various facility acquired and implemented solutions
	Intellispace Critical Care and Anesthesia (ICCA)—Critical Care Iview
	Picis
Infusion Management: Critical Care	

Dental	
Cerner Solution	**VA Solution**
Dentrix (future implementation)	Dental Record Manager

Emergency Medicine	
Cerner Solution	**VA Solution**
ED Coding	VistA-CPRS
ED Physician Documentation	VistA-CPRS or Essentris
ED Triage & Tracking	EDIS-ED Tracking Board System
FirstNet® ED Management	Emergency Department Integration Software (EDIS)
	EMMT (Emergency Medical Tracking Tool)

Extended Care	
Cerner Solution	**VA Solution**
Care Tracker	Care Tracker (in select locations)
Long Term Care	Caribou CLC Suite
	Minimum Data Set (MDS)
Rehabilitation	Functional Independence Measurement (FIM)

Gastroenterology	
Cerner Solution	**VA Solution**
Endoscopy Imaging	VistA Medicine Surgical Imaging
PowerChart Gastroenterology	EndoPro, EndoSoft/EndoVault, Olympus/EndoWorks, Pentax/ endoPRO, ProVation

Health Information Management	
Cerner Solution	**VA Solution**
Documentation Integrity	Incomplete Records Tracking (IRT)
Encoder/Grouper	DSS Encoder Product Suite
Health Information Management	Incomplete Records Tracking (IRT)
Patient Mobile Signature	DSS Scanning Solutions

Interfaces	
Cerner Solution	**VA Solution**
Interfaces	VistA - DSS Extracts
	Carousel
	VA/DoD Identity Repository
	Veterans Call Center (Suicide Prevention)
	Laboratory: Electronic Data Interchange (LEDI)
	Praedigene
	ShadowLink

Interoperability	
Cerner Solution	**VA Solution**
Cerner Direct	VA Direct Messaging
Commonwell	
Health Information Exchange	Nationwide Health Information Network Adapter (NHIN)
	Federal Health Information Exchange
	Bidirectional Health Information Exchange
	eHealth Exchange
	Joint Legacy Viewer
	Data Access Services
Ignite FHIR Services	VistA HLO OK
Immunization Registries	
Open Engine & *OPENLink*™	Data Translation
	Enterprise Messaging Infrastructure
	Legacy Decision Support System
	VistA - Income Verification Match
	Centralized Accounts Receivable System
	Standards and Terminology Services
	Enterprise Terminology Service (ETS)

EHRM Solution Crosswalk Placemat

Does not reflect "Like for Like" functionality replacement; indicates systems that are, as a whole, equivalent in capability.

Knowledge Solutions & Clinical Decision Support	
Cerner Solution	VA Solution
Advance/Lights On	
Biosurveillance	
Catheter Related Infections	IPEC
Cerner Medical Terminology	Lexicon Utility
	Standards and Terminology Services
	Veterans Enterprise Terminology Service (VETS)
eCoach	
Evidence Based Medicine	VistA-CPRS Clinical Reminders
MPages® Developer Toolkit	
Patient Education	Krames, Veteran's Health Library
	LogiCare
Rapid Response	
Sepsis Management	
Decision Support Engine	VSSC (VHA Support Service Center)

Laboratory	
Cerner Solution	VA Solution
Anatomic Pathology (Millennium)	Laboratory: Anatomic Pathology
Anatomic Pathology RFID Tracking	
PathNet® General Laboratory	Laboratory: Howdy Computerized Phlebotomy Login Process
	Vista Laboratory
PathNet: Helix	
PathNet: HLA	
PathNet: Microbiology	Laboratory: Emerging Pathogens Initiative (EPI)
PathNet: Transfusion	Laboratory: Blood Bank (VBECS)

Oncology	
Cerner Solution	VA Solution
PowerChart Oncology™	VistA - CPRS

Patient Accounting	
Cerner Solution	VA Solution
Patient Accounting	Financial Management System
	Medicare Remittance Advice
	VistA - Electronic Claims Management Engine
	Consolidated Copayment Processing Center System
	EEOB and Payment Healthcare Resolution Application
	VistA - Integrated Billing

Patient Accounting (Continued)	
Cerner Solution	VA Solution
Patient Accounting	Coding Compliance Module
	Consolidated Billing Statement System
	Electronic Payroll Deduction System

Perioperative	
Cerner Solution	VA Solution
Anesthesia	Various facility acquired and implemented solutions
	Anesthesia Record Keeper (Picis, Draeger, Phillips, Imed Soft, GE)
AORN Syntegrity Content	
SurgiNet ® Perioperative Nursing Management	VistA - Surgery Package
SurgiNet: Surgery Case Tracking	VistA - Surgery Package
SurgiNet: Surgery Management	InfoPath
	Intellica
	Protoviewer
	Centricity Perioperative
	Centrac
Tissue and Implant Management	Eastern Pacemaker Surveillance Center Database

Pharmacy	
Cerner Solution	VA Solution
ePrescribe	Native VistA to CMOP communication
Multum Drug Database	First Data Bank
PharmNet® Inpatient Pharmacy *PharmNet* Outpatient Pharmacy	VistA – Pharmacy
	VistA Pharmacy: Automatic Replenish / Ward Stock (AR/WS)
Prescription Drug Monitoring Program	VistA-CPRS
	VA Adverse Drug Event Reporting System (VA-ADERS)

Point of Care & Mobility	
Cerner Solution	VA Solution
Barcode Medication Administration	Barcode Medication Administration
Bedside Transfusion Management	VBEC (VistA Blood Establishment Computer Software)
CareAware Connect™	Responder 5
Handheld Specimen Collection	
POC Device Integration	Barcode Medication Administration
	Laboratory: Point of Care (POC)
PowerChart Touch™	

Population Health & Analytics	
Cerner Solution	VA Solution
HealtheAnalytics℠	Performance and Operational Web-Enabled Reports Plus
	VistaWeb
	VistA - Clinical Monitoring System
	VistA - Occurrence Screen
	Pharm: Drug Accountability
	Medical Analytics
HealtheAnalytics: Revenue Cycle	
HealtheCare℠	Health Management Platform
	CareManagement
	Case Management Tracking & Reporting (CMTRA)
HealtheDatalab	
HealtheLife EDW℠	Public Quality and Safety Website
	ASPIRE
	Clinical/Health Data Repository (CHDR)
HealtheRecord℠ (Joint Legacy Viewer visible in *PowerChart*)	VistAWeb
	Joint Legacy Viewer
HealtheRegistries℠	Registries Airborne Hazard Open Burn Pit (AHOBPR); Clinical Case (CCR); Embedded Fragments (EFR); Military Eye Vision Injury (MEVIR); Multiple Sclerosis Surveillance (MSSR); Oncology; Traumatic Brain Injury (TBI); Immunology Case (ICR)
	VistA – OncoTrax
	Veterans Integrated Registries Platform

Quality & Performance Improvement	
Cerner Solution	VA Solution
Quality Outcomes	
Regulatory Reporting	VistA - Automated Safety Incident Surveillance and Tracking System

Radiology	
Cerner Solution	VA Solution
ACR Select	Radwhere
Integrated Digital Dictation	
RadNet® Mammography Management	
RadNet: Radiology Information System	Radiology / Nuclear Medicine
	Registries Breast Care (BCR)

Research	
Cerner Solution	VA Solution
Health Facts®	
PowerTrials®	

Supply Chain	
Cerner Solution	VA Solution
Clinical Supply Chain	Remote Order Entry System (ROES)
	Above Par
	Omnicell
	PHACTS
	Prosthetics
Point of Use	

Support Services	
Cerner Solution	VA Solution
Application Management Services	
Remote Hosting	National Patch Module
	VistA - Capacity Management
	VistA - System Monitor
	Institution File Redesign
	Medical Domain Web Services

System Access	
Cerner Solution	VA Solution
724 Access® Downtime Viewer	VistA Read Only
P2Sentinel™	
Cerner Instant Access™ (Single Sign-On)	Caradigm
	Single Sign-On/User Context
Skybox™ Mobility	

Transaction Services	
Cerner Solution	VA Solution
Address Validation	
Automated Messaging	Audio Care and VetTechs
Claims Management	Customer Engagement Portal
Contract Management	Healthcare Claims Processing System
	Claims Processing & Eligibility System
	Payer Compliance Tool
Electronic Prior Authorization	
Eligibility Verification	Electronic Insurance Verification
Letters	
Medical Necessity	
Patient Statements	

Transplant	
Cerner Solution	VA Solution
OTTR Complete Cellular	VistA-CPRS
OTTR Complete Organ	VistA-CPRS

Women's Health	
Cerner Solution	VA Solution
PowerChart Maternity™: Acute	Women's Health
	Maternity Tracker
PowerChart Maternity: Ambulatory	

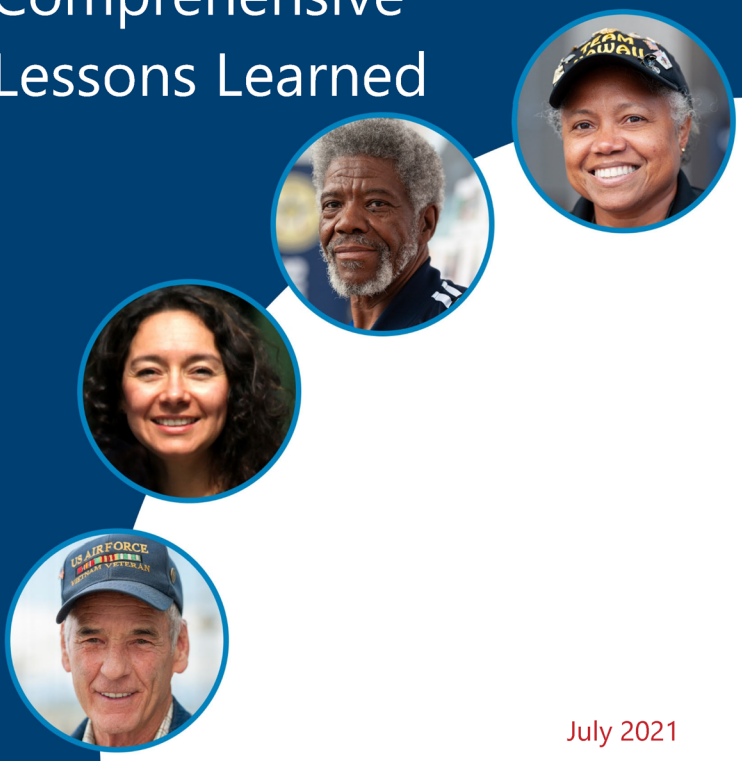
Workforce & Operations	
Cerner Solution	VA Solution
Asset Management	
Capacity Management	National Bed Control System
	Bed Management Solution
Demand Management	
Patient Driven Acuity	
Workforce Management	VistA - Nursing
	Voluntary Service System
	ANSOS

Last Reviewed: 04/24/2020

Metric ID	CPARS Group	SECVA Top 5 Priority	Capability	Performance Metric	Critical Success Factor (CSF)	Key result Indicator (KRI)	Key Performance Indicators (KPI)	Method of Surveillance
VA-NF-M1	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Performance Value	Number of patients for which the system can successfully identify the patient's record in both the VA Master Veteran Index and the DoD Defense Enrollment Eligibility Reporting System (DEERS)	Improve access to care that is timely and consistent with patient needs and preferences.	Increase SHEP Score Q23 (provider knowledge about important information of the medical history) by 5%	Percentage of the clinical data elements that are shared between from DoD to VA in a Transition of Care	Patient survey
VA-NF-M2	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Performance Value	Access to appropriate clinical appointments (Reduced wait time for appointments)	Improve access to care that is timely and consistent with patient needs and preferences.	Decrease SHEP Score Q7: (Average new patient wait days for an appointment) by 5%	Weekly trends for availability of electronic medical records supporting a continuum of quality care for all Service Members and Veteran beneficiaries.	Patient survey
VA-NF-M3	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Performance Value	CHDR Clinical data update success rate DoD-to-VA rate	Increase Quality and Quantity of Medical History Data Available to Support Clinical Decision Making.	Improve clinician satisfaction regarding completeness of medical history data by 5%	Weekly trends for CHDR clinical update success rate (DoD to VA)	100% inspection
VA-NF-M4	Technical/Quality of Product or Service	Modernize Our System	Availability	Number of the 25 ICIB clinical data domains with data elements mapped to National Standards and/or Common Format	Increase Quality and Quantity of Medical History Data Available to Support Clinical Decision Making.	Increase in proportion of healthcare providers who report using the information they electronically receive from outside providers and sources for clinical decision-making to 80% within 6 months post EHRM Go Live.	Percentage of terms in ICIB defined data domains that have been mapped to National Standards	100% inspection
VA-NF-M5	Technical/Quality of Product or Service	Modernize Our System	Availability Performance Value	Number of patients for which the system can successfully identify the patient's record in both the VA Master Veteran Index and the DoD Defense Enrollment Eligibility Reporting System (DEERS)	Enable reporting and management based on data that reflect clinical activities and outcomes	Increase percentage of treatment adherence for Veterans whose goals are included in the care plan from baseline to 90%	Percentage of the clinical data elements that are shared from DoD to VA in Transition of Care	Onsite Surveillance
VA-NF-M6	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Performance Value	Clinician satisfaction with completeness and accuracy of electronic medical history	Increase Quality and Quantity of Medical History Data Available to Support Clinical Decision Making.	Increase number of Community clinicians viewing VHA Health summaries by 5%/month	Percentage of C-CDA documents successfully transmitted from VA to the community providers	Onsite Surveillance
VA-NF-M7	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Performance	Time during the fiscal quarter that JLV was available for login and functionally operational.	Increase Quality and Quantity of Medical History Data Available to Support Clinical Decision Making.	Increase the percentage of Veterans that can generate a single electronic file that contains both self-reported and data from the VA Electronic Health Record by 5%/month	JLV Patient Query Average Transaction Response Time	100% inspection
VA-NF-M8	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Value	Reduced duplicate procedures, x-rays, CT scans, lab tests, patients, medications	Support highly coordinated care inside & outside VA.	Decrease duplicate and unnecessary imaging, lab tests, and procedures by 20%/quarter.	Number of Community Care Providers to review existing consults, referrals, orders, progress reports, and other relevant health record data when providing care to a Veteran.	100% inspection
VA-NF-M9	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Performance Value	Time during the fiscal quarter that JLV was available for login and functionally operational.	Enable reporting and management based on data that reflect clinical activities and outcomes	Increase Provider access to VA/DoD industry Medical Trend data by 5% over baseline to support clinical care decisions	End User Response time (90th percentile) for images provided by VistA imaging to be displayed in JLV.	100% inspection
VA-NF-M10	Management	Greater Choice for Veterans	Availability Value	Enable bi-directional communication between the Veteran and their VA healthcare team	Support highly coordinated care inside & outside VA.	Increase number of MyHealtheVet Blue Button Unique users by 5% over baseline/month	Number of patients (or authorized representative) accessing their health information online with MyHealtheVet Blue Button.	100% inspection
VA-NF-M11	Management	Focus Resources More Effectively	Availability Value	Number of medication discrepancies per 1,000 medications administered	Support highly coordinated care inside & outside VA.	Increase SHEP PCMH Q34: (in the last 6 months, how often did you and someone from this provider's office talk about all the prescription medicines you were taking?) 5% above current baseline/quarter	Frequency with which patients discuss medication list with providers after they have accessed medication list	Onsite Surveillance
VA-NF-M12	Technical/Quality of Product or Service	Modernize Our System	Availability Performance Value	Portion of non-VA or DoD health records supplied electronically vs paper to the Veterans Benefits Administration (VBA) adjudicator	Increase the exchange of electronic health information so that it is available when and where it is needed, and subsequently used to inform decision making.	Decrease percentage of Separating Service Members who had to transport paper health records from the DoD to VA in support of a disability claim from baseline to 10%.		100% inspection
VA-NF-M13	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Performance	For Separating Service Members who have the Separation History and Physical Exam (SHPE) performed in the VA, timeliness of electronic access to the patient's complete DoD medical records for the VA examiner	Increase the exchange of electronic health information so that it is available when and where it is needed, and subsequently used to inform decision making.	Decrease time from completion of all compensation and pension (C&P) examination reports for a Separating Service Member (SSM) to delivery of reports to Physical Evaluation Board Liaison Officer (PEBLO) to 7 days.		Validated Customer Complaint or Below Average ALP
VA-NF-M14	Project Milestones and Schedule	Improve Timeliness of Services	Availability Performance Value	Promote referral management efficiency (Reduced wait time for referrals)	Improve access to care that is timely and consistent with patient needs and preferences.	Decrease percentage of Mental Health transition of Care wait times where a summary of care records was provided for completed appointments to less than 30 days from preferred date.		Random Sample
VA-NF-M15	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Performance	VHA Clinical Adoption of Community Health Summaries (VHIE)	Enable reporting and management based on data that reflect clinical activities and outcomes	Increase VA clinicians viewing Community Health Data through VW and JLV 5%/month		100% inspection
VA-NF-M16	Technical/Quality of Product or Service	Improve Timeliness of Services	Availability Performance Value	Community Care Provider Adoption of VA Health Summaries (VHIE)	Increase the exchange of electronic health information so that it is available when and where it is needed, and subsequently used to inform decision making.	Increase Community clinicians viewing VHA Health Summaries electronically to 95%		100% inspection
VA-NF-M17	Technical/Quality of Product or Service	Greater Choice for Veterans	Availability Performance	Patient satisfaction with the TriCare Online (TOL) or MyHealtheVet (MHV)	VA providers and patients EHR experience should be enhanced based on clinical knowledge, analytics, context and situational awareness	Increase the percentage of patients satisfied with their online access to medical records (via SHEP surveys) by 10%/month		100% inspection
VA-NF-M18	Management	Greater Choice for Veterans	Availability Performance Value	Patient satisfaction with the TriCare Online (TOL) or MyHealtheVet (MHV)	Increase the exchange of electronic health information so that it is available when and where it is needed, and subsequently used to inform decision making.	Increase percentage of patients who report that access to their medical record has improved ability to manage their health 5%mo		Patient survey
VA-NF-M19	Technical/Quality of Product or Service	Greater Choice for Veterans	Availability Value	Telemental health Unique Veterans	Improve access to care that is timely and consistent with patient needs and preferences.	Increase number of unique Veterans who access mental health services using Clinical Video Telehealth to 1000/month		100% inspection
VA-NF-M20	Technical/Quality of Product or Service	Greater Choice for Veterans	Availability Value	Patient Preferences/Location Convenience	Improve access to care that is timely and consistent with patient needs and preferences.	Increase SHEP Score Q15: (in the past 3 months, how often were you able to get an appointment for this service at a convenient location?) from baseline by 5%/month	Number of patients living in remote locations that were able to obtain care from a VA Community Care Partner within 30 miles of their residence	Patient survey

ELECTRONIC HEALTH RECORD

Comprehensive Lessons Learned



July 2021

VA | U.S. Department of Veterans Affairs

Successful implementation of a modern EHR is essential in delivering lifetime, world-class health care for Veterans and their families, caregivers, and survivors. We must get this right.

Foreword

Denis R. McDonough
Secretary, U.S. Department of Veterans Affairs

Serving our Nation's Veterans is a sacred trust. To that end, the U.S. Department of Veterans Affairs (VA) has long been a leader in technology and innovation. VA now must march forward into the modern era – one in which we continue to lead on interdisciplinary and whole-person care. Reflective of the transparency and management rigor required to deliver on that charge, I am pleased to provide you with this report on the recent comprehensive strategic review of the Electronic Health Record (EHR) Modernization (EHRM) program. I extend my gratitude to Congress for giving VA the opportunity to implement a joint record with the Department of Defense (DoD).

Achieving the full promise of a joint record between VA and DoD to enhance care and services for Servicemembers and Veterans will represent a quantum leap forward in American medicine. With unified, seamless, trusted information flow between VA and DoD, VA can further empower Veterans and their families, caregivers, and survivors to achieve health and wellness; enable VHA care teams to deliver best-in-class access and outcomes as a highly reliable organization, while creating joy in work; and enhance our ability to innovate and advance Veteran care and services. Furthermore, this effort improves interoperability between VA's new enterprise-wide inventory management system—the Defense Medical Logistics Standard Support (DMLSS), VA's new financial management system—Financial Management Business Transformation (FMBT), and the Veterans Benefits Administration (VBA) systems.

VA's first implementation of Cerner Millennium occurred on October 24, 2020 at the Mann-Grandstaff VA Medical Center in Spokane Washington. When I began my tenure as Secretary in February, proactive engagement with Veterans, Veterans Service Organizations (VSOs), VA employees, and Members of Congress revealed ongoing concerns with the project. Reports

from the Government Accountability Office (GAO) and Office of the Inspector General (OIG) reflected a range of issues, many of which have also been reflected in press reporting, and it troubled me that multiple stakeholders were citing a perceived lack of transparency on this project as a longstanding issue. On this basis, I directed a top-to-bottom strategic review of the Electronic Health Record Modernization program. President Biden gave me the charge of "fighting like hell" for Veterans, and to that end, this review was a necessary means.

At my direction, and under the supervision of the Acting Deputy Secretary, a diverse group of senior subject matter experts and leaders from across the enterprise conducted the comprehensive strategic review. I ordered the review period not exceed 12 weeks, so it did not become an endless bureaucratic process without tangible outcomes we can immediately action. These leaders and subject matter experts swiftly gathered a broad range of internal and external stakeholder perspectives, analyzed findings from GAO and OIG investigations, and conducted deep dives into a plethora of areas, including, but not limited to: patient safety; productivity; governance and management; cost, schedule, and performance; patient portal; testing; data; change management and training. Additionally, the group consulted with leading private sector health care systems with Cerner experience for their expertise, lessons learned and best practices.

During these 12 weeks, we worked diligently and collectively to listen to Veterans, frontline clinicians and employees, industry professionals, oversight partners and other external stakeholders. My team continues to synthesize findings, and I commit to keeping you apprised and provide full transparency as we reimagine our approach and develop a way forward.

To begin, the strategic review illuminated a broad range of issues on patient safety to diminished productivity that was further compounded by the effects of the COVID-19 pandemic. Through interviews and feedback from Veterans, VA learned that the patient portal experience was fragmented for Veterans in Spokane post "go-live" and clinical and interdisciplinary workflows were not tested in a manner that effectively reflected a real-world environment. VA understands that gaps remain in the ability to govern and manage data between the two EHRs and with DoD. In addition, change management and training were not effective in ensuring interdisciplinary employees both understood and had effective support in completing the key functions of their roles.

Moving forward, VA is implementing new cost controls and a unified, enterprise-wide governance structure that incorporates the perspectives of clinical, technical, acquisition, and finance leaders to bring joint functional expertise to the program, provide support and meet overall needs for successful EHR implementation.

This report describes the findings of the strategic review and outlines our reimagined approach for Electronic Health Record Modernization. We intend to achieve improvements that will enhance care and services, empower employees to deliver continued excellence, strengthen enterprise program integration and management oversight, and ensure our operations run as an integrated suite of benefits and services.

Throughout the report, you will find a consistent theme of the importance of effective management of people, processes, and technology for a transformation of this scope and scale as well as jointness and increased transparency.

At VA, Veterans are our top priority. We are committed, alongside DoD, to realizing the full promise of a modern, integrated record to cultivate the health and well-being of those we serve. I look forward to advancing our shared mission and to our continued partnership in ensuring the delivery of lifetime, world-class health care and services for Veterans.

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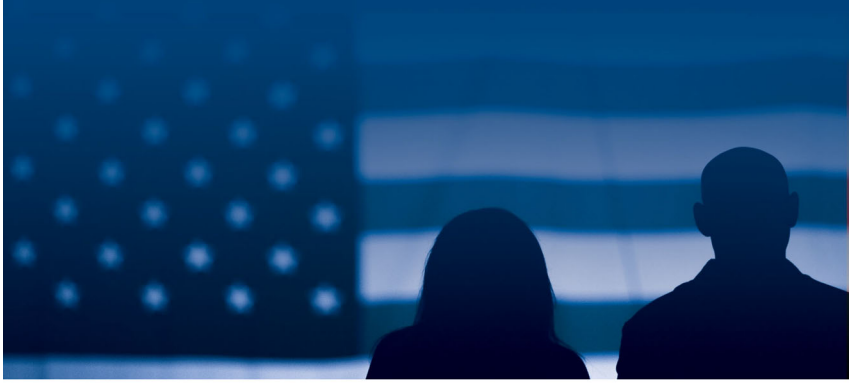


"As I've often said, we as a nation have many obligations, but we only have one truly sacred obligation: To properly prepare and equip the women and men we send into harm's way and to care for them and their families, both while deployed and when they return.

Every single Veteran deserves world-class health care and the support that they have earned — no matter their gender, race, disability, sexual orientation, or anything else. We owe you. It's as simple as that."

– President Joseph Biden, March 22, 2021

WHY VA CONDUCTED A STRATEGIC REVIEW

Following implementation of the new EHR System at the Mann-Grandstaff VA Medical Center in Spokane, Washington in October 2020, Veterans, employees, and external stakeholders raised concerns.

VA conducted a 12-week top-to-bottom Strategic Review of the EHR Modernization (EHRM) program to develop a comprehensive understanding of the status of the program and its impact on Veterans and employees.

HOW VA CONDUCTED THE STRATEGIC REVIEW

Under the supervision of the Acting Deputy Secretary, a diverse group of leaders and subject matter experts (in consultation with leading private sector health care systems with Cerner experience), analyzed findings from GAO and OIG investigations, and conducted deep dives into a plethora of areas to review issues and identify solutions to address them

Executive Summary

WHAT VA LEARNED DURING THE STRATEGIC REVIEW

VA established eight workstreams covering all aspects of the program to ensure successful EHR implementation across sites applying the comprehensive lessons learned. Below is a summary of the progress made so far and proposed objectives and performance measures.

Improving the Veteran Experience

Veterans and their families are frustrated by the transition to the Cerner patient portal and reported a fragmented online experience. VA is addressing Veteran insights by using human centered design to integrate its current digital experience with the back-end Cerner system. Ultimately, VA.gov will become a single Veteran online experience that integrates all Veteran transactions—across health, benefits, and memorials.

Ensuring Patient Safety

Numerous patient safety concerns and system errors were identified during the strategic review. VA established a Patient Safety Team to determine and resolve the EHRM patient safety concerns at Mann-Grandstaff. Mitigation plans are in place for the multiple issues identified. Through expanded training, and documented guidelines and workflow re-engineering, staff are able to better understand their roles and responsibilities.

Providing Extended Training to Frontline Employees

VA identified a need to standardize communication and improve training, so employees better understand the change in their roles. VA created Change Leadership Teams responsible for guiding staff through change and is redesigning training leveraging adaptive learning to account for variations between facilities and a greater presence at sites. Going forward, VA is empowering its Change Leaders through a centralized repository with comprehensive readiness checklists. VA continues to empower the facility-based Informatics Steering Council (ISC) to resolve knowledge gaps.

Building Confidence at VA Sites

There is a need to improve site readiness planning and testing, reduce staff

shortages prior to go-live, and upgrade physical and IT infrastructure. VA is deploying sandbox environments to increase end-user testing to improve adoption and it is establishing an interdisciplinary team to oversee the quality of test plan development and execution. VA is establishing go-live dates that allow for sufficient time to finish infrastructure upgrades, change management activities, and interface development. A Joint Deployment Coordination Team responsible for all pre- and post- deployment activities will be established at each site.

Implementing Organizational & Program Improvements

VA must improve its management of the EHR program and integration by focusing on technical and organizational challenges. A review of the contract has been completed, and VA is updating the EHRM work breakdown structure (WBS) to include all program work, as well as developing an enterprise integrated master schedule (EIMS) and Life Cycle Cost Estimate (LCCE) for greater transparency of the schedule and cost of the program. Improvements to EHRMs risk management processes have been made and dashboards as well as immersive visual designs have been developed to provide a transparent view of program status. Moving forward, VA will continue to review all aspects of EHR program management, including finalizing correlation between the EHRM WBS and the project schedules and assignment of risk mitigations to action owners, a risk dashboard to monitor progress, and clear criteria for risk severity analysis.

Improving Operational Efficiencies

VA needs to clarify and streamline enterprise-based roles within and across clinical and practice workstreams, optimize workflow configurations, identify root causes of productivity drop offs, and improve end user experiences. VA is optimizing clinical access to the system and adding specificity to workflows to ensure essential functions are captured. VA is monitoring post deployment work productivity and system availability and deploying additional staff if needed. All ticketed end-user experience issues and change requests are being addressed. VA continues to identify and address operational issues from the Mann-Grandstaff experience and assess the lessons learned for applicability to future implementation sites. A current state end-to-end operational workflow review is also underway. A key finding at Mann-Grandstaff is the lack of an effective Revenue Cycle function in the Cerner product. Actions are being taken to address and fix this major deficiency which, if not resolved, will limit future deployments.

Making Governance Effective

Greater clarification and empowerment of a governance structure is needed, ensuring stakeholder input, and enabling timely decisions communicated through one voice. VA is restructuring governance to ensure key stakeholders participate in all decisions. VA is considering several means to improve communications before and after all EHRM decisions. A priority moving forward includes that governance, performance, and risk management, reporting and analytics and decision-making activities are made in coordination and through a joint, unified voice.

HOW VA PLANS THE WAY FORWARD

VA is using the momentum of the Strategic Review to move toward a Veteran-centered approach to continue to identify areas of opportunity, make improvements at Mann-Grandstaff and increase future deployment site readiness.

A successful EHR deployment is essential in the delivery of lifetime, world-class heath care for our Veterans. VA is committed to successfully deploy the new EHR system for the Veterans we serve and to drive the nation's health care industry forward.

Centralizing Data Management for Workers & Veterans

The current structure of EHRM data syndication is unable to meet facility and VISN needs, including a lack of data migration quality review cycle and a need for manual intervention of imported VistA data. There are also gaps in enterprise reporting and analytics due to challenges with the usability, and complexity of managing the data. A Data Integrated Project Team (IPT) has been iterating, testing, and validating a common information model (CIM) to support data management, the issues of manual intervention, data quality and inconvenience to Veterans at the point-of-service. VA continuing and enhancing the Data IPT to ensure high quality data as well as strengthening a functionally focused team to develop a value realization plan and implementation strategy to include metrics at the local and enterprise levels. By December 2021, VA plans to publish the VA Data Strategy Roadmap integrating EHR modernization actions.

Vision

Empower Veterans, Service members and care teams, with longitudinal health care information to enable the achievement of health and life goals.

North Star

VA, in partnership with DoD, will ensures that unified, seamless and trusted information:

- **Empowers Veterans and their families, caregivers, and survivors to achieve health and wellness.**
- **Enables VHA teams to deliver best-in-class access and outcomes as a highly reliable organization and creates joy in work.**
- **Enhances VA's ability to innovate and advance care and services for Veterans.**

The Strategic Review was approached holistically to cover all areas of operations affected by the EHRM program.

Approach

The strategic review was approached holistically and covered all areas of operations affected by the EHRM Program, including patient safety, productivity, training and change management, testing and validation, data model and management, programmatic integration, site readiness and technical integration, integrated governance management, Veteran and employee experience and cost, schedule, and performance: The Acting Deputy Secretary, with frequent engagement from the Secretary, led an enterprise-wide, joint effort with organizational partners from across the Department, including the Office of Electronic Health Record Modernization (OEHRM), the Office of Acquisition, Logistics, and Construction (OALC), the Veterans Experience Office (VEO), the Office of Information & Technology (OIT), the Office of Enterprise Integration (OEI), the Veterans Benefits Administration (VBA) and the Veterans Health Administration (VHA.), among others. From March through June 2021, key leaders and subject matter experts met to develop joint understanding of the status of key objectives, re-establish key performance indicators (KPI), identify dependencies and risks, and provide recommendations for addressing opportunity areas. A deep-dive analysis and review of EHR contract requirements, schedule management, spend plan and organization were conducted, and a range of key leaders, including the Secretary, traveled to Spokane to hear directly from Mann-Grandstaff employees. VA appreciates the Government Accountability Office (GAO), Office of the Inspector General (OIG)'s and all other stakeholder efforts in illuminating insights that match findings by VA and are included as necessary next steps for future deployments of EHR.

The table below describes the approach for conducting the Strategic Review, including the sources and inputs provided by various stakeholder groups, informing the analysis and guiding development of this report.

Stakeholder Groups and Sources		Analysis	Outputs
Congressional Letters	Official Correspondence received between July 2020 and June 2021	– **Synthesized findings and identified common categories for resolution and reporting across sources** – **Formed workstreams to focus on addressing findings and recommendations found in the sources** – **Conducted a deep-dive analysis of requirements, schedule, spend plan and organization** – **Performed interviews and analyzed Veteran, Transitioning Service member and employee survey results to derive insights** – **Tiger Teams analyzed issues and identified fixes**	– **Human Centered Design Insights** – **Mann-Grandstaff Optimization Tiger Team Resolution of 148 Issues** – **Mann-Grandstaff Deployment Teams Recommendations & End-user Adoption Activities** – **EHRM Comprehensive Lessons Learned Report** o Opportunities o Progress o Measures of Success o Way Forward – **Patient Portal Survey**
Government Accountability Office (G.A.O.) & Office of Inspector General	– GAO-20-473 (6/5/2020) – GAO-21-224 (2/11/2021) – VAOIG-19-08980-95 (4/27/2020) – VAOIG-19-09447-136 (4/27/2020) – VAOIG-20-01930-183 (07/08/2021) – VAOIG-20-03185-151 (07/07/2021)		
Independent Assessments	– National Coordination Center (NCC) VA EHRM Initial Operating Capability Assessment Final Report (2/25/2021) – Institute for Defense Analyses (IDA) VA EHRM Quality Assurance Review (QAR) (January 2021)		
Listening Sessions, Interviews, After Action Reports & Surveys	– Staff Listening Sessions – Staff Interviews & Survey – Veteran & Transitioning Service member Interviews & Survey – After Action Reports		
Tiger Teams	– 20 Mann-Grandstaff Optimization Tiger Teams formed to identify and mitigate EHRM issues		

Table 1. EHRM Comprehensive Lessons Learned Approach

This Strategic Review establishes a reimagined approach to ensure the success of EHR implementation and to prevent and reduce issues at future deployment sites.

VA's Path to Success

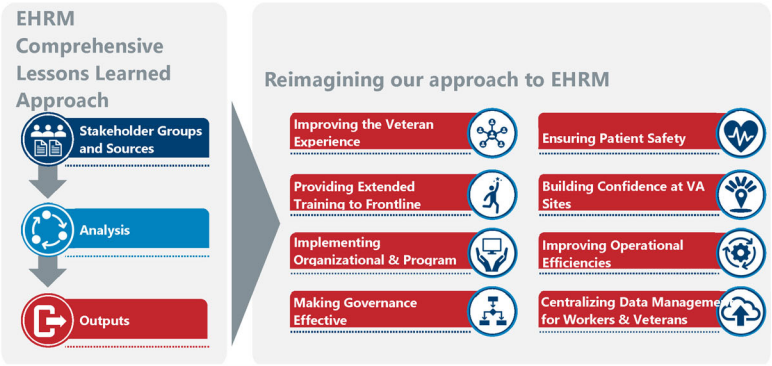
During the EHRM Strategic Review, VA identified areas for improvement and opportunities for progress and continues to work toward successful integration of EHR, while simultaneously providing optimal health care services and COVID-19 response efforts to our Veterans.

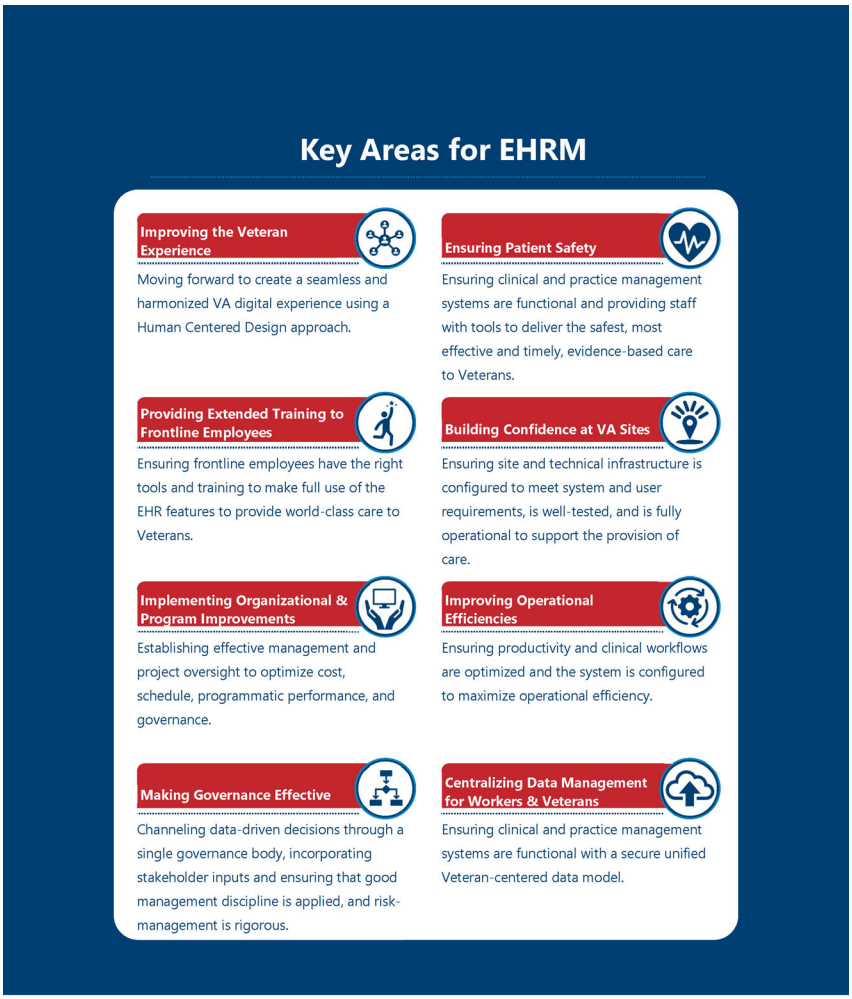
Through the systematic analysis of the findings and recommendations, VA organized itself into workstreams. The workstreams included Change Management, Communications & Training, Data Syndication, Governance & Operating Rhythm, Information & Infrastructure, Productivity & Patient Safety, Sandbox, Veterans Experience & Patient Portal.

In addition, contractual requirements, schedule, spend plan and organizational deep dives were conducted to ensure critical functional, technical, and programmatic issues are addressed.

By reimagining our approach to EHRM, VA has identified key areas listed in Figure 1, to ensure the success of future deployments and to prevent and reduce issues at future sites. This report describes the opportunities, progress, proposed measures of success and way forward.

NOTE: *All measures of success and way forward are proposed and are currently under review.*




Key Areas for EHRM
Improving the Veteran Experience
Moving forward to create a seamless and harmonized VA digital experience using a Human Centered Design approach.
Ensuring Patient Safety
Ensuring clinical and practice management systems are functional and providing staff with tools to deliver the safest, most effective and timely, evidence-based care to Veterans.
Providing Extended Training to Frontline Employees
Ensuring frontline employees have the right tools and training to make full use of the EHR features to provide world-class care to Veterans.
Building Confidence at VA Sites
Ensuring site and technical infrastructure is configured to meet system and user requirements, is well-tested, and is fully operational to support the provision of care.
Implementing Organizational & Program Improvements
Establishing effective management and project oversight to optimize cost, schedule, programmatic performance, and governance.
Improving Operational Efficiencies
Ensuring productivity and clinical workflows are optimized and the system is configured to maximize operational efficiency.
Making Governance Effective
Channeling data-driven decisions through a single governance body, incorporating stakeholder inputs and ensuring that good management discipline is applied, and risk-management is rigorous.
Centralizing Data Management for Workers & Veterans
Ensuring clinical and practice management systems are functional with a secure unified Veteran-centered data model.

Improving the Veteran Experience

Moving forward to create a seamless and harmonized VA digital experience using a Human Centered Design approach.

VA leveraged Human Centered Design (HCD) methodologies, to understand, address and improve the patient portal and overall VA digital experience for Veterans, Service members and VA staff, a unique experience to Veterans separated from service. VA assessed the landscape of its most-used digital products to capture the voices of Veterans, transitioning Service members and VA staff to better understand current and desired experiences. VA conducted interviews, observed user interactions with VA's online websites, reviewed artifacts and synthesized and analyzed qualitative data to identify the patterns and insights below.

Opportunities

- Veterans and their families are confused by the transition to the Cerner patient portal, often miss or overlook common communication methods and want to easy-to-follow or one-on-one guidance.
- Veterans have a fragmented online experience with multiple entry points and sign-in pages, creating confusion and frustration.
- In the new patient portal, Veterans struggle with refilling prescriptions, increasing the risk of missed refill orders.
- In My VA Health, Veterans can no longer see a list of the VA providers with whom they have a relationship, making it harder for them to initiate secure messaging to their Patient Aligned Care Team (PACT), potentially leading to a gap in communication.
- Mental health providers reported that Veterans can now only see the chief complaint of their progress notes in the portal, creating confusion and mistrust.
- Provider message pool design led to unclear Veteran reminders, lost messages, and excessive inbox messaging to providers, impacting appointment scheduling, resources, and workflow.

Progress

- VA's goal is to make the EHR transition invisible to Veterans by integrating VA's current digital experiences with the back-end Cerner system, providing Veterans the benefit of an integrated health record without the downside of a traditional patient portal transition.
- VA will integrate all Veteran transactions—across health, benefits, and memorials—into a single Veteran online experience on VA.gov to create seamless access to VA's unique and holistic suite of services, including health care information and transactions, benefits, billing/payments, record management, process/status tracking, and end-of-life benefits planning.
- VA used a human-centered design approach with direct interviews with Veterans, Service members and VA staff to capture user experiences and pain points. Findings included seven common themes and 19 insights with opportunity areas that will inform future system design updates.

Short-term fixes to address the current user experience:

- VA is working to streamline prescription refills within the current My VA Health portal, working with Cerner to enhance their commercial capabilities to better support Veteran prescription management. (e.g., default renewal settings and/or batch renewals of multiple medications.)

- A provider filter will be incorporated into the portal in June 2021 to improve the Veteran message reminder process and restrict erroneous messaging to providers with whom the Veteran has no relationship.

Measures of Success*

- Digital patient experience utilization measures: number of unique users per month, number of appointments made, number of secure messages sent, number of prescriptions refilled and renewed, number of health records viewed.
- Helpdesk tickets related to digital patient experience tools.
- Overall customer satisfaction with VA's online experience and specific health capabilities.
- Utilizing VA's customer experience framework as codified in 38 C.F.R. § 0.603, measure the Veteran digital experiences:
  - I trust VA to create a digital experience that meets my needs
  - It was easy to utilize VA's online health tools.
  - I got the services I needed through the VA's online health tools.
  - I feel like a valued customer when using VA's online health tools.

Way Forward*

- Using HCD principles, with collaboration across VA and Cerner, VA will prioritize user insights and develop a plan to achieve the system changes needed to harmonize the experience for all portal users so that VA's digital transformations are seamless and invisible to Veterans and other users.
- Using APIs provided by Cerner and Cerner's underlying system capabilities, VA will re-integrate the patient portal experiences at Cerner sites and VistA sites into VA's main digital experiences provided on VA.gov, making the Cerner transition invisible to Veterans as implementations of the modernized EHR proceed across the country.
- VA will empower Veterans with access to their own health record by implementing standards-based health data APIs that allow Veterans to access their joint VA/DoD record through a variety of approved third-party health applications.

** All measures of success and way forward are proposed and are currently under review.*

Ensuring Patient Safety

Ensuring clinical and practice management systems are functional and providing staff with tools to deliver the safest, most effective, and timely, evidence-based care to Veterans.

Preventing and reducing risks to patients is of paramount importance to the VA Veterans must trust VA staff, their knowledge, and the facilities they visit and have confidence that their safety is of top priority. VA makes every decision with Veterans safety in mind and will continue to do so.

Opportunities

Patient Safety Reports

- Many issues were reported through the Cerner ticketing system and through other reporting mechanisms that were identified as potentially impacting patient safety.
- **While patient safety managers working in the Joint Patient Safety Reporting System use standard definitions and risk-severity scoring criteria, end users do not always follow those definitions when submitting tickets.**
- In addition, the same issue may be reported more than once. This has resulted in different counts of the total number of safety issues and the status of the issues.

Patient Safety Concerns

- Risks to patient safety related to incomplete data migration, usability issues, complicated workflows, busy screen, manual work arounds, lack of training and faulty data must be addressed.
- Safety concern that fixes are not delivered in a timely fashion.

Patient Safety System Errors

- Pertinent patient information (medical history, medication list, allergies) do not populate/import from Power Chart into EDRM.
- Referrals to some specialties did not match the actual programs in that specialty; the referral types did not exist in the system and staff resorted to sending encrypted emails to notify each other.
- Key forms were not correctly routed.

Progress

Patient Safety Reports

- **The patient safety definitions have been shared with the vendor and discussions are underway to streamline the reporting process to ensure that accurate numbers of incidents can be easily obtained.**
- All key stakeholders have completed their review of issues reported through any mechanism where patient safety concerns were raised. The issues were consolidated, reviewed using the common definition of a patient safety issue, risk stratified and categorized. Reviews are underway to assess all other issues reported during the post-implementation period. Risks and issues have different levels of impact and likelihood of occurring and are categorized by areas of focus. No incidents of significant patient harm related to the deployment occurred.

Patient Safety Concerns

- VA has established a Patient Safety Team to examine all EHRM patient safety related concerns at Mann-Grandstaff, devise a resolution strategy for addressing all patient safety issues, and ensure communication and feedback is shared with patient safety managers and end users from ticket submission to solution.

Patient Safety System Errors

- Mitigation plans are in place to address patient safety system errors.
- Training has been developed as part of mitigation strategies to assist future sites through the use of an enhanced testing and training environment. This

- Prescription delays or errors (e.g., Veterans not receiving their prescriptions when needed or receiving the wrong prescriptions).
- Errors tracking and placing orders because of lack of training on the system.

- will assist in providing evidence-based confidence in mitigation strategies.
- Veterans' identity management and data migration issues have been escalated for development of advanced business rules or evaluation of alternative strategies.
- Reports are being run daily to identify orders/consults or other data sent to the unknown queue so that they can be corrected.
- VA is developing guidelines for Veterans Integrated Services Network (VISN) and VAMC employees to ensure roles and responsibilities are clearly defined and understood.
- Training is being expanded to include desktop exercises and other forms of interdisciplinary training environments.

Measures of Success*

- All (or> 90%) of Patient Safety issues are resolved.
- Percentage of successfully completed pharmacy orders.
- Percentage of successfully completed diagnostic exams.
- Percentage of successfully complete patient referrals.
- VA will develop a mitigation strategy and timeline for all open issues by end of July 2021.
  - Full resolution dates will be known by August 30th, 2021.

Way Forward*

- VA will develop a mitigation strategy and timeline for all open issues by end of July 2021.
- Patient safety teams will continue to organize patient safety issues into common domains and determine causative factors and methods of approach toward resolution.
- A documented patient safety strategy is under development and will include a communication strategy with standardized communication for all safety-related issues; on-call schedule/phone numbers for strategic partners personnel, a strategy for national/VISN/and local-level clinical and informatics team collaboration, a mitigation timeline, Safety Incident Engagement Process; tracking process, issue taxonomy, recommendations and contact list of key partners.
- VA subject matter experts (SME) will address workflows, new roles and responsibilities for end users, alerts & reminders, summary of root cause analyses to date, testing to "break the system", and establish a "stop-the-line" function.

** All measures of success and way forward are proposed and are currently under review.*

Providing Extended Training to Frontline Employees

Ensuring frontline employees have the right tools and training to make full use of the EHR features to provide world-class care to Veterans.

VA will provide the right tools to staff and ensure they are appropriately trained and prepared to make full use of the EHR features to provide world-class care to Veterans. The following recommendations refer to training, communications, change management, stakeholder engagement and organizational development activities.

Opportunities

Leadership

- An EHRM Enterprise solution must be pursued by VA leadership to minimize local variations and maximize functionality. Empowering the Informatics Steering Committee (ISC) is essential to ensure internal and external stakeholder engagement.
- Clearly defined and robust enterprise definitions, policies, roles, and procedures for the ISC User role assignments are a fundamental prerequisite for training and go-live that requires site supervisor approval.

Training and Coaching

- Employees at-large felt inadequately trained for their responsibilities that translated into operational errors. There was insufficient time to schedule and prepare for trainings, which resulted in employees confused about the purpose of the training activities and their roles in them.

Communication and Change Management

- There is a need for standardized communication and comprehensive communication planning across the VA/OIT/Cerner partnership. Improving the monitoring and management of change management deployment effectiveness needs to occur through centralized and standardized change management development, communication, and execution.

Progress

Leadership

- By establishing a maturity model, VA has determined the level of change capacity needed for leadership at all levels of the organization, recognizing existing variability across facilities and VISNs and setting a standard for expectations.
- VA is focusing on building change management skills for leadership roles across the organization, including empowering facility-based Change Leadership Teams and clearly defining the role, policies and procedures that will lead them to successfully guide their teams through change.

Training and Coaching

- VA is redesigning and expanding training to reflect an enterprise operating model and creating a new interdisciplinary training environment, as well as use adaptive learning to ensure adjustments are made based on facility differences. Sites will now be fully prepared with materials and guides to assist in training and best practices for training leveraging adult learning theory. VA is developing workflow-based training scenarios and additional site support to understand the "Why" for EHRM needs.

Communication and Change Management

- Collaboration approaches are being developed across VA, and stakeholders are meeting weekly to ensure current and correct knowledge sharing is occurring at all levels of the organization. VA is empowering its Change Leaders through a centralized repository of change management artifacts that will be developed upon determination of the sustainment training plan. OEHRM has created a VA EHRM page on VA's Insider news page with artifacts such as videos, fact sheets, toolkits,

and a style guide. A joint SharePoint site with created by OIT with Communication Plans (COMPLANs) is accessible by all VA EHRM communicators including VHA, OIT, OEHRM, Office of Public and Intergovernmental Affairs (OPIA), and OEI.

- Through a more comprehensive approach, VA has made many changes in response to the lessons learned:
  - Developing a comprehensive readiness checklist.
  - Developing a "Sandbox" environment that mirrors the production environment for training and testing.
  - Increasing engagement and using the expertise at the end user level to apply towards decisions at the councils.
  - Improving training methods to make knowledge transfer more effective to the end user by better equipping the super users and clinical adoption.
- VA is formalizing the development of informatics resources at deployment sites to support end users through deployment and sustainment of the new EHR

Measures of Success*

- Percentage of medical center users who express confidence in using the EHRM system.
- Percentage of users/critical superusers trained.
- ADKAR (Awareness, Desire, Knowledge, Acceptance, Reinforcement) progression (Percentage of identified stakeholders who have progressed in their ADKAR self-assessment based upon the stakeholder engagement/change management plan).

Way Forward*

- Change management is critical to successful deployment of the modernized EHR VA's plan moving forward includes synchronizing communication engagements for a single unified enterprise voice, as well as ensuring internal/workforce stakeholders are informed and have trust in the program and VA
- VA will focus on developing an end-to-end training framework that encompasses Cerner training while providing for a holistic team-based approach, incorporating supporting Health Information Technology within the clinical and business processes, and is based on best-practice business process re-engineering.

** All measures of success and way forward are proposed and are currently under review.*

Building Confidence at VA Sites

Ensuring site and technical infrastructure is configured to meet system and user requirements, is well-tested, and is fully operational to support the provision of care.

Site Readiness and Infrastructure

VA is ensuring the EHR technical infrastructure is configured to meet user required experiences, is well-tested, and is fully operational to support the provision of care, even before the scheduled go-live date. VA will provide the tools to ensure staff are appropriately trained and prepared to make full use of the features to provide world-class care to Veterans. Site readiness integration includes facility-level training and change management activities, testing and validation, information technology and facility construction infrastructure activities. VA must support and encourage employees at facilities to continue working together to ensure capability and readiness of sites before go-live dates.

Testing

VA is committed to ensuring that EHR systems are tested and fully operational and meet system readiness requirements. Environments will be provided that assure technical Infrastructure development and implementation, system configuration and interface test planning activities.

Site Readiness

- Improve site readiness planning and assessment procedures to ensure resource availability, appropriate data acquisition, development and prioritization of test scripts, schedule development and planning and decrease the occurrences of common issues observed in previous EHRM systems implementation.
- Staffing shortages may impact go-live readiness and support resulting in increased user frustration.

Infrastructure

- Significant upgrades are needed to VA's physical and information technology (IT) infrastructure.
- Current state reviews do not include observations on physical infrastructure.
- Joint Legacy Viewer (JLV) has up to a two-minute delay and closes between patients, impacting provider usage of the system.

Testing & Validation

Site Readiness

- Assessed readiness through developing a Systems Readiness Test Plan, conducting thorough system testing, dry runs, and tabletop exercises to ensure readiness of systems for cut over and awareness of responsible parties, roles, and assignments.
- Incorporated lessons learned from earlier deployments to improve planning, including go-live communication, go-live staffing coverage and cut over process plans to test readiness.

Infrastructure

- VA is looking to and planning of essential infrastructure upgrades.
- VA site assessments will include an engineering review and assessing the adequacy of the physical infrastructure building off previous assessments; findings will inform the schedule.
- Infrastructure constraints contributing to JLV latency from data center to desktop are being investigated.

- The Systems Readiness Test Plan was inadequate to ensure resource availability, appropriate data acquisition, development and prioritization of test scripts, schedule development and planning.
- End users did not have access to an EHRM Sandbox to practice their workflows and learn system functionality.

Interfaces

- Initial deployment required 73 interfaces and will require due diligence and robust management to minimize net new interfaces to reduce additional complexity and cost.

System Issues

- Significant system issues were observed, including:
  - Partially established ticket and help desk operations, which impacted user functionality and satisfaction.
  - User fatigue resulting from excessive amount of medication alerts.
  - Burdensome effort to frequently log in/out.
  - There is no option to create "ad hoc" appointments for unscheduled phone conversations with patients, leading to lost credit and revenue.

Testing & Validation

- VA will enhance system testing (user acceptance, load, integration, and systems testing) to optimize go-live and support end-user adoption by employing the newly developed end user sandbox and focusing on increasing individual and team readiness.
- Developing an evaluation plan and establishing an interdisciplinary team to oversee the quality of test plan development and execution.

Interfaces

- VA will set go-live dates with sufficient time to finish interface development and testing that includes stakeholder engagement, ensuring resolution of issues related to interfaces.

System Issues

- VA and Cerner employees are actively engaged in addressing technical and operational issues. Issues are being systematically analyzed, categorized, and prioritized to be addressed. A dashboard is being built to provide transparency on the status of resolution of the tickets.
- The team has resolved alert log concerns and is reviewing scheduling and billing policies to submit modifications.
- Pharmacy is conducting ongoing review of medication alert logs. The Tiger Team identified nine changes that would significantly decrease the number of alerts.
- VA is reviewing current appointment scheduling and billing policies and needed modifications. and awaiting approval for a single-sign-on change request.

Measures of Success*

- Percentage of system and data test issues successfully remediated before a Go-Live.
- Average help desk ticket # of days to resolution, # of total open help desk tickets, % of open help desk tickets assigned to an analyst, % of help desk tickets in testing phases, % of closed help desk tickets.

Way Forward*

- VA will build trust and confidence with Veterans and VA staff through incorporating lessons learned, proactive planning, providing ongoing support, engaging end users throughout system design, testing, roll-out and optimization, to ultimately provide an EHR that meets the needs of the organization.

– # of total generated medication alerts per day, # of medication alert overrides, trending the % of medication alerts that result in a change to the medication order, % of prevented medication errors.	– VA is considering the stand up of an independent Test & Evaluation (T&E) function to increase confidence in the product deployed at sites. – Plan for establishing a Joint Deployment Coordination Team responsible for all pre- and post- deployment activities at each site, consisting of a team of cross functional experts, to ensure a repeatable and consistent site readiness process across at each site. This would include all change management, on-site testing, and training coordination. – VA will develop metrics for workforce readiness and will develop change management activities to address needs to resolve issues impending readiness. It will also consider development of criteria to delay implementation if readiness is not present. Deployment team would obtain signoffs to confirm satisfactory completion of all requirements for site readiness

** All measures of success and way forward are proposed and are currently under review.*

Implementing Organizational & Program Improvements

Establishing effective management and project oversight to optimize cost, schedule, programmatic performance, and governance.

Effective integration and program management is critical to ensuring timely clinical and practice management system implementation. This section highlights VA's overall approach for improving EHR program management and integration.

Opportunities

Requirements

- There are significant technical and organizational challenges which must be addressed.

Schedule

- The work breakdown structure (WBS) and Integrated Master Schedule (IMS) do not capture all work, particularly activities not funded by OEHRM.
- Lack of an enterprise integrated master schedule (EIMS).
- Evaluate the deployment schedule, including Capability Set 2.0, in relation to optimization activities and areas of focused assessment.

Spend Plan

- Develop a Life Cycle Cost Estimate (LCCE) that includes all costs throughout the life of the program.

Organization

- Ensure the EHRM program has the appropriate organizational structure, management, strategy, adherence to industry best practices, change management philosophy and oversight to ensure it delivers actual value to the end user.

Performance

- Identify desired outcomes of the program, select metrics to align with these outcomes and develop a leadership dashboard to track the program's progress toward these outcomes.

Progress

Requirements

- A review of the contract has been completed and if necessary, additional task orders will be created to support the success of future deployments.

Schedule

- VA is updating the EHRM (WBS) to include all program tasks and work.
- An EIMS is under development, along with a corresponding dashboard that provides greater transparency on the schedule and the status.

Spend Plan

- VA is developing an LCCE that includes all costs throughout the life of the program.

Organization

- Review of the EHRM organization was conducted and changes needed to address issues are under evaluation.

Performance

- Lessons learned were captured, along with an analysis of performance measures and KPIs.

Risks

- Risk management process and EHRM risk register were reviewed, and improvements identified (tighter integration between schedule, scope, budget).

Dashboards

- Design for an ecosystem of tools has been built to integrate the various inputs and tools used for tracking lessons learned, performance data, risks, issues, action plans and decisions, with a knowledge

Risks

- Shortcomings in schedule, cost and risk management practices revealed deficiencies in VA's program management processes.
- Lack of identification of enterprise risks. Risks are not adequately aligned with organizational goals and objectives.

repository of information artifacts that support effective mitigation of risks.

- Dashboards and immersive visual designs have been developed to provide a consolidated and transparent view of the program status and the achievement of strategic outcomes that can be leveraged at appropriate governance forums.

Measures of Success*

- All schedule dependencies are reflected in an I.M.S.
- All costs for the entire lifecycle of Priority Initiatives (PIs) are reflected no matter who has budgetary authority.
- Percentage of schedule key milestones met (this measure should eventually be replaced by a Schedule Performance Index measure once a maturity level is reached in the Integrated Master Schedule).
- Percentage of capability elements in the I.M.S. with defined cost estimates based on the program Life Cycle Cost Estimate (LCCE) ((this measure should eventually be replaced by a Cost Performance Index measure once a maturity level is reached in the Integrated Master Schedule).
- Effectiveness of risk management process (Percentage of risks adjudicated within the targeted timeframe).

Way Forward*

- VA will continue to review all aspects of EHR program management through an iterative process and ensure there is a continuous assessment of schedule, costs and operations needs and support.
- VA is resolving task dependency network issues and verifying existence of task baselines.
- The correlation between the EHRM WBS and the project schedules guiding EHRM deployment efforts will be finalized.
- VA will consistently adhere to the policies and standards described in the EHRM Schedule Management Plan which defines the policies, standards, processes, and procedures governing EHRM schedule management practice.
- Clear linkage between schedule milestones and associated risks will be established. and vice versa. Risk mitigations will be assigned to an action owner and monitored until risk is mitigated. Clear criteria will be applied for risk severity analysis and all risks will be reported via a risk dashboard.

** All measures of success and way forward are proposed and are currently under review.*

Improving Operational Efficiencies

Ensuring productivity and clinical workflows are optimized and the system is configured to maximize operational efficiency.

VA is committed to ensuring clinical and practice management systems provide staff with tools to deliver high-quality, cost effective, timely and safe evidence-based care to Veterans. Integrated operations refer to end-to-end process workflow development, design and configuration activities, functional and baseline mapping and activities that optimize the user adoption in all relevant environments including clinical, administrative, and business operations. By focusing on operations' technical details, VA ensures that each process functions at its optimal level and that employees are empowered to work effectively and efficiently. As VA updates processes throughout its healthcare system, the dedicated staff who care for our Veterans provide recommendations to maximize operational efficiency without sacrificing patient safety. In this way, VA empowers its employees deliver high-quality, cost efficient, timely and safe care to Veterans.

Opportunities

Lack of Role Clarity and Duplicative Roles

- Clarify and streamline roles within and across clinical and practice workstreams so all users have the access they need while protecting patient privacy to ensure there are no duplication between roles and unnecessary redundancy.

Workflows

- Optimize workflow configurations to allow the right level of agility and aid productivity to avoid confusion, miscommunication, and rework.

Productivity

- Monitor post-development work productivity, specifically system availability to address staff and patient needs.
- Identify root causes of productivity drop-off at Mann Grandstaff post go-live and address. Focus on four key areas to be improved, measuring success through key KPIs since go-live, which include bills generated, billing collections and referrals.
- Apply lessons learned to future implementations.

End-User Experience

- Improve end-user experience, especially functionality issues, prioritizing tickets that affect

Progress

Lack of Role Clarity and Duplicative Roles

- VA is reviewing roles to ensure that all members of the clinical and VBA teams have appropriate access to view the same content and enter data appropriate to their roles. As additional facilities deploy, roles will continue to be optimized to reflect an enterprise definition of specific utilization of the Cerner product.
- VA is instructing managers and leadership across the enterprise to work with their users and encourage their involvement in ensuring challenges are identified, addressed, and resolved before go-live.

Workflows

- VA is determining essential functions of roles and teams and how they must be adjusted in existing workflows. Once workflows have been finalized, the appropriate level of testing and training will be performed.

Productivity

- VA is monitoring post deployment work productivity, site performance and system availability and prioritizing the availability of additional post deployment staff to maintain site readiness.

quality, safety and efficiency of care and decreasing alert fatigue from system notifications.

- Improve processes to identify user role mapping to ensure that domain group, training and workflow assignments are correct.
- Clinical staff spent significant time reconciling a range of clinical information from the different systems, as well as printed documents, to get through a single visit.

- Clinical reconciliation of migrated data is critical to ensure the safest and most efficient care after deployment. The complete end-to-end process of review and reconciliation will be documented and opportunities for improved efficiency identified and implemented.

End-User Experience

- ISC at medical facilities are prioritizing concerns and necessary configuration changes and communicating operational challenges and potential resolutions to VHA. leadership. For example, VHA. Revenue Operations is working with Cerner on several issues and has developed a workplan that will incrementally improve timely billing until reaching the target claim rate metric agreements.
- Alert and notification systems are being managed better and address concerns of providers who reported "alert fatigue."
- In a VISN 10 pilot, User Role Access Coordinators and the individual Site Service Chiefs are validating that their personnel and roles (primary and secondary) are appropriately assigned. If successful, this pilot will be used as a model moving forward.
- All end-user experience issues that have tickets and change requests are being addressed. Work groups are making significant progress in areas including referral management, new encounters, behavioral health, and others.
- VA is re-engineering ticket and change request functionality to ease transfers from each system and reduce the level of technical knowledge required. This will help address issues and gaps not captured in the National Councils' requirements development processes.

Measures of Success*

- Claims are filed within seven days of a clinical encounter; auto-biller error rates reach contracted targets.
- Seamless transfer items from ticket system to change request system.
- Number of tickets post go-live related to User Role Assignment (U.R.A.), patient safety, time to resolution of critical and major issues.
- Percent of documentation completed after hours.
- Provider satisfaction scores.
- All potential patient safety risks are resolved prior to Columbus go-live.
- All high-impact workflows have quality, safety, and productivity metrics, with 80% of staff trained on their use.
- Development and delivery of a workforce development training work plan and maturity model for staff for a minimum of the top five critical workflows in each department (with step-by-step, click-by click instructions with screenshots).
- Operational metrics on stabilization of workflows.
- Percentage of auto-posting accuracy for 3rd party claim payments.
- Average time to complete initial patient intake in the EHRM system.
- Average number of patients seen per day.

Way Forward*

- VA is continuing to address operational issues from the Mann-Grandstaff experience and assess the lessons learned for applicability to future implementation sites.
- Develop pre- and post- implementation support to better manage change.
- Evaluate VISN 10 role-mapping pilot for applicability to future implementation sites.
- A current state end-to-end workflow review is underway. VA will develop a future state workflow process and design that will include identification of necessary specialties, workflow optimization to desired future state and identification of respective workflows. As more facilities undergo current state reviews, VA will optimize enterprise workflows that truly reflect the end-user functionality of the system, not facility-based customization.

** All measures of success and way forward are proposed and are currently under review.*

Making Governance Effective

Channeling data-driven decisions through a single governance body, incorporating stakeholder inputs and ensuring that good management discipline is applied, and risk-management is rigorous.

VA is using continuous learning and risk mitigation techniques to achieve timely actions and decisions, ensure patient safety and improve the Veteran experience. A priority moving forward includes that governance, performance, and risk management, reporting and analytics and decision-making activities are made in coordination and through a unified voice.

Opportunities

Governance Framework and Decisional Hierarchy

- Clarify and empower the program and enterprise governance structure to ensure overlaps with functional governance and that decision authorities are resolved and EHRM governance is decided on and communicated through one voice.

Integrated Initiative Governance and Transparency

- Strengthen key stakeholders' engagement throughout the governance structure to improve transparency and decision-making, particularly for integrated initiatives.
- VA did not effectively communicate with leadership regarding representation at workshops; therefore, relevant stakeholders did not have a voice at the table.
- Integrate the workforce's views into decision-making for the new EHR system deployment line.

EHR Councils

- Enhance two-way communication with front line employees throughout the implementation process.
- Re-engineer the National Councils to better integrate with VHA. governance, create agile feedback loops and drive transformation.

Progress

Governance Framework and Decisional Hierarchy

- VA is restructuring program-level governance forums to ensure key stakeholders participate in all decision making.

Integrated Initiative Governance and Transparency

- VA is maturing its decision framework, including authorities, program controls and escalation thresholds, to clarify roles and empower decision-makers at all levels. Evaluations were developed for every deployment and change management activity to assess stakeholder engagement and confidence. Results will be shared with site leadership to enforce participation.
- VA analyzed and recommended ways for key stakeholders to be involved in program decision-making and improve consensus-based approaches to EHRM decisions.
- VA is implementing a decision support tool to provide leadership timely, evidence-based inputs for time-sensitive decisions that support EHRM goals and objectives.

EHR Councils

- VHA is assessing the Electronic Health Record Councils (EHRC's) to ensure they are aligning with VHA. chain of command and assuring communication, enterprise engagement, transparency, and prioritization.
- Councils are being re-engineered and roles are being reevaluated to ensure appropriate subject matter experts are engaged.

- Improved communication tools are being developed to ensure open communication across the councils.
- VA is appointing service line chiefs to support the council structure.
- EHR council leaders have been interviewed and changes to better define the roles, escalation flows and feedback loops for the councils are being developed.
- VA will provide expanded orientation and training for council members. The Council members will be exposed to Cerner functionality so can make decisions informed by the software's capabilities and limitations.
- VA is working on developing a sandbox that replicates the production environment and may be used by council members to inform their decision making.

Measures of Success*

- Decision authorities are clearly understood and adhered to.
- Decisions are communicated to key stakeholders.
- Decisions are implemented.
- Decision forums are using the dashboard to inform decisions.
- Stakeholder consensus on C.S.R. approach and results (Y/N). "KPI for completion - Percentage of information requirements designed and built into dashboard. KPI for effectiveness - Percentage of governance forums using dashboard as a significant input for decision-making." All test findings closed/resolved.
- Speed of decision-making (Percent of decisions made in targeted timeframe).

Way Forward*

- Specific recommendations to adapt and mature the existing integrated priority initiative governance are drafted and being socialized throughout VA
- VA will analyze additional staffing requirements to support governance management, including support to strengthen program management review functions.
- VA is considering several means to improve communications before and after all EHRM decisions.
- There will be a formal orientation process for council members so that their decisions reflect enterprise goals.
- National Council members will have the opportunity to visit sites that have gone live to gain exposure to the EHR in a real-world environment to support iterative optimization as appropriate understanding that visits are disruptive to patient care.

** All measures of success and way forward are proposed and are currently under review.*

Centralizing Data Management for Workers & Veterans

Ensuring clinical and practice management systems are functional with a secure unified Veteran-centered data model.

VA is ensuring clinical and practice management systems are functional, with a secure unified person-centered data model under VA data management policy and strategy. This recommendation focuses on activities aimed at improving centrally led data management and related infrastructure. VA's aim is standardization across medical facilities, with a focus on updates to the IT structure as VA continues to improve EHR. data captures to depict a wholistic view of the Veteran at the point-of-service, enterprise reporting and analytics, and an accurate assessment of progress and successes.

Opportunities

Data Syndication and Data Strategy

- Lack of data migration quality review lifecycle which is needed to ensure clinical workflow integrity.
- Significant variation between Cerner and VistA data that is required to support reporting, analytics, and research.
- Portions of data imported from VistA presented migration issues, necessitating a need for manual intervention of the data.
- Additional integration activities are required to migrate images into the VA EHRM solution.
- Current constitution of EHRM data syndication is unable to meet facility and VISN needs for real-time operational metrics because of inherent data processing delays.

Data Reporting

- Gap in enterprise reporting due to challenges with the usability of the data, including a lack of consensus regarding the root cause of reporting gaps.
- Mapping Cerner data to critical VA reports and creating a usable repository of analytic data is a complicated task of unprecedented magnitude for either organization.
- Reporting discontinuities of some enterprise reports that are infrequently updated (e.g., VA public reports and Medicare reporting for VA facilities) due to Cerner's varied approaches for

Progress

Data Syndication and Data Strategy

- A Data Integrated Project Team (IPT) has been iterating and testing and validating a common information model (CIM) to support data management between Millennium and VistA.
- In the context of validating the enhanced approach to data management, analyzed immunization data across the migration-syndication roundtrip.
- Validating a unified, objective, rules-based and operationally useful managed, Veteran-centric integration of the data as a prime targeted outcome.
- Addressed the issue of manual intervention of the data through establishing data decisions and workflows.
- Ensuring that additional integration activities can successfully migrate images into the VA EHRM solution through the CareAware MultiMedia (CAMM) v7.0 rollout.
- Work is currently being done on interface requirements to meet real-time data needs.

Data Reporting

- A new management dashboard has been developed for VAMCs as a result of a VHA assessment of EHRM reporting capabilities and gaps within Cerner, including the root cause of those reporting gaps.
- Confirmed path to training plan and timeline that included comprehensive training on reporting. Cerner Wiki was provided for additional information

capturing and calculating health quality and timeliness metrics.

– Some Cerner processes are so different that enterprise reporting continuity cannot be assured, necessitating re-baselining.

on commercial standard reports until training can occur.

– Using Key Analytic Questions (KAQSs) method to drive development of a data model in VA enterprise data platform and map all syndicated data into that model so that discontinuous time periods can be accounted for and the data applied to meet VA enterprise reporting needs.

– VA is creating a Post Migration Data Analytics Team to ensure data is accurately identified, scrubbed, ready for testing and migrated for site readiness.

– VA is developing a value realization plan and implementation strategy, built on a solid foundation of managed data, to include the defining and establishment of metrics at the local and enterprise levels.

Measures of Success*

Measures are focused on foundational clinical data management. The following measures will be baselined, then periodically refreshed:

– % of entity-attributes (or comparable atomic-level objects) that are populated with data from Cerner, from VistA, or both (by domain).

– % of VA governance-approved Key Analytic Questions (K.A.Q.s) that can be answered using data from each primary store, or both together (by source).

– # of data-quality issues reported and trended over time against governance approved K.A.Q.s: number reported, (their severity,) number resolved, average time to resolution, stock-flow velocity (time of flight, time in flight), and type of issue (e.g. patient safety, semantic loss or divergence, etc.)

Way Forward*

- Complete evaluation and planning for the of the CIM to support site readiness assessments via site-specific data quality measures and feedback.
- Engage with external stakeholders and publish the data policy and supporting analysis to support creation of the CIM.
- Complete the joint data policy review with DoD and publish recommendations.
- Develop, test, and publish the end-to-end initial framework process, KAQs, and key metrics VA intends to be used to realize value by operationalizing the North Star.
- Strengthen API management in collaboration with Cerner to achieve unfettered access to VA data for use with third party applications to support health care at the point of service as well as sophisticated forms of data analytics.

** All measures of success and way forward are proposed and are currently under review.*

We have listened intently to Veterans and frontline employees and understand there is much to be done. As a result, VA is reimagining its approach and is establishing a more strategic, integrated approach for guiding the EHRM Program going forward.

Reimagining VA's Approach

The Strategic Review provided the opportunity for a deep look—top to bottom—of the EHRM program. It afforded an opportunity to continue to engage with Veterans and frontline employees, including valued clinicians and other interdisciplinary and administrative professionals. If anything, this effort has underscored the complexity, scope, and importance of the effort we are undertaking to benefit Veterans and to move the health care industry forward.

VA has learned much from the strategic review and will apply these lessons to future health IT implementations. VA understands that there is much to be done and will continue working towards progress in identifying areas of opportunity to realize improved productivity and is using human centered design to make Veteran-centered improvements, including to our patient portal. VA is implementing additional optimization activities at Mann-Grandstaff that focus on Veteran safety & experience, revenue cycle and workload improvements. VA has also enhanced training, creating a "sandbox"—requested by users—to facilitate their ability to learn about the new system, and is integrating and aligning clinical data management under our VA Data Strategy and Roadmap.

Leveraging the improvement opportunities associated with the initial deployment at Mann-Grandstaff is critically important but not by itself sufficient. The EHRM is a major enterprise-wide transformation effort touching people, process, and technology. We are taking swift and decisive action to incorporate the management rigor and enterprise jointness required for this program to deliver on its intended purpose: seamless excellence in VA care for Veterans. This will include maintaining an EIMS that captures the interdependencies between the key milestones across various EHRM workstreams related schedules enabling critical path analysis. In addition, a dashboard and immersive and interactive visualization ecosystem of tools will be utilized to improve program management controls. The new approach will incorporate the inputs from lessons learned and performance measurement (operational, programmatic, and contractual KPIs) to identify and quantify risks. Immersive and interactive visual models will be used to proactively mitigate risks and ensure timely actions/decisions are taken to ensure patient safety and improved Veteran experience. This will also enable leadership decision-making by providing a foundation for sound governance and will ensure integration across VA's modernization programs. The new governance model will reduce the barriers for timely risk mitigation and increase collaboration and trust across all the key stakeholders.

As the deployment continues, VA will pursue a surge of activity in the coming weeks and months, intently focused on Veteran experience, patient safety and employee engagement. Specifically, VA will establish technical-only ("sandbox") deployment of Cerner technology at previously planned sites in Veterans Integrated Service Networks (VISNs) 10 and 20 – ensuring technical readiness without affecting Veterans or frontline clinical employees. In parallel, we will accelerate technical infrastructure upgrades required to deploy the EHR system as well as establish an integrated test and training environment for a dedicated enterprise end user team to continue to evaluate the functionality of the system. This will enable us to evolve our processes, training, and change management – and test our approach to build evidence-based confidence in the success of our next deployment before we "go-live" again.

VA will conduct enterprise-wide Current State Reviews, both technically and qualitatively, of all our facilities concurrently which were previously planned to be completed site-by-site over the life of the project - to assist in establishing an evidence-based view of enterprise site readiness and in developing an optimized deployment schedule for facilities beyond VISN 10 and VISN 20. This new approach will result in a shift from sequential site engagements over the next decade, to integrated enterprise readiness and planning.

VA is focused on improving the organizational structure and governance to become more responsive and effective as well as invest in training and change management capabilities to better prepare the workforce for the Cerner solution to be implemented at their individual locations.

VA will continue to listen carefully to Veterans and frontline employees, gather lessons learned and use this information to continuously improve future health IT implementations and the EHRM Program. A successful EHR deployment is essential in the delivery of lifetime, world-class heath care for our Veterans. VA is committed to get EHR right for the Veterans we serve and to drive the nation's health care industry forward.

Appendix A. Acronyms and Abbreviations Used in This Report

Abbreviation	**Definition**
AAR	After Action Review
CAMM	CareAware MultiMedia
CIM	Common Information Model
COMPLANs	Communication Plans
DMLSS	Defense Medical Logistics Standard Support
DoD	Department of Defense
EDRM	Electronic Dental Records Management
EHR	Electronic Health Records
EHRM	Electronic Health Record Modernization
EIMS	Enterprise Integrated Master Schedule
FMBT	Financial Management Business Transformation
GAO	Government Accountability Office
HCD	Human Centered Design
IDA	Institute for Defense Analyses
IMS	Integrated Master Schedule
IPT	Integrated Project Team
IT	Information Technology
ISC	Informatics Steering Committees
JLV	Joint Legacy Viewer
KAQ	Key Analytic Questions
KPI	Key Performance Indicators
LCCE	Life Cycle Cost Estimate
NCC	National Coordination Center
OEI	Office of Enterprise Integration

Abbreviation	Definition
OEHRM	Office of Electronic Health Record Modernization
OIT	Office of Information and Technology
OPIA	Office of Public and Intergovernmental Affairs
PACT	Patient Aligned Care Team
PI	Priority Initiatives
QAR	Quality Assurance Review
SME	Subject Matter Expert
SOP	Standard Operating Procedure
URA	User Role Assignment
VA	Department of Veterans Affairs
VAMC	Veterans Affairs Medical Center
VBA	Veterans Benefit Administration
VHA	Veterans Health Administration
VISN	Veterans Integrated Services Network
WBS	Work Breakdown Structure