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EXAMINING THE FUTURE PATH OF VA'S ELECTRONIC HEALTH RECORD MODERNIZATION PROGRAM

HEARING

BEFORE THE

COMMITTEE ON VETERANS' AFFAIRS UNITED STATES SENATE

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WEDNESDAY, MARCH 15, 2023

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

The Committee met, pursuant to notice, at 3:30 p.m., in Room SD–106, Dirksen Senate Office Building, Hon. Jon Tester, Chairman of the Committee, presiding.

Present: Senators Tester, Murray, Brown, Blumenthal, Sinema, Hassan, King, Moran, Boozman, Cassidy, Tillis, Sullivan, Blackburn, and Tuberville.

OPENING STATEMENT OF CHAIRMAN TESTER

Chairman TESTER. I call the meeting to order. I apologize. We got tied up, and that is about enough, so that is it. But thank you all for being here.

I want to recognize our panel, start by recognizing the folks from the VA that are trying to make this electronic health record work, to deliver for our veterans under what I see is pretty difficult circumstances. We spent about 10 million bucks on this project so far. The new EHR has been deployed to give hospitals, 22 community-based outpatient clinics. It is being used by about 10,000 employees, which sounds big but in a system as big as the VA it is not where we need to be.

By the VA's own admissions, OIG and GAO reports and independent industry analysts, it is clear that the tools in the Oracle system are not working, at least not working as they are intended to. There has been a number of screwups, lack of coordination between DoD and the VA. Within the VA we have seen a lack of clear goals and strategy and unstable, inconsistent leadership. And while the contractors have been what I believe abusing the taxpayers, we know the previous administration did not do veterans any favors by issuing a $10 billion no-bid, sole source contract that needs to be renegotiated, which I will talk about in a second.

Today we need to hear from GAO that almost every part of this contract certainly has not lived up to my expectations and I doubt anybody else's either. For all the documented system crashes, incomplete technology, and poor training programs, Oracle Cerner has refunded the government about $325,100 of the $4.4 billion it has received through its contract. Make no mistake about it: we need to right this ship.

And for me, all options but one are on the table to fix this new EHR. I am not going to ban the effort to modernize VA's health records. This is not in the cards, it is not sustainable to do, and quite frankly, our veterans need it, and that is why we need to work together on a bipartisan basis to get this program and contract working for our veterans, VA medical personnel, and the American taxpayer.

And while the VA has shown some signs of making necessary steps getting this program back on track in recent months, with the help of some of the leaders here today, the following really needs to happen. The Secretary must bring together government and industry, best contract experts and renegotiate the Oracle Cerner contract that is due to expire on May 16th. And we need tougher teams, discounting prices, a narrow set of tasks for Oracle, and severe penalties for poor performance. And if Oracle will not agree to those terms then the VA should be prepared to roll up its sleeves and negotiate an entirely new contract or find a different team of partners.

Just yesterday, VA informed Congress that at least six additional veterans that have been connected in some way to their care as delivered by Oracle Cerner system, four of them fatally harmed. This is as serious as our work on this Committee needs our full attention to get this back on track.

It is going to be an interesting hearing today. We need to know exactly where the hell we are at and where we are going and what it is going to cost and when we can look for a timely delivery of a thing that we have been talking about here for 20 years. We have all got to step up to the table.

Over to you, Senator Moran.

OPENING STATEMENT OF SENATOR MORAN

Senator MORAN. Mr. Chairman, we are here again to discuss the challenges of the VA electronic health records modernization program. I emphasize the word "again." We have done this numerous times.

The VA aims to create a unified health record for servicemembers and veterans, enabling more consistent health care. It is frustrating that the opposite has happened. The five medical centers that are using this system are struggling with delays, disruptions, and rising costs, and only yesterday we find out the system has been a factor in the loss of veterans' lives.

We all have concerns about the VA's ability to manage this program, and that is not new. These delays and disruptions, the rising costs have had unintended but unacceptable impacts to the health of veterans and the programs that were created to serve them. The VA and Oracle Cerner are making improvements but they are gradual, and many of the most expensive, extensive, and most significant fixes are many months or even years away.

Meanwhile, the VA tells us that they will begin rolling out EHR to new facilities in June, which is just around the corner. I have yet to see what has fundamentally changed in the system, training or program management that will make the implementation more successful. The changes in and lack of current programmatic leadership suggest to me that the whole effort may be sleepwalking to-

ward an extremely destructive result. And due to changes in leadership at the VA it is still an open question, who will be leading this program three months from now.

To justify additional spending on this program we need assurances that every penny is spent focused on creating and implementing a system that serves veterans and provides them with the high-quality care they deserve. I need to know if the VA still wants and believes in this program. I need to know what will be different this time under the next group of leaders.

Mr. Chairman, thank you for your attention to this issue. I look forward to the discussion today.

Chairman TESTER. Thank you, Senator Moran. I want to associate myself with your remarks. I think they were very much spot on.

Today we are going to hear from key VA leaders that are critical to this programs success, as well as representatives from the GAO and Oracle Cerner. From the VA we have Dr. Neil Evans, who is the Acting Program Executive Director of VHRM Integration Office. Dr. Evans, I believe you have been on the job for about three weeks, but like I said earlier, we have been at this for 20 years. And you have been at the VA—I am sorry—for 20 years, and you still provide the care to veterans at the local DCVA hospital. Thank you for that. Thank you for your willingness to serve. And you are accompanied by Dr. Shereef Elnahal, somebody who is very familiar to this Committee, Under Secretary for Health at the VA. Big job. Kurt DelBene, Assistant Secretary for Information Technology and Chief Information Officer. And Michael Parrish, who is the Chief Acquisition Officer and Principal Executive Director, Office of Acquisition, Logistics, and Construction.

I believe, Dr. Evans, you are going to do the speaking for the trio and yourself, and you have the floor.

STATEMENT OF NEIL C. EVANS ACCOMPANIED BY HON. SHEREEF M. ELNAHAL; HON. KURT DELBENE; AND MICHAEL D. PARRISH

Dr. EVANS. Thank you. Chairman Tester, Ranking Member Moran, and distinguished members of the Committee, thank you for this opportunity to testify in support of VA's initiative to modernize its electronic health record system.

Before I get started I do want to express my gratitude to Congress and to this Committee for your commitment to serving veterans with excellence, and specifically for your interest in and oversight of this project.

As you mentioned, today I am accompanied by my VA colleagues, Dr. Shereef Elnahal, Under Secretary for Health; Mr. Kurt DelBene, Assistant Secretary for Information and Technology and Chief Information Officer; and Mr. Michael Parrish, Principal Executive Director for the Office of Acquisition, Logistics, and Construction. The representation on this panel is indicative of VA's department-wide approach to its EHR modernization program and our shared desire to get this right.

As the newest member of this team, having stepped into my current role, as you mentioned, less than three weeks ago, I greatly appreciate the opportunity that I will have to collaborate with

these experts, with the teams that they lead, with our contracted partners in this effort, and most importantly, with the frontline VA staff who will depend on a modernized electronic health record to provide high-quality, responsive health care to the veterans that they serve.

Though I may be new to my current role I am not new to this effort, having been a participant in this project from various vantage points across its life span to date. And I would add that I am also a future user of the system as a practicing VA primary care provider. This matters to me.

As you are well aware, nearly five years ago VA began in earnest its journey to implement a new electronic health record, or EHR, replacing the EHR components of VA's VistA system that has served us well for upwards of 40 years. Our electronic health record modernization effort involves deploying across VA the very same commercial electronic record system provided by Oracle Cerner that is being implemented by the Department of Defense and the United States Coast Guard.

As a brief aside, electronic health record systems, as you know, are far more complicated than the name might imply. They are much more than a record alone. They consist of many orchestrated IT capabilities that power clinical care delivery in the modern health care system, including care in outpatient clinics, hospital wards, emergency departments, operating rooms, clinical laboratories, intensive care units, pharmacies, radiologic suites, et cetera.

These systems, in many ways, drive how health care is delivered, how work gets done, how patient care encounters are orchestrated, how communication and handoffs occur, and how both patients and health care providers access the data that they need for decision-making and more. These systems are extremely complex and they need to be highly reliable, available, and performant at all times.

Transitioning from one set of EHR technologies to another is always a massive endeavor, one that is time consuming, disruptive, and challenging. Mature organizations also recognize that EHR transitions are more than just a technology changeout. They are opportunities to rethink the people and process side of health care delivery, opportunities to standardize and optimize how work is done across the enterprise.

Where are we now in VA on our EHR modernization journey? We acknowledge that there have been challenges with our efforts to date. As we work through the challenges, our commitment remains unwavering, to provide world-class patient care and prioritize patient safety for the veterans we serve.

We have learned a lot since our initial go-live at the Mann-Grandstaff VA Medical Center, and in 2022, we completed four further deployments in Walla Walla, Washington; Columbus, Ohio; Roseburg, Oregon; and White City, Oregon. And as you mentioned, the system is now in use at 5 VA medical centers, 22 community clinics, 52 remote sites, by more than 10,000 VA medical personnel.

VA is working aggressively to address issues with the configuration and performance of the new system, based on direct feedback from end users. We expect the same aggressive attention from Oracle Cerner.

In October 2022, VA announced it would delay upcoming deployments to concentrate on assessing concerns that have been raised with the system and to develop solutions for the most impactful and critical issues, particularly those with a potential to affect patient safety.

Though there is still a lot of work to do, important progress is being made. For example, last month's update to the system included three critical pharmacy enhancements with more on the way. We have addressed usability issues and enhanced training regarding order management in the system, and more.

In terms of system stability, this has also improved. As of this month it has been more than 200 days, or six months, without a complete outage. System-incident free time, or the amount of time without users experiencing any disruption in their use of the system is not yet at its goal, though it is moving in the right direction.

As improvements continue to be made over the next months, VA will continually evaluate the readiness of upcoming deployment sites as well as the EHR system itself to ensure success. It is important to take the time now to get things right, to provide a strong foundation for an accelerated deployment schedule later as the project proceeds.

A modernized electronic health record, one that enhances the efficiency of care delivery, one that delivers interoperable health data, one that provides effective clinical decision support, one that serves as a springboard for future integrations and innovation, this is what is required to support the VA health care system of the future.

Chairman Tester, Ranking Member Moran, and members of the Committee, thank you again for the opportunity to testify today and for all that you do to continue to support our Nation's veterans and their caregivers.

[The prepared statement of Dr. Evans appears on page 39 of the Appendix.]

Chairman TESTER. Thank you for your statement, Dr. Evans. I appreciate it very, very much, and I appreciate your commitment to our veterans throughout your professional life.

Next we have Executive Vice President of Oracle, Mike Sicilia. Mike is also familiar to this Committee. I like to say Mike is where the buck stops. I think that is correct when it comes to Oracle and this system. I hope we get a head nod for that.

And you have the floor, Mike.

STATEMENT OF MIKE SICILIA

Mr. SICILIA. Chairman Tester, Ranking Member Moran, and members of the Committee, thank you for inviting me here today.

When I last testified before you Oracle was just over a month into its acquisition of Cerner. I made several commitments about adding resources, bringing new engineering and technical expertise, and making VA's EHRM program Oracle's most important priority. Since then, we have done that and delivered significant improvements in a short amount of time.

The technical fixes we have made to the system have resulted in meeting the 99.9 percent availability requirement in five of the last

six months. Average downtime minutes dropped from 345 minutes per month prior to the acquisition to 21 minutes per month in January and February. The goal of every system should, of course, be as close to zero as is possible, and we are marching toward that.

End users should also be feeling a notable difference across key workflows, with 28 improvements delivered in the most recent Block 8 update in February. We also delivered the top three pharmacy enhancements in four months instead of the originally estimated three years, as I promised we would do last July. In August, we provided updates for the unknown queue, and now, on average, only one order per site per day enters the queue, which represents a dramatic improvement from where we are.

At the same time, we are very aware that there is more to do, and nobody—VA, the medical centers, veterans, all of you, or Oracle—is satisfied yet.

Last week I was in Columbus, Ohio, with Dr. Evans, getting on-the-ground feedback. We met with the medical center's director and leadership team. The bottom line from their feedback is while the system functions, it can be made better. I wish to thank the leadership team in Columbus for their candid, constructive, and well-formed feedback.

Providers felt the performance improvements but they also want the new system to be easier to use, with defaults that are more relevant to their daily work. We can achieve quite a bit of this by reconfiguring the system without touching the code, and it can be done relatively quickly. I am talking weeks, not months, noting, of course, that direction and permission to do so resides with our partners at the VA VHA.

This post-rollout feedback is not uncommon. In fact, we have experienced this before in our commercial business and have always quickly tailored the system to make it easier for providers to use. Nobody in Columbus told me that they want to go backwards.

The system is functioning at five VA sites and across 75 percent of DoD, and all of the Coast Guard. The Cerner EHR is the most utilized system of its kind on the planet. It supports national and defense health systems in allied countries as well. The core system was built for major missions, and Oracle has invested in making it more secure, scalable, and reliable.

It is logical to ask, though, why the VA rollout has been subject to more issues than all of us wish to see. While modernization, especially at this scale, is never easy, the initial DoD rollout was similarly challenged in the first two years, only completing four deployments and then taking a two-year pause to improve governance and fine-tune a standard enterprise baseline system. Those efforts enabled DoD, in a little over three years' time, to accelerate deployments from four sites to being 75 percent complete today, with 140,000 total users live on the system. The domestic deployments at DoD will be completed this year, on time and on budget.

As I look back on what has been accomplished in the last nine months, I am more optimistic than ever that we are now on the right trajectory and we can get this program on track, on schedule, and on budget. Our working relationships across VA leadership is very strong. Dr. Evans and I have only known each other for a

short amount of time, but I think it is fair to say that we are already working from the same page.

The VA's recently issued Sprint Report outlines a path toward better governance and expedited decision-making that will enable, for example, faster decisions from National Councils on plans to simplify workflows.

Oracle's significantly expanded team is steadily working every day to continuously improve the system and address issues like we heard about in Columbus, and that we know also exists in Washington State and Oregon. We believe, though, from a performance and scalability standpoint, the system is ready for the resumption of deployments. We will work with VA in the lead up to June to evaluate other critical factors that will impact readiness for the resumption of go-lives.

These are big things to deliver, and doing so will enable deployments across VA more rapidly, with a more intuitive, easy-to-use system. That system will deliver on the promise of seamless care to improve health care for our Nation's veterans and servicemembers. We look forward to continuing to work with you and the VA to achieve this goal.

Thank you.

[The prepared statement of Mr. Sicilia appears on page 46 of the Appendix.]

Chairman TESTER. Thank you, Mike.

And last but certainly not least, the Director for Information Technology and Cybersecurity at the Government Accounting Office, Carol Harris. Carol?

STATEMENT OF CAROL HARRIS

Ms. HARRIS. Thank you. Chairman Tester, Ranking Member Moran, members of the Committee, thank you for inviting us to testify today on the status of VA's EHRM program. As requested, I will briefly summarize the findings from our recently completed review of this mission-critical system.

As you know, VA provides health care services to roughly 9 million veterans and their families and relies on a legacy system called VistA to do so. In June 2017, the Department initiated the EHRM program to replace VistA, and has obligated at least $9.4 billion on this program to date. It should also be noted that this is VA's fourth attempt at replacing the legacy system, and the implementation so far has been fraught with major issues.

In our most recent work, we detailed VA's gaps to effectively manage organizational change as well as the extreme dissatisfaction among users and system issues. This afternoon I will highlight three key points from our work.

First, more work needs to be done to adequately address VA's organizational change management challenges. Our recent review detailed eight leading practices for change management. VA had partially implemented seven and did not implement one. For example, the EHRM program has taken great care to analyze and collect VA's readiness to implement a new workflow and system. But their data indicated that users were not ready for such a change and the

program did not have assurance that it had resolved potential problems in a timely fashion.

For example, the Walla Walla and Columbus medical centers showed low scores for the knowledge of how to change and the ability to implement change on a day-to-day basis. Program officials said they were taking actions to provider user support in response to those concerns. However, the program did not conduct another assessment before deploying the system. Had they done so, they would have seen that users were still not ready, which was ultimately reflected in the post-deployment survey data.

We made seven recommendations to VA regarding their change management activities, and until they are fully implemented future deployments will likely be at risk of similar challenges. This could hinder users' ability to effectively use the system, impede their knowledge of new workflows, and limit the utility of system improvements.

My second point. Users of the new EHR system are generally dissatisfied, and this needs to be addressed before deployments resume. VA is well aware that its users are unhappy with the system. Their 2021 and 2022 User Satisfaction Surveys showed this.

For example, about 6 percent of users agreed that the system enabled quality care, and roughly 4 percent of users agreed that the system made them as efficient as possible. These scores are among the lowest we have ever seen on a major Federal IT acquisition.

Furthermore, VA has not established goals to assess user satisfaction. Having such goals in place would provide the Department with a basis for determining when satisfaction has improved and also help ensure that the system is not prematurely deployed to additional sites, which could risk patient safety. Accordingly, we recommended that VA set these goals and also demonstrate improvement toward meeting them prior to future system deployments.

And finally, my third point. VA did not adequately identify and address EHR system issues. VA has not conducted an independent operational assessment of the new system, and as of January did not plan to do so. This critical evaluation performed by a third party would enable VA to systematically catalogue, report on, and track resolution of assessment findings with greater rigor, transparency, and accountability. DoD, in contrast, conducted one shortly after deploying MHS Genesis to its first site, and based on those findings paused deployment to other sites until the major issues were resolved. Accordingly, we recommended that VA make plans to have the independent assessment done.

In summary, the successful implementation of the new system across VA will require a level of program management, adaptability to change, and sustained system performance that the Department and contractor have yet to demonstrate. The continuance of the EHRM is not without risks, but with strong oversight from this Committee, in addition to improved VA program management and contractor system performance, particularly through the implementation of our recommendations, we can increase the odds for success.

Mr. Chairman, that concludes my statement, and I look forward to your questions.

[The prepared statement of Ms. Harris appears on page 93 of the Appendix.]

Chairman TESTER. Well, thank you very much, Ms. Harris. I appreciate your testimony.

I am going to start with Dr. Elnahal. Dr. Elnahal, I am sure you are familiar with the Sprint Report. Correct?

Dr. ELNAHAL. Yes, Senator.

Chairman TESTER. Last time I checked there were 14 items on that report that needed to be fixed.

Dr. ELNAHAL. Yes.

Chairman TESTER. What is your perspective as far as moving forward with this plan? Do you think that those 14 items have to be fixed before you move on, or do you think you can move on without fixing those?

Dr. ELNAHAL. Chairman, I think it is important to understand that each of these issues needs to, at the very least, be mitigated at the sites where the system already exists, and certainly addressed in anticipation of future deployments. Ideally, the configuration of the system would ultimately change. We would hold Oracle Cerner accountable for making those changes, to eliminate the risk entirely. That is the gold standard we are shooting for.

But now that we are mindful and aware of each of those risks, which was part of the reason for the Sprint, we are at least able to address them at the point of care.

Chairman TESTER. Okay. Dr. Evans, do you feel the same way, that those 14 items need to be fixed before you move on?

Dr. EVANS. I agree with Dr. Elnahal that the items—I mean, we certainly need to have a plan for those items and we also need to have mitigations in place, which we do, as the record is being used at five sites.

Chairman TESTER. Perfect. So the question is, how quickly can VA and Oracle get these changes done?

Dr. EVANS. We are in the process of analyzing that. I know that one of them we have already resolved. Five were actually partially addressed by the Block 8 software upgrade that was just mentioned, and analysis is ongoing with regard to how we might expediently resolve the others. I do not have a timeline for you.

Chairman TESTER. So I am gathering by the answer to that question that these are fairly complicated issues, these 14?

Dr. EVANS. Some of them will likely require work by Oracle Cerner to resolve. Some of them may be resolvable through a change in the configuration of the record, as Mr. Sicilia mentioned.

Chairman TESTER. So you have been on the job for three weeks, and so this is kind of an unfair question, but what the hell. I am asking them so I will do it. What kind of time frame are you anticipating it to be? Are we talking years? Months?

Dr. EVANS. Not years. I would imagine months.

Chairman TESTER. And is it your opinion that before this is moved to, say, a place like—not saying this would be the place, but it could be—Saginaw, Michigan, that these have to be pretty well tricked out and done?

Dr. EVANS. I think we—so before we go live at any site, whether it is in Saginaw or any other——

Chairman TESTER. Yep.

Dr. EVANS [continuing]. Location, we need to be confident that we are ready to go live and that we have things right.

Chairman TESTER. But you are going to have to look at certain metrics to make that determination. Are these the metrics you are looking at or are there other metrics beyond these that you are going to be looking at before you move forward?

Dr. EVANS. Those are metrics with regard to the actual solution itself, the software solution and the IT. There are other aspects of determining whether a site is ready to go live, and actually Ms. Harris mentioned some of those. They have to do with whether our employees are ready for the change. And so there is an assessment of the readiness of the people onsite where the change is going to occur, and also of the solution itself.

Chairman TESTER. There is going to have to be an assessment done of where the EHR is currently being used, with those employees?

Dr. EVANS. Is an assessment going to have to be done there?

Chairman TESTER. I mean, you said—we will use Saginaw as the example. You say you have to prepare those folks. Do you not also have to look at the folks that are using it right now and make sure that they are okay with it?

Dr. EVANS. Yes, absolutely, and that is one of the reasons why one of the first things I did was go to Columbus to speak to end users.

Chairman TESTER. Perfect.

Mr. Sicilia, there is an independent research firm, KLAS. I am sure you are familiar with it. They did survey of VA users of this system, and they put it this way is that "KLAS has measured EHR experience in 280 organizations around the world. VHA Cerner currently has the lowest EHR experience score of any organization measured." That is not exactly a booming compliment. What is your response to that?

Mr. SICILIA. Yes, Mr. Chairman. Thank you for the question. No, it is not a booming endorsement by any means. And the real shame of it is when you compare it to the line right above it, which is MHS Genesis, which is the DoD system, it is the same system, it is the same code, it is the same database, it is the same infrastructure, the score is materially higher. When you compare it to Cerner and the general public the DoD's satisfaction is materially higher. The general public scores for Cerner are materially higher, and actually——

Chairman TESTER. So——

Mr. SICILIA. So the issue——

Chairman TESTER [continuing]. The DoD is higher. The VA is not very good. What is the difference?

Mr. SICILIA. Well, as I said, in the beginning, when you have 345 minutes a month of down time, they are not going to score very well, right? By and large we have addressed the issues where the system was not available when it should be available. We have addressed issues like the unknown queue. The remaining issues I would put into the category of things that I heard in Columbus last week, which are usability issues. They are configuration issues, ease-of-use issues, and frankly, allowing the providers a little bit more autonomy in the system to do some things.

These are defaults that populate a dropdown of things like that. This is not a fundamental change to the system. If it was a fundamental change to the system, then it would be illogical for me to think that the same system could be working not only in other customers but in other sides of government as well.

Chairman TESTER. I am going to turn it over to Senator Moran here right now, but the bottom line is that at some point in time, how much money are we going to have to spend to make sure this program works and that veterans get the health care that they have earned. That is it.

I think that there is plenty of blame to go around, and I am tired of putting blame out. I want to see production, and I want to see results, and I want to see time frames from both.

Senator Moran.

Senator MORAN. Following up on a couple of things that you outlined in your questions, Mr. Chairman, first of all a continuation of this discussion, because, Mr. Sicilia, what I think I hear is that given a little bit more time the system will fundamentally work, the fixes that need to be made are made, but there is still then, as Dr. Evans indicated, the operational aspect, what needs to happen within the health care system, to be able to utilize a system that technically is capable.

So, I mean, is that a fair assessment of what you were saying, is that there are two components here?

Mr. SICILIA. Yes, I think that is a fair assessment. I mean, obviously, there are things that I would describe now, as we get past the major catastrophic interruptions to the system and into more ease-of-use systems, again, these are fundamentally easier things to change. These are not hard engineering efforts to change these things. As I said, these things can be changed in a matter of weeks, not even months but weeks.

Then, obviously, there is change management, there is training readiness, there is site readiness, there is connectivity readiness, and all those things that have to be continued to be assessed on a site-by-site basis as well. So I would think it is fair to say that both of those things need to happen.

Senator MORAN. Dr. Evans, welcome to this capacity that you now serve in. Would you respond to that? I mean, if the system was working, that the technical capabilities of the system were there, then how much of the problem is solved? Let me ask it this way. So Cerner has an obligation to get the system to work. The VA has an obligation to make sure that is the case, but in addition to that, to train, educate, figure out how to utilize the system within the VA.

So if the system had technical capabilities to function properly then how much of the problem has gone away?

Dr. EVANS. You know, so first of all, I do not think we are yet at the point where we can say with full confidence that the system is technically performing where it——

Senator MORAN. No, I did not say that, and I do not know that even Mr. Sicilia said that. He says they are in the process of fixing these problems. My question is a hypothetical. If they fix the problems within the system, the technical capabilities of the system, then are there still problems left at the VA in its implementation?

The system works—can the VA then utilize the system and care for veterans?

Dr. EVANS. Yes, so I think in many ways the question you are asking is are end users in the VA ready to adopt this change. That is, if they are given a system that is highly reliable, where there is not a lot of lag in the system, and they are not watching the spinning wheel, where it is doing what they need to do to be able to enter orders, order prescriptions, review the data that they need, the tool is kind of getting out of the way of clinical care. Are they ready to adopt and move to this new solution? I think the answer to that is yes. I think VA clinicians, clinical staff, they want a tool that is going to help them take care of veterans. That is their motivation.

There is work we need to do to make sure we are preparing them for that change, that we are helping them understand what that change is, that we are creating a feedback loop where we are understanding what the issues are and then rapidly resolving them. But I do think they are ready to move in this direction.

Senator MORAN. Dr. Elnahal or Dr. Evans, either one of you may answer this if you would. The GAO recommended you establish user satisfaction targets and measure progress toward meeting them prior to future system deployments. Do you commit to do that and stop the future EHRM deployments until user satisfaction is met?

Dr. ELNAHAL. I am happy to start, Senator. I think it is an important question because there really is not much daylight between users believing that the tool in front of them, our clinicians, is the right one to be able to serve the clinical needs of veterans and the actual veteran outcome, which is what we are all shooting for.

And so absolutely, it is important for us to increase user satisfaction. We do so through multiple ways. We have to, again, change the configuration of the system, as Dr. Evans mentioned. We have to train right. And we have to assess that as its own target moving forward.

So yes, we do commit to assessing user readiness and user adoption and satisfaction.

Senator MORAN. But if you assess—I appreciate that you are willing to assess, but then the question is what are you going to do with the assessment. Until the assessment indicates that the user satisfaction is where it needs to be, if it is not there are you still deploying to new sites within the VA?

Dr. ELNAHAL. Well, if you ask me in a vacuum, Senator, I would want user satisfaction to improve substantially. That is an outcome that I would want to see, especially before we accelerate deployments in a manner that DoD has been able to accomplish. I think that users will——

Senator MORAN. I am sorry. What is the vacuum that you are in? You have a set of criteria. The GAO says meet the criteria. The question is, do you pause before you deploy to more locations until that is met? I do not know the vacuum that is. If criteria is not met are you still going to deploy?

Dr. ELNAHAL. Forgive my wording. What I meant to say was we really want to see user satisfaction improve, and I believe that it will improve once we do follow through on all of the Sprint solu-

tions, which is a combination of holding Oracle Cerner accountable for configuration changes, for us to improve training, and for us to organize ourselves and support our end users with the right change management, which had everything to do with our build of governance.

So yes, I would want to see end user satisfaction improve before we accelerate deployment. And I do not know if Dr. Evans——

Dr. EVANS. I agree. I mean, I think there is still an opportunity—there will be opportunities to learn, but to your point, we have folks who are using this system on a daily basis, where we can assess an improvement in satisfaction.

And, you know, I do think that there is—we just released three critical pharmacy updates, and we are hearing some good news about those pharmacy updates. There are more to come amongst the pharmacy community. So there are places where we are starting to see some user satisfaction improvement, but to your point, we need more in order to support any acceleration of the schedule.

Senator MORAN. I will come back to this in a second round, but I think my question is worthy of a yes-or-no answer, and I do not know what the answer is. So I will come back to it.

Chairman TESTER. Senator Murray.

SENATOR PATTY MURRAY

Senator MURRAY. Mr. Chairman, thank you very much.

You know, we are almost five years into this EHR contract, and from the very start, before the original Cerner contract was even agreed to by the Trump administration, I have been raising concerns from my constituents, in Spokane and in Walla Walla, and I believe that I have been very patient and reasonable in pressing the VA and Oracle Cerner to get this system to work the way it should.

Now I have heard from providers who are now burned out trying to navigate this broken interface on top of what has already been an incredibly trying time for health care workers, and I have heard directly from my constituents, who have received a late cancer diagnosis because of the flaws in the system, and everything in between. None of this is okay, and something that concerns me deeply is we have not heard a lot about how those voices, that on-the-ground perspective, will be taken into account when we determine the future of this program.

VA is now in the decision-making process about whether to renew this contract. This is a key moment. So Dr. Elnahal, I need to know. Who is representing the frontline experience from Eastern Washington, who has been using the system, and how exactly is the patient and provider experience represented in that decision-making?

Dr. ELNAHAL. I think it is a really important question, Senator, and we focus squarely on that in the Sprint effort, in collaboration with the program. We built a governance structure that takes the views of end users into consideration in the first instance. The most important input we have is the input we have from frontline clinicians like Dr. Evans, who are telling us about the problems that need to be fixed to meet the veteran care need.

That cascades up into different levels of governance, our clinical councils, that ultimately make decisions on the changes we need to be able to meet safe and effective care.

Senator MURRAY. So it is not the users who have been facing these challenges over and over again.

Dr. ELNAHAL. Yes. Our governance now includes users from the five sites where it exists and leaders who are advising on what changes need to be made, based on their input.

Senator MURRAY. Okay. I would like to see that chart.

Dr. ELNAHAL. Absolutely, Senator.

Senator MURRAY. Mr. Sicilia, Mann-Grandstaff has been dealing with serious and even life-threatening issues for over 2 years now, since the rollout of the EHR, and many of the OIG reports have further confirmed what I have been hearing on the ground, over and over. There are problems in the system with suicide flags, with unknown queues, pharmacy issues, and I know that Oracle has begun working on some of those fixes. But we are still talking about the same problems 2 years later, and that is just so unacceptable. The stakes could not be any higher.

So just tell me, why is it taking so long to update this system when we have been telling you the problems, from the ground up 2 years ago, and we are still getting, "Well, we are going to have a fix for this"?

Mr. SICILIA. Thank you for the question, Senator. To my knowledge the unknown queue issue has been addressed. I committed to this panel in July that we would deliver a fix on August 1, 2022. We did that. It is deployed now, on average, there is 1 order per day that shows up per site in the unknown queue. I think the last time we spoke here we were up at about 1,500 orders in the unknown queue. So if that is still a problem, that is, in fact, news to me, and I am happy to come back to you in writing if there are additional problems. But I have not heard those.

In terms of pharmacy, the last time we spoke the estimate was that it would take three years to address the pharmacy issues. My response to that was when that kind of estimate is given the real answer is nobody knows. So the first thing we did after that hearing in July was broke that down into smaller subsets. We delivered, in February, the top three fixes for pharmacy. The fourth fix, number four on the priority list, will be delivered in April to the VA. As Dr. Evans just mentioned, we have heard some positive feedback from sites about those pharmacy fixes.

As far as behavioral health flags, behavioral health flags are now in the system and will continue to be added to all modules of the system on schedule in April. As well, the opioid advisor tool that has been deployed has flagged over 1,600, just at the five sites that are live, has flagged over 1,600 potential opioid prescriptions that would have been made to patients who perhaps should not have received opioids.

So I think a lot of the issues that have been reported have been addressed. I am disappointed to hear that that news has not made it to you, and certainly we will make sure that we respond in writing with formative date on each one of your questions.

Senator MURRAY. I would like to see that in writing.

Mr. Chairman, before I finish my time I just want to say, as Chair of the Appropriations Committee and Chair of the Military Construction and Veterans Affairs Subcommittee, and a longtime member of this Committee, I take my oversight responsibility pretty darn serious. And despite how much funding has been provided, this system is, by no means, living up to our promise to care for our veterans. The continued patient safety risks are totally unacceptable.

So I want to be candid here because at the end of the day what I care about is getting this right for our veterans. And I do not believe that more money is what is going to solve this problem. And I am not sure it makes sense, Mr. Chairman, to continue to fully fund the budget request for this system until I can see that the system is working and not putting our veterans in harm's way. That responsibility is on both the VA and Oracle Cerner, and both entities need to step up.

Chairman TESTER. Senator Murray, thank you for those comments, and I would tell you, in short, our patience is running thin.

Coach Tuberville.

SENATOR TOMMY TUBERVILLE

Senator TUBERVILLE. Thank you, Mr. Chairman. Thank you, and thanks to the witnesses for being here today, for discussing such an important topic, one that I know has taken many years and a lot of money. We need to do what makes financial and logistical sense, and most importantly, make sure it works for veterans and VA's health care providers. I hope we are well on the way of achieving this goal.

However, I am going to use my five minutes today to relate to another topic. It relates to an interim final rule issued by the VA last September that allows the VA to provide abortions to veterans and their dependents. Since this rule was implemented six months ago the VA should be able to provide this Committee with the data.

Dr. Elnahal, I have several questions I want to ask you and see if you can answer some of these. I am going to ask all three of them first and see if you can answer them.

In the last six months, how many abortions has the VA facilitated, either at a medical facility or through community care? Number two, at what stage of pregnancy was each of the abortions? And number three, what exception was used for each of the abortions? Can you answer any of those three?

Dr. ELNAHAL. Senator, respectfully, in a public forum like this I am concerned about both veteran and clinician safety if I give you that information right now, but we are happy to work with you and take that for the record.

Senator TUBERVILLE. Thank you. I figured that was coming. Well, the next questions we should not have a privacy issue so see if you can give me a response on these. Which VA doctors, therapists, social workers have been trained to counsel and refer veterans for abortions, how have they been trained, and how has the VA assessed their competency in women's health and prenatal care? Do you know that?

Dr. ELNAHAL. Well, Senator, we want to ensure that the folks providing these services, again, in the limited exceptions that we

have as defined by the IFR, the life of the veteran, if the health of the veteran is at risk, or in situations of rape or incest, and we need trained, qualified professionals to do that. So we have rolled out training. We have begun to do that, of course, for our women's health providers, our coordinators of care for women's health, our mental health providers where these conversations can come up, and that process is ongoing.

Senator TUBERVILLE. But have we not changed it to where abortion at any time, not the three exceptions?

Dr. ELNAHAL. The criteria, Senator, is if, again, the veteran's life or health is at risk or in situations of rape or incest.

Senator TUBERVILLE. Those three. Those three exceptions. Okay.

All right. It is my understanding that doctors now have the option to opt out of participating in this policy. Is that true?

Dr. ELNAHAL. That is true, Senator.

Senator TUBERVILLE. Okay. How many doctors have chosen to opt out? Do you have any clue?

Dr. ELNAHAL. I do not have that information now but will take that for the record and see what we can provide.

Senator TUBERVILLE. Was that included in this new rule, that they could opt out?

Dr. ELNAHAL. Under the law, physicians have always had the right to opt out of care against which they have a conscientious objection, and we made that clear through formal policy, and the exact process by which they can do that, very recently we sent that guidance out to the field.

Senator TUBERVILLE. Yes. Do you have any clue how much it is costing the Veterans Administration to implement this rule? Do we have any kind of report on that?

Dr. ELNAHAL. Well, the impact analysis, Senator, that we have done estimated that fewer than 1,000 veterans a year would need these services, and so we are really not talking about a significant percentage of the medical appropriations budget that we have.

Senator TUBERVILLE. Yes. You know, we have had this new interim law for six months, and I hate that we cannot discuss it a little bit more. You know, I am curious what prohibits this, you know, from privacy. I understand a little bit of it and I am really just wanting numbers. The last time I talked to Secretary McDonough about this we had started abortions. So hopefully we can get some numbers down the road. I think there should be an obligation from the VA to do that since it was changed from the VA and not through this body. So hopefully we can discuss this and get more information in the future.

Thank you. Thank you, Mr. Chairman.

Chairman TESTER. Senator Brown.

SENATOR SHERROD BROWN

Senator BROWN. Thank you, Mr. Chairman, very much. Thank you to the Chairman and to Senator Boozman for the discussion this morning over the Air Force breakfast and talking about patient safety and talking about mental health and all the things treating men and women in the service and after they get out of the service, as human beings.

This week is National Patient Safety Week. I hear directly from VA employees in Ohio regarding safety concerns at the VA. No surprise. We should applaud those who have the courage to make sure veterans are receiving care in the safest possible environment, speaking out about it when necessary.

I want to take a moment to thank Dr. Cox who testified last year in the HRM for his team at VHA for their work to make the electronic health record safer. We know VA's electronic record rollout had led to negative outcomes for Ohioans. As Mr. Sicilia talked, you were in Columbus recently. Today my office was briefed on three separate veterans, three individual veterans who died in part because of the Oracle Cerner EHRM's failings. Until the 14 technology fixes outlined in the HRM's Sprint Report are developed, tested, and placed, this should not move forward at any other facility. I think you are hearing that from the Chairman, the Ranking Member, Ms. Murray, and others.

My first question is for Dr. Evans and Dr. Elnahal, if you would respond to this. I met with VA employees in Columbus a few months ago, right after you announced the assess and address period to find and fix problems with the EHRM product and after Dr. Elnahal's September visit. Frontline VA employees raised frustrations, the kind of frustrations Ms. Murray spoke about, about connectivity, system latency, workflows. Clinicians raised pharmacy and patient safety concerns, where they went around the table, one after another, talking about those. We see the effects on productivity, on worker morale, on veteran satisfaction.

In January, specific clinics' productivity were still below go-live and access to specific clinics at Chalmers, the Columbus facility, primary care, rheumatology, and neurology remain limited. So go-live, the facility has hired additional staff, and employees are working overtime to meet veteran needs. You know all that.

No new system launches perfectly, of course. However, we are almost a year post go-live in Columbus. Veteran satisfaction is low. Worker morale is low, as indicated by the GAO report.

So how, Dr. Elnahal and Dr. Evans, how can you recommend moving forward to more complex facilities if the current sites are not back to pre go-live productivity levels? I mean, you have talked about Cleveland. You have talked about Cincinnati. You have talked about Ann Arbor. You have talked about Seattle. How do you go to more complex facilities when you cannot get it right in an ambulatory place like Columbus?

In either order. Dr. Evans, do you want to start?

Dr. EVANS. Sure. First of all, I was just in Columbus myself last week, and I heard many of those same things, and we need to address those issues. There is just no two ways about it. In any system, as you said, there are going to be challenges when we roll out a new system, but it is very, very important for us to be sensitive to the operations on the front lines of care, and to be identifying where those challenges are, and fixing them.

To your question about highly complex sites, like those that you mentioned that have some, what we would refer to as our Level 1 medical centers, where there is more complex care delivered, I think the VA recently made a decision to move back. We had been considering moving forward with a go-live in Ann Arbor, Michigan.

Senator BROWN. This fall, right? This late summer or fall?

Dr. EVANS. That is correct.

Senator BROWN. And you are moving that back?

Dr. EVANS. We have moved that back.

Senator BROWN. As you have Cleveland and Cincinnati.

Dr. EVANS. That is correct. And I think, you know, again, this gets to the core principle that I mentioned earlier, and that is we need to know that we are ready to safely deploy a record that will meet the needs of the organization before we go live at sites, particularly at complex sites, but I would argue that would apply to any site. It does not matter whether it is highly complex or not complex.

Senator BROWN. Okay. Dr. Elnahal?

Dr. ELNAHAL. Yes, thank you, Senator, for the question. As you remember, it was actually my visit to Columbus where I heard directly from frontline users and I observed their workflows, about the concerns they had around veteran care that prompted us to do the assess and address after I had a conversation with the Secretary about what I saw. And the need to restore productivity is not an end in and of itself. It has everything to do with access to care, and it is also a marker about the degree of workarounds and issues that our clinicians have to go through to work around the system rather than having the system function for their needs.

So I do see—and I agree with everything Dr. Evans said about a site-by-site assessment that considers not only productivity but everything else we have discussed—patient safety risks, a number of other metrics. But there is a ray of hope in that Walla Walla has just reached predeployment productivity recently. They have strategies for their workflows that have been able to achieve that. And so we are learning deeply from that experience, and we plan on having that experience be taught and shared in terms of those best practices, not only for sites going forward, like Saginaw, but to sites that already have the system, like Columbus.

Senator BROWN. Thank you, and Mr. Chairman, thank you for giving me one more. Mr. Sicilia, I would like to ask you one question. It has been a year ago since the purchase of Cerner. Since that time VA employees have told me a lot of things—IT tickets being closed without communicating that back to the clinicians, degradations, outages that affect veterans' clinical care, not properly testing upgrades before they go live which cause pharmacy shortages.

You are aware of this. I just do not see the benefit from your system. Veterans are frustrated by the delay in their care. The contract is coming up for renewal in May of this year. Without significant changes to the terms of any contract why should we support it? What benefits can I start seeing that you are providing?

Mr. SICILIA. Well, I think on the issue of tickets being closed, this was feedback that I heard in Columbus last week, and I would agree with you. It is not where it needs to be, and it is on us to address that. On the issue of system availability, though, I think we have made dramatic strides, and we are now at the 99.9 percent system uptime SLA, that is contracted for.

So I believe that some of that data is from older reports, and things have been remedied certainly in recent months. It has been

nine months since we have owned the system and made material changes.

As I said, if the core and fundamental aspects of the system were flawed it would not be powering health care for countries like the United Kingdom and others. So there are issues. We are working together with the VA and the VHA, and I think that list of 14 accurately summarizes the things that need to be addressed. Seven of those are already addressed and not yet rolled out, and the other seven are in planning to be rolled out.

So I do believe that with the new leadership and the folks that have leaned in, we have a very good understanding of what needs to be fixed clinically to make the system better. I do know that the system does work and can work because it works all over the world. Obviously, this implementation has been particularly problematic.

But as far as not testing the system and causing outages, my firm belief is that those days are behind us. I do not see that as a continued issue going forward. It has not been.

Chairman TESTER. Senator Tillis.

Senator BROWN. Thank you.

SENATOR THOM TILLIS

Senator TILLIS. Thank you, Chair Tester. Thank you all for being here. And Chair Tester, I am glad that we have a panel instead of two panels. We have got all the stakeholders at the same one.

Ms. Harris, I spent a lot of time doing large-scale systems implementation work, contracts, price, all that sort of stuff. As your office completed the review, did you make any determination—I have not read the report, just the summary—any determination about contract obligations and who was responsible between Cerner and the VA in the execution?

Ms. HARRIS. That was not part of the scope of the review that we performed, but I mean, I think that it is fair to say that Oracle Cerner has not performed as well as they could have, given the volume and the severity of the system issues that have occurred and also the lack of timeliness to resolve them, which was part of our review, in terms of the trouble ticket resolution and not meeting the SLA timeframes.

Clearly I think that the contract as currently written has not sufficiently motivated Oracle Cerner to perform better, I mean, just in looking at the ticket resolution timeliness, just on that alone.

I think that the other component of that is the IT oversight piece on the side of VA. I think that this is a relatively new thing for VA. They have, for 40 years, been in the business of building systems, like VistA, and it is a completely different skill set in building IT versus buying, as you know. And so I think the department has struggled to make this transition, and that is evidenced by its past failed attempts to replace VistA with other commercial products, as well as what you are seeing going on right now.

Senator TILLIS. And Mr. Sicilia, you mentioned that I think you said that you transferred ownership of the system about nine months ago. Can you give me, if you have the information in front of you, the trouble ticket resolution. You have transferred ownership. I am assuming they are going through an implementation.

They may need some fixes to address process issues. Where are we now? I would have expected a lot of trouble tickets before you went live in the Northwest, fewer now. Has that happened or do you have a continuous flow of additional requests?

Mr. SICILIA. It is not uncommon to have a continuous flow of tickets in a system this big.

Senator TILLIS. More of a scale issue.

Mr. SICILIA. Yes. I think the current issue and the feedback that I heard on the ground in Columbus was that there is a feeling among the providers, the end users of the system, that we are closing tickets too quickly in order to meet a metric. And I think, frankly, that feedback was probably fair. I think there are some things that we need to do better, and we took that as an action item to get through.

But we closed 94 percent of the outstanding tickets. I am not so sure, though, that the qualitative measures are the only measures that matter. The quantitative measures, the quality of the close, communication back to the end users is an area for improvement.

I do not think we are at the point, and I do not have the numbers in front of me here—I am happy to supply those back in writing—I do not think we are at the point where we have a massive amount of tickets that we do not know what to do with or have issues that have not been surfaced in the past.

Senator TILLIS. Mr. Elnahal—did I pronounce your name right?

Dr. ELNAHAL. Yes, Senator.

Senator TILLIS. Okay. I know that you all are moving forward with the current implementation date. There are some improvements that have been recommended. Does that suggest that the improvements will be implemented, or are you moving ahead and you will work on any sort of recommendations from the GAO as you can get to them?

Dr. ELNAHAL. So I read through the entire GAO information that was received from Ms. Harris and digesting all of that. I do want to reinforce that we are going to assess readiness site by site. And so when you say that we have a schedule, we have a schedule, but the assessment for readiness for deployment at Saginaw has not been completed.

Senator TILLIS. All right. So you will do a go/no-go based on that assessment.

Dr. ELNAHAL. Exactly, and we are reviewing all the improvements we think need to be made before we would consider the likelihood of a safe and effective deployment to occur.

Senator TILLIS. I am about out of time, but, you know, I anticipated that you were going to have some challenges, because if you take a look at the VISNs and you take a look at the way that they have matured over years, they are like fingerprints. When you started this process you had several different variations, in some cases variations within a given VISN that you had to deal with. That is a huge systems process, change management challenge. So it is not surprising to me. The scale of it in terms of cost is a bit surprising.

But I think it is important for everyone to know that we have to plow through. We have to address these problems. One of the reasons why I was okay with the Cerner decision is it is a common

platform with the DoD. I know that they are not perfect, but my ultimate goal is to see integration there.

My last question, as you go through implementation, has to do with what I heard just earlier. One of the things that we wanted to make sure got done, which seems to be having some problems right now, is with non-VA care. And when you look at the implementation of the PACT Act and the additional stressors that I think are going to drive you to non-VA care in many instances as you ramp up, has that problem been solved? Are we going to see that integration, that ability for non-VA providers to access the same chart in a reasonable period of time? And that is for anybody that can answer the question.

Dr. EVANS. Yes, Senator. I think actually this is a particularly important part of what we have accomplished in this project already, as a part related to but not directly related to the electronic health record change itself, has been the implementation of what we call the Joint Health Information Exchange. And we, the DoD and VA combined, as well as the Coast Guard, the Federal Electronic Health Record are now exchanging data through the Joint Health Information Exchange with 65 percent, I believe, is the last I saw, of the American health care system, records digitally. And those are available not just to users at the five sites that are using the Oracle Cerner EHR but can be reviewed as well by clinicians at sites that are still using VistA.

Senator TILLIS. I may be working on dated information. I got the impression—and I will go back to the person that informed me on this—that exchanges are something I spent some time on in the state legislature. It is one thing for one of the providers to publish it. It is another thing for people to fully subscribe to it and exploit it. So if that 65 percent number—and I will take it at face value—it would be interesting to see if they are fully exploiting it in the manner that I would expect them to, and it would be the same way that any health care provider in the VA would.

Thank you, Mr. Chairman. I am sorry I went so far over.

Chairman TESTER. Senator Blumenthal.

SENATOR RICHARD BLUMENTHAL

Senator BLUMENTHAL. Thank you, Mr. Chairman. Thank you very much. You know, I have been on this Committee for a little more than 12 years. I have been on the Armed Services Committee the same amount of time. I do not know whether you have recently read *The Iliad* and *The Odyssey*, about the decades-long war that the Greeks conducted. This reminds me of *The Iliad* and *The Odyssey*. It seems endless. And I do not know what to tell my constituents about why it seems to have been such a dismal failure.

Can you tell me, Dr. Evans?

Dr. EVANS. I have teenagers who are taking high school English so I have seen *The Iliad* and *The Odyssey* recently at my house.

I think as for the question of the change here, this is a very, very, very significant change for the Veterans Health Administration. As I mentioned in my opening remarks, electronic health records really, it is much more than a record. It is what drives the workflow. It is what, frankly, in many ways, supports how clinicians think about patient care.

And so I think it is important to understand the depth of the change.

Senator BLUMENTHAL. I know it is an important and complex change, but it is equally important and complex for a lot of very big corporations that get it right, and then they have to change, they have to update. This technology is changing. I almost feel like the VA begins to get there and then somehow the system escapes them because of advancing technology because they do not—and I say "they" because it is not just you. It is a decade plus.

Would you say that the VA is now fully integrated with the Department of Defense?

Dr. EVANS. So I have been seeing patients at the VA for 21 years. I cannot remember a time in the last decade where I was not able to access data from the Department of Defense health care system in order to support a patient who came into my clinic who had either received care in the DoD recently or was receiving care in both.

Senator BLUMENTHAL. But with all due respect, sir, that does not answer my question, because the fact that you could access records does not mean that the systems are integrated electronically. If you are saying yes, it is done——

Dr. EVANS. Right. So here is what I would say. So interoperability has multiple layers. If we are talking about if the data is available digitally for me to review in order to understand and take care of patients, the answer to that question is yes, across the enterprise. But is that enough, and the answer to that is no.

We need to get to a point where the data is not just available but it is computable, so that the colonoscopy that was done eight years ago triggers a reminder for me to order a new colonoscopy at the 10-year mark for a patient. That is, that I do not have to go look it up in a digital repository somewhere but that that data element is driving clinical care decisions. And that is what we are striving to achieve with this.

Senator BLUMENTHAL. And the answer then to my question is no, it is not fully integrated, because if it were, if that patient had gotten that kind of test 10 years ago only within the VA system, I presume that after 10 years, or whatever the right time is, there would be a red light that goes on and you would have said, "Joe, you need to come back." If it is not happening from the DoD to the VA, you are not fully integrated.

And I am running out of time so I know this is a big and complex question and I know I have asked it in a very simplistic way.

Dr. EVANS. And if I may——

Senator BLUMENTHAL. Go ahead.

Dr. EVANS [continuing]. I completely agree, and that is where we are headed with this project. That is the benefit of having an integrated Federal record, and frankly, the benefit of having health information exchanges with the Oracle Cerner record, that records that we are getting from the private sector can be ingested into the VA record to drive that kind of clinical decision support. So that is where we need to go.

Senator BLUMENTHAL. My staff was told yesterday that there were six catastrophic events related to a feature of the electronic health record modernization program in the last couple years. Four

of the events resulted in a fatality, one from Spokane and three from Columbus, Ohio. Is that accurate?

Dr. EVANS. Let me just start by saying that patient safety is incredibly important to us, and I think you heard Dr. Elnahal mention that. One of our goals in the VA is to see zero patient harm. It is hard to achieve. Health care is an inherently risky endeavor. But our goal is zero patient harm. And we take every episode where there is harm and we evaluate it very carefully, and we try to understand why. And often there are many contributors to what can lead to unintentional patient harm.

It is never good. We are never satisfied when this happens. But we learn from it by identifying what the factors are. And there are many factors—medication errors that can occur, the electronic health record can contribute, physical infrastructure issues in our facilities. There are many potential contributors to patient safety, of which the EHR is one. And yes, there have been cases where we have found that, frankly, with both our EHR on the VistA side as well as with the Oracle Cerner EHR, that the EHR has been a potential contributor to that harm.

Senator BLUMENTHAL. A potential proximate cause, as we say in the law.

Chairman TESTER. Senator Blackburn.

SENATOR MARSHA BLACKBURN

Senator BLACKBURN. Thank you, Mr. Chairman, and thank you for the hearing.

This is something that we have followed for months, as you all know, and it is a source of frustration for us that the implementation is not happening.

Mr. Sicilia, I would love to come to you. I appreciate the efforts that your company has made in developing a new platform that would modernize the EHR structure. We hear that that has been a problem. We think this could be helpful. This rollout has not met the expectations of anyone. Transitioning these platforms are difficult. At Vanderbilt Hospital there in Nashville there was a lot of pioneering work early on that went into the EHRs and how they could be utilized. There has been frustration that the VA has just not been able to make this system applicable, user friendly, interoperable. The list of questions goes on.

But what I would like to hear from you, let us just say if this program is unsuccessful, you cannot get this platform going, what challenges do you see in integrating electronic records among the various shareholders that might need these—DoD, other VA programs, people that are going to go into community care. So kind of walk me through what the challenges are on this.

Mr. SICILIA. Well, if the program is not successful and it were to revert back to VistA, which is the current system, VistA was created on a technology called MUMPS, which was introduced during the Carter Administration, and by and large still remains on the same platform. I think interoperability would be a real challenge because those systems are very difficult to get to modern cloud platforms and to turn it into what is usually called "software as a service," which means that the system is automatically updated,

automatically secured, and automatically maintained by, in this case, the vendor, Oracle.

So I think that becomes, to be a very difficult——

Senator BLACKBURN. Okay. Then let me ask you this. Have you seen VA's program for restructuring?

Mr. SICILIA. Excuse me?

Senator BLACKBURN. Have you seen the VA's proposal for restructuring? Are you read into that?

Mr. SICILIA. For restructuring VistA?

Senator BLACKBURN. For their entire EHR.

Mr. SICILIA. We are the vendor for——

Senator BLACKBURN. Right. But VA has an approach. Are they working with you? Are they stonewalling you?

Mr. SICILIA. No, they are not stonewalling. VA is not stonewalling. I would particularly with the addition of Dr. Elnahal and Dr. Evans in the last few months and weeks, I would describe the collaboration among all parties as excellent, certainly better than it has ever been in the nine months that I have been associated with this program, and I am very optimistic that we are at exactly the moment where DoD was in their initial rollout, which I would call a page-turn moment.

Senator BLACKBURN. Okay.

Mr. SICILIA. And I think we are——

Senator BLACKBURN. That is great. That is good to hear. So do you feel like your recommendations are being listened to and that VA is responsive?

Mr. SICILIA. I do.

Senator BLACKBURN. Okay. And Mr. DelBene, let me come to you because in your nomination hearing, to my QFRs, I asked you about the EHR modernization and flipping the system, making it workable. And here was your response: "What is most important is to make sure that these projects run in a highly effective manner, accomplishing agreed-upon goals for each project in a cost-effective manner."

So the posture this program is in right now, is it cost-effective? Is it highly effective? Is it meeting agreed-upon goals? Where are you on this?

Mr. DELBENE. Thank you for the question. I definitely think we have made progress, as has been cited by the up time hitting the goal recently. I think we still have a way to go, to be honest. There is another set of measurements, kind of a second click down, where we are not yet meeting the goals. One is incident free time, the period of time when there is not an incident in the implementation somewhere. We still are not meeting a goal there.

We are making progress, but there is a way to go still.

Senator BLACKBURN. Okay. And Ms. Harris, the GAO finding, "VA medical staff appear apprehensive about adopting the new EHR system." What is their dissatisfaction? Why are they apprehensive? Why do they not want to move to an EHR system that could be interoperable, that you could have some of your multi-stakeholders, DoD, utilizing an interoperable system? Why are they resisting this?

Ms. HARRIS. I think change is hard, and I think that, you know, within VA in particular, for the past multiple decades, these med-

ical centers have been able to do what they want, which is evidenced by the 130 versions of——

Senator BLACKBURN. Do they understand this is their job? Do they understand this is their job? Is it the union that is resisting? Who is resisting on this? Why do they not want to do this? I have never in my life seen such resistance to modernizing a program. You have got a vendor sitting right next to you. They are a making a good-faith effort to bring something forward. Why can you not tell employees, "This is your job. If you do not want to do this, go work somewhere else"?

Ms. HARRIS. We have not done the detailed work to get to what you are asking.

Senator BLACKBURN. What is your timeline? What is your timeline for getting this program to the point that you are going to be able to see VA? I mean, you are the GAO. You are telling them what they are doing.

I guess that question is more properly placed to another of you on the staff, probably Mr. Elnahal. What is your timeline? How long does the transition take? I know that the Chairman asked you and you said months.

Dr. ELNAHAL. Well, I think the thread of your question, Senator, has a lot to do with the responsibility we have to take in the health care system to prepare for the change and execute on the change. And we took that seriously with the Sprint effort that we submitted to all of you on this Committee. We have built a structure that holds all of our leaders accountable for owning this effort, but also one that requires us to really define the changes needed so that at the end of the day for our end users it is usable and it is an efficient system.

Senator BLACKBURN. I am way over my time. I hope you all realize the frustration is that VA ought to be able to do this, and there does not seem to be a willingness. And Ms. Harris, I appreciate that GAO had that report for us. But I think we are all frustrated with the lack of willingness to modernize this system and be of service to the veterans. Thank you.

Chairman TESTER. Thank you, Senator Blackburn.

I am going to stick with you, Ms. Harris. Your report, and I think in your opening statement you said that there was one remaining recommendation that had not been addressed, or did I hear you wrong, from the report?

Ms. HARRIS. Well, we made 10 recommendations.

Chairman TESTER. How many are still open?

Ms. HARRIS. They are all open.

Chairman TESTER. They are all still open. So that means they have not been addressed, right?

Ms. HARRIS. That is correct. But VA did concur with all of those recommendations.

Chairman TESTER. And how old are they?

Ms. HARRIS. I am sorry?

Chairman TESTER. How old were these recommendations? When were they made?

Ms. HARRIS. Well, we have made a total of 15—well, we have 15 open recommendations related to the EHR, and the oldest one is from June 2020.

Chairman TESTER. Okay. So you have only been on the job for three weeks. What is the plan here?

Dr. EVANS. I think that some of the recommendations that were mentioned are just coming out right now. We concur with them and we will be acting on them. I mean, change management, communication, it is critical.

Chairman TESTER. Yes. Okay, good.

Going back to you, Ms. Harris, have you ever seen a contract? Do you look at contracts?

Ms. HARRIS. We do look at contracts.

Chairman TESTER. Have you ever seen a contract—correct me if I am wrong, okay, because I am not always right—have you ever seen a contract that appears to be really out of balance, favoring the vendor, and where the agency oversight of that contract, I believe, is lacking?

Ms. HARRIS. Well, I think that the contract certainly is not necessarily in the best favor of the government in this particular case, to be blunt.

Chairman TESTER. Okay. Good. So that brings me to you, Mr. Parrish, who has not been asked any questions, and I do not want you to feel too lonely down at the end. But where are you at in contract negotiations?

Mr. PARRISH. Well, Mr. Chairman, as you may or may not know we have begun our renegotiation of the contract for the new option period that would theoretically begin on the 17th of May. However, given the procurement rules, I am limited in what details I can actually give in a public hearing. But that said, I do want to——

Chairman TESTER. So let us just ask you it this way. Do you intend to have a contract negotiated by the time this one runs out, which is, what, the 17th of May or something?

Mr. PARRISH. Yes, sir. So, a couple of points that I can add for you. The key component is, as everyone on the Committee has acknowledged, there have been some challenges around system reliability and user adoption, and we have insisted for those improvements to be made by Cerner, and they have done some but nearly not enough.

And so, one of the key items that we are doing, and we are looking at instituting, is improving, the frustration that you acknowledged around, the limited enforcement mechanisms of the May 2018 contract, because it is very restrictive, and what we are allowed to recover, as you acknowledge, we only received $325,000.

Chairman TESTER. So I want to ask you this. How is that enforcement applied? Is it applied via the checkbook, or is it applied some other way?

Mr. PARRISH. Well, right now, as you know, it is very limited.

Chairman TESTER. I know.

Mr. PARRISH. But what we are renegotiating with the Oracle team is to strengthen and add more enforcement, especially around service level agreements. We want to bring industry standards in.

Chairman TESTER. But how do you hold their feet to the fire? Is it going to be by money?

Mr. PARRISH. Yes, sir. It will be by money and by—I guess that is really the main.

Chairman TESTER. Do you anticipate this next contract will be more favorable to the American taxpayer?

Mr. PARRISH. That is absolutely the plan. Yes, sir.

Chairman TESTER. Okay. Dr. Cassidy.

SENATOR BILL CASSIDY

Senator CASSIDY. Thank you all.

Ms. Harris, I think your latest recommendation was that there be an independent review of this process to just kind of have a third-party look at it. Sometimes you are so close—it does not mean the VA is not doing their job or Oracle. It is just that you are so close you cannot. What do you think about that process being a regular process? It would not just be this one time but it would be once a year, once every six months, some interval in which some objective person could say, "Everybody step back. I am a new eye. X, Y and Z." Thoughts about that?

Ms. HARRIS. I think that makes a lot of sense. I mean, the more eyes that you have on the system implementation, particularly an objective third party, the better. And you look at DoD, for example, and their rollout of MHS Genesis, and having that independent operational analysis completed after their first initial deployment, they put a pause based on the results of that assessment, they addressed all the major findings there, and then subsequently restarted the deployments——

Senator CASSIDY. Let me stop you.

Ms. HARRIS [continuing]. And it was much smoother.

Senator CASSIDY. Because it is kind of like—it is kind of a tale of two departments. It was apparently going kind of swimmingly in the DoD, with high provider satisfaction, and it is obviously not going very well in VA, with very low provider satisfaction. I would be interested in knowing more about that, but it sounds like you are somewhat attributing that to this sort of third party coming in. "Okay, stop, everybody. Time out." Almost like a marriage counselor, and then kind of getting things back online. Is that a fair characterization?

Ms. HARRIS. Yes. It is objective, and it is comprehensive, and it would allow VA to systematically catalogue what the major issues are and then to address them, point by point.

Senator CASSIDY. Which of the gentlemen from the VA should comment on this—I apologize. I have been at a series of meetings out of here—as to whether or not you would accept that or even think it is a good idea?

Dr. EVANS. Again, I am new in this position, but I will say this. I completely agree that the perspective of those who are outside of the narrow window of executing program is valuable, and frankly, we value the input from the GAO, we value the input we have received from the OIG, and we value the input that we have received from other partners.

Senator CASSIDY. So knowing that you value it, but I am really asking, would you be open to systematizing this third-party review, that it would not be an ad hoc, maybe it is about time to do it, but rather apparently such as DoD did, on a regular basis, now is the time for the person to come, kind of like JCAHO coming in for a

hospital. I do not know if they go to the VA or not. But everybody kind of resets. Your thoughts?

Dr. EVANS. I mean, I think, look, I would certainly be open to having those discussions, to figure out what that could look like.

Senator CASSIDY. That is a little bit——

Dr. EVANS. Or do you want me to say—I mean, yes.

Senator CASSIDY. Mr. Sicilia, what do you think about that? Is there value there?

Mr. SICILIA. Yes, it is a common practice among our commercial customers that third parties do quality reviews.

Senator CASSIDY. A common practice——

Mr. SICILIA [continuing]. Among our commercial customers.

Senator CASSIDY. No, I heard what you said but I just was kind of like digesting the thought, that the common practice, the best practice, which has worked with DoD and worked in the commercial setting—and I am not pointing fingers at anybody. We are trying to find solutions here because we are $30 billion in and counting, apparently, in terms of potential liability.

Mr. Sicilia, have you ever met with Secretary McDonough?

Mr. SICILIA. I have not.

Senator CASSIDY. How about your CEO?

Mr. SICILIA. No, she has not.

Senator CASSIDY. Is there any value in you meeting with him?

Mr. SICILIA. I think we did make an offer for a meeting. It has not yet been accepted. It would be common that we have top-to-top meetings in a deployment such as this size.

Senator CASSIDY. I apologize if you have answered this, but again, I have been gone. Is there just a succinct answer why this has gone so differently in DoD versus how it is going in VA?

Mr. SICILIA. If there was a very succinct and very easy, I think we would have flipped that switch. I would say that the range of services in the VA is more complex than it is, in many cases, in the DoD. However, in upcoming go-lives this month, we will go live at some of the most complex DoD sites that there are, and the readiness assessment on those is squarely in favor of a go-live in the system.

Senator CASSIDY. Can I stop you for a second? It does seem, though, that scheduling and pharmacy benefits are core competency of any system, and what we saw about the deaths and the morbidity associated with the current system related to scheduling and pharmacy. So knowing that there might be something else—allied health, specialties, whatever, whatever—that is core competency of any EHR. How could that have broken down?

Mr. SICILIA. The pharmacy process, as you may know, at VA is different than it is in all of private medicine and in the DoD. That said, it is an obligation to deliver those features. The initial estimate, when I first testified in front of this Committee in July of last year, was that it would take three years to fix the pharmacy issues. We delivered the top three issues in four months, and the next prioritized issue on the list will be delivered in April. So I think we have made material improvements in the pharmacy module here in the nine months that we have been involved.

Senator CASSIDY. Well, thank you all for trying to make something good happen for the veterans. I appreciate it, and I yield.

Chairman TESTER. Senator Moran.

Senator MORAN. Ms. Harris, let me confirm my understanding is that the GAO recommendation is for certain criteria to be met by the VA before there is a further expansion of the sites in which this system is to be utilized. Is that true?

Ms. HARRIS. Yes, that is true.

Senator MORAN. So what is the GAO recommendation in that regard?

Ms. HARRIS. To establish goals associated with user satisfaction and to have marked improvement against those goals before continuing on with deployments.

Senator MORAN. And do you outline the nature of those goals?

Ms. HARRIS. We do not outline the nature of the goals. I think that should be up to the VA to establish what the appropriateness of those goals should be, and I think VA, with Dr. Evans and Dr. Elnahal, should be working very closely together to identify what the appropriateness of those goals should be. But what is important is that VA does this and that they measure against it, and before they do anything else, in terms of proceeding forward with deployments, that they have significant improvements in their user satisfaction.

Senator MORAN. And is that the only criteria in the sense, yes, the VA needs to determine the desired outcome, but user satisfaction, is there something more that you mentioned in your report?

Ms. HARRIS. There is. So in terms of priority that is the most important priority, but also relative to change management as well, we made seven specific recommendations on improving their organizational change management, and the VA should be implementing those and be in a better position before they continue on with deployments as well, in that regard.

Senator MORAN. And the VA's response to those recommendations, that recommendation?

Ms. HARRIS. They did concur with all of our recommendations.

Senator MORAN. And the sense that they are following through—if they concur with your recommendations then do I have the answer I was looking for earlier? If they concur with your recommendations then there would be a pause. The answer to my question is yes.

Ms. HARRIS. That is TBD. I mean, from everything that I have heard now it sounds like they will continue to proceed with deployments.

Senator MORAN. And that is different than what you were told by the VA in response to your recommendations?

Ms. HARRIS. Well, they concurred with the recommendations but they did not provide specificity in terms of the timelines for implementing those recommendations. So I assume that they would take into account the pause and get back to us with time frames for the new schedule for deployments once they have implemented those recommendations.

Senator MORAN. So, Dr. Elnahal, what am I missing? Why is it difficult to say—I mean, we have heard from a number of my colleagues about the health consequences to veterans as a result of the utilization of the EHR system. I am not sure I can understand why if that is true, which seems to be the case, then if it is a mat-

ter of certainly health and welfare, and perhaps life, then what would be the reason that it is difficult for you to say, we are going to wait for criteria to be met, satisfaction, before we expand the number of hospital sites that are going to be utilizing the system?

Dr. ELNAHAL. I do not think you are missing anything, Senator. We concurred with that recommendation. I would want to see improvements in user satisfaction and adoption of this system before we deploy further. I just wanted to clear that clearly.

Senator MORAN. Let me try the question again, and if you do not see that, then what?

Dr. ELNAHAL. Well, what we are doing now, with Dr. Evans and his team, is refreshing what we call the broader readiness criteria, apropos of Ms. Harris' and her team's recommendation to us to clarify those goals around readiness for deployment and beyond. So we are working on that now, feverishly, and as we do that, site-by-site we are going to assess readiness. And if we are not ready against those criteria, we will not go live at those sites.

Senator MORAN. So is the unknown at this moment the criteria?

Dr. ELNAHAL. We are refreshing those criteria. I am interested in what Dr. Evans' perspective is as well. But we are refreshing those criteria as a team right now.

Senator MORAN. So the Department of Veterans Affairs comes up with criteria that they say today needs to be met before there is further expansion of the system, and if that criteria is not met then the expansion would not occur. And the thing that we do not yet know today is what the exact criteria is. Is that a summary of what you are testifying?

Dr. ELNAHAL. Yes, Senator. There are obviously criteria that the program has used before. We paused deployments back in July, at the Secretary's request. We extended that pause in October to do the Sprint analysis. And now, of course, we have much more information about vulnerabilities in the system, things we need to do in VHA to better prepare for the change management recommendations that Ms. Harris mentioned.

So that criteria needs to be refreshed, and that is what we are doing right now.

Senator MORAN. And may I assume that at least seemingly to me was a reluctance to say there would be this delay if their criteria was not met, you are not concerned that if you said that, that then Oracle Cerner would be less intent on fulfilling its obligations under the contract?

Dr. ELNAHAL. We expect Oracle Cerner to follow through on our requirements.

Senator MORAN. Anything here, Mr. Sicilia?

Mr. SICILIA. I think that obviously end user satisfaction is critically important. It is not just a contractual requirement. It is a moral requirement as well, given the fact that these people are caring for our Nation's veterans.

I would say, in concert with Ms. Harris, that I think the end user surveys has to be paired with a change management process. If you just survey people and make that the only criteria, and you ask them, "Would you like to change?" usually the answer is not positive, right. So in any kind of survey where change is associated,

without a strong change management process accompanying it, you will inherently get more negative answers than positive answers.

However, I will say that the feedback that I heard in Columbus was very pointed, it was very well formed. I think the people who are using this system have put a tremendous amount of thought into it. I think they know what they need to make it better, and I think we can deliver it. And disinformation would say that the only feedback is just general surveys and sometimes can backfire because without accompanying process around them, you know, you can survey forever before you get to the resumption.

Senator MORAN. Dr. Elnahal, your criteria is broader than just user satisfaction?

Dr. ELNAHAL. Yes, Senator. We have to consider everything from operational readiness of the facility, making sure that a certain number of employees were trained appropriately. We are working on revamping training, starting the training much further in advance of deployment, looking at specific user roles, tailoring to specific user roles. There are a number of things we are doing with training. And yes, there are a good number of other criteria.

Senator MORAN. And I will belabor this a while longer. The criteria that you are utilizing will be based upon outcomes from the places that the system is already deployed, to determine whether to deploy it elsewhere.

Dr. ELNAHAL. Yes, especially user satisfaction. That is the only place where we would be able to get that information. And with Block 8 and some of the changes we have made since the beginning of the Sprint, I do hope to see that users are saying more often that the system is meeting the needs for veterans.

Senator MORAN. And the places that the system is going to be deployed, in the next series, what input or what criteria is required from them to determine whether to further deploy?

Dr. EVANS. I mean, I think——

Senator MORAN. I think this is my last question on this topic and then I have one more.

Dr. EVANS. So we need to assess the readiness of the solution itself, that is its technical performance, the reliability, system response time, et cetera, and configuration, whether it is meeting the needs. And a piece of that leads to user satisfaction. As we have been talking about, we also need to assess the readiness of a site to engage in change.

So we will be focusing on improvements at existing sites, assessing satisfaction, and frankly, the system performance, the configuration changes that you have heard mentioned earlier, that we can make to improve the path forward, that is critical. But as we look for it at future sites we have to ask the same questions. And so the criteria will apply to both.

Senator MORAN. The 14 patient safety issues that have been identified, they should be fixed before further deployment?

That is a question, not a statement.

Dr. EVANS. Yes. We should have a clear and unambiguous plan and an assessment of what must be fixed before we go live. I would argue that our lean is that they should all be fixed. But remember, this system is in use right now. We have mitigations in place for existing sites. Ideally we have them all fixed before we go live.

Senator MORAN. Dr. Elnahal—my last question, Mr. Chairman, although you made the mistake of telling me I could go as long as I wanted.

Chairman TESTER. Yes, well, the vote is about to close, but that is okay.

Senator MORAN. I do not think so. Not quite yet.

First of all, I would compliment you and your political skills. Despite the number of times your name was mispronounced, in every instance in which you were asked if was being pronounced correctly your answer was yes. I guess I should not question your veracity based upon that evidence.

Doctor, do we have your commitment that staff and existing Cerner EHR site will make liberal use of their authorities under the MISSION Act to refer veterans who might be worried about any of their safety or well-being to community providers until improvements are made or until the best interest of the veteran is altered?

I did not ask my question very well. Let me try this again. I want to make sure that you are going to utilize Community Care as an alternative in regard to any veteran that may have concerns about the system.

Dr. ELNAHAL. Well, I will start, Senator, by saying that I have been giving the benefit of the doubt in the pronunciation of my name since I was a child.

On that question, absolutely. Where we are not able to meet the access standards, which are in place and something we adhere to, regardless of whether our facilities have Cerner or VistA, we offer community care. And we have seen increases in utilization of community care at the five sites, because of decrements in productivity that you would expect after a go-live. We are seeing one facility reach pre-deployment productivity, but the four others have not. And you have seen across the board, and we have seen, community care utilization go up, because we need to make sure that veterans get the care one way or the other.

Senator MORAN. Thank you for your answers. Thank you, Mr. Chairman.

Chairman TESTER. I have got one more too. Senator Moran, I figure you probably did too, but that is okay if you need to go.

I was looking down this Committee. Many of the people on this Committee are either on the Authorization Committee for the Department of Defense or on Appropriations Committee for the Department of Defense. Mr. DelBene, in a recent interview, Secretary McDonough said, "Too often we are a downstream consumer of this infrastructure, and too often our concerns become secondary to, for example, the DoD, which manages big parts of this network, and this makes implementation of this system harder than it might be."

Could you respond to that?

Mr. DELBENE. Thank you for the question. I support his statement there. I think this is a complicated system that has dependencies between the VA and the DoD. There are services that we consume from the DoD, such as login and patient safety, or patient information exchange, that we have had issues around reliability, and we have been speaking to our peers at the DoD to try to get those resolved. But that is one area.

And the other area I think is around getting us to a point of shared governance, such that we manage the enclave together. I think it is just a matter of history, that they started this deployment and that we have added on as kind of a second tenant. We need to get to a place where we share in all those kinds of decision-making, and we are working with them on that. But it is that, to what the Secretary said, around the frustration that we sometimes have of we think we need to go in this direction, and how do we get that to be executed across the two organizations.

Chairman TESTER. One of the solutions that we had to solve any kind of problems between the DoD and VA—because, by the way, turf is always a problem around this place—is the Joint Executive Committee. Is it working?

Mr. DELBENE. I think we are able to bring issues to the JEC when they get raised. I think the problems are, as you say, in a very large organization when we get down to the specifics of getting a particular issue resolved, it can sometimes get bogged down, and despite the best intentions of both sides to resolve those issues.

Chairman TESTER. Okay. Last question, and this is your opinion. You have been in this business of technology your whole life. You have been in this position for a couple of years now? Pretty close?

Mr. DELBENE. Fifteen months.

Chairman TESTER. Fifteen months. Time does not fly when you are having fun. But is this something that can be done before I get really old?

Mr. DELBENE. I do think it can be done. I was trying to figure out how not to speak about your age. But I do believe it can be done. I think that we are in a very different position than we were when we started this rollout. I think we have made great progress in the sites that have gone active, and we understand the issues and we are driving the issues.

I think there is a long road still to get to absolute perfection, but I think we are on that path. And so I do think it can be implemented, and successfully, for the benefit of our veterans.

Chairman TESTER. Mike Sicilia said a bit ago that the players in place were better—if I paraphrase this wrong you correct me—were better now than they have been in the past. Fair statement, Mike?

Mr. SICILIA. I would say that is fair. I would not say the other players were bad by any means.

Chairman TESTER. But they are better now than they have been in the past.

Mr. SICILIA. We have enjoyed more collaboration.

Chairman TESTER. Perfect.

For you, since you are the IT guy, do we have the people in place to make this work, from a VA perspective?

Mr. DELBENE. From a VA perspective I definitely think we have the right people in place. I think our oversight of this project is strong, I think we are holding Oracle Cerner accountable for strong deployment, and I do think we have a good team in place to execute.

Chairman TESTER. Then I would ask the same question to you, Mike, but I know your answer is going to be, "We are going to have the right team, come hell or high water." Right?

Mr. SICILIA. Yes, sir. That is correct.

Chairman TESTER. All right. Let me close this out. I want to thank you all for being here today. This has been a good hearing, only if it results in progress. Okay? If we are back here even three months from now, still talking about the same old stuff, then we have got some issues. I think everybody up and down the rostrum made very, very good points about what the expectations are, and I think that it is driven by one thing, and that is making sure our veterans get the health care they have earned in a way that they deserve. Okay?

Status quo is unacceptable. I think we all know it, up and down the line. We are tired of excuses. We want to have results. And I would just say that if everybody puts their shoulder to the wheel, and the wheel is going in the same direction, I have confidence. But I will tell you that my confidence has been waning, and so I really do want to see results.

Thank you all for being here. This hearing is now adjourned.

[Whereupon, at 5:26 p.m., the hearing was adjourned.]

A P P E N D I X

Prepared Statements

STATEMENT OF NEIL EVANS, M.D.,
ACTING PROGRAM EXECUTIVE DIRECTOR,
ELECTRONIC HEALTH RECORD MODERNIZATION INTEGRATION OFFICE,
DEPARTMENT OF VETERANS AFFAIRS (VA)

"VA'S ELECTRONIC HEALTH RECORD MODERNIZATION"
COMMITTEE ON VETERANS' AFFAIRS
UNITED STATES SENATE

WEDNESDAY, MARCH 15, 2023

Good afternoon, Chairman Tester, Ranking Member Moran and distinguished Members of the Committee. Thank you for the opportunity to testify today in support of VA's initiative to modernize its electronic health record (EHR) system. I am accompanied by VA's senior leaders critical to this initiative, Shereef Elnahal, M.D., Under Secretary for Health, Kurt DelBene, Assistant Secretary for the Office of Information and Technology and Michael Parrish, Principal Executive Director for the Office Acquisitions, Logistics and Construction.

I want to begin by thanking Congress and this Committee for your continued support and your shared commitment to Veterans. Successful deployment of a modern EHR is essential to the delivery of lifetime world-class health care and benefits for Veterans. Indeed, with a modern EHR, 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. In the end, our goal is a unified, seamless, trusted information flow between VA, the Department of Defense (DoD), the U.S. Coast Guard and community providers that will empower Veterans and their families, caregivers and survivors to achieve and sustain health and wellness. Because Veterans are at the center of everything we do, their health and well-being and ensuring they receive the care they have earned is our highest priority.

We readily acknowledge there have been challenges with our efforts to modernize VA's EHR system. Yet, we remain fully committed to the ongoing modernization and deployment of the new system and have made significant progress from our first go-live in Spokane. We continue to improve the system based on feedback from our health care personnel and Veteran community. We currently are focused on assessing and remediating all identified issues at live sites, with a continued prioritization of patient safety. As we move forward with deployments, we will, of course, incorporate lessons learned and implement continued improvements we have identified, so that we can achieve the benefits of a modern EHR system. We strive to have a system that can support improved access, outcomes and experiences for Veterans, through a single health record from entry into military service to VA care.

VA has an obligation to Veterans and taxpayers to get this right. We understand the concerns of this Committee regarding the EHR system and its impact on Veterans and the care our health care personnel provide. We are committed to full transparency

and we appreciate your vigorous oversight. Indeed, we look forward to further engagement with you and your staffs to ensure that this modernization is successful. We commit to you that we are working diligently to address identified issues and implement enhancements and improvements. In delivering world-class health care to Veterans, VA adheres to the principles of a High Reliability Organization, and our number one goal remains achieving zero patient harm.

EHR Readiness

In October 2022, VA delayed upcoming go-lives of the new EHR system until June 2023 to understand and address challenges with the system and ensure optimal functionality for VA health care personnel. The goal, of course, is to achieve better outcomes for Veterans. During this "assess and address" period, VA is actively working on many other issues impacting system reliability and usability to include system performance, testing, training and functional optimization.

System Stability and Reliability

VA is resolving issues with the EHR system's performance and stability before restarting deployments at other VA medical centers (VAMCs). Corrective actions within the Oracle database configuration have resulted in more than 6 months without a complete outage. The Block 8 upgrade in February 2023 included 28 updates, which reduced crashes and freezes across clinical, Revenue Cycle, and platform applications, resulting in an 11% reduction in application freezes and 8% reduction in application crashes. Additional improvements are planned for this weekend that will improve those numbers to a 13% reduction in freezes and 32% reduction in crashes. Key performance indicators are now being used to monitor and evaluate performance improvements.

Improving system reliability and availability remains a critical VA focus. Cerner is contractually obligated to meet 99.9% uptime commitment per measurement period (i.e., monthly) for the EHR production system, meaning that the system is functional and available for use. Over the last 6 months, Cerner has met that requirement. In addition, our immediate target is to achieve at least 95% system incident free time, which we define as the percentage of time in which all solutions are functioning as intended for all users. Because not all system interruptions are the result of Cerner activity—issues with other systems that connect to the EHR can impact it—VA continues to work with our partners at DoD and the Federal Electronic Health Record Modernization office to reduce downtime within the EHR enclave and the systems connected to it.

VA also established a Performance Excellence workgroup in March 2022 to review technical performance issues with Cerner and resolve problems with system stability, reliability and performance. The goal of this workgroup is to remediate identified reliability and performance issues before deployment of the EHR system to additional sites and minimize any disruption to access of care. VA looks forward to continuing deployments this summer.

System Usability

On February 17, 2023, the three priority pharmacy enhancements were installed as part of the Block 8 upgrade to the EHR system. These enhancements are improving providers' visibility of available prescriptions, optimizing system options for maintenance medications and expanding details on prescription expiration dates—all of which are necessary to support our health care personnel in delivering Veteran care. Demonstrating the lessons we have learned from the past, these enhancements underwent rigorous testing prior to installation, and initial feedback from the pharmacy community is positive – especially pharmacy personnel at Mann Grandstaff which experienced the greatest impact in the early deployments. In fact, it is fair to note that without these pharmacy enhancements, we would not be able to effectively resume EHR system deployment. We are confident the implemented changes and the remaining pharmacy changes will reduce the burden on personnel at the five sites already using the new EHR and improve delivery of world-class health care Veterans have earned.

VA is also standardizing activities across the VA health system to optimize business processes, reduce user adoption issues and improve training and testing. This includes standardization of data collection workbooks and standardization of locations and roles. Standardization and improving the end-user experience is critical to reducing use error and risk of patient safety events.

The Electronic Health Record Modernization Integration Office (EHRM-IO) and the Veterans Health Administration (VHA) have worked collaboratively to assess and remediate a subset of identified system challenges to expediently resolve some of the most critical issues. Examples of these issues and resolutions include:

- Introduction of behavioral health flags that are prominent in the user-facing sections of the EHR (completed in February 2023 Block 8 update for RadNet and PathNet; RevCycle scheduled for Block 9 in August 2023);
- Development and Insertion of physician credentialing table that will ensure clinicians orders are delivered to the intended location and leaders have the appropriate level of visibility and control (scheduled for June 2023) before next go-live;
- Completion of a "Prescriptions" filter made available by default;
- Configuration change to only allow formulary medications to appear on initial search;
- Creation of a standard report on common prescriptions to allow for facilities to review to trigger modification; and
- Technical enhancement that now 1) limits the available options in the "VA Scheduling Location" drop down field when placing Orders and 2) ensures Providers will no longer see the entire list of locations available at the facility and will only be able to select from locations with scheduling build associated to the order.

We also learned that additional updates are required to the EHR system workflows and administrative processes for medical centers with oncology and research services and have started developing these updates. These changes are due to the high-risk nature and complexity of oncology medication protocols (these will be completed before Level 1a facility go-lives).

Training, Change Management and End-User Engagement

End-user engagement and adoption is key to achieving usability and successful integration of the EHR system into operations. When VA health care personnel can efficiently and effectively use the EHR in their day-to-day care delivery, Veterans benefit from a simplified patient experience, earlier identification of health risks, and better preventative care based on when and where they served. VA continues to listen to our end users and make improvements to training and adoption activities based on their feedback. We have taken steps to address concerns with contracted trainers and the sandbox simulated training environment to better prepare users for the live EHR environment. We are addressing challenges with user participation and involvement of super users, who are critical in providing specific, on-the-job guidance to our health care providers. We have made the training more modular and based on specific system functionality. This allows us to further target training requirements to end users' specific roles in the system, better aligning content with the work they perform and reducing the overall amount of training required for many users. We also are doing a better job managing expectations around training, so that our staff understand it is only one part of the overarching adoption pathway for the new EHR system. Based on lessons learned, ongoing feedback and general maturing of the program as deployments expand, VA is working on a variety of other program improvements to support end users. These updates include additional support from clinical consultants, VHA subject matter experts and super users on use of the EHR within VA policy, processes and operations.

Program Improvements

VA has also made progress in completing implementation of many of the VA Office of Inspector General's (OIG) recommendations for the EHRM program. As of the date of this testimony, 43 of the OIG's 68 recommendations are closed, including the final recommendation from the unknown queue that was closed in January 2023. Two additional recommendations are targeted for closure by the end of March 2023. 25 recommendations remain open, including two from the oldest report focused on access to care at Mann-Grandstaff VAMC. These two recommendations relate to evaluating the EHR system's impact on productivity and the impact of mitigation strategies on the user and patient experience and are targeted for closure by June 2023. VA continues to drive each to closure. We have established VHA EHRM governance bodies and processes to ensure enterprise standardization and health system decision-making. As part of this work, EHRM-IO transitioned the EHRM National Councils to VHA to be incorporated into VHA's governance process.

Readiness to Resume Deployments in June

As improvements continue to be made over the next few months, VA will continually evaluate the readiness of each site as well as the EHR system to ensure success. The continuous focus will be on assessing and remediating any identified issues at live sites and designing for safety and efficiency at future deployment sites. Inside VA, EHRM-IO continues to partner with VHA stakeholders, including site and Veterans Integrated Service Network (VISN) leadership, to execute deployment events and track site readiness in preparation for upcoming 2023 go-lives and beyond. To be clear, we will not go live at any site with unresolved safety critical findings, but remain firm in our resolve to continue deployments of the modernized EHR. Additionally, with the new EHR National Councils within VHA, multiple database and system reliability fixes and the three priority pharmacy enhancements in place, VA leaders are confident in a successful path forward for future deployments.

Continued Engagement at Live Sites

VA is not singularly focused on the future deployment schedule. We continue active engagement with sites already using the new EHR system. We are grateful for their hard work and dedication to patient care. In fact, these sites have provided vital feedback on challenges with the new EHR that have resulted in critical improvements. We maintain a continuous feedback loop with these deployed sites to capture future improvement opportunities at those sites and to drive future changes at sites not yet deployed. As we continue to support these live sites, VA has developed and sustained a training regimen to ensure new hires are properly trained and existing users are getting opportunities to optimize their performance in the EHR system. We routinely communicate system changes, planned maintenance events, upgrades and outages, and also leverage our weekly User Impact Series, which is attended by over 200 super users, site and VA leaders, and subject matter experts. The lessons learned from these sites have enabled VA to improve the level of support provided before, during, and after go-live.

The progress we have made is demonstrated by the opening of Mann-Grandstaff VAMC's acute psychiatric unit on January 17, 2023. As the unit began using the new EHR system, staff and leadership commented on both the smooth transition and the level of support they received. VA has also developed a VAMC Information Portal Dashboard with 82 facility operational metrics to monitor health care delivery at sites using the new EHR system.

Contract Update

VA's initial sole source contract award was awarded to Cerner on May 17, 2018. The EHRM Indefinite Delivery/Indefinite Quantity (IDIQ) contract was structured with the initial period of performance over five years, after which another five-year option period is available to exercise at the Government's discretion. The current period of performance for VA's contract ends May 16, 2023. Our Office of Acquisition, Logistics,

and Construction, together with other stakeholders in VA, has conducted acquisition planning and preparation to support option period negotiations with Cerner. Those negotiations are expected to begin on March 14, 2023.

Budget Overview and Cost Estimate

To support the EHR modernization effort, the total budgetary resources for EHRM-IO budget for FY 2023 is $2.103 billion ($1.759 billion from FY 2023 appropriation and $344 million in carryforward funding from FY 2022). This reflects the funding needed to sustain deployed sites and prepare for the next program requirements at sites scheduled to go-live in FY 2024 and early FY 2025. To address OIG's concern regarding the lack of an independent cost estimate (ICE), VA procured the services of the Institute for Defense Analyses (IDA) to develop an ICE that includes EHRM-related costs attributable to EHRM-IO, VHA, and the Office of Information and Technology, among other costs related to the new EHR throughout the life cycle of the system. This estimate provides VA leadership with a neutral, independent assessment of potential costs to implement and operate a new EHR. The four main contributors of differences between EHRM's estimates and IDAs are the deployment timeframe, inclusion of sustainment, inclusion of productivity losses across the deployment, and cost differences among existing elements of the deployment process. VA is currently assessing the ICE. We are also working to update and finalize the program's life cycle cost estimate and will provide an updated version to Congress once completed.

Deployment Schedule

Deployments are scheduled to begin again in June 2023. VA has a draft schedule for the next six sites for FY 2023. We plan to deliver a full life cycle deployment schedule to Congress by May 2023.

EHR System Alternative

Since the decision to modernize VA's EHR system was announced in 2017, our charge has been clear: create a single, seamless, integrated, interoperable, and secure health record for Veterans, starting with their military service days. From the outset, doing so was going to be one of the most complex clinical and business transformation endeavors in the Department's history. However, the challenges of modernizing our EHR system must not prevent us from moving forward. Modernizing is critical to providing our health care personnel with the most up-to-date tools to provide the best care to Veterans.

Our existing EHR system, VistA, is almost 40 years old. It has served VA well, and we know long-time VA employees are accustomed to the system. VistA is comprised of 130 distinct instances, and is not a solution that can be sustained or modernized to deliver the benefits of an enterprise electronic health record for our Veterans, with seamless integration across federal partners and community care centers. It does not have modern capabilities like artificial intelligence/machine learning, web access, and capabilities providers and Veterans expect and deserve from a

modern cloud-native EHR. VistA is a member of VA's expansive and complex ecosystem of software and infrastructure. The size and complexity of that technology ecosystem has nearly doubled in the last five years, and most of that growth was in modern cloud-native applications. Programmers are increasingly challenged keeping VistA integrated in a growing ecosystem that is architected very differently from the system designed 45 years ago. These challenges compound every year.

VA must continue to move forward with a modern, commercial EHR solution in close coordination with Federal partners including the DoD. An alternative approach would only push us further away from the goal of a single, seamless, integrated health record necessary to provide world-class health care to our Veterans. Despite the challenges, it is important to note that the same EHR system that VA is deploying has already been successfully implemented at DoD sites across the United States, including by the U.S. Coast Guard and the U.S. Military Entrance Processing Command, as well as in the commercial sector. Implementing a commercial, enterprise-scale EHR allows VA to take advantage of new technologies both today and in the future. It allows us to standardize workflows and systems across VA and to automate and integrate manual processes, resulting in efficiencies and better service and care to Veterans. In addition, enterprise-wide standardization means that personnel trained at one facility will be able to transfer their skills to any other facility nationwide without re-learning the EHR system. Further, it will make it easier to use telehealth to share clinical expertise across VA's expansive health care delivery network, improve enterprise scheduling and enable smarter care decisions based on a broad view of a Veteran's medical history and service record.

Conclusion

Our focus is keeping Veterans at the center of everything we do, and our top priority remains and continues to be advancing a culture of safety and high reliability, with the goal of zero incidents of patient harm. Veterans deserve high-quality health care—that means health care that is timely, safe, Veteran-centric, equitable, evidence-based and efficient.

As improvements continue to be made over the next several months, VA will continually evaluate readiness of sites and the EHR system to ensure success. This includes close collaboration with EHRM-IO, site and VISN leadership and other key stakeholders to evaluate individual site readiness. These assessments include ensuring each site has the people, processes and technology elements in place to ensure a successful go live. With the key activities and EHR system improvements that are underway, VA leaders are confident of the path forward.

I again extend my gratitude to Congress for your commitment to serving Veterans with excellence. With your continued oversight and support, VA will realize the full promise of a modern, integrated health record to cultivate the health and well-being of Veterans. We are happy to respond to any questions that you may have.

ORACLE
Health

Statement of Mike Sicilia, Executive Vice President, Global Industries
Oracle Corporation

Before the

U.S. Senate
Committee on Veterans' Affairs

Hearing on

"Examining the Future Path of VA's Electronic Health Record Modernization Program"

March 15, 2023

***Introduction*:**
Chairman Tester, Ranking Member Moran, and members of the Committee, thank you for the opportunity to speak with you today to provide an update on Oracle's work on the Department of Veterans Affairs' (VA) Electronic Health Record Modernization (EHRM) program.

I am Mike Sicilia, Executive Vice President for Global Industries at Oracle. I am responsible for the Oracle Health Business Unit, including Oracle Cerner.

It has been nine months since Oracle acquired Cerner and assumed its responsibilities under the EHRM contract with VA. I last spoke before your Committee in July shortly after the acquisition closed. In the time since, Oracle has made significant progress on many critical issues that were impacting the Electronic Health Record (EHR) system. We recounted this work in our 2022 Year-End Congressional Report, which is attached to this testimony.

We have accomplished a significant amount in a relatively short period of time, but there is still work to do. We recognize that the program is not where you – and we – expect it to be, *yet*.

Chairman Tester, at the hearing held by the Appropriations Committee last September, you made a statement to the effect of "I don't want anything implemented before it is ready for prime time, on the same token we have an investment in a program that needs to start delivering at some time."

We have taken that to heart since our first day on the job with Cerner, and we have worked to turn the corner. We know Congress is frustrated.

What I can tell you today is that we believe continuing to move forward on this modernization project is the correct course. Modernizations – and changes – are never easy. Making this implementation additionally unique is the transition of the operational posture of VA and their EHR – moving from 133 different custom solutions governed in a decentralized operating structure, to an enterprise solution governed centrally, which itself brings challenges of change.

As we evaluate where we are today, we at Oracle have made the kind of progress, and fulfilled promises made shortly after the acquisition, that should give you confidence that Oracle is the right technology partner for VA to be successful.

As I said, there is still a lot of work to do, but allow me to first cover where we are currently, where we have made progress and the EHR is benefitting veterans, and then I will review the program's continued challenges, and our view looking forward.

Current Assessment/Columbus Visit
The progress we have made to-date, especially the enhancements and updates to the underlying technology that runs the EHR, gives us confidence that the system is properly resourced and capable of handling the additional users that come with future deployments. In January, Department of Defense (DoD) deployments added approximately 12,000 new users to the system across 2 hospitals, 11 commands and more than 70 physical clinic locations without issue. The DoD modernization program is now 75 percent complete and remains on schedule and on budget to complete domestic deployments within calendar year 2023.

Two additional waves of DoD deployments will occur in March and June respectively, which will allow us to further see that the federal enclave is able to handle the additional users and workloads that will come with the resumption of VA deployments.

Resuming VA deployments will be an important decision, one that we expect to work on closely with VA on as we near June. During the last several months, we have strengthened a positive working relationship with VA leadership; teams from all levels of engagement have been meeting weekly since August. We are aligned with VA and DoD on a common set of metrics that we use to measure our progress and the system's performance, and we are continuing to iterate. This alignment on metrics was something that had never previously been agreed on by all parties, and our working partnership grows daily.

Last week I was in Columbus, Ohio with Dr. Evans and visited Chalmers P. Wylie Medical Center. The visit proved to be insightful; across the board we heard about the benefits of the system, as well as continued frustrations. We want to thank the team in Columbus for spending the day with us, for their transparency and candor in conversation. The team at Oracle Cerner believes that there is a significant opportunity working together with VA/VHA to address the concerns voiced in Columbus in relative short order.

Many of the frustrations and concerns we heard about the system are rooted in its configuration and resulting workflows. If we level set on the relationship of the system, Oracle Cerner considers itself the provider of the system, implementing a configuration as designed by the central governance office of the VA. The good news here is that configurations and workflows can be modified and updated with relative ease once we receive direction from VA/VHA. I have the utmost confidence that working with Under Secretary Elnahal and Dr. Evans we will be able to streamline problematic workflows and get the VA approvals we need to make system changes from the original workflow design decisions.

As an example, we are currently working with the National Councils to simplify the complexity of ordering labs such as a liver enzyme test, and I'm hopeful we will have that change in place by the end of May.

However, not all feedback we heard had to do with the configuration of the system. We heard thematic feedback around small bugs, human centric design, and gaps in our support process. Productivity has not rebounded to where Columbus leadership wants it yet, and there are issues that impact the medical center's revenue, which we are focused-on addressing. We must do better, and internally we are adjusting to ensure a better experience for the practitioners that serve our veterans, ultimately impacting our veterans directly.

What we did not hear in Columbus was a single provider who stated that the system can never work for them. Each division head that we met with echoed their intent on working with Oracle Cerner, and the central VA governance office, to address the issues they are experiencing to make rollouts better for upcoming sites. The audiology team today in Columbus is already working with other sites to share best practices and lessons learned as they prepare. Every person we interacted with shared ideas for how to make things better.

These providers are committed and dedicated to serving veterans, and we are committed and dedicated to making the improvements that they need so they can provide the best care. Their feedback is already being taken and worked into a plan, a practice we will mirror across all other sites that are live.

So where does that leave us? Currently the system is performing drastically better than it was nine months ago and is taking on new DoD users without issue. We believe the federal enclave is adequately resourced to take on additional VA sites without impacting performance.

We need to make workflows simpler, which will be an ongoing, iterative process among Oracle, VA/National Councils and users.

We have improved training, and we will assess the impact of these changes as new users undergo training. There is work that needs to be done that I will explain below to make these changes, harden governance standards and achieve a repeatable model.

The VA's recently issued EHRM Sprint Report includes many recommendations for improving the governance, processes and aspects of the EHR system. We continue to work with VA through all of these recommendations and implement solutions in our areas of responsibility as quickly as possible.

With all of that said and acknowledging the work to be done, it is still true that the underlying system is performing, stable and working. Yes, it can be improved and we are one hundred percent committed to working with VA to do so. Continual improvement is a reality with any EHR system and is a common practice for our customers worldwide. From a performance and stability standpoint, we believe the system is ready for the resumption of deployments. We will work with VA in the lead-up to June to evaluate other critical factors related to workflows, usability and continual improvement that will impact readiness for the resumption of go-lives.

Summary of Progress
The following is a short summary of progress made since I last appeared before the Committee.

System Performance: We have gone from an average outage of 345 minutes per month prior to the Oracle acquisition, to 21 minutes on average per month (considering January and February's most recent data).

We have met the contractual requirement for availability to be 99.9 percent or higher 5 out of the last 6 months, with a DEERs incident impacting the month of October. DEERS is the Defense Enrollment Eligibility Reporting Service operated by the Defense Manpower Data Center, providing personal identity and demographic information for service members.

We also have significantly reduced the instances of less severe, but still frustrating, degradations going from an average of 28 high severity incidents a month to 15 – yet our response time to fix the issues when they occur is greatly improving.

Appendix A provides a chart of current metrics on performance, VA specific. Teams across the board, from VA, to DoD and FEHRM, jointly review these metrics weekly in a cross enclave operational plan, as well as monthly at aggregate to understand broader trends. When trends arise, we build joint plans for a quick fix.

Users should also start to feel a notable difference across key workflows in terms of application and workflow interruptions, with 28 improvements delivered in the most recent Block 8 delivery in February 2023.
More tuning coming in Block 9 will yield even more improvements across several workflows.

On the Technical Roadmap of 41 items that we provided to VA on September 2, 2022 – the list of items we need to deliver to make the federal enclave perform reliably – we have completed 26 already. These items are available to you to view on our Congressional Dashboard (https://apexadb-ext.oracle.com/ords/r/cerner/federal-ehrm/home).

These improved performance metrics are the result of controls we have implemented to improve engineering rigor. Change management controls have been implemented for updates and system modifications, and dedicated incident response personnel and procedures have been added so that when there is a problem, we can conduct a rigorous root cause identification and preventative action processes, resulting in fewer incidents caused by a code change, faster incident response times and improved processes to prevent the same issue from happening again.

Congressional Items: There are 48 items Congress has requested be fixed or addressed in letters from Congress to VA dated June 27, 2022 and Jan. 18, 2023. Of these, Oracle has completed and closed 16 items, work is in progress or awaiting direction from VA on 20 items, 2 items are scheduled and the remaining 10 are in development. These items also are available to be viewed on our Congressional Dashboard (https://apexadb-ext.oracle.com/ords/r/cerner/federal-ehrm/home).

Pharmacy: We delivered the top three Pharmacy enhancements to VA in four months instead of the original timeline of up to three years, which was the time communicated to VA prior to Oracle acquiring Cerner. Enhancements 1, 2 and 3A began updating across the system last week, after being piloted in February, and we anticipate Enhancement 3B to be updated in the same rolling approach beginning in April (we are working closely with the VA on additional testing to ensure a smooth rollout). More details on Pharmacy updates are below in the Block 8 section.

Behavioral Health Flags: Patient Behavioral Health Flags for Radiology and Lab were delivered ahead of schedule for inclusion in the February system update. Flags for Registration will be delivered this Spring for the August system update (Block 9). This addition will ensure behavior health flags are visible both upon registration and between encounters to enhance coordination across a veteran's entire care team.

Additional Clinical Support: In addition to the expanded use of behavioral health flags, VA providers can now use suicide screening tools within the EHR to easily assess patients for risk of suicide using the Columbia Suicide Severe Rating Scale (C-SSRS) assessment tool. The new opioid advisor tool is also continuing to automatically alert providers to avoid prescribing opioids to high-risk patients, and has done so more than 1,600 times in the VA since November 2020.

Unknown Queue: Enhancements for the Unknown Queue were delivered on August 1, 2022, fulfilling a promise I made during my testimony in July 2022. As a direct result of this change, we have seen a 90 percent drop in the number of orders that fall into the queue.

We delivered to VA changes that alert a provider when an order they entered could not be scheduled and requires correction as well as a similar message to the provider in their notification center. These alerts continue until the order is corrected by the provider. VA implemented these changes in December, and because of these fixes and enhanced awareness, there is currently, on average, only one scheduling task routed to the Unknown Queue per site per day which represents a dramatic improvement.

Testing: Enhanced testing enables us to validate code and configurations in very similar circumstances to which they will operate.

We are working with both the DoD and VA to update our existing test environment to be a more meaningful place to test, matching the size and scale of the federal EHR system. With this we will be better able to evaluate risks associated with an update and build test automation capabilities so regression testing can be implemented and continuously performed outside of the federal EHR system to ensure general workflows are always functional.

This will be complete in the fall of 2023; however, we are making iterative improvements through the next several months and have already made progress – we are able to complete scale testing on concurrent users of up to 70,000 today.

Training: Training improvements in strategy, content, delivery, and communication are also in-process that we believe will lead to higher levels of end-user satisfaction and readiness prior to a deployment. We are implementing the

recommendations made in the Oracle funded third-party training assessment and will have them operational when go-lives resume in June 2023.

Block 8 Updates

In February 2023, major updates were provided to the EHR system through the Block 8 update.

The most important of these updates were those relating to Pharmacy. You may recall that at the time of the acquisition Cerner and VA were anticipating that the implementation of Pharmacy features would take up to 36 months. Instead, Oracle re-evaluated the timeline and approach, injected resources, and delivered the most critical changes to VA for validation in 4 months. Three of these changes went into the February Block 8 update and a fourth feature is anticipated to go into the April 2023 update, currently being tested by the VA today.

These Pharmacy improvements have improved the productivity levels for end users by enhancing usability between the EHR and other VA specific systems, and providing better alignment between work and workflows to prevent the need from navigating between systems for providers and pharmacists to do their jobs.

An enhanced prescription history function increases pharmacist processing for prescriptions, enabling veterans to receive prescriptions faster. A change allowing local VA site pharmacies to control prescription visibility for ordering means that there is less re-work if a local VA site cannot fill a prescription. Another change provides a more accurate list of active prescriptions for a veteran regardless of whether a veteran's prescription was originally ordered within the EHR or from a community care provider. Finally when a provider is in the EHR, the expiration date for a veteran's prescription is displayed, which allows for more timely prescription renewals.

The update that is anticipated to be delivered in production in April will replace provider prescriptions with the pharmacy information used to fill the prescription. This brings more visibility to situations when a pharmacy is using a different tablet size, for example, to fill a prescription (e.g. Lisinopril 20 mg tablet x 1 tab prescription filled with Lisinopril 10 mg tablet, x 2 tabs).

Behavioral health flags were extended in the Block 8 upgrade to additional workflows in radiology and labs so that they are now more widely viewable across the system for wherever a veteran is receiving care. In addition, an update will be delivered later this spring to VA for testing and implementation in Block 9 for behavioral health flags to be visible in the registration module.

EHRM Benefits for Veterans

The point of this effort is for our nation's service members and veterans to have a seamless, interoperable medical record from enlistment through lifetime care – and for service members and veterans to benefit from a modern EHR that keeps pace with developments in technology and healthcare delivery. When complete, the modernized DoD and VA systems will produce better health outcomes, increased access to care, less burden on healthcare providers, and a future where this technology enables providers to spend more time with their patients and make better decisions about their care because they have all the information they need at their fingertips.

We already are seeing some of these benefits at the five deployed VA sites and their associated clinics. For example, with over two million female veterans in the US today, the EHR's women's health software allows seamless tracking for mammograms and cervical cancer screenings. It improves tracking and follow-up with new tools that do not exist in VistA where records were kept on spreadsheets and much of the tracking took place outside of the EHR.

Another example is that historically when a veteran was referred to another VA Medical Center (VAMC) for services, an interfacility consult order was sent to the receiving site. As each VAMC had their own version of VistA, the

documentation of the visit was stored in the receiving hospital's version of VistA and sent to the Joint Legacy Viewer where the ordering provider would need to log into the separate system to find the outcome and follow-ups to the visit. With the new EHR, now when an interfacility consult is ordered between two VAMCs on the new EHR, consults seamlessly appear on the receiving site's worklist and the documentation is already part of the veteran's single comprehensive record. This leads to better care and more information for providers in one place.

A third example of the benefits of modernization lies in telehealth, which obviously has greatly increased in importance since the pandemic. With an integrated telehealth solution in the EHR, users have direct access to the telehealth appointment from a link inside the chart. There is no longer a separate appointment e-mail to find, and nurses are no longer having to call the veteran prior to the appointment to walk them through connecting.

Another area where we are seeing significant efficiencies of the EHR is in the labs at deployed sites. The lab at Walla Walla has reported saving three hours per day because the new EHR has eliminated time-consuming manual processes. Specimen tracking from community-based outpatient clinics (CBOC) was a highly manual and time-consuming process. EHRM automates the process for lab results and allows for VA to digitally track specimens coming from the CBOCs.

Finally, use of the new EHR will undoubtedly empower VA to fulfill the promises made to veterans under the PACT Act by tying their records of service and medical care to presumptive eligibility. For the first time, conversations are beginning with DoD on bringing Individual Longitudinal Exposure Record (ILER) exposure data directly into the EHR. This means that not only will a single, seamless lifetime record avoid lost paperwork or other records gaps caused by data siloes that complicate disability eligibility, but also the data driving the EHR will help us get ahead of the next generation's service-related health crisis by flagging and activating against concerning health trends related to service exposure across the entire DoD and VA patient population.

Training

The EHRM training program is executed in accordance with government-defined requirements and government-determined priorities. While VA's contract with Oracle defines the contract-required technical training on the new EHR, end user feedback reflects more expansive expectations. To better understand these needs and associated opportunities, at its own expense Oracle engaged a third-party to conduct an independent assessment of the EHRM training program and offer recommendations for improvement. The result of this effort was the identification of ten root cause issues, six high-level recommendations and more than 25 initiatives that center on training improvements to four core areas: strategy, content, delivery, and communication.

To make the necessary improvements, we are focused across all four of these areas and do so with enhanced collaboration across VISN sites and by leveraging feedback loops for deployed sites.

From a strategic lens we are enhancing end-to-end training methodology with more scenario-based learning focused on cross collaboration within a clinical team. In addition, we are tailoring learning in what we call Adoption Pathways, which integrates the training strategy with change management and communications so as to level-set what end users can expect during trainings.

As an example, one of the key findings from the assessment was the need to focus on enhancing and empowering peer-to-peer training. Thus, we have retooled our super user training to better equip our super-users for their roles before training begins through go-live and into sustainment to enable sustained peer-to-peer training.

We are also continuing to upgrade training content, educate end-users on shortcuts already built into the system, and make training tools more accessible and available earlier to elongate and flatten the learning curve. This includes a refocus in areas that are critical to the delivery of care, where roles are seeing a significant amount of change and where

we have seen lower end user adoption rates from the first five site deployments. We are in discussions with Accenture to provide an initial set of trainers for our provider certification program for training throughout this year and next year.

Simultaneously we are putting tools in place that will automate training logistics, significantly improve the overall end-user experience, and provide real-time data and analytics to further improve content delivery and overall confidence in the learning journey.

All of these efforts will help improve change management communications and enable a more targeted, timely approach to effective communication to the right stakeholders at the right time.

Costs and Timeline

Oracle is committed to being a good steward of both public and private funds. Our work with DoD, VA, the U.S. Coast Guard and other federal stakeholders is no exception.

In September 2022, I committed in testimony to the Senate Appropriations Committee to keep costs in line with the contract ceiling, barring new requirements from VA. This commitment also includes the moving of the EHR to a modern, cloud-based system at no additional cost—to ensure the system works for all stakeholders including patients and health care providers.

Our intent continues to be to fulfill the deployments within the contract window, acknowledging of course that VA determines the schedule.

To speed deployments from where we are now will require continued working with VA to implement their defined national standards inclusive of workflows, interfaces, clinical content, user roles and devices so that when we prepare to deploy at a new site there is a repeatable model that we can use. Not only will this minimize costs associated with workflow and interface sprawl and allow deployments to occur on a predictable timeline, but it will also allow VA to achieve a consistent veteran experience and quality of care regardless of venue of care.

DoD's contract for modernizing its EHR system was issued in 2015. By October 2017 it had only deployed to four facilities and after that they went nearly two years with no additional facilities going live. During that time DoD, Leidos and Cerner focused collectively on:

- Fine-tuning and adhering to a standard, enterprise baseline of capabilities, workflows and connectivity;
- Enabling a repeatable deployment methodology; and
- Establishing a local and enterprise governance structure with clear lines of accountability that remained committed to delivering an enterprise system.

With those conditions in place and steady leadership from DoD, implementation resumed in September 2019. Deployments accelerated and went from four live sites to being 75 percent complete today with 140,000 total users in a little over three years. Later this year DoD implementation will be complete across the United States, with overseas locations likely early next year.

We can achieve a similarly repeatable model with VA. A key factor will be deep collaboration to obtain timely approvals for any deviations. This will allow us to be able to deploy across VA more rapidly – implementing to these three governance principles, which is why I continue to believe and to advocate to VA that this can be done in the contract's current ten-year window provided deployments resume in June.

Challenges

Workflows: As I have discussed, improving the provider experience with the EHR is a must-do, and that manifests itself mostly in usability and reducing burdensome tasks. This includes both workflow optimization and streamlining. These changes will make the greatest impact for providers using the system. We held a functional summit with VA in November 2022, which provided a forum to educate, collaborate and gain consensus on high impact areas for prioritization and creating a path to resolution.

Following the input I received in Columbus and in partnership with Under Secretary Elnahal and Dr. Evans, I believe we are ready to breakthrough on workflows and get this done expeditiously. This is not, however, our only challenge.

Interfaces: As a result of the lack of standardized procurement processes in the past, there are over 800 independent systems at the site level and not all require an interface into the new EHR. Such a large number of systems requires an enterprise standard for connectivity to both define what is needed and what is not, but also to prevent scope creep and additional contracting work ahead of deployments. While initial work in the lead up to the first EHRM deployment led to the build of nearly 100 interfaces, we still see the continual demand for new interfaces at sites as we move through the deployment schedule and currently have already added nearly 20 additional interfaces.

Revenue: We understand revenue challenges facing VAMCs and are working with VA to update the revenue cycle and billing components. This is a problem I heard about specifically in Columbus. For a clinical based revenue cycle capability, this also means ensuring proper training to end users to better mitigate downstream billing issues related to complete documentation in the record.

Referrals: While we have made progress to improve the referral manger process by reducing manual processes, improving system performance, and increasing user productivity and embedding Referral Initiative to standardized process adoption and workflows across VAMCs, we are continuing to work with VA to make improvements to the referral management component of the EHR especially for when veterans need to seek care in the community.

Modern EHR

Last year I informed you of our plans, with permission from VA and DoD, to move the federal enclave that runs the EHR system to our cloud infrastructure. Our focus remains on stabilizing and enhancing the performance of the existing system, but we also continue to work through these cloud plans with VA and DoD and are in the early stages of development.

Oracle is a leading hyperscale cloud service provider, operates fully authorized government cloud regions, and is one of the selected cloud providers for the Intelligence Community's Commercial Cloud Enterprise (C2E) program and the DoD's Joint Warfighter Cloud Capability Program (JWCC). We believe moving the federal enclave to our infrastructure cloud will only enhance the performance and security of the EHR system for VA, DoD and other federal users.

We also continue to be committed to delivering the world's first modern, intuitive, stateless web EHR system, and would like to partner with the VA and DoD to be adopters. The new web application will have an entirely new user interface, and feature modern design, mobility, and analytics to improve patient care. A core design principle as we build this system is that it must be built in a way for low client impact, meaning, data from their existing system should seamlessly map to the net new system. This will be provided to our nation's veterans and their caregivers as *a free upgrade* to the system already under contract.

We anticipate having a beta version for a handful of key workflows available later this year.

Closing

After an initial assessment following the close of Oracle's acquisition of Cerner in June 2022, we have catalogued lessons learned from the initial VA deployments and issues that require improvement have been made clear. Modernizing legacy systems is always hard to do and always worth doing.

With the DoD progressing towards completion, we now can showcase the potential for replacing a national tangle of scattered healthcare records with a seamless record maintained in a modern secure, accessible, and intuitive system. Turning back is not an option as the commitment to our veterans is too important and success is within sight.

We look forward to continuing to work with you on behalf of our nation's veterans as we deliver on VA's EHRM project. Thank you.

Appendix A – VA Key Performance Indicators (KPIs)

KPIs *(Combined VA & DoD Experience)*	June 2022	July 2022	August 2022	Sept 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023 *
Availability: Outage Free Time (OFT) % ** **Oracle-Owned Outage Free Time (OFT) %**	99.6 *99.8*	100 *100*	99.6 *99.6*	100 *100*	99.1 *100*	100 *100*	100 *100*	99.9 *100*	100 *100*
Incident Free Time (IFT) % ** **Oracle-Owned Incident Free Time (IFT) %**	80.0 *88.2*	75.0 *89.6*	84.8 *91.5*	86.3 *94.0*	77.7 *93.2*	79.9 *91.2*	33.0 *88.6*	74.0 *88.9*	71.0 *84.4*
Major Incidents (SEV1 | 2)	11 | 34	0 | 21	1 | 19	0 | 9	1 | 10	0 | 14	0 | 22	1 | 21	0 | 31
Mean Days Between Major Incidents	1.53	2.5	2.31	4.14	3.33	2.90	2.50	2.31	1.59
Mean Minutes to Recovery. Major Incidents	106	187	137	141	525	283	971	210	220
Major Incidents Caused by Change (SEV1 | 2)	1 | 12	0 | 5	0 | 7	0 | 3	1 | 7	0 | 5	0 | 7	1 | 1	0 | 18
p99 User Interruptions	420	441	477	346	387	340	222	279	276

* *Preliminary numbers. Incident data for the month is not finalized until the 15th.*

** *OFT / IFT: (Minutes Free of Incident / Total Minutes) X 100%* (***All incidents are included, regardless of responsible party***)

December IFT Callouts

December IFT experience was significantly impacted by an extended Televox incident lasting over 12 days. Televox is our provider that delivers patient reminders of appointments and referrals. During the December issue, Televox did not send patient reminders during this time; accordingly, clinics had to call patients directly.

We are working on a failover provider in partnership with the VA and DoD as Televox today is a single point of failure, which forced people to revert to manual work at the time of go down.

February IFT Callouts

February KPI results incorporate the Code Block 8 Release Experience. The release of the block did create a few incidents to specific modules, not the entire system. Teams real time triaged via a war-room and were able to resolve issues quickly, so while IFT did take a hit, we know this is directly correlated to our release. We are working on a plan to automate and improve block 9.

Our February Oracle-Owned IFT was 84.4% (6,290 total minutes). Of the 31 Major Incidents in February, 21 were Oracle owned, and 12 of those were directly related to Code Block 8. Code Block 8 incidents totaled 2,808 minutes (~44% of total Oracle-owned minutes). Without this impact, Oracle-Owned IFT would have been 91.4%

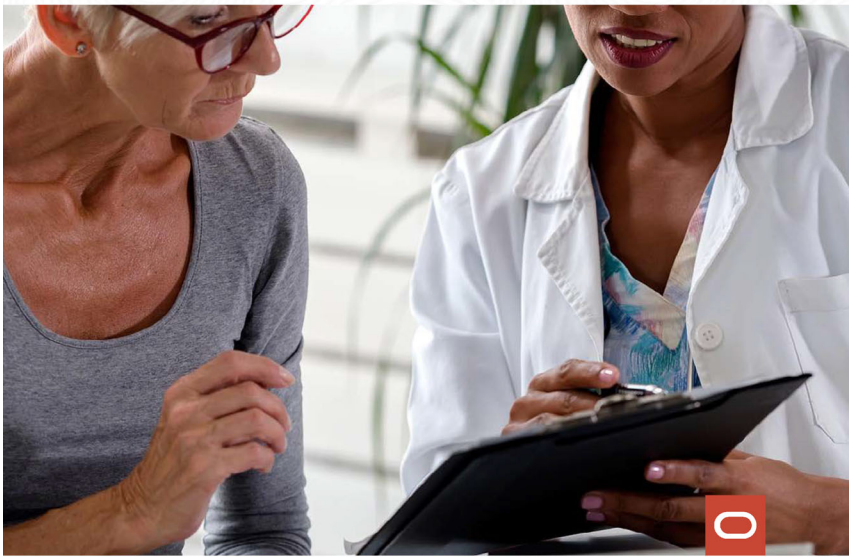
Attachment

2022 Year-End Congressional Report (see separate file)

ORACLE
Cerner

2022 Year-End Congressional Report

Federal Electronic Health Record Modernization




“We are on a mission to bring together the clinical expertise within Cerner and the technological expertise within Oracle to create the world’s first truly modern health care ecosystem.”
— MIKE SICILIA, EXECUTIVE VICE PRESIDENT, ORACLE GLOBAL INDUSTRIES
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Oracle is a leading technology company with more than 40 years of experience securing the world's most sensitive data and helping businesses and governments solve their most pressing problems.
Oracle's second-generation cloud delivers **better performance, better security, and better reliability** for mission critical enterprise applications delivered at scale.
Oracle is utilized **by more than 430,000 customers across 175 countries** to accelerate their digital transformation.
170,000 employees
48,000 developers & engineers
$64B+ in R&D since FY2012
World's first & only autonomous database
Industry's broadest & deepest suite of cloud applications
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INTRODUCTION

In June 2022, Oracle acquired Cerner Corporation, which overnight changed the trajectory of the Department of Veterans Affairs' (VA) Electronic Health Record Modernization (EHRM) program. The combination brought the world's only enterprise infrastructure and enterprise applications company together with one of the world's leading health care software providers. Oracle's core competency is running mission critical enterprise applications securely and at scale. Oracle brings orders of magnitude more engineering capability and resources to this project ensuring the program's long-term success.

Moreover, Cerner is now a central component of Oracle's industry strategy, and we are committed to delivering the world's first modern, intuitive web application to the VA first. It will have an entirely new user interface, and feature modern design, mobility, and analytics to improve patient care. This will be provided to our nation's veterans as a free upgrade to the system already under contract.

We need to keep in mind that the point of this effort is so that our nation's service members and veterans have a seamless, interoperable medical record from enlistment through lifetime care. When complete, the Department of Defense's (DoD) MHS Genesis modernization and VA's EHRM will produce better health outcomes, increased access to care, less burden on healthcare providers, and a future where this technology enables providers to spend more time with their patients and make better decisions about their care because they have all the information they need at their fingertips.

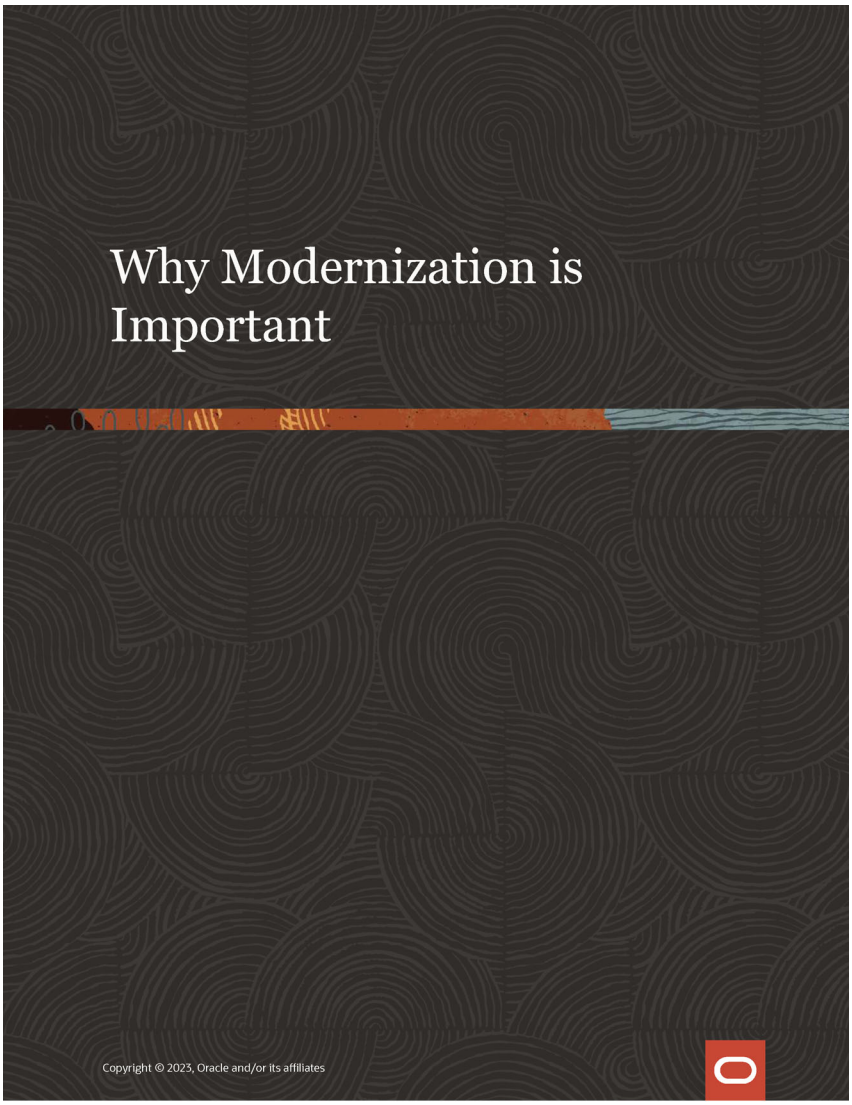
Deployment at DoD facilities is on schedule and on budget, with full deployment on track to be completed in 2023. As regards the VA, we inherited a system that was behind schedule and has experienced challenges. After an initial assessment we have catalogued lessons learned from the initial VA deployments and issues that require improvement have been made clear. Modernizing legacy systems is always hard to do and always worth doing.

As a result of our initial efforts since June 2022, system performance has improved, with the most severe type of outages down 67 percent. Oracle delivered ahead of schedule critical enhancements for VA's pharmacy system and implemented fixes to address scheduling and numerous other issues. We have brought on additional capability to improve training. Much additional work is in-process currently.

We have also committed to transparency. In the pages that follow is an update on the progress we have made toward meeting these goals and a summary of future work to come.

With the DoD largely complete we now can showcase the potential for replacing a national tangle of scattered healthcare records with a seamless record maintained in a modern secure, accessible and intuitive system. Turning back is not an option as the commitment to our veterans is too important and success is within sight.

We look forward to keeping you updated and stand at the ready to answer any questions.


Why Modernization is Important
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Modernizing DoD and VA EHR systems will dramatically improve healthcare for more than 18 million service members and veterans—and their families.

A SINGLE, COMMON EHR ACROSS VA AND DOD WILL RESULT IN:

Better health outcomes
by always arming providers with the full patient picture

Improved medical treatment
through state-of-the art clinical decision support tools

Increased access to care
with records available at VA, DoD and participating community facilities

Less administrative burden
on healthcare providers and patients who will no longer rely on paper records

Interoperability

Improving Access to Quality Care

EHRM improves interoperability by allowing any facility using the Oracle Cerner system—whether VA, DoD, or a participating community provider—to share data and view a single longitudinal patient record:

VA to VA

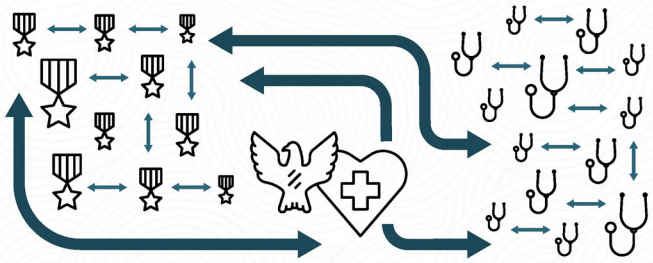
By replacing 130 unique instances of VA's legacy EHR (VistA) with a single enterprise system, the new EHR will empower any VA facility to view a patient's full medical record, no matter where a patient has received previous care or testing.

DoD to VA

With both departments on a single system, data is now longitudinal, bidirectional, actionable and consumable. Not only does this help patients seek care at the facility that offers the best or most convenient care, it empowers future modernization and innovation across the federal space.

VA to Community Providers

Only a single query is now required to retrieve a patient's health information from both departments leveraging Joint Health Information Exchange (JHIE) connections to more than 60,000 community partner facilities.



Data Migration is Complete

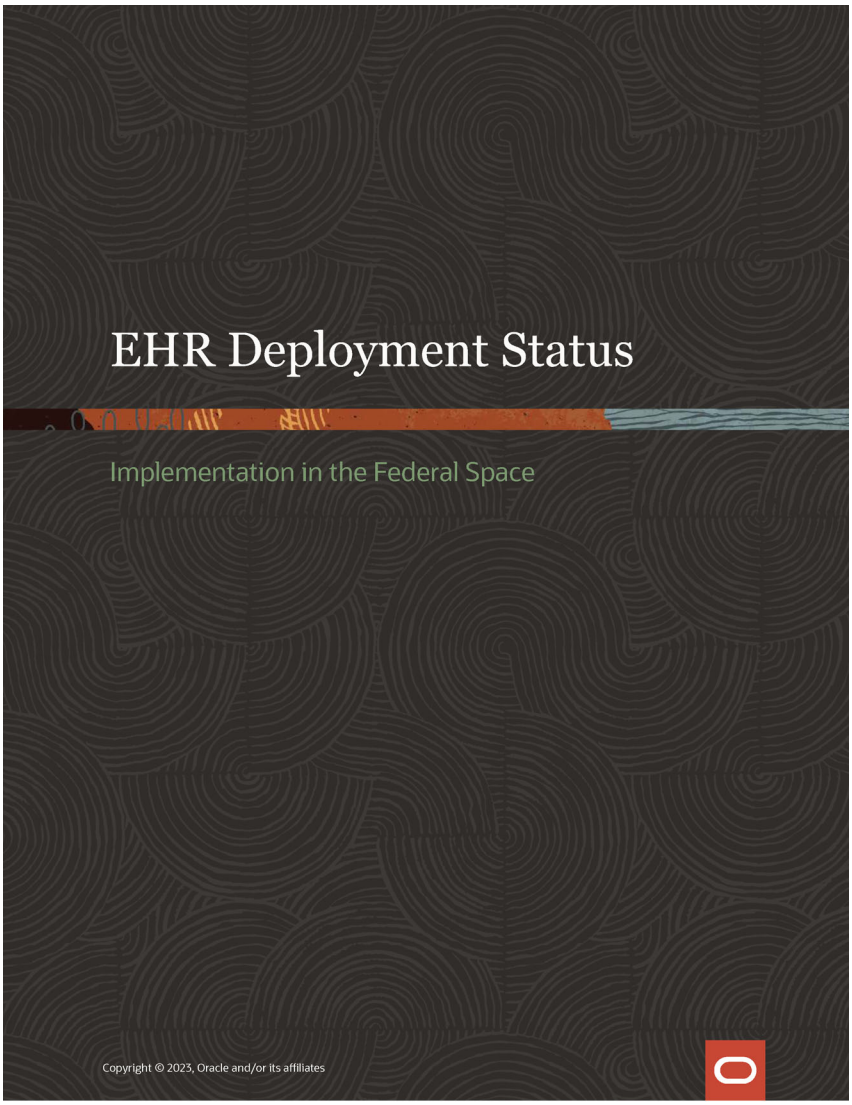
Jumpstarting a Modern EHR

The most comprehensive legacy health data migration in history has been completed, copying 35 years of legacy health data including 23.7 billion record elements belonging to 23.5 million veterans from VA to the secure federal enclave.

23.7 Billion
Health Record Elements Migrated

23.5 Million
Patients

This data migration laid the foundation for a longitudinal health record that supports continuity of veteran care and will fuel future research and innovation to positively impact VA patient outcomes.


EHR Deployment Status
Implementation in the Federal Space
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2022 EHR Deployment Status

Federal Healthcare Modernization at a Glance

Dept. of Defense

- On schedule and on budget
- 67% of facilities have deployed the system as of the end of 2022, bringing online:
  - 92 Commands
  - 127,000 End-users
  - 5.6 million Beneficiaries
- Full deployment is on track for completion in 2023
- Additionally, implementation at United States Military Entrance Processing Command (USMEPCOM), at 67 facilities, for use by more than 400 physicians who process more than 300,000 applicants a year

Dept. of Veterans Affairs

- Rollout paused due to implementation and system stability challenges
- System currently implemented at 5 VA Medical Centers and associated facilities
- Aggressive plan, developed in partnership with VA, launched to institute system and training enhancements
- Rollout to resume in June 2023

U.S. Coast Guard

- Full deployment complete across the entire service as of Nov. 2021
- EHR now supports:
  - 101 facilities
  - 100+ physicians
  - 40,000 Beneficiaries
  - 250,000+ medical examinations per year

Modernizing DoD and VA's EHR systems provides an opportunity to showcase the tangible health benefits of replacing a national tangle of scattered healthcare records with a seamless record that lives in a modern, secure, accessible and intuitive system.

DoD - Current Operations

As of Waves JACKSONVILLE/EGLIN Go-Live

DoD Deployment 67% Complete...

1,129
Total Locations Preparing

73,628
Total Users Preparing (as of OCT 14, 2022)

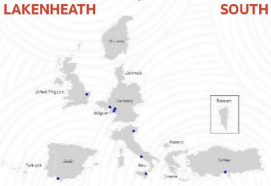
Current Operations by the Numbers...

92
DoD MTF Commands

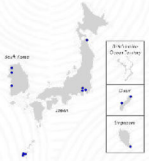
127K
Provisioned Users

5.6M of 9.6M
Beneficiaries Served

WAVES LANDSTUHL/ LAKENHEATH



WAVES OKINAWA AND GUAM/ SOUTH KOREA



DoD sites deployed (completed)

USCG sites (completed)

9 waves "in flight"

Deployment Waves Completed

IOC SITES (2017)
WAVE TRAVIS SITES (2019)
WAVE NELLIS SITES (2020)
WAVE PENDLETON SITES (2020)
WAVE SAN DIEGO SITES (2021)
WAVE CARSON+ SITES (2021)
WAVE TRIPLER SITES (2021)
WAVE BAMC SITES (2022)
WAVE LACKLAND SITES (2022)
WAVE BRAGG SITES (2022)
WAVE HOOD SITES (2022)
WAVE BEAUMONT SITES (2022)
WAVE GORDON SITES (2022)
WAVE EGLIN SITES (2022)
WAVE JACKSONVILLE SITES (2022)

USCG PILOT SITES (2020)
USCG PACIFIC SITES (2021)
USCG ATLANTIC SITES (2021)

USMEPCOM SITES (2022) (completed)

NOAA SITES (2023)

Future DoD sites (Parent Commands)

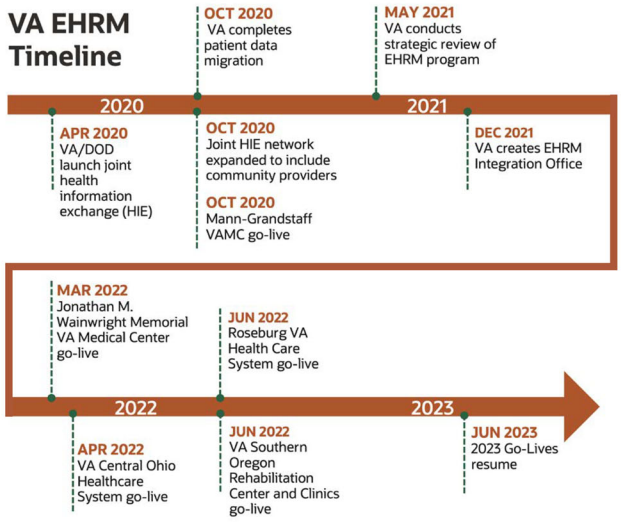
WAVE DRUM (2023)
WAVE PORTSMOUTH (2023)
WAVE WALTER REED (2023)
WAVE BELVOIR (2023)
WAVE WRIGHT-PATTERSON (2023)
WAVE LANDSTUHL (2023)
WAVE LAKENHEATH (2023)
WAVE GUAM/SOUTH KOREA (2023)
WAVE OKINAWA (2023)

VA Deployment Status

Deployment of the new EHR is complete at 5 VA medical centers and 22 associated clinics and facilities, supporting 10,000 end users.

VA's EHRM program is slated to resume go-lives in June 2023, following a strategic pause that began after VA and Oracle Cerner began developing a plan, in close cooperation, to fix system stability and enhance functionality.

Lessons learned and weaknesses revealed during Initial Operating Capability (IOC), and enhancements implemented during the current strategic pause, mean 2023 go-lives will improve and not disrupt patient care.



VA Deployment Status

Implementation Priorities

System performance, system improvements, and fiscal responsibility are our priorities in deploying the EHR. These priorities underpin patient safety and our responsibility to our customers and taxpayers.

System Performance

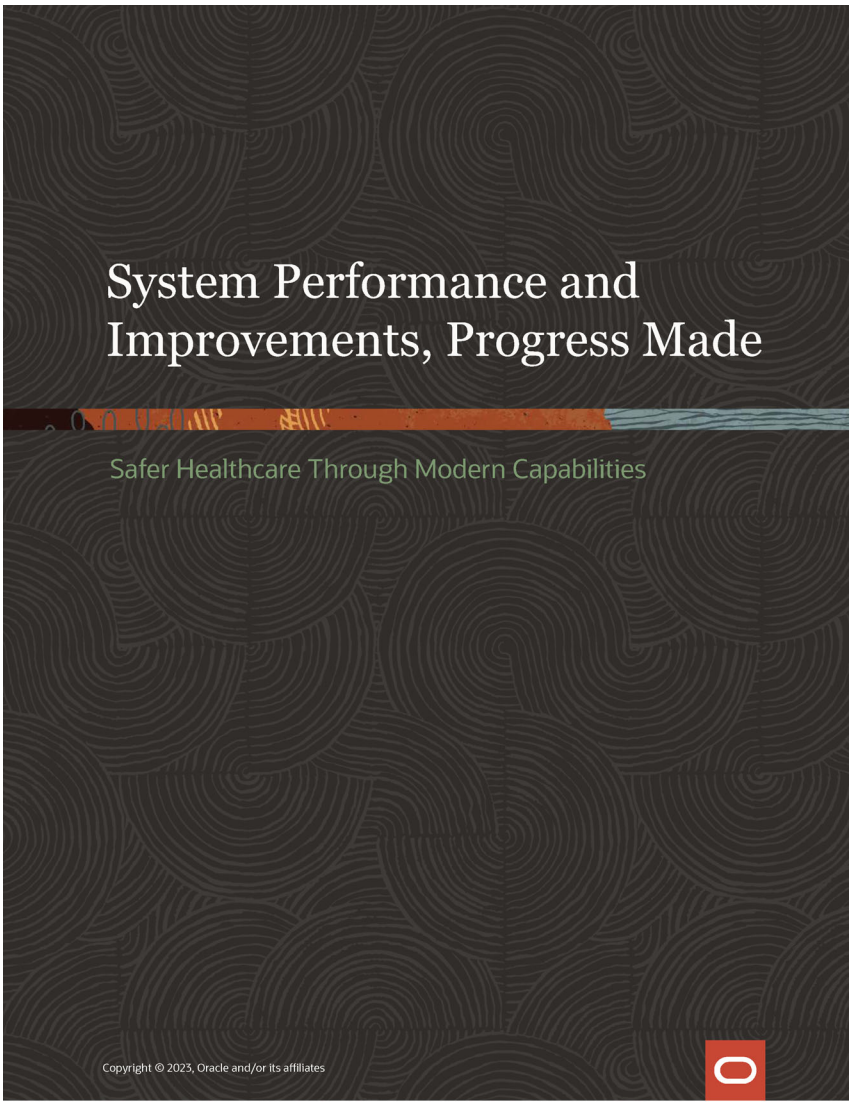
System performance has improved significantly since Oracle closed the acquisition of Cerner in June 2022, shortly after which Oracle worked with VA to develop a plan to address concerns over system stability and functionality. This plan has resulted in a **67% decrease in the most severe type of outages** across the federal enclave.

System Improvements

System improvements have accelerated with resources gained through the acquisition, resulting in ahead-of-schedule delivery of critical fixes and enhancements for VA's pharmacy system, Unknown Queue scheduling challenges and behavioral health flags. Additionally we are working directly with VA to simplify workflows for providers in the EHR.

Fiscal Responsibility

Oracle is committed to being a good steward of both public and private funds. Our work with DoD, VA, the U.S. Coast Guard and other federal stakeholders is no exception. For example, despite challenges with VA's EHRM project, Oracle committed in Sept. 2022 testimony to the Senate Appropriations Committee to keep costs in line with the contract ceiling, barring unforeseen new requirements from VA. This commitment includes supporting the development of new, critical system enhancements at no additional cost—for example future upgrades to move the EHR to a modern, cloud-based system—to ensure the system works for all stakeholders including patients and health care providers.


System Performance and Improvements, Progress Made
Safer Healthcare Through Modern Capabilities
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System Performance

August Summit

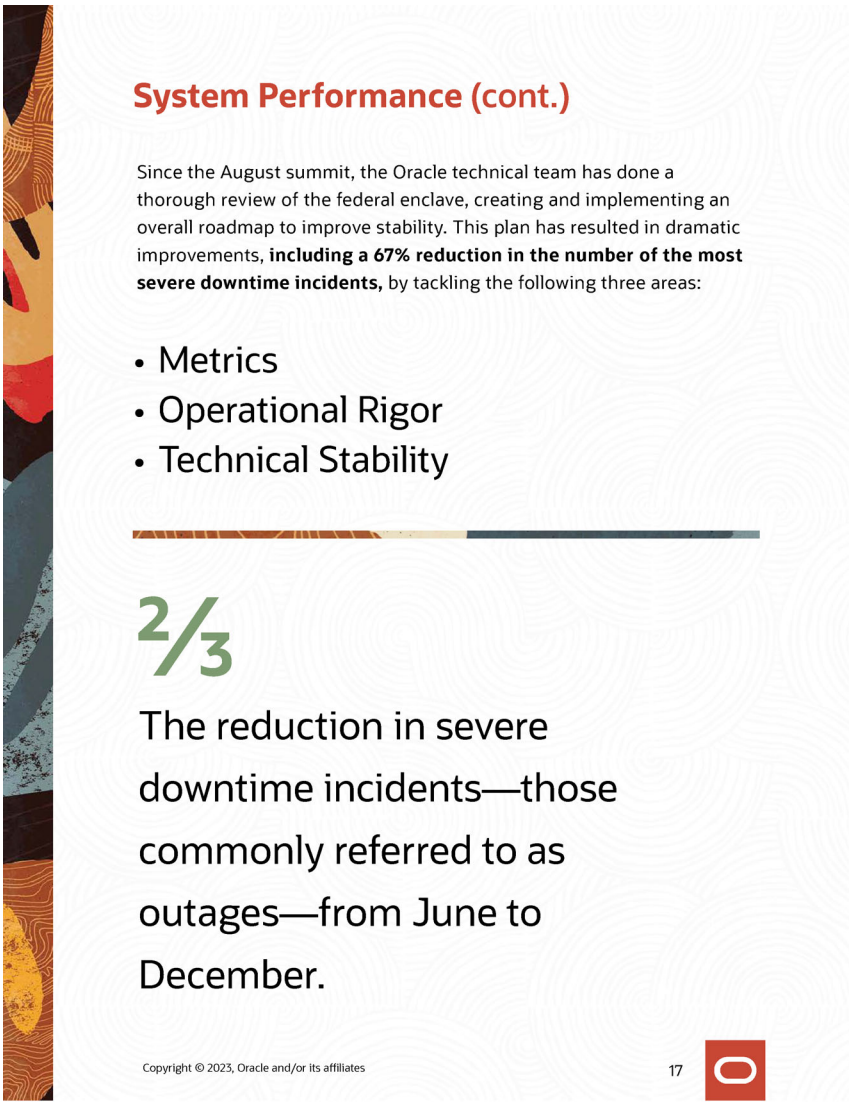
Oracle hosted a summit in August 2022 in Kansas City, attended by VA, DoD, the Federal EHRM office (FEHRM), and Leidos (the prime contractor for DoD).

The summit focused on actions all participants could take to improve functioning of the federal enclave, which is the data center that hosts VA and DoD's EHR systems, as well as dozens of other complementary and necessary systems.

In a follow-up letter to VA dated September 2, 2022, Oracle identified a roadmap of 41 projects to improve EHR system performance.

As of the end of 2022, 13 projects are complete as noted in the table below. Since the start of 2023, an additional 13 projects have been completed and completing remaining pending projects is a priority for our teams who will work to complete them as quickly as possible.

Workstream / Theme	Total Projects	High	Medium	Completed
Certificate Management	7	1	5	1
Configuration	11	9	0	2
HIE	5	0	2	3
Infrastructure	1	0	1	0
Interfaces	6	1	1	4
Multi-Client Governance & Comms	2	1	1	0
Testing	4	0	2	2
WebSphere App Server	5	0	4	1
TOTAL	41	12	16	13


System Performance (cont.)
Since the August summit, the Oracle technical team has done a thorough review of the federal enclave, creating and implementing an overall roadmap to improve stability. This plan has resulted in dramatic improvements, **including a 67% reduction in the number of the most severe downtime incidents,** by tackling the following three areas:
• Metrics
• Operational Rigor
• Technical Stability
2/3
The reduction in severe downtime incidents—those commonly referred to as outages—from June to December.
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Metrics

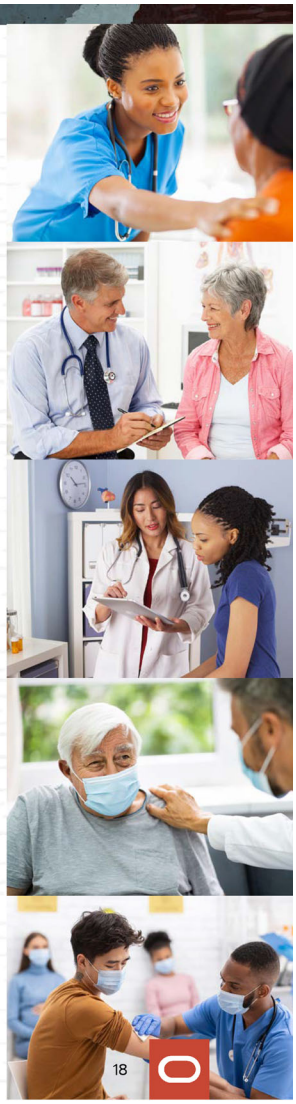
August Summit Area of Focus #1

After the August summit, Oracle, VA, DoD, and Leidos agreed upon a set of standard metrics that are representative of overall health and performance of the federal enclave. These metrics track incident free time, major incidents, and lesser degradations or user interruptions which impact a provider through system crashes or slow performance.

These performance metrics are evaluated weekly. If anomalies are found, preventative action plans are created to prevent a failure from occurring again.

The chart on the following page covers metrics for system performance for the entire federal enclave which includes all federal users (e.g. VA, DoD, Coast Guard, etc.). Data is included regardless of responsible party. For example, an incident that impacts Outage Free Time could have been caused by Oracle, Leidos, VA or DoD. Oracle-owned incident minutes represent 31-59% of the monthly Incident Free Time over the period displayed overall.

Overall trends in these metrics are positive and improving and would be even better if not for an issue in December that impacted Televox. Televox is our provider that delivers patient reminders of appointments and referrals.



1. Metrics (cont.)

August Summit Area of Focus #1

Federal Enclave - KPI	June	July	August	Sept	Oct	Nov	Dec
Availability: Outage Free Time (OFT)**	99.6	100	99.6	100	99.1	100	100
Incident Free Time (IFT)**	80.0	75.0	84.8	86.3	77.9	79.9	33.0
Major Incidents (SEV 1|2)	11 | 34	0 | 21	1 | 19	0 | 9	1 | 10	0 | 14	0 | 22
Mean Days Between Major Incidents	1.53	2.5	2.31	4.14	3.33	2.90	2.50
Mean Minutes to Recovery, Major Incidents	106	187	137	141	525	283	971
Major Incidents Caused by Change (SEV 1|2)	1 | 12	0 | 5	0 | 7	0 | 3	1 | 7	0 | 5	0 | 7
p99 User Interruptions	420	441	477	346	387	340	222

** October OFT, IFT, and MTTR experience influenced by the DEERS incident (~4k incident minutes recorded in SOA); December IFT impacted by extended vendor incident

*** OFT / IFT : (Minutes Free of Incident / Total Monutes) X 100% (All incidents are included, regardless of responsible party)

Glossary

Outage Free Time (OFT) – Percentage of time the Core EHR is available for use. Minutes subtracted for Severity 1 events.

Incident Free Time (IFT) – Percentage of time in which all solutions function as intended for all users. Minutes subtracted for Severity 1, 2, and 3 events. Accounts for all events tracked in our Service Outage Attribution (SOA) tool which includes events caused by Oracle, Leidos, VA and DoD owned services.

Major Incidents (SEV 1|2) – Count of distinct major incidents for the given severities.

Mean Days Between Major Incidents – Mean days between distinct Severity 1 and 2 incidents.

Mean Minutes to Recovery, Major Incidents – Mean time to recover an unhealthy system for Severity 1 and 2 incidents.

Major Incidents Caused by Change (SEV 1|2) – Count of distinct major incidents for the given severity where the root cause was due to updates to the environment (eg. software upgrades).

p99 User Interruptions – 1 out of 100 users experienced this many, or more, application crashes or application pauses greater than 5 seconds.

2. Operational Rigor

August Summit Area of Focus #2

Since the August summit, Oracle has implemented change management controls, dedicated incident response, rigorous root cause identification, and preventative action processes. Together this rigorous, high standard will result in far fewer incidents caused by code changes. When an incident does happen, it means we respond faster, more effectively, and institute fixes to prevent repeat issues.

This kind of "block and tackle" rigor is needed to ensure high performance of the federal enclave.

While we've made progress, we are not yet satisfied and continue to:

- Use automation to deploy and test software updates, which improves reliability by reducing the number of manual steps which can introduce human error
- Improve certificate management tools to achieve better automation and integration
- Improve collaboration with partners who run key components of the federal enclave, such as the Defense Manpower Data Center which manages DEERS, the system housing authoritative identity and demographics data for service members and veterans, which experienced a severe issue in October
- Create a higher, single standard for change management across Oracle which will apply to all organizations working on EHRM and thus reduce human error

3. Technical Stability

August Summit Area of Focus #3

Since August, Oracle has conducted a deep-dive review of federal enclave components that have had the most issues and quickly implemented key stability fixes including:

- Deploying an updated site-based architecture to support more concurrent users as new sites go-live
- Improving the system's capacity sizing model
- Fixing scaling bottlenecks in key servers that now will be properly sized to support rollout volume for next 18 months
- Resolving scaling issues that impacted the HealtheIntent system
- Hardening critical database failover improvements so that service is maintained
- Implementing a new process and code fixes for managing exception messages in the system

Our goal, as we continue to improve stability in the Federal Enclave, is to further improve Incident Free Time (IFT) and Outage Free Time (OFT) metrics and continue to decrease instances of frustrating customer experiences such as crashes or "hangs" which cause the system to be unresponsive for 5 or more seconds.

To support these overarching efforts, we have taken a three-step, iterative approach.

Gathering Data and Feedback

To support these efforts, we have combined quantitative data from our internal tracking with qualitative feedback from sessions like the "Voice of the End User" in Columbus, Ohio.

Fixes and Enhancements

From this valuable end-user feedback, we developed fixes including one for the revenue cycle scheduling application that reduced daily hangs by 80% and freezes by 55%. More fixes, for deployment in February, will further reduce crashes by 40% and freezes by 15%.

Stability Testing

We have setup a separate federal enclave-like system that allows us to test how the federal enclave will perform when new users or functions are added. This enhanced testing process is essential to reduce incidents caused by system updates. It will improve performance and stability by allowing us to validate code and configurations in circumstances similar to those in which they will operate once deployed.

System Enhancements Through Improved Engineering Velocity

One of the greatest benefits of the Oracle Cerner merger has been the combination of resources **with Oracle bringing deeply experienced technical personnel** to bear in support of quick engineering fixes and enhancements.

A Case Study: VA Pharmacy Enhancements

After the acquisition, one of the most frequent complaints we heard about the EHR for VA was the need for system enhancements to better adapt the EHR to VA's unique pharmacy system. Cerner's original projection to implement the enhancement was up to three years.

Following the Oracle acquisition, Oracle allocated senior technical resources to the effort, re-evaluated the existing approach, and consequently delivered the most critical pharmacy enhancements to VA for validation in 4 months. Remaining pharmacy enhancements are on schedule to be delivered in 2023.

Oracle will continue to bring an increased velocity to critical enhancements and fixes that are necessary for the EHR system.

VA Pharmacy Enhancements: Delivery Ahead of Schedule

TASK ORDER (TO)	Pharmacy Capability	Targeted Desktop Release*	Targeted Desktop Version	Client Validation Ready in Non-Prod	Current VA PROD Desktop Upgrade Timing
VA TO 31	E-Rx Monitor Filtering	Released	2018.13	Dec 2022	Block 8: Feb 2023
VA TO 31	Weekly Multum Release	Dec 2022	Content Package	--	--
VA TO 52	#1: Toggle Prescription Synonym Visibility	Released ~~Apr 2023~~	2018.13.02, 2018.15	Nov 2022	Attempting Block 8: Feb 2023 ~~Block 9: Aug 2023~~
VA TO 52	#2: Optional Order Stop Date in Retail Med Manager	Released ~~Jan 2023~~	2018.13.02, 2018.14	Nov 2022	Attempting Block 8: Feb 2023 ~~Block 9: Aug 2023~~
VA TO 52	#3A: Display Rx Legal Expiration Date in Orders	Released ~~Jan 2023~~	2018.13.02, 2018.14	Nov 2022	Attempting Block 8: Feb 2023 ~~Block 9: Aug 2023~~
VA TO 52	#3b: Display Rx Dispensing Details in PowerOrders	Dec 21, 2022 ~~Jul 2023~~	2018.13.04, 2018.16	Dec 2022	Attempting Block 8: Feb 2023 ~~Block 9: Aug 2023~~
VA TO 52	#4: Support mCDS Discontinue in Retail Med Manager	Apr 2023	2018.15	Q2 2023	Block 9: Aug 2023
VA TO 52	#5: Enable PowerOrders Renewal Action on Retail Med Manager Prescriptions	Mid 2023	TBD	Q3 2023	Block 10: Feb 2024
VA TO 52	#6: Optional Pharmacist Verification for Pharm Tech Refills	Mid 2023	TBD	Q3 2023	Block 10: Feb 2024
VA TO 52	#7: Request Refills from PowerChart to Outpatient Pharmacy	Mid 2023	TBD	Q3 2023	Block 10: Feb 2024
VA TO 31	Three Drug Image	July 2023	2018.16	Q3 2023	Block 10: Feb 2024
VA TO 31	Mobile Inventory Scanning	July 2023	2018.16	Q3 2023	Block 10: Feb 2024

System Enhancements Through Improved Engineering Velocity

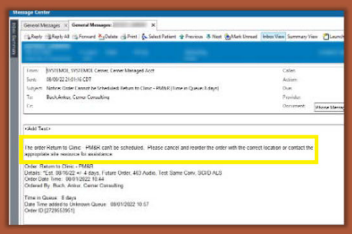
Unknown Queue

Shortly after the acquisition closed, the media reported on and then a VA Office of the Inspector General report was issued regarding the Unknown Queue. Oracle immediately looked into the issue, which while poorly named is actually a process built into the EHR system to account for patient scheduling tasks that were entered by a provider in a way that the system could not properly recognize and route. Instead these orders were sent to the Unknown Queue for manual review and processing.

In July 2022, Oracle promised that by August 1, 2022, we would deliver fixes to VA that would alleviate the problem of orders entering the Unknown Queue. On-time, we delivered updates to the system that alert providers about orders that cannot be scheduled and must be corrected.

Unknown Queue Enhanced Alerts

MESSAGE CENTER NOTIFICATION



CLOSE CHART NOTIFICATION

VA recently adopted these fixes, which along with previous enhancements that limited drop-down location results to those where a particular service could be rendered, have resulted, on average, in **only 4 orders per day** entering the Unknown Queue across all sites using the EHR, or less than 1 per day at each of the current live 5 VA Medical Centers.

System Enhancements Through Improved Engineering Velocity

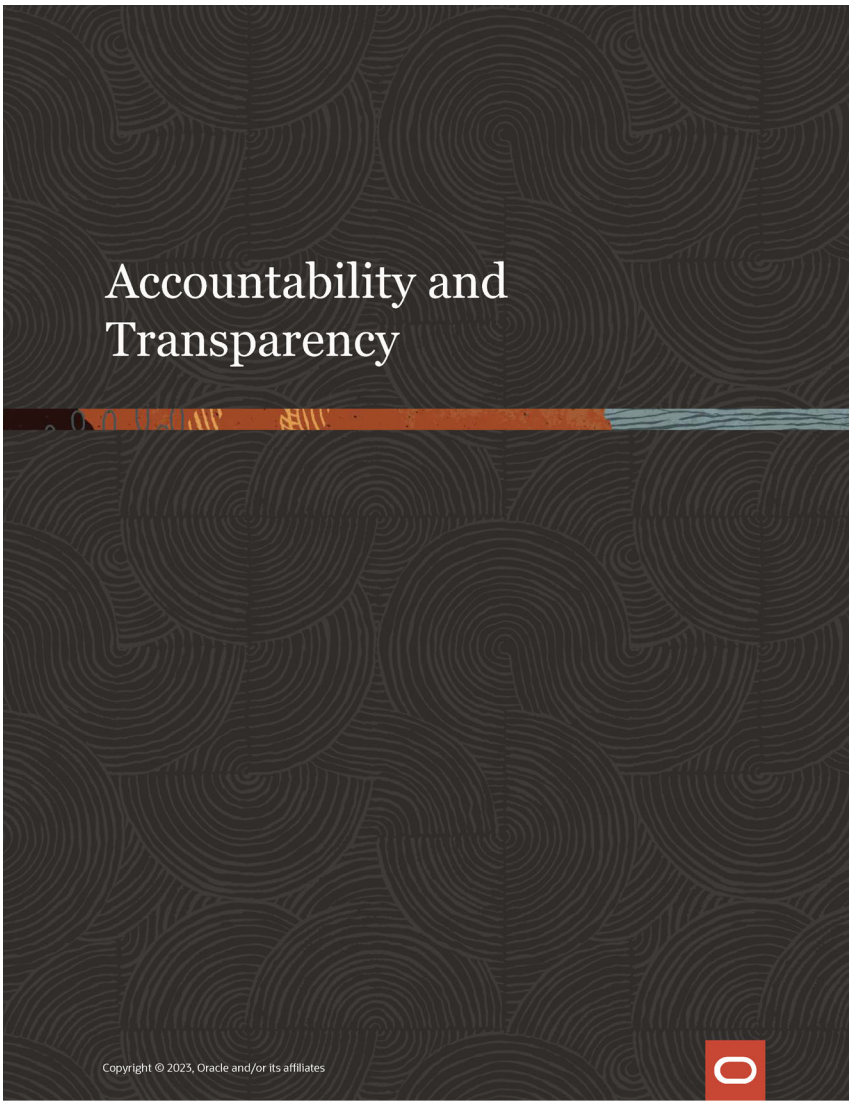
Patient Record Flags

VA developed patient risk flags within patient charts to notify healthcare professionals when veterans are at risk of suicide or have certain behavior health risk factors that require special attention.

By providing a single, common system across all VA Medical Centers, EHRM enables VA to standardize patient record flags. This means the patient flags will travel with a veteran wherever they receive care. We continue to work with VA to expand how and where these behavior health flags are viewed, no matter an end-user's entry point into the new record.

Over the last few months Oracle has compressed the delivery time of this work to allow for more flags to go into the VA's February 2023 updates, with additional updates to come later in 2023.

Type	Capability	Targeted Desktop Release*	Targeted Desktop Version	Targeted Cloud Release	Client Validation Ready in Non-Prod	Current VA PROD Desktop Upgrade Timing
Patient Record Flags	Radiology: The RadExamManagement workflow will be enabling open chart alerts within this application	Released	2018.13	--	Dec 2022	Block 8: February 2023
Patient Record Flags	Laboratory: The specimen collect/phlebotomy workflow will be enabling open chart alerts within the Department Order Entry (DOE) application	Released Nov 9 ~~Jan 2023~~	2018.13.01 2018.14	--	Dec 2022 ~~Jun 2023~~	Block 8: February 2023 ~~Block 9: Aug 2023~~
Patient Record Flags	Registration: Pop Up alert would be designed to occur after selecting patient from person search window as well as when opening a patient record from a Work Queue or Patient Tracking. A user-defined field will still be utilized within Revenue Cycle.	Apr 2023	2018.15	--	May 2023	Block 9: Aug 2023


Accountability and
Transparency
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Addressing VA Patient Safety

Over the last several months, we have established an effective working relationship with VA's National Center for Patient Safety (NCPS) team to:

- Ensure alignment on what is considered patient safety
- Determine how to quickly address patient safety concerns identified by VA healthcare professionals.

Our partnership with NCPS includes the launch of a patient safety command center during each EHR go-live, to ensure emerging patient safety concerns are immediately addressed.

In early September 2022, VA's EHRM-Integration Office (EHRM-IO) awarded a new task order "EHRM Quality and Patient Safety Strategic Support." This task order enables us to expand our specialized patient safety team to work with key stakeholders focusing on cross-agency collaboration and to take a more holistic approach to governance and processes around patient safety.

Ensuring EHR safety is a shared responsibility and requires cohesion between Oracle, EHRM-IO, VA and local VA Medical Centers (VAMCs).

Oracle will promote the safe use of the EHR by:

- Bringing these agencies together to carefully integrate efforts.
- Providing subject matter experts' support from pre-go-live through sustainment.

Enhancing Clinical Decision Support

Our state-of-the-art clinical decision support tools offer healthcare providers in-EHR clinical decision support tools that help them render safer, more effective treatment. These are among our most powerful capabilities to improve patient care and safeguard patient safety. For example, they help providers quickly identify patients at risk for pressing public health concerns of particular import to the veteran and defense communities like opioid abuse and suicide.

Opioid Advisor

The new EHR allows clinicians to simultaneously check data from 47 state Prescription Drug Monitoring Programs (PDMP) and DoD facilities to prevent improper prescribing of controlled substances. Previously clinicians had to leave a patient's record and access PDMP data through each state's website with different passwords for each site.

The opioid advisor tool has alerted providers in the VA system more than 1600 times and the DoD more than 17,700 times representing more than 19,000 prescriptions where a provider could make a better choice for patient safety regarding opioid use.

Suicide Prevention

Suicide screening tools within the EHR help clinicians easily assess patients for risk of suicide using the Columbia Suicide Severe Rating Scale (C-SSRS) assessment tool.

In late 2022, Oracle introduced a new feature that uses an algorithm that looks at a dozen factors within the patient record to automatically alert clinicians of patients who might have an increased risk of suicide and prompt screening.

The EHR will soon be able to identify the number of times this assessment tool is used on a site-by-site basis.

Working with VA to Improve Functionality & Workflows

Apart from changes to safeguard system performance and stability, workflow updates will have the greatest positive impact for providers using the system.

Clinical workflows are the alignment of EHR technology with scenario-based clinical processes by various roles within and between care environments to ensure cohesion consistency in the delivery of care. We have heard repeatedly from VA providers that some workflows are not intuitive or are overly complicated. While workflows are directed by VA's National Councils, in coordination with DoD, we are in a close, collaborative dialogue with them, and leadership from the office of VA Under Secretary Shereef Elnahal, to simplify workflows.

In November, we coordinated a functional summit with VA and DoD to collaborate and gain consensus on high impact areas for prioritization. Senior VA leadership reaffirmed their commitment to work with us to make workflow changes. Changes span from simple (limiting the number of choices in drop-down list to top actions) to complex (revising how a provider enters an order into the system).

Oracle's belief is that the system should be intuitive and easy-to-use. This ongoing process will require new direction from VA, but we look forward to quickly implementing changes that will make the system more intuitive.

Training Improvements

The EHRM training program, one of significant size and complexity, is executed in accordance with government-defined requirements and government-determined priorities. While VA has contracted with Oracle to provide technical training on the new EHR, end user feedback reflects more expansive expectations.

To better understand these needs and associated opportunities, **Oracle, at its own expense, engaged a third-party to conduct an independent assessment of the EHRM training program** and offer recommendations for improvement. The result of this effort was the identification of various recommendations to improve the training program.

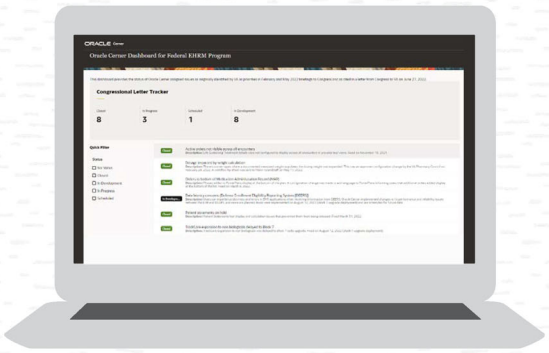
In order to put these recommendations to work, **Oracle engaged Accenture to implement the needed changes and work with us to make training more efficient, applicable and useful.** VA recently issued an Authority to Proceed for Accenture to begin work, and **we expect to see changes to the training program in early 2023.**

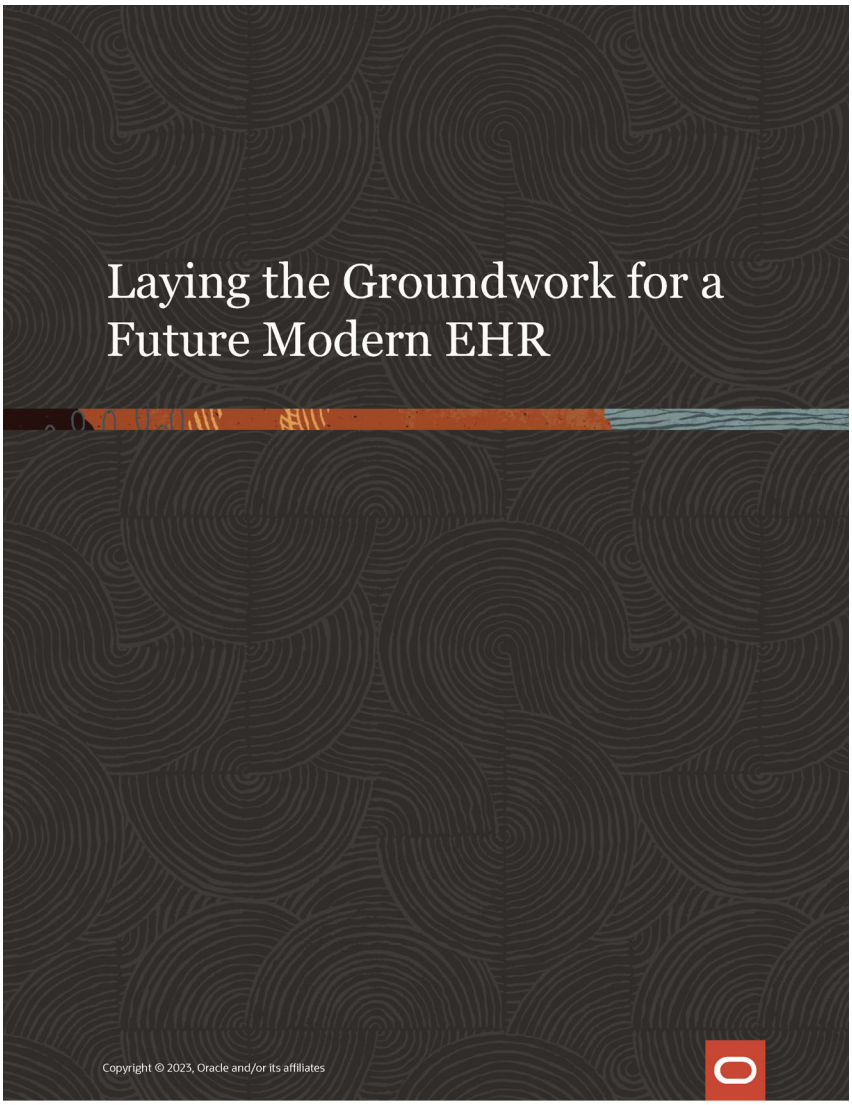
Dashboard

On June 27, 2022, Senate and House Veterans' Affairs Committee leaders sent VA a letter with a list of dozens of items that they believed required attention to improve the EHR. As of the end of 2022, twenty of the thirty-six items on the Congressional list are the responsibility of Oracle.

Believing transparency is critical to accountability and oversight we have posted a public dashboard showing status of priority items, eight of which are now complete.

In addition to the public dashboard, we have provided two substantive technical briefings to the authorizing committees reviewing changes made and improvements to the system.




Laying the Groundwork for a Future Modern EHR
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Laying the Groundwork for a Future Modern EHR

PACT ACT

The Oracle Cerner EHR will undoubtedly empower VA to fulfill our promise to veterans under the PACT Act by tying their records of service and medical care to presumptive eligibility.

Not only will a single, seamless, lifetime record avoid lost paperwork or other records gaps that could complicate disability eligibility, the data driving the EHR will help us get ahead of the next generation's service-related health crisis by flagging concerning health trends across the entire DoD and VA patient population.

Centralized patient data to support other VA modernization

EHRM's centralization of veterans health data from data silos throughout the country into a single place sets the foundation for VA's other modernization efforts.

New supply chain system can have a single source of data to better inform the VA health system on the connection between system utilization and demands on its supply chain.

Benefits processes can be streamlined to assist veterans who often have to navigate two tandem, but very different disability processes. Rather than having to manually provide service and VA disability rating records through manual processes that can take weeks or month—and in some cases still require faxing documents—a Veteran can authorize the nearly instant digital transfer of their records in a small fraction of the time.

Next Generation EHR

Even as Oracle works to maintain and enhance our current EHR, our engineers remain hard at work developing a next-generation EHR. Mike Sicilia, EVP for Global Industries at Oracle, testified in September 2022 to the Senate Appropriations Committee about what this future version of the EHR will look like, stating:

"We are currently investing substantial resources to progressively rewrite the Oracle Cerner Millennium EHR as a modern, stateless web application, which will include pharmacy functionality. The system will have a modern web-based user interface. It will be mobile friendly, meaning users can bring their own device. It will include voice recognition, and ML-based clinical decision support and analytics that are built-in from the ground up. In short, it will be a fully modern cloud-based EHR system.

"Not only will this deliver the longitudinal record from enlistment through retirement and lifelong care at VA, but also includes the hierarchical view of the entire DoD/VA population against which analytics, AI, and machine learning can be deployed. We will keep VA, DoD and Coast Guard updated and engaged as we work on this modern EHR system, and of course will seek appropriate approvals for deployment as necessary. And while I don't want to over-promise here, our intent is to deliver a beta version of the new EHR, with pharmacy functionality included, in 2023.

"Our plan – and our commitment to you – is to deliver all this functionality as an upgrade to the current system as part of our existing obligations under the current contract, at no extra cost to the government.

"Let me say that again – we plan to deliver a fully modern cloud-based EHR for the DoD, Coast Guard, and VA as part of our existing contract with the government."

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United States Government Accountability Office

Testimony Before the Committee on Veterans Affairs, U.S. Senate

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ELECTRONIC HEALTH RECORD MODERNIZATION
VA Needs to Address Change Management Challenges, User Satisfaction, and System Issues

Statement of Carol C. Harris, Director, Information Technology and Cybersecurity

GAO-23-106685

Chairman Tester, Ranking Member Moran, and Members of the Committee:

I am pleased to be here today to discuss the Department of Veterans Affairs' (VA) Electronic Health Record Modernization (EHRM) program. As you know, the use of IT is crucial to helping VA effectively serve the nation's veterans. Specifically, VA uses the Veterans Health Information Systems and Technology Architecture (VistA) to manage health care to its patients, which contains the department's electronic health record (EHR).[1]

In June 2017, VA initiated the EHRM program to replace VistA because it is technically complex, costly to maintain, and does not fully support the department's need to exchange EHRs with other organizations, such as the Department of Defense (DOD) and private health care providers. As a result, VA began to acquire the same Oracle Cerner EHR system DOD had selected. VA has reported obligating about $9.42 billion on EHRM from fiscal year 2018 through the first quarter of fiscal year 2023.

My statement today is based on a recently completed review to determine the extent to which VA has (1) employed organizational change management strategies for the EHRM program consistent with leading practices, (2) assessed users' satisfaction with the new system, and (3) identified and addressed EHR system issues.[2] Appendix I provides information on our objectives, scope, and methodology.

The work on which this statement is based was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

[1]An EHR is a collection of information about the health of an individual and the care provided to that individual, such as patient demographics, medications, and past medical history.

[2]On March 10, 2023, we provided a final briefing on the results of our review to the House and Senate Committees on Appropriations, Subcommittees on Military Construction, Veterans' Affairs, and Related Agencies; House and Senate Committees on Veterans' Affairs; Rep. Jim Banks; and Rep. Susie Lee. We plan to publish the briefing in a report.

Background

VA's IT systems provide capabilities to establish and maintain EHRs that health care providers and other clinical staff use to view patient information in inpatient, outpatient, and long-term care settings. The department's health information system—VistA—serves an essential role in helping the department to fulfill its health care delivery mission.

However, VistA is technically complex: it is comprised of about 170 clinical, financial, and administrative applications that support health care delivery at more than 1,600 medical facilities. In addition, VA has approximately 130 versions of the system department-wide.

VA is in the process of replacing VistA because it has been in operation for more than 30 years, and as previously mentioned, is costly to maintain, and does not fully support VA's need to electronically exchange health records with other organizations, such as DOD. Toward this end, VA established the EHRM program and contracted with Oracle Cerner to acquire Millennium (the core EHR system) and HealtheIntent (a cloud-based software platform that aggregates health data from multiple data sources to create a longitudinal patient record).[3] VA's contract also includes requirements for Oracle Cerner to:

- conduct reviews and assessments of medical facilities to determine facility needs prior to deployment (e.g., technology infrastructure);
- provide services, including project management, change management, training, and testing; and
- host and deploy EHRM across the VA enterprise.

The EHRM Integration Office (EHRM IO) is the organization within VA that is responsible for planning and implementing the EHRM program.[4]

Deployment Schedule for the New EHR System

Initially, VA planned to deploy the new system at sites in stages based on their geographical location over a 10-year period, through 2028. In October 2020, VA first deployed the new EHR at the Mann-Grandstaff VA

[3]A cloud-based service can allow an agency to only pay for the IT services used, when executed effectively.

[4]The office was previously referred to as the Office of Electronic Health Record Modernization.

Medical Center and planned to deploy it to other sites.[5] However, in March 2021, VA identified issues with the initial deployment, which led to a strategic review of the program. The strategic review identified eight challenge areas for EHRM, as well as plans and progress towards addressing those challenges.[6]

After the review, VA deployed the new system to the following locations in 2022:

- Jonathan M. Wainwright Memorial VA Medical Center (Walla Walla) in March 2022,
- VA Central Ohio Health Care System (Columbus) in April 2022, and
- Roseburg VA Health Care System and VA Southern Oregon Rehabilitation Center and Clinics (White City) in June 2022.

In June 2022, VA announced that it would be pausing future deployments of the system until 2023 to allow time for improvements to the system. Subsequently, in October 2022, VA delayed deployments until June 2023 to address technical and other system performance issues.

EHRM Costs

VA contracted with the Institute for Defense Analysis to provide an independent cost estimate for the program. In September 2022, the Institute reported that the EHRM life cycle cost estimate was $49.8 billion:

- $32.7 billion for a 13-year implementation phase and

[5]These sites are within the Veterans Health Administration's (VHA) Veterans Integrated Services Network 20 (VISN 20) and VISN 10. VHA is divided into areas called Veterans Integrated Services Networks (VISNs). There are currently 18 VISNs throughout VHA based on geographic location. VISNs provide oversight and guidance to the VA Medical Centers and VA Health Care Systems within their area and are sometimes called a "network." VISN 20 includes medical centers and community-based outpatient clinics in the states of Alaska, Washington, Oregon, most of Idaho, and one county each in Montana and California. VISN 10 serves veterans in the Ohio, Indiana, and Michigan areas.

[6]VA summarized the results of its strategic review in *the Electronic Health Record Comprehensive Lessons Learned* report. Department of Veterans Affairs, *Electronic Health Record Comprehensive Lessons Learned* (Washington, D.C.: July 2021). The eight challenge areas described in the report are improving the veteran experience, ensuring patient safety, providing extended training to the frontline employees, building confidence at VA sites, implementing organizational and program improvements, making governance effective, improving operational efficiencies, and centralizing data management for workers and veterans.

- $17.1 billion in sustainment costs for the following 15 years.

As previously mentioned, VA has reported obligating about $9.42 billion on EHRM from fiscal year 2018 through the first quarter of fiscal year 2023. This includes three areas:

- the EHR contract ($4.49 billion),
- IT infrastructure ($2.61 billion), and
- program management ($882 million).

In addition, VA reported obligating about $1.27 billion and $170 million on the program from the Veterans Health Administration (VHA) and the Office of Information and Technology (OIT), respectively.

GAO Has Reported on VA Health Care and EHRM

In 2015, we designated VA health care as a high-risk area for the federal government, in part due to its IT challenges.[7] In addition, we have previously reported on the EHRM program:

- In June 2020, we reported on the process for configuring the department's new EHR system.[8] We noted that VA's decision-making procedures were generally effective, but the department did not always ensure key stakeholder involvement. We recommended (and VA concurred) that VA ensure the involvement of all relevant deployment site stakeholders in the EHR system configuration decision process. The department has begun to improve subject matter expert identification and involvement, but this type of involvement needs to continue until different stages of modernization unfold. As such, our recommendation remains not fully implemented as of February 2023.

[7]VA's IT issues were highlighted in our 2015 high-risk report and subsequent high-risk reports. See GAO, *High-Risk Series: An Update*, GAO-15-290 (Washington, D.C.: Feb. 11, 2015); GAO, *High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, GAO-17-317 (Washington, D.C.: Feb. 15, 2017); GAO, *High-Risk Series: Substantial Efforts Needed to Achieve Greater Progress on High-Risk Areas*, GAO-19-157SP (Washington, D.C.: Mar. 6, 2019); and *High-Risk Series: Dedicated Leadership Needed to Address Limited Progress in Most High-Risk Areas,* GAO-21-119SP (Washington, D.C.: Mar. 2, 2021).

[8]GAO, *Electronic Health Records: Ongoing Stakeholder Involvement Needed in the Department of Veterans Affairs' Modernization Effort,* GAO-20-473 (Washington, D.C.: June 5, 2020).

- In February 2021, we reported that VA had made progress toward deploying the new EHR system by making configuration decisions, developing capabilities and interfaces, completing testing events, and deploying the system at the first site in October 2020.[9] However, we noted that the department was at risk of developing a system that may not perform as intended or could negatively impact the likelihood of successful adoption by users if critical and high severity test findings (that could result in system failure) were not resolved prior to future deployments.[10]

  We made two recommendations (and VA concurred) in February 2021, including that VA postpone deployment of the new EHR system at planned sites until any resulting critical and high severity test findings are appropriately addressed. VA stated that it planned to continue to test and appropriately adjudicate all critical and high severity test findings prior to future deployments. We will continue to monitor VA's actions to implement our recommendation as the department makes additional system deployments.
- In February 2022, we reported that our work and VA's analyses indicated challenges with the quality of transferred data and with how the new EHR system worked for some users.[11] For example, VA identified errors in allergy, medication, and immunization data, which raise patient safety concerns. We recommended that VA establish and use performance measures and goals to ensure the quality of transferred data. The department concurred with our recommendation and began to take steps to address it. However, those steps had not yet been completed as of February 2023.

[9]GAO, *Electronic Health Records: VA Has Made Progress in Preparing for New System, but Subsequent Test Findings Will Need to Be Addressed,* GAO-21-224 (Washington, D.C.: Feb. 11, 2021).

[10]A critical test finding results in the failure of the complete software system. A high severity test finding results in the failure of the complete software system; however, there are acceptable workarounds.

[11]GAO, *Electronic Health Records: VA Needs to Address Data Management Challenges for New System,* GAO-22-103718 (Washington, D.C.: Feb. 1, 2022).

VA's Organizational Change Management Activities Were Partially Consistent with Leading Practices

According to federal guidance and other leading practices, change management practices are intended to apply an organized and structured framework to the often chaotic and perplexing world of organizational change.[12] Effective change management techniques help managers to plan, organize, and negotiate successful changes in the organization. The objective of managing organizational change is to maximize the likelihood of successfully implementing change quickly and with reduced risk. Leading practices for change management activities include: (1) developing a vision for change, (2) identifying and managing stakeholders, (3) effectively communicating, (4) assessing the readiness for change, (5) increasing workforce skills and competencies, (6) identifying and addressing potential barriers to change, (7) establishing targets and metrics for change, and (8) assessing the results of change.

As shown in table 1, VA's organizational change management activities for the EHRM program were partially consistent with seven of the leading practices and not consistent with one leading practice.

[12]Project Management Institute, Inc., *Managing Change in Organizations: A Practice Guide*, (Newtown Square, PA: 2013); Office of Personnel Management (OPM), *Migration Planning Guidance Information Documents, Change Management Best Practices*, October 2011; GAO, *Business Process Reengineering Assessment Guide--Version 3*, (GAO/AIMD-10.1.15); Prosci, *The Prosci ADKAR® Model, A Goal Oriented Change Management Model to Guide Individual and Organizational Change*; ISACA, *COBIT 2019 Framework*, 2019. ADKAR® is a registered trademark of Prosci, Inc.

Table 1: Extent to Which the Electronic Health Record Modernization (EHRM) Program's Activities Were Consistent with Organizational Change Management Leading Practices

Leading practice	GAO assessment
Developing a vision for change	Partially consistent
Identifying and managing stakeholders	Partially consistent
Communicating effectively	Partially consistent
Assessing the readiness for change	Partially consistent
Increasing workforce skills and competencies	Not consistent
Identifying and addressing potential barriers to change	Partially consistent
Establishing targets and metrics for change	Partially consistent
Assessing the results of change	Partially consistent

Source: GAO analysis of Department of Veterans Affairs (VA) data. | GAO-23-106685

Legend: Consistent – VA provided evidence that it conducted organizational change management activities mostly consistent with leading practices. Partially consistent – VA provided evidence that it conducted organizational change management activities consistent with some of the leading practice criteria, but some key parts were not followed. Not consistent – VA did not provide sufficient evidence that it followed leading practices.

Practice 1: Developing a Vision for Change (Partially Consistent)

This practice includes:

- identifying the compelling need for change and benefits of the desired change that can motivate stakeholders to accept and willingly participate to make the change successful, and
- understanding the business context and developing strategies to define the change approach through a formalized methodology.

The department developed a vision to have a comprehensive EHR accessible across VA, DOD, and community care providers to enhance the quality of health care. To realize the vision, VA plans to modernize its EHR system with a commercial solution to improve the delivery of quality health care to veterans, enhance the provider experience, and promote interoperability. In addition to a new EHR system, VA's vision includes implementing standardized clinical practice workflow processes for use in the new system.

However, VA has not established a VA-driven strategy for change. A VHA commissioned report from April 2021 noted the need for a VA-driven change management strategy to formalize the structure and people capabilities to support the readiness of end users and drive adoption. According to EHRM program officials, following the strategic review, VA

had articulated the need for change for VA health care, established change champions at Veterans Integrated Services Networks (VISNs) and VA medical center sites, and augmented super users, among other activities. Also, VA had hired additional government staff to move towards VA-led change management. However, as of January 2023, it had not provided documentation of a VA-driven change management strategy.

Practice 2: Identifying and Managing Stakeholders (Partially Consistent)

This practice includes:

- identifying stakeholders, which are individuals, groups, departments, and organizations that have a direct interest in the change effort and will be directly affected by and/or have influence over the change effort; and
- obtaining stakeholder buy in by assessing the anticipated impact of the change. Given their power to sustain or derail a change initiative, stakeholders and their concerns should be identified and understood.

The program identified stakeholder groups, created a stakeholder communication strategy and plan, and conducted numerous workshops at the national and local level for the purpose of engaging, identifying, and analyzing stakeholders. However, as we reported in June 2020,[13] VA did not always effectively communicate information to stakeholders, including medical facility clinicians and staff to ensure relevant representation at local workshop meetings. As a result, local workshops did not always include all relevant stakeholders.

As of February 2022, the EHRM program office had updated local workshop agendas to identify VA stakeholders recommended to participate in each session. However, users continued to share examples where they reported that the program did not fully identify stakeholders for local workshops. For example, one user said it was difficult to determine the correct person that should attend the local workshops. Another user said they were not involved in many important meetings, which contributed to issues with the new system in that department. Because not all users were included in relevant local workshops, the program had not fully anticipated the impact of change to users and had not fully understood stakeholders and their concerns. In addition, in February 2022 we reported that the department did not have a stakeholder register

[13]GAO-20-473.

to identify and engage key stakeholders for the EHRM program and recommended that they develop such a tool.[14]

EHRM IO officials said that in August 2022 they began conducting workshops with Directors from future implementation sites to focus on site stakeholder engagement. If VA continues to focus on site stakeholder engagement, this should better position the department to effectively identify and manage stakeholders, while addressing our open recommendation.

Practice 3: Communicating Effectively (Partially Consistent)

This practice includes:

- communicating the what, when, why, and how of the change frequently, and in a targeted and compelling manner; and
- sustaining change through ongoing communication, consultation, and representation of stakeholders.

The program defined a communication plan to engage with stakeholders involved with the EHR system implementation and deployment. The program used various methods to communicate with stakeholders, and documented over 5,000 completed communications between December 2018 and October 2022. These communications targeted enterprise, national, internal, and external site level staff. Examples of these communications included executive leadership briefings, kickoff meetings for initial deployment locations, training coordination activities, and site specific plans.

However, users of the system indicated that information on system changes and the status of trouble tickets were not effectively communicated after initial system deployment. For example, a user stated that an update to the system caused changes to the user's workflows without being properly notified prior to the update.

Further, in November 2020, the program identified a risk that a communication plan had not been established to inform VA end users of changes, major incident management, upgrades, and package releases. As of July 2022, this risk was still open and a communication plan for changes in sustainment had not been finalized.

In October 2022, EHRM program officials said that rather than develop the sustainment communication plan they were communicating through

[14]GAO-22-103718.

weekly user updates. They also had established an EHRM Sustainment Resource Center for all VA staff to access information on EHR changes, upgrades, and downtime events. EHRM program officials also said that there was communication of system downtimes and scheduled maintenance. The program planned to begin sending regular communications summarizing critical updates and establish a team to create a plan for communicating changes in sustainment. However, even with these activities, documentation of feedback from sites indicated the need to distribute more frequent updates on change request and system downtimes.

Practice 4: Assessing the Readiness for Change (Partially Consistent)

This practice includes:

- measuring the state of readiness using periodic checkpoints, analysis, and metrics; and
- resolving any potential problems in a timely fashion.

The program assessed its readiness for change by conducting change readiness questionnaires (CRQ) to serve as a baseline assessment across the initial deployment sites and to allow a tailored change effort to address gaps. According to the EHRM Integration Office, CRQs measure staff readiness for change and are administered twice prior to deployment and once post-deployment. According to the program office, as of January 2023, VA had conducted 55 CRQs at 28 deployment sites.

However, VA received response rates between 17 percent and 23 percent from the CRQs for the first three deployment sites. Specifically, in response to mid-deployment CRQ surveys, about 23 percent (297 of 1,320) of Mann-Grandstaff staff participated, 17 percent (296 of 1,737) of Central Ohio (Columbus) staff participated, and 21 percent (186 of 898) of Jonathan M. Wainwright (Walla Walla) staff participated. Therefore, VA had limited responses to assess readiness for change.

In addition, results from the CRQs indicated that users were not ready for the change and the program did not have assurance that it had resolved potential problems in a timely fashion:

- results from the Mann-Grandstaff VA Medical Center indicated low scores related to training and practicing in the new environment, and
- results from the Jonathan M. Wainwright Memorial (Walla Walla) and the Central Ohio (Columbus) VA Medical Centers showed that staff had indicated low scores for the knowledge of how to change and the ability to implement the change on a day-to-day basis.

Program officials said that CRQs are an indicator of readiness, but low results would not prevent deployment because the program was taking actions to provide user support. However, the program did not conduct another assessment before deploying the system to ensure their actions in response to concerns were effective and readiness was achieved.

Practice 5: Increasing Workforce Skills and Competencies (Not Consistent)

This practice includes empowering stakeholders with the knowledge for how to successfully change and gain the full benefits from the change by training them in the new processes, skills, and competencies needed throughout the transition.

The program outlined goals and objectives of training, site preparation steps, key milestones for training, the process for scheduling courses and registering staff, and a process for continuous training improvement. However, training has been a weakness for the program:

- training was a noted concern for users at Mann-Grandstaff in CRQs;
- training was identified as an area for improvement in the Secretary's Strategic Review as the review noted that employees felt inadequately trained for their responsibilities which translated into operational errors; and
- in July 2021, VA's Office of Inspector General identified numerous issues with training, including that users reported there was insufficient time for training, limitations with the training domain, challenges with user role assignments, and gaps in training support.

In response to a September 2022 VA survey, most users (87 percent - 1,803 of 2,071) disagreed or strongly disagreed that their initial training prepared them well to use the EHR and that their ongoing EHR training/education was helpful and effective.[15] Further, our structured interviews corroborated users' views regarding training. Specifically, 47 of 63 users disagreed or strongly disagreed that training was effective in preparing them to use the new system.[16] For example, users said that

[15]In response to the statement, my initial training prepared me well to use the EHR, 5 percent (102 of 2,071) of users agreed, 8 percent (166 of 2,071) were indifferent, and 87 percent (1,803 of 2,071) disagreed or strongly disagreed. In response to the statement, my ongoing EHR training/education is helpful and effective, 11 percent (217 of 2,063) of users agreed, 21 percent (432 of 2,063) were indifferent, and 69 percent (1,414 of 2,063) disagreed or strongly disagreed. This does not sum to 100 due to rounding.

[16]Of 63 users, 47 disagreed or strongly disagreed that they had been provided effective training on how to use the new EHR system, six neither agreed nor disagreed, and 10 agreed.

trainers were familiar with the system but were not familiar with VA's workflows and processes.

EHRM program officials acknowledged that training did not meet users' expectations and effectively support the transition because the contractor-provided training focused on using the system. However, users needed additional training and support for learning new workflow processes simultaneously. They said the program took a number of actions to address training issues, including adding additional clinical experts to support onsite training and increased use of a hands-on practice environment (i.e., sandbox). According to the program, VA planned to conduct additional user adoption strategies to reinforce training such as more robust provider champion and super user networks, show and tell demonstrations, workflow adoption activities, and coaching support during and after go-live. EHRM program officials said they were working with VHA and Veterans Benefits Administration (VBA) partners to ensure that context on VA policy, process, and operations was provided by appropriate subject matter experts.

In addition, in May 2022, the department notified Oracle Cerner about its concerns with training and in September 2022, Oracle Cerner announced that it would work with an outside entity to make the training more efficient, applicable, and useful for caregivers. EHRM program officials also noted that in the future, the program planned to conduct training earlier in the deployment timeline to allow time for additional workflow adoption activities and had initiated a plan to pilot the handoff of sustainment training to VHA. To address the lack of familiarity with VA workflows and processes, VA noted it has worked with Oracle Cerner to define additional change management activities. Nevertheless, VA has not yet demonstrated if these actions to increase workforce skills and competencies have been effective.

Practice 6: Identifying and Addressing Potential Barriers to Change (Partially Consistent)

This practice includes:

- taking steps to identify and understand potential resistance barriers or roadblocks throughout the change efforts;
- taking actions to address barriers that might derail change efforts when they arise; and
- examining daily activities of impacted groups experiencing change to identify and understand legitimate causes of resistance caused by design, execution, or implementation issues. Legitimate issues should spur re-evaluation of the solution design of the project.

The program identified activities to regularly monitor resistance to change. In addition, VA conducted site visits and change readiness questionnaires, among other things, to gather feedback and propose actions or recommendations to address feedback. Oracle Cerner and VHA also conducted change impact assessments to identify the level of complexity and effect of new workflows. Specifically, according to EHRM program officials, the program initiated an evaluation of high-risk workflows to optimize them and conducted a sprint to review the configuration and workflows in key areas to address users' experience.

In addition, the Secretary's Strategic Review identified barriers that needed to be addressed and, as of January 2023, VA had completed 45 of 69 actions identified in the review, and 24 were in progress. VA planned to complete these action items by October 2024.

Nevertheless, the EHRM program did not always adequately take action to address barriers such as user issues. For example, although the program tracked user issues and encouraged users to submit tickets to the help desk, many users (43 of 63) we interviewed said that they were dissatisfied or very dissatisfied with obtaining resolution to problems with the new EHR system.[17] Several users said that it was 6 months or even a year before they heard back about a ticket. Multiple users said that the help desk closed tickets without satisfactory resolution.

Practice 7: Establishing Metrics and Targets for Change (Partially Consistent)

This practice includes:

- establishing measurement systems and targets to measure the adoption of the change, and
- establishing measurement systems and targets to measure the resulting outcomes of the change.

The program planned a number of key activities for measuring the adoption of change. For example, the EHRM program proposed metrics such as the amount of time spent in the EHR system and the number of patients seen in an ambulatory setting. The plans also included a post-deployment survey of users aimed at measuring users' perspective on their ability to use the new system. In this post-deployment survey, a

[17]Of 63 respondents, 43 said they disagreed or strongly disagreed that the help desk provided adequate resolution to problems they encountered with the new EHR system, 10 neither agreed nor disagreed, and four agreed that the help desk provided adequate resolution to problems they encountered with the new EHR system. Six respondents said they had no basis to judge.

score of 68 of 100 is an average score. Additionally, VA conducted an EHRM system user satisfaction survey. The program also identified metrics for performance of the new system such as measuring veteran experience, health care operations, workforce support, and quality and safety.

However, beyond the average score, VA had not fully established targets to measure the adoption of the change. In addition, the department has not yet fully established goals or key performance indicators for the performance metrics.

Further, VA did not have a plan that outlined the metrics, including agreed upon targets, to measure the results of the change. VA reported in November 2022 that it was continuing to refine functional and technical quality standards to define success, including metrics to define access to care and clinical operational efficiency but did not provide a timeline for when it would be final.

Practice 8: Assessing the Results of Change (Partially Consistent)

This practice includes:

- measuring adoption of the change and obtaining feedback from stakeholders to help determine how successful the change was,
- measuring and reporting established metrics to demonstrate resulting outcomes of the change, and
- taking action needed to ensure that the change is reinforced and sustained.

To measure adoption, the EHRM program collected data, such as amount of time spent in the EHR system and the number of patients seen in an ambulatory setting. In addition, as previously mentioned, the program has conducted a number of post-deployment surveys since deployment of the system at Mann-Grandstaff VA Medical Center in October 2020. Further, the program has been tracking performance metrics such as veteran experience, health care operations, workforce support, and quality and safety since initial deployment in October 2020.

However, VA has not fully identified specific targets. In addition, users shared examples of concerns about their productivity using the new system and veterans' access to care. For example, several users told us that their departments were at about 50-80 percent of pre-go live volumes. One user said that workload that was managed by 15 staff prior to go live now required additional staff. Another user said that previously, they could process referrals within a week, but now it took them longer

and there were over 8,000 referrals in the queue. Further, several users said that patient safety issues had increased.

In addition, the program had not demonstrated that it had taken action needed to ensure that the change has been reinforced and sustained. For example, a March 2021 survey aimed at measuring Mann-Grandstaff users' perspective on their ability to use the new system noted that 82 percent of users agreed or strongly agreed that the new EHR was cumbersome to use, and 84 percent agreed or strongly agreed that the new EHR was unnecessarily complex.

VA's Organizational Change Management Activities Were Not Fully Consistent with Leading Practices for Various Reasons

The program's organizational change management activities were not fully consistent with leading practices for a variety of reasons. First, VA did not have a VA-driven strategy for how its efforts would supplement the contractor-led change management activities for deployment. According to EHRM program officials, the contractor's change management activities focused on the activities required to deploy the new system. However, these activities did not address user challenges with transitioning to new workflow processes. Further, EHRM officials noted that the program office had experienced transition in change management leadership and vacancies in their change management staffing. This limited the resources available for coordinating and implementing change management activities.

Until the program implements all eight of the leading practices for change management, future deployments could be at risk of similar change management challenges. This could hinder users' ability to effectively use the system, impede their knowledge of new workflows, and limit the utility of system improvements.

Further, the results of post-deployment questionnaires demonstrate the need for improvements in organizational change management activities. Specifically, according to VA-reported data, users provided feedback that was below average regarding their abilities to use the new EHR system.[18] Based on the program's research, a score of 68 out of 100 was

[18]The response rates to these questionnaires ranged from 12 percent to 22 percent.

considered average and scores below 68 were below average (see table 2).

Table 2: Department of Veterans Affairs Electronic Health Record (EHR) Modernization Program Post-deployment Feedback on New EHR System

Site	Date	Average summed system usability scale score
Mann-Grandstaff VA Medical Center	February - March 2021	24.38
Jonathan M. Wainwright (Walla Walla)	May - June 2022	32.33
Central Ohio (Columbus)	July 2022	24.14
Roseburg	July - August 2022	23.19
Southern Oregon (White City)	August 2022	24.72

Source: GAO analysis of Department of Veterans Affairs reported data. | GAO-23-106685

In our interviews, users expressed concern about staff morale and burnout. One user reported working 60 hours a week and trying not to drown in carrying out duties because completing chart reviews, which used to take 15-30 minutes using the old system, was now taking hours or even days. Other users said that providers were volunteering their time, and one user said this was because tasks took 10-15 percent more time to complete. Finally, users noted that staff in their department had resigned, specifically due to problems with the new EHR system. Additional details about users' satisfaction with the new system are discussed in the next section of this statement.

Accordingly, we recently made seven recommendations to VA regarding change management activities.[19] Specifically, we recommended that the Secretary of VA:

- document a VA-specific change management strategy to formalize its approach to drive user adoption;
- ensure that the department's planned improvements to communication of system changes meets users' needs for the frequency of the updates provided;
- take steps to improve change readiness scores prior to future deployments;

[19]These recommendations were conveyed in our March 10, 2023, briefing to Congressional committees and members and will be published in a report.

- ensure steps taken by the EHRM program and Oracle Cerner to increase workforce skills and competencies through improved training and related change management activities have been effective;
- address users' barriers to change, by ensuring planned completion of all actions identified in the Secretary's Strategic Review;
- develop a plan, including a timeline, for establishing (1) targets for measuring the adoption of changes and (2) metrics and targets to measure the resulting outcomes of the change; and
- measure and report on outcomes of the change and take actions to support users' ability to use the system to reinforce and sustain the change.

VA concurred with our recommendations.

Users Generally Expressed Dissatisfaction with the New System, but VA Has Not Established Goals

GAO and federal IT guidance recognize the importance of defining program goals and related performance targets and using such targets to assess progress in achieving the goals.[20] Also, leading practices identify continuous customer feedback as a crucial element of IT project success, from project conception through sustainment. Particularly for IT programs like EHRM, where development activities are ongoing, customer (i.e., end user) perspectives and insights can be solicited through various methods. Such methods include interviews and satisfaction surveys, to validate or raise questions about the project's implementation. Further, leading practices emphasize that periodic user satisfaction data be proactively used to improve performance and demonstrate the level of satisfaction the project is delivering. Measuring user satisfaction with the system is essential for monitoring progress towards pre-established goals or targets and allows programs to understand whether users' operational needs have been met.

[20]GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, GAO-04-394G (Washington, D.C.: March 2004); Executive Office of the President, Office of Management and Budget, *Evaluating Information Technology Investments, A Practical Guide* (November 1995), Office of Management and Budget, *Preparation, Submission, and Execution of the Budget*, OMB Circular No. A-11 (August 2022), and General Services Administration, *Modernization and Migration Management (M3) Playbook*, accessed Oct. 20, 2022, https://www.ussm.gov/m3.

VA Has Taken Steps to Obtain Feedback; Users Generally Expressed Dissatisfaction with the New System

VA has taken steps to obtain feedback on the performance and implementation of EHRM. Specifically, in September 2022, VA conducted a survey of users from two regions, VISN 10 and VISN 20, where the new EHR system had been deployed. In addition, VHA conducted another survey in September 2021 and September 2022 to assess Mann-Grandstaff employees' perceptions of the implementation of the new EHR.

In September 2022, VA worked with a contractor to conduct a user satisfaction survey to determine user satisfaction with the Oracle Cerner system. In December 2022, the contractor reported on VA's results in comparison to other health care systems. The results of the survey indicated that users were not satisfied with the performance of the new system or the training for the new system. For example, about 6 percent (120 of 2,066) of users agreed that the system enabled quality care.[21] In addition, about 4 percent (92 of 2,074) of users agreed that the system made them as efficient as possible.[22] In addition, fewer VA users reported that they agreed that the system enabled them to deliver high-quality care when compared to DOD and other health care systems. For example, about 23 percent (1,000 of 4,432) of DOD users agreed that the system enabled quality care.

In response to the survey of Mann-Grandstaff users' morale in September 2021, most users noted that as a result of the new EHR implementation, their morale, job satisfaction, and level of burnout had worsened (see table 3).[23]

[21]In response to the statement, the EHR enables me to deliver high-quality care, 6 percent (120 of 2,066) users agreed, 15 percent (306 of 2,066) were indifferent, and 79 percent (1,640 of 2,066) disagreed or strongly disagreed.

[22]In response to the statement, the EHR makes me as efficient as possible, 4 percent (92 of 2,074) users agreed, 6 percent (130 of 2,074) were indifferent, and 89 percent (1,852 of 2,074) disagreed or strongly disagreed.

[23]About 56 percent (833 of approximately 1,500) recipients responded to this survey.

Table 3: Department of Veterans Affairs Veterans Health Administration Survey Feedback on New Electronic Health Record (EHR) System, as of September 2021

	Improved		Not changed		Worsened		
	Number	Percent	Number	Percent	Number	Percent	**Total**
As a result of the EHR implementation, my morale has:	6	0.7%	133	16.0%	691	83.3%	**830**
As a result of the EHR implementation, my job satisfaction has:	6	0.7%	173	20.8%	652	78.5%	**831**
As a result of the EHR implementation, my level of burnout has:	4	0.5%	154	18.6%	670	80.9%	**828**

Source: GAO analysis of Department of Veterans Affairs' data. | GAO-23-106685

In September 2022, most users still noted that as a result of the new EHR implementation, their morale, job satisfaction, and level of burnout had worsened (see table 4).[24]

Table 4: Department of Veterans Affairs Veterans Health Administration Survey Feedback on New Electronic Health Record (EHR) System, as of September 2022

	Improved		Not changed		Worsened		
	Number	Percent	Number	Percent	Number	Percent	**Total**
As a result of the EHR implementation, my morale has:	91	12.3%	119	16%	532	71.7%	**742**
As a result of the EHR implementation, my job satisfaction has:	90	12.1%	142	19.2%	509	68.7%	**741**
As a result of the EHR implementation, my level of burnout has:	87	11.8%	123	16.7%	528	71.5%	**738**

Source: GAO analysis of Department of Veterans Affairs' data. | GAO-23-106685

When asked to rate the improvement in the EHR since they began using the new medical record, of 741 respondents, 231 (31 percent) said no improvement, 372 (50 percent) said minimal improvement, 49 (7 percent) said moderate improvement, and 89 (12 percent) said great improvement.

Similarly, our interviews from the first three deployment sites indicated that users were not satisfied with the new system. Specifically, 51 of 63 users said that they disagreed or strongly disagreed that overall they were satisfied with the new EHR system. In addition, 48 of 63 users said

[24]About 52 percent (742 of approximately 1,440) recipients responded to this survey.

they disagreed or strongly disagreed that the new EHR system met the expectations they had prior to and during go-live. Table 5 provides the results from our interviews regarding user satisfaction of the new system.

Table 5: Users Responses to Statements on New Electronic Health Record (EHR) System

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	No basis to judge	Total
The new EHR system meets the expectations I had prior to and during go-live.	2	9	3	23	25	1	63
The new EHR system is available when I need it.	1	18	11	29	4	0	63
Health data was migrated accurately from the old EHR system to the new EHR system.	0	11	6	22	21	3	63
Compared to the old system the new EHR system requires fewer steps to accomplish what I need to do.	1	1	6	21	33	1	63
Overall, I am satisfied with the new EHR system.	1	6	5	31	20	0	63

Source: GAO analysis of interviews with Department of Veterans Affairs officials. | GAO-23-106685

Further, Mann-Grandstaff users' responses to structured interview questions only minimally indicated improved satisfaction or changes in the perceptions of the effect of the new EHR system on productivity or quality of care from our interviews in 2021 to our interviews in 2022. Specifically, as shown in table 6, in 2021, most users (23 of 26) said they disagreed or strongly disagreed that overall they were satisfied with the new EHR system. In 2022, most users (18 of 23) said they disagreed or strongly disagreed that they were satisfied with the new EHR system (see table 6).

Table 6: Mann-Grandstaff User Satisfaction with New Electronic Health Record (EHR) System in 2021 and 2022

Do you agree or disagree with the following statement based on your current experience using the new EHR system? Overall, I am satisfied with the new EHR system.	Mann-Grandstaff 2021 (Out of 26)	Mann-Grandstaff 2022 (Out of 23)
Strongly agree	0	0
Agree	0	1
Neither agree nor disagree	3	4
Disagree	6	9
Strongly disagree	17	9

Source: GAO analysis of interviews with Department of Veterans Affairs officials. | GAO-23-106685

VA Has Not Established Goals for User Satisfaction

VA has not established targets (i.e., goals) to assess user satisfaction. EHRM provided several reasons for why the program had not established specific goals for user satisfaction for the system:

- In February 2022, EHRM program officials stated there was an opportunity for additional metrics such as user satisfaction targets in the future.
- In October 2022, EHRM program officials stated they were focused on addressing technical changes to improve the system usability before establishing targets or goals for user satisfaction.

Nevertheless, until VA establishes goals for user satisfaction, the department will be limited in its ability to objectively measure progress toward improving EHRM users' satisfaction with the system. The department will also lack a basis for determining when satisfaction has improved. Such a basis would help ensure that the system is not prematurely deployed to additional sites, which could risk patients' safety. Accordingly, we recently recommended that the Secretary of VA establish user satisfaction targets (i.e., goals) and demonstrate improvement toward meeting those targets prior to future system deployments.[25] VA agreed with this recommendation.

[25]These recommendations were conveyed in our March 10, 2023, briefing to Congressional committees and members and will be published in a report.

VA Did Not Adequately Identify and Address System Issues

Efforts to identify and address system issues can be supported by activities such as resolving trouble tickets quickly and conducting an independent operational assessment. VA did not adequately identify and address system issues. Specifically, VA did not ensure that trouble tickets for the new EHR system were resolved within timeliness goals, but subsequently worked with the contractor to reduce the number of tickets that were over 45 days old. Additionally, although VA has assessed the system for user performance at two sites, as of January 2023, VA had not conducted an operational assessment to evaluate if the new EHR system satisfies the intended use and user needs in the operational environment.

VA and Its EHR System Contractor Have Worked to Improve Trouble Ticket Resolution

VA's contract with Oracle Cerner addressed the support and resolution of trouble tickets during and after implementation of the new EHR system. Based on impact and urgency, each ticket is assigned a priority of critical, high, medium, or low.[26]

According to a service level agreement (SLA) between VA and Oracle Cerner, resolution timeliness goals varied depending on the ticket priority levels as follows:

[26]**Critical** - A patient safety condition exists or greater than 25 percent of concurrent users across a medical center are unable to process transactions or access managed solutions critical to their ability to conduct daily business; and no bypass or alternative is available. **High** - When (15-25 percent) of concurrent users across a VAMC and associated facilities are unable to process transactions or access managed solutions required to conduct daily business or a component of managed software required to compete a crucial workflow is non-functional for more than one user and no bypass or alternative is available. **Medium** - A component, minor solution, or procedure is down, unusable, or difficult to use but, no immediate impact on service delivery, financial, or patient care. Critical and high problems that have an acceptable workaround, or bypass available will be assigned as a moderate incident. **Low** - A component, procedure or personal application (not critical to Client) is unusable. No impact to business, single Incident failure, and an acceptable workaround, alternative, or bypass is available.

- Critical tickets: 100 percent of trouble tickets resolved or mitigated through VA approved mitigation strategy within 5 hours and closed within 24 hours.[27]
- High tickets: 90 percent of trouble tickets resolved within 16 hours and no single ticket exceeds 64 hours.
- Medium tickets: 80 percent of trouble tickets resolved within 4 business days and no single ticket exceeds 60 calendar days.
- Low tickets: 80 percent of trouble tickets resolved within 6 business days and no single ticket exceeds 60 calendar days.

However, VA determined that during the 25 month period from December 2020 to December 2022, Oracle Cerner did not meet the SLA established for the resolution of system trouble tickets. Specifically, Oracle Cerner did not meet the SLA for:

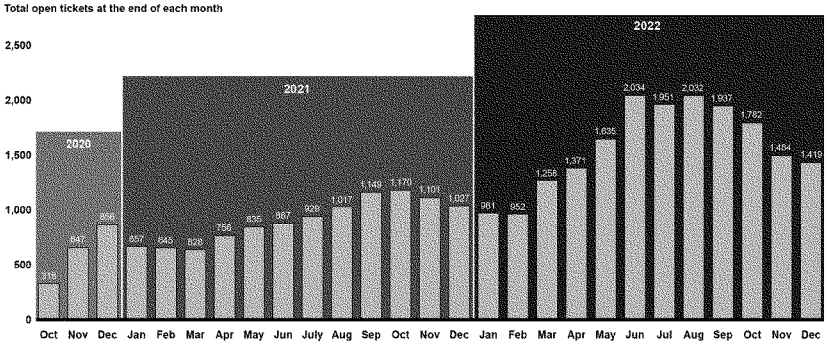
- critical severity trouble tickets for 4 of the 25 months
- high severity trouble tickets for 15 of the 25 months
- medium severity trouble tickets for 21 of the 25 months, and
- low severity trouble tickets for 24 of the 25 months.

To address a higher-than-expected volume of tickets that were not addressed within 60 calendar days or less, in August 2022, Oracle Cerner developed a 120-day plan to reduce the number of open tickets that were 45 days or older. Oracle Cerner developed its plan in response to a VA letter of concern regarding the new EHR system's performance. As of January 2023, Oracle Cerner had reduced the number of tickets that were 45 days or older from 714 to 108.[28] Nevertheless, as of December 2022, VA had over 1,400 open tickets, which was more than the number of tickets at the end of 2020 and 2021. Figure 1 depicts the number of open trouble tickets per month from October 2020 to December 2022.

[27]A ticket is considered 'resolved' when Cerner places the ticket in a 'Client Action' status for the client to approve / confirm the issue is addressed. A ticket is considered 'completely resolved' when VA has approved and confirmed that a trouble ticket placed in "Client Action" has been fully addressed. 'Completely resolved' and 'closed' are used interchangeably. In the trouble ticket data, 'closed' is a ticket which has been resolved and cannot be reopened.

[28]According to Cerner's plan some incidents could be converted to change requests, if appropriate.

Figure 1: Department of Veterans Affairs Electronic Health Record Modernization Open Trouble Tickets per Month



Source: GAO analysis of Department of Veterans Affairs trouble ticket data. | GAO-23-106685

Oracle Cerner officials provided explanations for the difficulties with meeting the SLA.

- VA's IT systems are more complex than DOD's, which contributes to a larger number of trouble tickets.
- Oracle Cerner relies on the local informatics staff to help triage the tickets, but some VA sites had little informatics support, which increases the burden on the Oracle Cerner help desk. [29]
- Oracle Cerner needed to apply additional staffing resources to address the problem.

Additionally, according to VA's strategic review status report, the department recognized that its capacity to resolve the volume of tickets at

[29]Health Informatics is a multidisciplinary and integrative field that focuses on health information management and information technology in support of health care. The field of health informatics draws from computer, cognitive, and social sciences for the development, change management, implementation, configuration, deployment and evaluation of systems that manage health information.

the five deployment sites was overwhelmed due to, among other things, an insufficient number of subject matter experts.

Until the program resolves trouble tickets according to established time frames, users' system issues will not be resolved in a timely manner. Additionally, there is a risk that VA will not be able to address users' system issues effectively going forward, particularly when larger sites go live. Accordingly, we recently recommended that the Secretary of VA ensure that future system trouble tickets are resolved within established timeliness goals.[30] VA concurred with our recommendation.

VA Has Not Conducted Independent Operational Assessments to Validate That the System Meets User Needs

According to leading practices for software verification and validation, a product should be evaluated to determine whether it satisfies the intended use and user needs in the operational environment.[31] An operational assessment is an evaluation of operational effectiveness and operational suitability made by an independent operational test activity with user support as required.[32]

The EHRM program's master test plan from May 2021 described plans to execute an independent post-production validation and operational assessment to assess the degree to which the new EHR met the users' needs in their daily operational use in the production environment. According to the program's test plan, the purpose of the operational assessment was to evaluate the system's efficiency, effectiveness, usability, user satisfaction, and training.

However, VA has not conducted an operational assessment and, as of January 2023, did not plan to do so. EHRM program officials said that they did not plan to execute an independent operational assessment because such an assessment would be duplicative to existing post-go-live evaluations and change assessment surveys, and disruptive to site operations. Further, the EHRM Master Test Plan was updated to remove the requirement for an operational assessment.

[30]These recommendations were conveyed in our March 10, 2023, briefing to Congressional committees and members and will be published in a report.

[31]IEEE Standards Association, *IEEE Standard for System, Software, and Hardware Verification and Validation* (IEEE Std. 1012-2016), (September 2017).

[32]Defense Acquisition University Glossary, accessed September 1, 2022, https://www.dau.edu/acquipedia/pages/articlecontent.aspx?itemid=46.

In July 2022, officials from VHA and the EHRM program office conducted a post-go-live study at the Columbus deployment site. These officials observed slow system response, system errors, user interface issues, and inefficient workflows that affected the end user experience. In addition to these observations, the study report stated that the scope of the assessment was limited and recommended further usability assessments.

Following the July 2022 study, VA conducted a review focused on standardization, usability, and safety issues at the five deployment sites.[33] The study team reviewed 300 issues and prioritized 30 to address that were related to patient safety. Additionally, according to EHRM program officials, in September 2022 they visited the Columbus deployment site to obtain feedback from users on high-risk workflows. Program officials said they also conducted an assessment at two sites in an effort to improve system performance. However, because these assessments were not conducted independent of the program, they lack the objective evaluation and analysis characteristic of an independent operational assessment.

Until an independent operational assessment of the new EHR system is conducted, VA will be limited in its ability to validate that the system is operationally suitable and effective, and to identify, track, and resolve key operational issues. An operational assessment, particularly if conducted by an independent entity, would enable the department to systematically catalog, report on, and track resolution of assessment findings with greater rigor, transparency, and accountability. Accordingly, we recently recommended that the Secretary of VA reinstitute plans to conduct an independent operational assessment to evaluate the suitability and effectiveness of the new EHR system for users in the operational environment.[34] VA agreed with this recommendation.

In summary, the program's organizational change management activities were not fully consistent with eight leading practices. These practices are especially important given that VA's transition to the new EHR was challenging for users at the initial deployment sites. In addition, VA

[33]VA referred to this review as the EHRM Sprint Project. The Sprint Project work streams included VHA EHR governance processes, medical order issues, clinical episode review team review and assessment actions, and collaborative readiness.

[34]These recommendations were conveyed in our March 10, 2023, briefing to Congressional committees and members and will be published in a report.

undertook several efforts to assess user satisfaction with the new system, but results indicated that users were dissatisfied with the system. Further, VA had not established targets or goals for user satisfaction. Consequently, it is not evident what basis the department will use to determine when satisfaction has sufficiently improved to support a decision to deploy the system at additional sites. Such a basis is critically important to ensuring that systems not be deployed prematurely and pose unnecessary risks to patient health and safety. Finally, VA did not ensure that system issues had been addressed within established timeliness goals nor has it conducted an independent operational assessment, which could be beneficial in validating that the system satisfies user needs in the operational environment. We will continue to assess these issues and to track VA's progress in response to our recommendations.

Chairman Tester, Ranking Member Moran, and Members of the Committee, this completes my prepared statement. I would be pleased to respond to any questions that you may have.

GAO Contact and Staff Acknowledgments

If you or your staff have any questions about this testimony, please contact Carol C. Harris, Director, Information Technology and Cybersecurity, at (202) 512-4456 or harriscc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. GAO staff who made key contributions to this testimony are Mark Bird (Assistant Director), Merry Woo (Analyst-in-Charge), Tim Barry, Chris Businsky, Quintin Dorsey, Rebecca Eyler, Ash Harper, Igor Koshelev, Christy Ley, Monica Perez-Nelson, Rachael Scott, Eric Trout, Walter Vance, Adam Vodraska, and Charles Youman.

Appendix I: Objectives, Scope, and Methodology

The review upon which this testimony was based culminated in a briefing to Congressional committees and members.[35] The objectives of our review were to determine the extent to which:

1. VA has employed organizational change management strategies for the EHRM program consistent with leading practices,
2. VA has assessed satisfaction with the new system, and
3. VA has identified and addressed EHR system issues.

To address the first objective, we conducted a literature search for organizational change management leading practices.[36] We identified leading change management practices that are applicable to organizational transitions, such as VA's EHR system modernization. We then evaluated VA's activities against these practices by examining program plans for organizational change management and discussing the program's approach with cognizant EHRM program officials.

To assess whether the program's activities were aligned with its planned approach and leading practices, we reviewed EHRM change management documentation, such as wave deployment plans, stakeholder communication strategy and plan, change impact analyses, site deployment and work plans, and change readiness questionnaire reports. We supplemented our analysis with examples from interviews with users from the Mann-Grandstaff VA Medical Center, Jonathan M. Wainwright VA Medical Center (Walla Walla), and VA Central Ohio Health

[35]On March 10, 2023, we provided a briefing on the results of our review to the House and Senate Committees on Appropriations, Subcommittees on Military Construction, Veterans' Affairs, and Related Agencies; House and Senate Committees on Veterans' Affairs; Rep. Jim Banks; and Rep. Susie Lee. We plan to publish the briefing in a report.

[36]Project Management Institute, Inc., *Managing Change in Organizations: A Practice Guide* (Newtown Square, Pa.: 2013); Office of Personnel Management, *Migration Planning Guidance Information Documents, Change Management Best Practices* (Oct. 7, 2011); GAO, *Business Process Reengineering Assessment Guide*, version 3, GAO/AIMD-10.1.15 (Washington, D.C.: May 1997); ISACA, *COBIT 2019 Framework* (2019); and Prosci, *The Prosci ADKAR® Model, A Goal Oriented Change Management Model to Guide Individual and Organizational Change*, accessed Feb. 21, 2021, https://www.prosci.com/methodology/adkar. ADKAR® is a registered trademark of Prosci, Inc.

Care System (Columbus), the three locations where the new system was first deployed.

To address the second objective, we obtained and reviewed results of surveys that VA conducted to determine users' satisfaction with the new EHR, including a survey conducted by VHA to assess Mann-Grandstaff employees' perceptions of the implementation of the Oracle Cerner EHR and post-deployment system usability surveys conducted by the EHRM program office. We obtained documentation regarding the department's administration of its user satisfaction surveys to determine that the data were sufficiently reliable for our purposes. We met with EHRM program officials and VHA officials to discuss whether the department had established any goals for user satisfaction.

We conducted structured interviews with selected users from the Mann-Grandstaff VA Medical Center, Jonathan M. Wainwright VA Medical Center (Walla Walla), and VA Central Ohio Health Care System (Columbus), the three locations where the new system was first deployed. Specifically, we conducted structured interviews with 63 users at these three locations between April and August 2022.

The methodology for selecting interviewees was as follows: we received a list of Mann-Grandstaff VA Medical Center employees who have been involved with national EHR councils. First, we conducted two pre-test interviews with leadership staff and made minor revisions to our structured interview instrument. We then selected one user from each of the 16 departments represented among the councils. For departments that had multiple users involved in the national councils, a user was randomly selected. In addition, two users were selected based on recommendations from the Mann-Grandstaff Medical Center leadership. Finally, an additional six users were selected based on recommendations from interviewees for a total of 26 interviews between April 2021 and June 2021. Following these interviews, we conducted additional interviews with 23 of the same users between April 2022 and June 2022. While the users' responses cannot be generalized to the entire population of EHR users at the initial deployment site, they represent a broad range of user roles and clinical areas at the sites.

Following interviews with Mann-Grandstaff VA Medical Center, we conducted structured interviews with selected EHR users from the Jonathan M. Wainwright Memorial VA Medical Center (Walla Walla) and VA Central Ohio Health Care System Center (Columbus). We conducted 40 interviews in total, 19 from Walla Walla and 21 from Columbus between June 2022 and August 2022.

The methodology for selecting interviewees at these two locations was as follows: we requested and received a list of representatives from a variety of clinical areas from both sites. We then interviewed the chief of staff at each location. In addition, we selected 18 user representatives from Walla Walla and randomly selected 20 users from the list of user representatives from Columbus, excluding those who were not obvious users of the system. While these users' responses cannot be generalized to the entire population of EHR users at these deployment sites, they represent a broad range of user roles and clinical areas at the sites.

To address the third objective, we obtained data on system trouble tickets from October 2020 to December 2022. We analyzed VA's data on the contractor's performance meeting time frames established in the service level agreement (SLA) for the contractor to address system trouble tickets. We also obtained a summary of monthly reports from Oracle Cerner to VA on trouble ticket resolution with respect to the SLA. We also analyzed the trouble ticket data for trends in the number of open tickets at the end of each month.

We assessed the reliability of the trouble ticket data by reviewing it for obvious errors and missing data and interviewed responsible officials about any discrepancies in the data. We determined the data to be sufficiently reliable for the purposes of our briefing.

We also obtained documentation of the EHRM program's testing activities, including test plans and results. We then analyzed the plans, as well as test activities that had already been completed, to determine whether they constituted an independent operational assessment.

We supplemented our analyses for our objectives by interviewing relevant VA officials, including the EHRM IO Executive Director, Functional Champion, and Deputy Chief Information Officer.

We conducted our performance audit from February 2021 through March 2023 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

GAO Highlights

Highlights of GAO-23-106685, a testimony before the Committee on Veterans Affairs, U.S. Senate

Why GAO Did This Study

VA uses the Veterans Health Information Systems and Technology Architecture (VistA), which includes the department's legacy EHR system, to provide health care to its patients. In June 2017, VA initiated the EHRM program to replace VistA because it is technically complex, costly to maintain, and does not fully support the need to exchange health data with other organizations. Specifically, VA began to acquire the same EHR system DOD was acquiring. VA has reported obligating about $9.42 billion on EHRM from fiscal year 2018 through the first quarter of fiscal year 2023.

GAO was asked to testify on its recently completed review to determine the extent to which VA has (1) used organizational change management strategies for the EHRM program consistent with leading practices, (2) assessed satisfaction with the new system, and (3) identified and addressed EHR system issues. GAO identified leading change management practices and evaluated VA's activities against these practices. It also reviewed results of surveys that VA conducted to determine users' satisfaction with the new EHR, conducted interviews with selected users, and interviewed officials on user satisfaction goals. Further, GAO analyzed system trouble ticket data and compared them to VA's service level agreement with its contractor.

What GAO Recommends

GAO made 10 recommendations to VA to address change management, user satisfaction, system trouble ticket, and independent operational assessment deficiencies. VA concurred with the recommendations.

View GAO-23-106685. For more information, contact Carol C. Harris at (202) 512-4456 or harriscc@gao.gov.

March 2023

ELECTRONIC HEALTH RECORD MODERNIZATION

VA Needs to Address Change Management Challenges, User Satisfaction, and System Issues

What GAO Found

The Department of Veterans Affairs (VA) organizational change management activities for the Electronic Health Record Modernization (EHRM) program were partially consistent with seven leading practices and not consistent with one leading practice (see table).

Extent to Which the Electronic Health Record Modernization (EHRM) Program's Activities Were Consistent with Organizational Change Management Leading Practices

Leading practice	GAO assessment
Developing a vision for change	Partially consistent
Identifying and managing stakeholders	Partially consistent
Communicating effectively	Partially consistent
Assessing the readiness for change	Partially consistent
Increasing workforce skills and competencies	Not consistent
Identifying and addressing potential barriers to change	Partially consistent
Establishing targets and metrics for change	Partially consistent
Assessing the results of change	Partially consistent

Source: GAO analysis of Department of Veterans Affairs (VA) data. | GAO-23-106685

Legend: Consistent – VA provided evidence that it conducted organizational change management activities mostly consistent with leading practices. Partially consistent – VA provided evidence that it conducted organizational change management activities consistent with some of the leading practice criteria, but some key parts were not followed. Not consistent – VA did not provide sufficient evidence that it followed leading practices.

Until the program fully implements the eight leading practices for change management, future deployments are at risk of continuing change management challenges. These challenges hinder effective use of the new electronic health record (EHR) system, impede users' knowledge of new workflows, and limit the utility of system improvements.

Most users have expressed dissatisfaction with the new system. VA's 2021 and 2022 surveys showed that users were not satisfied with the system's performance or training. About 6 percent (120 of 2,066) of users agreed that the system enabled quality care. In addition, about 4 percent (92 of 2,074) of users agreed that the system made them as efficient as possible. Further, VA has not established targets (i.e., goals) to assess user satisfaction. Until it does so, VA lacks a basis for determining when satisfaction has sufficiently improved for the system to be deployed at additional sites. Such a basis helps ensure that the system is not deployed prematurely, which could risk patients' safety.

VA did not adequately identify and address system issues. Specifically, VA did not ensure that trouble tickets for the new EHR system were resolved within timeliness goals. It subsequently worked with the contractor to reduce the number of tickets that were over 45 days old. Nevertheless, the overall number of open tickets has steadily increased since 2020. Accordingly, it is critical that system issues be resolved in a timely manner. Additionally, although VA has assessed the system's performance at two sites, as of January 2023, it had not conducted an independent operational assessment. Without such an independent assessment, VA will be limited in its ability to (1) validate that the system is operationally suitable and effective, and (2) identify, track, and resolve key operational issues.

Questions for the Record

Department of Veterans Affairs (VA)
Questions for the Record
Committee on Veterans' Affairs
United States Senate
"Examining the Future Path of VA's Electronic Health Record Modernization Program"

March 15, 2023

Questions for the Record from Senator Kyrsten Sinema:

Questions for Dr. Neil C. Evans:

QUESTION 1: VistA is currently integrated with best-in-class clinical applications, many of which are common between VA and leading academic institutions with whom the VA is affiliated. As a result, physicians have selected best-in-class clinical applications that are both familiar and help them provide the best care to Veterans. Examples include treatment planning systems, medical image management and exchange systems, mammography reporting, and many more.

1a: Please explain whether VHA created an inventory of these applications that are currently integrated and share the list of applications and the plan for supporting the integration of each of these applications with EHRM and Oracle-Cerner?

VA Response: Yes, VA creates a list of applications that are currently integrated with Veterans Health Information Systems and Technology Architecture (VistA) by performing a current state review (CSR) with Cerner at each VA Medical Center (VAMC). The resulting list of interfaces from the CSR is provided to the Electronic Health Record Modernization Integration Office (EHRM-IO) and the Transition Management team manages the integration projects from legacy VistA system to the new electronic health record (EHR) system through indefinite delivery/indefinite quantity contract task orders. The interface list includes the requirements that are approved and funded for the new EHR system.

The Office of Information and Technology (OIT) tracks applications that are currently integrated with VistA and maintains a list of applications and the plans for supporting the integration of each of these applications with EHRM and Cerner.

1b: If EHRM replaces an application that VHA has modernized already in VistA, please identify the replacement application, its past performance at VHA and justification for the replacement. In addition, please explain the business/ financial relationship between the replacement vendor and Oracle-Cerner so that there is transparency and oversight regarding the financial incentives for Oracle-Cerner to recommend replacing an existing, implemented, best-in-class clinical applications that have been modernized in VistA.

VA Response: As part of the migration to the Cerner EHR, the core health capabilities of the VistA system are being migrated. Many of these capabilities are replaced one-for-one by a Cerner capability within their core EHR product, Cerner Millennium. Interfacing ancillary systems such as Radiology Picture Archiving and Communication System (PACS), bedside monitoring systems and others are evaluated during CSRs and most of these are preserved and migrated to interface with Cerner Millennium.

As an example, where VA was going to replace a system that was considered best-in-class, the My HealtheVet patient portal interfaces with VistA and key functionality was going to be replaced with the Cerner HealtheLife application, branded as My VA Health. VA is in the process now of moving away from this fragmented patient portal experience and will be consolidating back to a single patient engagement experience regardless of the underlying EHR at the site serving the Veteran, delivered as My HealtheVet on VA.gov.

QUESTION 2: Oracle-Cerner's competitors, such as Epic Systems, do not offer software for medical device services. As a result, the private sector does not often purchase medical device software from Electronic Medical Record (EMR) companies, as VA has with Cerner for EHR modernization. Cerner has limited past performance in offering its medical device products, such as the Cerner PACS (Picture Archiving and Communication System).

2a: Please provide Oracle-Cerner's past performance information for the medical device systems it will offer as part of EHRM including Cerner PACS. Please explain why VA is allowing Cerner to select medical device software with limited past performance instead of those with exceptional past performance at VA and its academic affiliates?

VA Response: There are multiple PACS solutions and in the majority of cases VA is not contracting with Cerner for PACS solutions. For example, Radiology, Dental, Eye and Pathology all have remained non-Cerner solutions. In contrast, the Cerner Cardiology PACS is integrated into the EHR and allows for standardization of workflows, instead of being a standalone, locally supported solution. Cerner has leveraged the technology from Siemens Syngo, which VA is currently using at some sites as a Cardiology PACS solution.

QUESTION 3: At the recent House VA TechMod hearing, VA's OIT witness testified that a VistA lift and shift to the cloud costs VHA roughly $70,000/instance, and there are around 130 instances of VistA. Therefore, moving VistA to the cloud costs between $9 and $10 Million. VA's OIT witness also testified that Cerner is not in the cloud, yet - what is the equivalent cost of moving Oracle-Cerner to the cloud? Can you commit that the cost of moving Oracle-Cerner to the cloud will be no more than $10 Million?

VA Response: During the Senate Committee on Appropriations, Subcommittee on Military Construction, Veterans Affairs and Related Agencies hearing on September 21, 2022, Oracle Executive Vice President Mike Sicilia stated that Oracle intends to rewrite the Cerner Millennium system into a stateless cloud application that will deliver a modern interface and ease of use. They expect to deliver a beta version in 2023 and commit to migrate the Cerner Millennium system to the cloud at no-cost to VA. However, there may be additional functional and technical cost impacts to VA related to this migration.

QUESTION 4: When VHA talks about interoperability through Commonwell, eHealth Exchange, and Cerner's QHIE, does this include medical images such as radiology, dental, and pathology?

VA Response: The Joint Health Information Exchange (HIE) enables a single point of entry for bi-directional exchange of health data between VA, Department of Defense (DoD), United States Coast Guard (USCG) and community care providers. The HIE platform queries for and retrieves documents in the formats of HL7 Consolidated Clinical Document Architecture (C-CDA) document templates [including the Continuity of Care Document (CCD) and others] in accordance with Office of National Coordinator for Health Information Technology (ONC) and industry standards, which include formats, terminology and discreet domain elements for radiology reports, dental encounters and pathology results. At this time, the industry standards for HIE use of C-CDA document data exchanges do not include diagnostic imaging (e.g., the Digital Imaging and Communications in Medicine [DICOM] format). While interoperability with external partners utilizing the joint HIE and through eHealth Exchange or CommonWell does not include any medical DICOM images, the Joint HIE utilizes C-CDA documents to exchange with external partners.

However, currently there is an image sharing pilot for DICOM image sharing planned at the VA Central Ohio Health Care System. This image sharing solution will support image exchange between VA and community care network (CCN) providers. This will reduce the need for Veterans to be re-imaged as they move between care providers, as well as reduce or eliminate the need to use CDs for image exchange with community care network providers.

QUESTION 5: Seamless exchange of clinical information, including medical images, is critical to providing excellent health care to Veterans who get their care at VA hospitals and from community providers. Today, the majority of VA hospitals have adopted a modern medical image exchange software in VistA that supports the bi-directional exchange of diagnostic quality medical images and makes the images available to clinicians with a search and retrieval function in real-time.

5a: What steps are you taking to plan for the integration of this modern medical image exchange solution chosen by VHA in the future Veterans EHR system?

VA Response: The Veterans Choice Act and the VA Maintaining Internal Systems and Strengthening Integrated Outside Networks Act of 2018 (MISSION Act) increased VA's referrals to community providers with its associated need for care coordination. As a result, there has been an increase in the need to coordinate and exchange diagnostic quality images and studies between VA and CCN providers.

The new EHR system includes integration with Life Image, a third-party service provider of Cerner, to allow DICOM images to be exchanged, by a secure link, between VA and community care providers. This solution provides the following benefits:

- Enables VA and CCN providers to share diagnostic images and reports to support collaborative care coordination for Veterans.
- Allows VA to seamlessly create and maintain a comprehensive imaging health record for Veterans, inclusive of images and studies performed as part of a referral outside of VA.
- Reduces the need for Veterans to be re-imaged as they move between care providers.
- Reduces or eliminates the need to use CDs for image exchange with community providers.

Life Image was implemented on April 17, 2023, with the first CCN, Proscan, with Columbus VAMC. Images were successfully exchanged, and they are currently in the process of onboarding more community care network providers.

Cerner Central VistA Imaging Exchange Integration (CVIX) Adaptor (CCIA) is referenced as CCIA and is critical in allowing access to Cerner diagnostic images and scanned documents, along with electrocardiograms. CCIA is a custom software application providing the interface between VA VistA Imaging, the new EHR system and Vendor Neutral Archive Care Aware Multimedia (CAMM). CCIA was adapted from the VA CVIX baseline. CCIA is critical to EHR system interoperability with legacy VA systems during the EHRM transition and interoperability with DoD. CCIA is a key component to several interoperability workflows including the following:

- Joint Longitudinal Viewer (JLV) provides the ability to access remote medical image data. Sharing images improves clinical workflows and enhances collaboration between clinicians. Image exchange improves efficiency and generates cost savings by reducing redundant procedures. CCIA allows for more accurate diagnosis and improved treatment, and patient experience is improved when clinicians can access all necessary data. Clinical end users benefit from having all image data for their patients available in one application.
- CAMM images are accessible through VA VistA Imaging Clinical Display. CCIA provides VA clinicians another option to view images and diagnostic reports stored in the new EHR system.
- Telereader clinical staff at VistA sites can continue to provide telereading services for sites using the new EHR system.

Questions for the Record from Senator Dan Sullivan:

Questions for Dr. Elnahal and Dr. Evans:

QUESTION 1: Dr. Elnahal and Dr. Evans, the EHRM project has been postponed in my state multiple times now due to serious concerns about implementation. I am deeply concerned that when this project is implemented, Alaskan veterans in rural communities are going to be left behind, or worse, endangered by this project.

1a: What is being done to ensure that this modernization project is compatible with ultra-rural veterans?

VA Response: As part of the MISSION Act, eligible Veterans may access community care where VA care is not available within the access standards. The integration of community care is an essential element of the new electronic health record (EHR), and VA is working to ensure that all Veterans, including rural Veterans, are able to receive the care they earned.

QUESTION 2: What needs to change between now and implementation to ensure rural veterans' safety is not compromised?

VA Response: VA continually evaluates the readiness of each site for transition to the new EHR prior to deployment, including consideration of any factors related to the rurality of the facility or Veterans served. On April 21, 2023, VA announced that future deployments of the new EHR will be halted while we prioritize improvements at the five sites that currently use the new EHR, as part of a larger program reset. VA will not go-live at any site with unresolved or insufficiently mitigated safety critical findings.

Questions for the Record from Senator Thom Tillis:

Questions for Dr. Elnahal:

I am extremely concerned that some VA officials have maintained that the upcoming June 2023 "go-live" schedule will not change – regardless of what, if any, improvements are made.

QUESTION 1: Is this the current view of the Department?

VA Response: No. On April 21, 2023, VA announced that future deployments of the new EHR will be halted while we prioritize improvements at the five sites that currently use the new EHR, as part of a larger program reset.

During this reset, VA will address the issues with the EHR that were identified during the recent "assess and address" period, continue to listen to Veterans and clinicians about their experience with the EHR and redirect resources to focus on optimizing the EHR at the sites where it is currently in use: Spokane VA Health Care System, VA Walla Walla Health Care, Roseburg VA Health Care System, VA Southern Oregon Health Care and VA Central Ohio Health Care System.

Additional deployments will not be scheduled until VA is confident that the new EHR is highly functioning at current sites and ready to deliver for Veterans and VA clinicians at future sites. This readiness will be demonstrated by clear improvements in the clinician and Veteran experience; sustained high performance and high reliability of the system itself; improved levels of productivity at the sites where the EHR is in use; and more. When these criteria have been met and the reset period concludes, VA will release a new deployment schedule and re-start deployment activities.

QUESTION 2: If system improvements are not a driving factor in determining future deployments, what other factors will the Department consider when making those decisions?

VA Response: System improvements are a driving factor in determining future deployments. Additionally, VA has nearly finalized a Readiness Decision-Making framework to support data-driven decision making and risk management regarding site-by-site readiness to transition to the new EHR. The framework considers technical, programmatic and operational readiness of the site. The Operational Readiness Assessment Tool is designed to assess the facility operational readiness throughout the deployment process, pre- and post-go-live. VA will use a set of activities to assess completion, quality and impact/effect to the organization. Assessment factors include the following:

- Change Management;
- Communications;
- Department Readiness;
- Downtime Planning;

- Go-Live Planning;
- Leadership;
- Productivity;
- Local EHRM Implementation Management;
- Reports;
- Resources;
- Stabilization (post go-live);
- Sustainment (post go-live);
- System Configuration;
- Systems, Devices & Data;
- Testing;
- Training;
- User Roles & Provisioning; and
- Workflow & Content Validation.

QUESTION 3: Does this mean the Department will continue EHR deployment despite outstanding recommendations from GAO/OIG regarding patient safety and user satisfaction?

VA Response: On April 21, 2023, VA announced that future deployments of the new EHR will be halted while we prioritize improvements at the five sites that currently use the new EHR, as part of a larger program reset.

During this reset, VA will address the issues with the EHR that were identified during the recent "assess and address" period, continue to listen to Veterans and clinicians about their experience with the EHR, and redirect resources to focus on optimizing the EHR at the sites where it is currently in use: Spokane VA Health Care System, VA Walla Walla Health Care, Roseburg VA Health Care System, VA Southern Oregon Health Care, and VA Central Ohio Health Care System.

Additional deployments will not be scheduled until VA is confident that the new EHR is highly functioning at current sites and ready to deliver for Veterans and VA clinicians at future sites. This readiness will be demonstrated by clear improvements in the clinician and Veteran experience, sustained high performance and high reliability of the system itself, improved levels of productivity at the sites where the EHR is in use and more. When these criteria have been met and the reset period concludes, VA will release a new deployment schedule and re-start deployment activities.

Questions for Dr. Elnahal and Dr. Evans:

Improving training and user satisfaction is arguably the most impactful prevention activity to ensure patient safety and prevent system failure. New software and streamlined workflow processes are only useful if the Department trains and supports the individuals charged with utilizing it. VA conducted a survey in September 2022 and found that just 5 percent of those surveyed felt that their initial training prepared them well to use the EHR.

QUESTION 4: Who is ultimately responsible for ensuring VA employees are adequately and properly trained to use the new EHR?

VA Response: EHRM training is delivered by Cerner and overseen by EHRM-IO, working in collaboration with sites. The contracted EHR training is focused on training users on the new EHR system. Training on VA policy, processes and integration of the EHR system into daily operations is also required for new users to be successful and a joint responsibility of the Veterans Health Administration (VHA) and EHRM-IO.

QUESTION 5: What steps have you all taken to ensure employees at existing and future deployment sites are fully trained?

VA Response: To ensure users have completed assigned systems training on the new EHR system, EHRM-IO developed a robust data management system to extract and share data from VA's Talent Management System, showing training completions. EHRM-IO provides Power BI dashboards to help key stakeholders monitor day-to-day training of thousands of users across various sites and populations. In addition to the dashboards, the program supports local facilities to ensure their site completes training by delivering daily supplemental reports, monitoring open bridge lines to facilitate real-time response to concerns and deploying EHRM-IO staff who are regularly onsite to support active training.

VA has taken steps to address concerns with contracted trainers and the sandbox simulated training environment to better prepare users for the live EHR environment. We are addressing challenges with user participation and involvement of super users, who are critical in providing specific, on-the-job guidance to our health care providers. We have made the training more modular and based on specific system functionality. This allows us to further target training requirements to end users' specific roles in the system, better aligning content with the work they perform and reducing the overall amount of training required for many users. We also are doing a better job managing expectations around training, so that our staff understand it is only one part of the overarching adoption pathway for the new EHR system. Based on lessons learned, ongoing feedback and general maturing of the program as deployments expand, VA is working on a variety of other program improvements to support end users.

VA recognizes there is a gap between Cerner systems training and that which is necessary to ensure VHA's transformation from VistA/Computerized Patient Record System (CPRS) to the modernized EHR. As part of the Collaborative Readiness effort there is a workgroup assessing this gap and developing a plan to address it.

Questions for Dr. Evans:

Successful EHRM implementation should begin with the end in mind.

I understand that the Department has a draft schedule for the next six site deployments and is currently developing a full life cycle deployment schedule – with hopes to deliver that schedule to Congress by May 2023.

QUESTION 6: Can you describe what challenges – other than the pandemic – the Department has faced in terms of drafting and executing a reliable, comprehensive schedule for full implementation?

VA Response: Challenges impacting VA's ability to draft and execute a comprehensive full deployment schedule include ongoing Cerner contract negotiations, activities associated with the EHRM Sprint and challenges to date with VA's efforts to modernize its EHR system. The way forward, including the full deployment schedule, is heavily dependent on the result of ongoing negotiations as well as the resolution of current system issues. When these criteria have been met and the program reset period concludes, VA will release a new deployment schedule and re-start deployment activities.

QUESTION 7: Has the lack of a comprehensive schedule for full implementation contributed to deployment delays and cost overruns?

VA Response: No, the deployment schedule itself has not contributed directly to deployment delays or cost overruns.

QUESTION 8: Is the 2028 estimated completion date for full implementation still on target? If not, what is the updated timeline?

VA Response: As part of the EHRM program reset announced on April 21, 2023, VA is evaluating the deployment schedule. When the program reset period concludes, VA will release a new deployment schedule.

QUESTION 9: Has IDA completed their independent analysis?

VA Response: Yes.

QUESTION 10: Can you speak to the findings?

VA Response: Last year, the Institute for Defense Analyses (IDA) estimated EHR implementation over 13 years at $33.6 billion. The four main drivers of differences between EHRM's estimates and IDA's are the deployment timeframe, sustainment, inclusion of productivity losses across the deployment and cost differences among existing elements of the deployment process.

For the specific difference between VA's and IDA's cost estimates for EHR deployment, VA's estimate spanned 10 years whereas IDA's estimate covers a timeframe of 13 years. VA's estimate was based on the current 10-year contract. IDA's estimate of 13 years was derived from examining data on historical enterprise resource planning programs.

In its estimate, IDA also includes the cost for some sustainment during the implementation phase plus 15 years of sustainment operations once the system is fully deployed. The specific sustainment cost point estimates in IDA's life cycle cost are $3.5 billion during the implementation phase and $17.1 billion during the 15-year fully deployed phase. VA's estimate did not include some of the costs for operations and support during the implementation phase nor any sustainment costs during the fully deployed phase.

In total, IDA's estimate includes an estimated $25.9 billion in costs for elements not in scope of VA's estimate. These additional elements (i.e., acquisition, sustainment pre- and post-full deployment) account for about 75% of the cost difference between VA's estimate ($16.1 billion) and IDA's estimate ($49.8 billion).

The remaining approximately 25% difference between VA and IDA estimates is due to IDA independently producing higher cost estimates for some of the elements common to both VA and IDA estimates. These increased costs were derived from VA actual costs and the IDA-estimated 13-year implementation schedule. Cost increases are common for programs of this complexity, and prior enterprise resource planning programs have had similar cost increases in acquisition.

IDA's cost estimate excluded consideration of the effects of sustaining our current EHR, VistA. VistA must remain operable until all required functionality is replaced. The total cost to sustain VistA in fiscal year (FY) 2021 was approximately $841 million. We expect this VistA cost to continue during the deployment of the Cerner system.

Please note that the information contained in this response is Procurement Sensitive. As such, VA respectfully requests that the information not be released or shared beyond the committee.

QUESTION 11: Will the Department commit to providing that independent analysis, in addition to the final program life cycle cost estimate?

VA Response: VA provided a copy of the independent analysis to the Committee on March 8, 2023. EHRM-IO is working with VA leadership to update and finalize the full program life cycle cost estimate and will provide an updated version to Congress once completed.

QUESTION 12: Does continued cost overruns have the ability to undermine VA's other modernization efforts on supply chain and financial management systems?

VA Response: No. Congress established a separate appropriation account to fund EHRM activities, the Veterans EHR account. The modernization efforts for supply chain and financial management systems are funded in separate appropriation accounts. The planning assumptions for the new financial management system, Financial Management Business Transformation, and the modernization effort for supply chain recognize and account for updates in EHRM implementation, as necessary. VA will continue to fund the modernization efforts for supply chain and financial management systems at the needed and appropriate levels.

After reviewing reports provided by the Office of Inspector General (OIG), there is seemingly a lack of accountability and transparency among VA offices—in terms of a comprehensive plan, employee training evaluation programs and acknowledgement of challenges. The disturbing pattern of misrepresentations to this Committee, Congress and OIG on these and other topics is unacceptable. I was glad to see President Biden sign the VA Electronic Health Record Transparency Act of 2021, P.L. 117-154, which will require the Secretary of Veterans Affairs to submit periodic reports to Congress regarding the costs, performance metrics and outcomes for EHRM.

QUESTION 12: In addition to this, what actions should the VA purse to ensure there is effective, clear, and accurate communication with stakeholders on the progress of implementation?

VA Response: VA is committed to transparency and excellence in EHR implementation and will continue to engage congressional and other stakeholders with full and proactive transparency on the progress of the EHRM program. We appreciate congressional engagement and oversight as we work to advance the access, outcomes and excellence that Veterans deserve. The issues raised above are priorities for both VA and Congress. VA regularly reports on these issues through monthly, quarterly and ad-hoc briefings to the House and Senate Committees on Veterans' Affairs and Appropriations. VA also provides a quarterly congressionally mandated report on the program to these committees, as well as additional reports as required by legislation.

EHRM-IO leadership, VA program offices and staff promptly respond to Government Accountability Office (GAO) and OIG requests and host monthly briefings with GAO analysts and other subject matter experts within VA. Our relationship with OIG and GAO has been highly beneficial as they bring expertise and knowledge, including from working with DoD and their deployment efforts to support our program. VA has a good working relationship with GAO and continues to work diligently to solidify this relationship by meeting monthly to respond to questions verbally and in writing. If needed, EHRM-IO also supports providing GAO information in a more personal manner through small group engagements. The monthly meetings and document requests support the engagement's objectives. We always intend to provide OIG and GAO with the answers and documentation as requested in a timely manner.

VA communicates to a variety of stakeholders across VA program offices on a regular basis using various channels**.** For example, VA's internal EHR Modernization website, which is accessible to all VA employees, includes a range of foundational resources for the field, including a question-and-answer database and scenario-based examples and screen shots. VA also uses diverse channels to communicate directly to staff using the new EHR system. These channels include change notifications, EHR system alerts, newsletters, the Sustainment Resource Center and User Impact Series.

We should ensure that the new EHR system be integrated with community care providers, allowing non-VA providers to access the new EHR. Dr. Evans, you mentioned that the implementation of the Joint Health Information Exchange. DoD and VA combined are exchanging data through the Joint Health Information Exchange with 65% of the American health care system. I understand that these records are not just available to users at the five go-live sites but can be reviewed by clinicians at site still using VistA.

It's one thing for one of the providers to publish records digitally, it's another for community care providers to fully subscribe to it and exploit it in a way that a health care provider within the VA would.

QUESTION 13: Can you speak to the interoperability capabilities of the EHR, particularly the ability of non-VA providers to add, edit, or provide supplemental information in the EHR?

VA Response: Providers who do not work for VA or DoD cannot add or edit information in the EHR as they are not vetted, registered users of the EHR system and will not have access into the record. Medical information from community providers outside of VA and DoD can be exchanged through various cooperative agreements with VA and DoD, such as HIE and CommonWell agreements. Information from non-VA providers can also be provided to VA providers through Direct messaging, which is more like a secure email exchange of the data that can then be ingested into the record. VA and DoD providers review the information from community providers and may elect to add it to the documentation in the EHR's charting system. Non-governmental

providers without digital medical information exchange agreements are provided paper/digital documents upon release by the patient.

The EHR system allows the user to optionally review and incorporate data. That is, VA clinical care staff can determine which data should be added to a patient's VA/DoD EHR.

Use Case 1: The EHR system supports referral management workflows and communication methods with VA's CCN, which provides licensed health care providers for medical, surgical, integrated health services, durable medical equipment, pharmacy and dental services to Veterans.

- Features include provider alerting, tracking, scheduling, communicating and completion (including the receipt of the patient results), reports and non-clinical comments from CCNs administering the referred care. The CCNs do not add, edit or alter the patient's record directly; rather clinical data exchanged throughout the community care referral process are presented upon receipt for review by VA care teams and added to a patient's health record through the appropriate clinical workflows (be it an "OK" button, or use of the "outside records" functions).

Use Case 2 (current): Within the EHR system, the outside records data reconciliation workflow prompts VA staff to review a patient's clinical data from outside data sources obtained via the Joint HIE or Direct Secure Messaging. VA staff determine what is the most clinically relevant among the data and reconcile those selected data elements into the patients' record within the Federal EHR, to support ongoing comprehensive care.

- Clinical data domains currently available for outside record data reconciliation include problems, allergies, medications, procedures and immunizations.
- External data sources currently queried, retrieved and available for review and reconciliation in the outside records data reconciliation include VA/DoD legacy EHR data and external community partner data received through the Joint HIE or Direct Secure Messaging.

Use Case 2 (future): The upcoming enhancement called "seamless exchange" will expand outside record data reconciliation and streamline the user's ability to accept, discard or even undo a data reconciliation in singular or grouped cohorts of data.

- For example, addition of lab results, vitals and encounters to the clinical data domains available from outside records.
- Identify specific data domains and data sources to automatically reconcile to a patient's health record, alleviating the user of the clinical review workflow.
    - Decisions to auto-reconcile specific clinical data domains from certain data sources will be conducted jointly by the VA/DoD/USCG functional governance processes.
    - An example of a joint decision could be how to resolve active medications administered by community providers (received through the Joint HIE) that should be reviewed by the patient's care team and the patient and manually reconciled by VA or DoD staff.

Questions for the Record from Senator Angus S. King, Jr.:

Questions for Dr. Neil C. Evans:

QUESTION 1: The Department of Defense is finishing up its rollout of Cerner in the next year. Why is the VA rollout so much harder?

VA Response: Implementing a new EHR system in any organization is difficult but implementing one in a health care system as large and complex as VA's is unprecedented. We are transitioning from the current, nearly 40-year-old EHR system, VistA, comprised of 130+ customized versions, to a single, state-of-the art product with enterprise-wide standardized workflows and configurations. This is momentous change for VA's medical personnel. This is an opportunity for VA to fundamentally transform health care for Veterans through standardization of its operations to deliver consistent, high-quality care wherever Veterans seek it.

VA offers a broader range of health care than DoD and required additional components of the EHR system to meet the unique needs of Veterans.

DoD also encountered challenges in its initial deployment of the EHR system and took a pause to address issues before restarting deployments. VA incorporated the lessons learned from DoD into its deployment strategy and processes, and we continue to work with DoD to benefit from their lessons learned.

QUESTION 2: What lessons can be learned from the DoD Cerner rollout that should be implemented with the VA rollout?

VA Response: From the beginning of the EHRM program, VA incorporated lessons learned from DoD, including the early use of site activities and personnel to support clinical workflow alignments, staff augmentations, training strategies and effective governance structure.

VA continues to benefit from lessons learned from DoD. VA staff, specifically solution experts, have been sent to DoD deployment sites to provide support, learn from their experience and bring back improvements to VA's EHR modernization effort. For example, VA solution experts participated onsite during DoD's deployment to Walter Reed National Military Medical Center.

QUESTION 3: In light of the GAO report, what contract remedies will the VA pursue in its contract renegotiation with Cerner this spring?

VA Response: VA negotiated additional performance metrics to better hold the contractor accountable for performance issues and revised the Performance Work Statement to align with VA's current and future needs.

QUESTION 4: The initial Cerner contract was awarded through a non-competitive bidding process. Why not put the modernization contract out to bid again to attract other Electronic Health Record programs that may be able to do better at less cost?

VA Response: The former Secretary of Veterans Affairs chose Cerner with the rationale provided in the EHR Determination and Findings (D&F) document, signed June 1, 2017. As outlined in the D&F, the EHRM program will leverage an existing commercial solution to achieve interoperability across VA, DoD and community care providers. Adopting the same electronic health record system as DoD (e.g., Cerner) is a Veteran-centric approach that will support service members as they transition from military service, drive better clinical outcomes by giving health care providers a full picture of patient medical history and enhance collaboration with community partners.

Questions for the Record from Senator Jerry Moran:

Questions for Dr. Evans and Dr. Elnahal:

QUESTION 1: What percentage of patient safety issues caused by the use of the EMR relative to number of patients seen where the clinician used the specific EMR can be directly attributable to using Millennium compared to VistA?

VA Response: Any significant change, such as implementing a new EHR within VHA facilities, is likely to increase reporting of patient safety events. This is a sign of a healthy patient safety reporting culture in VHA facilities. A high number of patient safety reports does not indicate that a hospital is unsafe. VHA facilities are encouraged to report actual and potential events. Through the awareness of patient safety risk from reporting, VHA facilities can mitigate and prevent harms from occurring to Veterans.

A national or VHA industry standard for capturing patient safety events relative to number of patients being seen is not currently available. VA tracks reports and flags them as relevant to VistA and Cerner. However, this is not the same as tracking issues. As part of our issue-management initiative for the EHRM program, VA is developing capability to track reports/concerns/tickets to issues. We will be happy to brief you on this advancement in a few months. We are discussing how to use this system for VistA systems.

QUESTION 2: Is it true that VA restricted the use of purchased and implemented products to maintain vendor neutrality?

VA Response: VA respectfully requests additional clarity surrounding the term "vendor neutrality" to enable proper research and completeness of response.

2a: Is Oracle Cerner Millennium vendor-neutral?

VA Response: VA respectfully requests additional clarity surrounding the term "vendor-neutral" to enable proper research and completeness of response.

QUESTION 3: How often has VA tried to provide interoperability amongst the VistA applications and their purchased care providers in the past ten years?

VA Response: Interoperability is the ability to exchange and use information among multiple systems, devices or technologies securely and safely. Use of the data can include storage, display, analysis or automated uses. Interoperability is an evolving functionality that has been in operation at VA since before 2009, but which can be expanded to provide ever-increasing benefits to Veterans.

VA has been continuously and successfully implementing interoperability since shortly after 2000. Since 2009, the VA Veterans Health Information Exchange project alone, in its current iteration as the VA Joint HIE, has disclosed over 205 million VA patient health

summaries to community care providers and has retrieved over 1.1 billion health summary patient records to enable enhanced treatment of Veterans. Another project, Direct Secure Messaging, which enables encrypted communications between VA and community providers, exchanges over 3,000 messages per month. These are just two of a myriad of interoperability-enabled projects that are operational at VA today.

In the year 2000, VA began work to implement interoperability between VA and DoD and between VAMCs. The focus then shifted to initiatives like Direct Secure Messaging that allowed medical record sharing and encrypted communication with community providers. More recent efforts in the past 15 years have expanded interoperability for specific use cases like referrals, creating expanded interoperability to not just share medical records but also facilitate scheduling and sharing results and outcomes. Interoperability is not a yes/no concept; there is a continuum, and VA's interoperability efforts are mature and expanding. Today, providers at VAMCs can view their patient's records from other VAMCs where the Veteran received treatment along with the Veteran's DoD records and records from community providers, leveraging commercial health information exchanges, which is the industry standard. There is room to grow by sharing more medical domains and/or sharing more computable data that can be used to generate more alerts and reports; however, there is robust interoperability in place today.

3a: How much was spent?

VA Response: Interoperability is not treated as a single, discrete line item but is embedded in the budgets of all VA information technology projects, initiatives and clinical practices. The expense and benefits of interoperability are spread throughout VA's budget.

3b: Is one of those attempts eHMP?

VA Response: Yes. Enterprise Health Management Platform (eHMP) had interoperability with DoD and was working with VA's HIE office to build out interoperability with community providers. eHMP's original intent was to replace CPRS with a singular dashboard that had information from DoD and community providers. Additionally, it was aligned to support VistA modernization, contributing to expanding VA interoperability.

QUESTION 4: What was accomplished by eHMP, a program that lasted 7 ½ years and spent ~$350M?

VA Response: eHMP, as a program, was designed to create a web-based application for use by medical professionals. The accomplishments were as follows:

- It integrated data from all VistAs and select data from DoD and from community providers into a single longitudinal record that allowed viewing and computation for clinical decision support. (This contrasts with other solutions.

JLV does not allow significant computation. Cerner Millennium only imports limited data into the mainstream view of the patient record.)

- It provided a more pleasant and intuitive user experience than CPRS.
- It provided robust task management that prevented tasks such as follow ups on orders or requests to self and others from falling between the cracks in the system.
- It streamlined internal consult management including management of prerequisites.
- It achieved Initial Operating Capability and was deployed to three test sites (Hampton, Portland and San Diego) where it ran in parallel with CPRS during initial deployment.

Below is the complete budget information

FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	**Total**
$2,754,588.40	$7,642,701.01	$7,999,999.18	$54,678,661.36	$138,435,984.03	$30,774,376.03	$47,956,746.23	$366,568	$194,333.60	**$290,803,957.84**

QUESTION 5: We understand that when VA halted eHMP, the program produced less than 1% of the data from the VistA systems required by the HITECH Act for MU2. Is that the case?

VA Response: Presuming the 1% is regarding the overall eHMP connections and access to VistA data, the answer is no. The eHMP data engine, VistA Exchange component, was connected to all 130+ VistAs. It did aggregate patient health records from all connected sources. Additionally, eHMP Care Coordination user interface was in production at only three sites: Hampton, Portland and San Diego.

QUESTION 6: For your current Veterans Data Integration & Federation (VDIF), we understand that VA achieved data sharing and interoperability requirements for the HITEC Act under the MU2 requirement and the requirements of the VACAA and MISSION Acts. Wasn't that accomplished in less than two years (as marked by the Joint HIE go live in April 2018)?

VA Response: That is correct. The Veterans Data Integration and Federation (VDIF) Enterprise Platform is a commercially proven, service-orientated architecture platform which delivered on VA MISSION Act requirements as part of the VDIF Joint HIE in 2 years.

6a: Wasn't the cost of that go live less than 30% of the prior attempt in less than 1/3 the time?

VA Response: There is not a yes or no answer to this question. Compliance with MU2 was not a goal of the deployed version of eHMP. That goal was on the development roadmap and VDIF was a candidate component technology of eHMP to use towards satisfaction of these requirements.

6b: What was the difference?

VA Response: eHMP and VDIF are very different products designed to address very different goals. eHMP was a VA in-house developed clinical viewer and data engine. eHMP had many end-user capabilities including those listed above all of which VDIF lacks. It was connected to all 130+ VistAs to present a federated record; however, the data were not persisted. As a result, if VistA went down, its data were not accessible to consuming applications through eHMP. Some, but not all, VistA data were updated in real time in eHMP.

The VDIF Enterprise Platform is a modern, commercially developed service-oriented, cloud hosted middleware. VDIF is connected to all 130+ VistAs to present a federated record, and the data are persisted. As a result, if a VistA is down, its data are accessible to consuming applications via VDIF. VDIF is a longitudinal data store and as a result, consuming applications do not have to interface with each VistA individually but instead have a single interface to VDIF. VistA data are updated in real time in VDIF.

QUESTION 7: If question six is true, doesn't this prove VA has the technology to modernize but, for some reason, restricted its employees and contractors from using available tools to modernize?

VA Response: VA attempted to create an open-source community, OSEHRA, around VistA. Creating such a community required a codebase that could run on alternative/standard MUMPS implementations, rather than using a vendor's (InterSystems Cache) extensions. Fostering an open source EHR community is no longer relevant and does not apply to a commercial off-the-shelf strategy. On the other hand, a Fast Healthcare Interoperability Resources application programming interface driven EHR as directed by ONC does encourage collaboration on solutions, both open source and commercial.

In fact, VA did partially modernize its EHR system. VA was also actively considering using more proprietary components of its EHR system. However, the EHR system comprises far more than a database. It comprises many transactional modules to manage departmental functions such as pharmacy, laboratory medicine, radiology, surgery, in addition to utility functions like note writing and problem-list management.

7a: If not, why did VA maintain a self-imposed restriction to stay on 1996 ANSI Standard MUMPS until 2017, when the technology to modernize was available a decade and a half, if not two decades earlier?

VA Response: As noted in Question 7, VA did not dictate direction to restrict the use of available tools. The decision to conform to the 1996 ANSI Standard MUMPS until 2017 was made to establish governance and to ensure compliance with standards.

QUESTION 8: During the hearing, witnesses from Oracle Cerner referenced the Klas report titled, "VHA EHR End-User Satisfaction." The witness stated the DoD legacy system rated poorly in user satisfaction surveys, and VistA is the same technology as DoD's legacy system; and therefore VA should press forward with replacing VistA.

8a: Does that same report indicate that amongst the 280 EMRs used by those that responded Cerner Millennium had the lowest user satisfaction scores at only 6% while VistA/CPRS ranked in the top 10 with a 64% satisfaction score (specifically, "percent that agree the EHR enables quality care")?

VA Response: The question cites "that same report" as referenced by Cerner's statements during the hearing. We do not know of any report that has this finding.

As background, the KLAS survey is not intended to compare VistA/CPRS and Cerner. It is intended to assess a point pre-go-live as a baseline to set expectations for a return to post go-live. The survey conducted, which was VA's first, assessed users at all facilities in Veterans Integrated Service Network (VISN) 20 and 10 at the same time. At that time the five live facilities were at variable points post go-live. The rest of the users were at varying points along the pre-go-live continuum and all still using VistA/CPRS.

8b: Further broken down by subspecialty (coding & billing, extended care, inpatient care, outpatient care, and non-clinical), does that same report show VistA categorically outranked Oracle Cerner Millennium by at least five times?

VA Response: Please see the response to question 8a.

8c: If so, why would anyone suggest that because VA and DoD are using the same underlying technology VA should continue the replacement of VistA/CPRS with Oracle Cerner Millennium? Wouldn't the data in the report indicate the opposite (that VA should stop the rollout of Millennium in favor of keeping and modernizing VistA and having them work in tandem)?

VA Response: VA's implementation of the same EHR system as DoD supports the goal of a unified, seamless, trusted information flow between VA, DoD, USCG and community providers that will empower Veterans and their families, caregivers and survivors to achieve and sustain health and wellness. VA's existing EHR system, VistA, is almost 40 years old. It has served VA well, and long-time VA employees are accustomed to the system. VistA is comprised of 130+ distinct instances and is not a solution that can be sustained or modernized to deliver the benefits of an enterprise electronic health record for Veterans, with seamless integration across Federal partners and community care centers. It does not have modern capabilities like artificial intelligence/machine learning, web access and capabilities providers and Veterans expect and deserve from a modern EHR. VistA is a member of VA's expansive and complex ecosystem of software and infrastructure. The size and complexity of that technology ecosystem has nearly doubled in the last 5 years, and most of that growth

was in modern cloud-native applications. Programmers are increasingly challenged keeping VistA integrated in a growing ecosystem that is architected very differently from the system designed 40+ years ago. These challenges compound every year.

VA must continue to move forward with a modern, commercial EHR solution in close coordination with federal partners including the DoD. An alternative approach would only push VA further away from the goal of a single, seamless, integrated health record necessary to provide world-class health care to Veterans.

8d: Should DoD migrate to VistA/CPRS based on the Klas report?

VA Response: No. The KLAS survey is not intended to make a decision to revert to VistA/CPRS. It is intended to provide meaningful data to guide improvements to people, process and technology moving forward.

QUESTION 9: Isn't VistA built on a platform that is Cloud first? So, the VA has tools in their underlying technology underneath VistA that allows for VA to move to a web services-based architecture?

VA Response: Cloud-first is an organization's hosting strategy. VistA natively is not web-service enabled. The vendor, InterSystems, does provide a web-service based architecture capability. However, it requires investment and resources to implement.

OIT is moving VistA to Amazon Web Services, but that is really a datacenter consolidation and management activity, not a replatforming of VistA.

QUESTION 10: Does the VA have a plan to populate the Edge Gateways? I understand that for VistA users, this would still be read-only (just like with JLV except with deterministic patient matching) until the VA decides to service enable.

VA Response: Edge Gateways are a component of VDIF (Healthshare) used to communicate with VistA.

QUESTION 11: There is undeniably a pattern of harm to patients resulting from delays in care, diagnoses, scheduling errors, and lost medication. If you are determined to deploy the EHR to other facilities shortly, aren't you telling those facilities to be careful and do their best with an unsafe system?

VA Response: We have been listening to Veterans and clinicians, and it is clear that the new EHR is not meeting expectations. That is why we are halting all work on future deployments of the new EHR while we prioritize improvements at the five sites that currently use the new EHR, as part of a larger program reset. Additional deployments will not be scheduled until VA is confident that the new EHR is highly functioning at current sites and ready to deliver for Veterans and VA clinicians at future sites.

11a: Is that fair, either to the veterans or those employees?

VA Response: Because Veterans are at the center of everything VA does, their health and well-being and ensuring they receive the care they have earned is VA's highest priority. In delivering world-class health care to Veterans, VA adheres to the principles of a High Reliability Organization, and our number one goal remains achieving zero patient harm. To that end, VA will not go live at any site with unresolved or insufficiently mitigated safety critical findings.

QUESTION 12: VA's decision to buy an off-the-shelf EHR, such as Oracle Cerner's, necessitates the Department standardizing its processes and procedures across the medical facilities. But that has not happened. Contrary to what some would say is the change that saved the VA in the 90s, the traditional model where each medical center has autonomy. How will this be accomplished, when will it happen, and is the EHR Modernization program viable without it?

VA Response: VA agrees that standardization of the approach to facility configuration and business and clinical processes is foundational to achieve fully successful implementations. The current degree of standardization in both of these categories raises significant risk for successful implementations. VHA and EHRM-IO are currently collaborating on standardizing facility configuration. VHA has repositioned its EHRM Councils to focus more on standardization. VHA is currently focused on standardization and improvement to high-risk workflows. VHA will ramp up its standardization activities for clinical and business workflows over the next several months.

QUESTION 13: Many of the problems with the EHR are rooted in its customization, configuration, and workflows. These were all attempts to accommodate VA's unique processes and each medical center's specific needs. However, the customization and tailoring were unsuccessful in many cases and introduced even more problems to the EHR. How are you correcting these actions, and how long will it take?

VA Response: National councils have been made aware and tasked with ensuring nationally standardized workflows are developed and maintained to reduce the reliance on local customizations that have introduced unintended consequences. This work will be continual in nature throughout the life of any EHR implementation.

QUESTION 14: According to Oracle Cerner's Congressional Dashboard, there are 48 items that VA has requested to be fixed and that this Committee has highlighted. Of these, Oracle Cerner has completed and closed 16; work is in progress, or direction is needed from VA on 20; 2 are scheduled, and ten are in development. Does VA have a mechanism for staff to provide feedback on the 16 items marked as completed or closed to ensure they are genuinely resolved?

VA Response: Yes. Staff have opportunities to provide feedback as items are vetted through the national councils, and communications are provided to the end users that include status updates. Change requests for recommendations on improvements can occur at any point and are a necessity to ensure the record is continually updated to meet the needs of front-line staff.

14a: Of the other items in progress, what are the main holdups?

VA Response: All issues on the dashboard that are open are actively being worked. Progress is dependent on a variety of factors, including reaching consensus on enterprise-wide standardization requirements, workflows and configuration decisions, and ensuring appropriate resourcing levels.

14b: Will you commit to resolving all these issues before deploying the system at additional locations?

VA Response: VA is committed to addressing issues before deploying the EHR. Some require longer-term solutions that are in development. In those cases, VA has implemented mitigations to enable the continued delivery of health care. With mitigations in place, it is not necessary for every issue to be resolved in order for the EHR system to deploy. That being said, additional deployments will not be scheduled until VA is confident that the new EHR is highly functioning at current sites and ready to deliver for Veterans and VA clinicians at future sites.

QUESTION 15: VA recently gave us the report from its Improvement Sprint, which occurred between October and December. The report focuses on 30 out of more than 450 issues. Is there a plan to address the remaining issues, and when will that happen?

VA Response: Yes. While the "top 30" included critical and/or immediately impactful items, all the items are being tracked. In fact, the majority of the remaining items were already included in other efforts described in this document, including but not limited to system stability, response times and "user friendly" dialogs. Solutions are typically a combination of configuration changes, software updates, hardware upgrades and VHA workflow and policy re-assessments. Obviously, these myriad dependencies result in widely varying suspense dates, but all items with significant impact to the operation or useability of the EHR are being considered in VA's EHRM reset criteria.

In the time between October and December, we worked on additional issues that were not under the "Sprint" activity. For example, we worked on several issues with improving the functionality of the product and standardization of primary-care workflows. From January through now, we have ben addressing many other issues such as configurations for research and oncology, user adoption after go-live and issue management among many others. During the reset period, we will address all issues either by closing them after analysis or addressing them in the context of projects that we are setting up during May.

QUESTION 16: VA agreed with GAO's recent recommendation calling for an independent operational assessment of the new EHR system. Please provide the Committee with a description of the specific activities the department will take and when?

VA Response: VA will update all stakeholders as we work through this recommendation, to include specific activities the department will take if and when a decision is made.

QUESTION 17: GAO's work identified Oracle Cerner's poor performance addressing system trouble tickets. Please provide an update on Oracle Cerner's recent trouble ticket performance. Have they done anything new to improve their performance?

VA Response: A project team chartered in February 2021 outlined a plan to complete the project in a timely manner. The new workflows and system integrations between ServiceNow and Remedy were live and available to users in June 2021. EHRM-IO led the effort to complete the workflow redesign and project deliverables listed below, which resulted in a successful change request intake process that provided greater visibility to end users through the ability to track the status of submitted change requests in the VA YourIT ServiceNow portal. The project deliverables included the following:

- A new change request intake form and workflow within the ServiceNow ticketing tool.
- Bi-directional interfaces and field data mapping between ServiceNow and Remedy.
- Custom change request dashboard view available through the YourIT platform with drill down analytics capabilities.
- New assignment groups and approval steps within the ServiceNow workflow for local and VISN teams that are responsible for reviewing and monitoring changes in their queue prior to sending them to the national EHRM solution expert team.
- Movement of change request tickets previously co-mingled in the incident queue into the new change control process in ServiceNow.

Cerner created a plan of actions and milestones in August of 2022 to close the aging tickets over a 120-day timeline. Cerner worked with VA weekly to assess progress until the project concluded on December 31, 2022, resulting in over 700 closed tickets.

QUESTION 18: The Committee understands that VistA has been modernized with best-in-class software applications in the areas of medical image exchange, picture archival and communications systems, and mammography reporting, to name a few. Please provide an inventory of all the software that interface with VistA for patient care and cite past performance and cost associated with each software. In addition, please provide the list of comparable solution in

Oracle/CERNER including cost and past performance. In areas where Oracle/CERNER solution has higher cost and insufficient past performance, what's the rationale for not creating interfaces between the modern application in use at VistA with CERNER?

VA Response: As part of the migration to the Cerner EHR, the core health capabilities of the VistA system are being migrated. Many of these capabilities are replaced one-for-one by a Cerner capability within their core EHR product, Cerner Millennium. Interfacing ancillary systems such as Radiology PACS, bedside monitoring systems and others are evaluated during CSRs and most of these are preserved and migrated to interface with Cerner Millennium.

Department of Veterans Affairs
June 2023

Senator Angus S. King, Jr.
Questions for the Record
Senate Veterans' Affairs Committee
Electronic Health Record Modernization Program
Wednesday March 15, 2023

Questions for Mike Sicilia, *Executive Vice President, Oracle Corporation*

1. Between FY2018 and FY2023 $9.4 billion has been obligated to this EHRM contract, with $4.4 billion going to OracleCerner. That's almost $2 billion per site. The program's original cost estimate was $16 billion over ~10 years (FY 2018-2028). Why should the VA stick with OracleCerner given these outrageous cost overruns?

Oracle has committed to keep costs in line with the contract ceiling, barring new requirements from VA. This commitment also includes the moving of the EHR to a modern, cloud-based system at no additional cost—to ensure the system works for all stakeholders including patients and health care providers.

With any typical enterprise EHR modernization effort, there are early enterprise costs that benefit all sites such as design and build work, data migration and aggregation. For EHRM this included establishing nearly 1,000 workflows, building system interfaces, building the Joint Health Information Exchange, and migrating and aggregating 35 years of VA legacy data represented by 23 billion record data elements. In addition, there are front end costs such site assessments and site readiness work ahead of deployments.

As scale increases and initial accounting for unique system-wide capabilities, such as the pharmacy enhancements, are completed, spend rate is reduced. However, to realize the cost benefits of scale, a clear enterprise standard and a disciplined governance structure to adhere to such a standard is key to accelerate bending the cost curve.

To speed deployments from where we are now will require continued working with VA to implement their defined national standards inclusive of workflows, interfaces, clinical content, user roles and devices so that when we prepare to deploy at a new site there is a repeatable model that we can use. Not only will this minimize costs associated with workflow and interface sprawl and allow deployments to occur on a predictable timeline, but it will also allow VA to achieve a consistent veteran experience and quality of care regardless of venue of care that can also drive cost avoidance outside of the EHR modernization budget.

2. The Department of Defense is finishing up its rollout of Cerner in the next year. Why is the VA rollout so much harder?

Enterprise standardization in healthcare has enormous benefits for operation efficiency and patient care but makes some degree of change necessary and inevitable for everyone. More than 130 versions of VistA has produced 130 different support operating and governance structures throughout VA. Deployment of an enterprise system in a decentralized operating structure requires clear lines of accountability and decision-making authority, a clear enterprise EHR standard, and a governance structure to adhere to such a standard in the amidst high degrees of site variance.

3. What lessons can be learned from the DoD Cerner rollout that should be implemented with the VA rollout?

DoD's contract for modernizing its EHR system was issued in 2015. By October 2017 it similarly had only deployed to four facilities and after that they went nearly two years with no additional facilities going live. During that time DoD, Leidos and Cerner focused collectively on:

- Fine-tuning and adhering to a standard, enterprise baseline of capabilities, workflows and connectivity.
- Enabling a repeatable deployment methodology; and
- Establishing a local and enterprise governance structure with clear lines of accountability that remained committed to delivering an enterprise system.

With those conditions in place and steady leadership from DoD, implementation resumed in September 2019. Deployments accelerated and went from four live sites to being 81 percent complete today with 154,000 total users in a little over three years. Later this year DoD implementation will be complete across the United States, with overseas locations likely early next year.

We can achieve a similarly repeatable model with VA. A key factor will be deep collaboration to obtain timely approvals for any deviations. This will allow us to be able to deploy across VA more rapidly – implementing to these three governance principles, which is why I continue to believe and to advocate to VA that this can be done.

Sen. Tillis
Questions for the Record
Senate Veterans' Affairs Committee
Examining the Future Path of VA's Electronic Health Record Modernization Program
3/15/2023

Questions for Mr. Sicilia:

Improving training and user satisfaction is arguably the most impactful prevention activity to ensure patient safety and prevent system failure. New software and streamlined workflow processes are only useful if the Department trains and supports the individuals charged with utilizing it. VA conducted a survey in September 2022 and found that just 5 percent of those surveyed felt that their initial training prepared them well to use the EHR.

1. Who is ultimately responsible for ensuring VA employees are adequately and properly trained to use the new EHR?

This is a shared responsibility between Oracle Cerner and VA. The VA is accountable for establishing the government-defined requirements and government-determined priorities aligned to VA training framework and end-user participation in the training. Oracle Cerner is accountable for the deliverables associated with meeting the set requirements.

2. What steps have you all taken to ensure employees at existing and future deployment sites are fully trained?

Feedback from the initial deployment sites reflected the collective need for more of a, end-to-end approach to training to meet end user expectations and increase adoption rates.

In 2022, at our own expense, we engaged a third-party to conduct an independent assessment of the EHRM training program and offer recommendations for improvement. The result of this effort was the identification of ten root cause issues, six high-level recommendations and more than 25 initiatives that center on training improvements to four core areas: strategy, content, delivery, and communication.

From a strategic lens we are enhancing end-to-end training methodology with more scenario-based learning focused on cross collaboration within a clinical team. In addition, we are tailoring learning in what we call Adoption Pathways, which integrates the training strategy with change management and communications to level-set what end users can expect during trainings.

As an example, one of the key findings from the assessment was the need to focus on enhancing and empowering peer-to-peer training. Thus, we have retooled our super-user training to better equip our super-users for the full life-cycle of their roles before training begins through go-live and into sustainment.

We are also continuing to upgrade training content, educate end users on shortcuts already built into the system, and make training tools more accessible and available earlier to elongate and flatten the learning curve. This includes a refocus in areas that are critical to the delivery of care, where roles are seeing a significant amount of change and where we have seen lower end user adoption rates from the first five site deployments.

Simultaneously we are putting tools in place to automate training logistics, significantly improve the overall end-user experience, and provide real-time data and analytics to further improve content delivery and overall confidence in the learning journey.

All these efforts continue to improve change management communications by enabling a more targeted, timely approach to effective communication to the right stakeholders at the right time.