Veterans Health Administration

Office of Health Informatics

Clinical Informatics and Data Management Office (CIDMO)

FY20 VHA FIELD INFORMATICS RESOURCE ASSESSMENT:

Report & Analysis of Findings

February 2020

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Version History

DATE	VERSION	DESCRIPTION	NAME
24 Jan 2020	1.0	Initial Draft	Working Group
24 Feb 2020	1.1	Final Version: Consolidated and incorporated edits and feedback	Diabene, Yvonne; Ferguson, Sydney

1 Executive Summary

The FY20 Field Informatics Resource Assessment (FIRA) was commissioned by the Veterans Health Administration (VHA) Clinical Informatics and Data Management Office (CIDMO) to improve understanding of the current state of the VHA informatics workforce and prepare the organization for Cerner deployment/Electronic Health Record modernization (EHRM). The FIRA sought data from VHA personnel known to support the operation and maintenance of the legacy system– Veterans Information Systems and Technology Architecture (VistA)/Computerized Patient Record System (CPRS)– and of other clinical applications that support Veterans' health.

While many VHA informaticists hold positions with role descriptions that are standardized by the enterprise, the majority of informaticists in the field occupy positions uniquely titled and defined from facility to facility. Not only are they organized differently across facilities, but they also receive varying levels of training (if any) and perform varying informatics responsibilities under common position titles. These components presented significant challenges in connecting with relevant staff and collecting this data.

Nevertheless, a questionnaire was structured, written, and distributed broadly in order to capture data from as many health informaticists across the VHA as possible. Their responses detailed a lack of standardization in roles and titles across the VHA and a significant understaffing in Clinical Application Coordinator/ Health Informatics Specialist (CAC/HIS) resource levels. This lack of standardization among facilities and clinical departments exacerbates the prevalence of overlapping duties as reported by many informaticists.

In analyzing responses to this assessment, the FY20 FIRA Working Group identified opportunities in training, succession planning, and staff utilization to support the health informatics workforce and prepare the VHA enterprise for modernization.

2 Background

In 2016, the Office of Health Informatics (OHI) conducted a Facility Readiness Assessment to assess Clinical Application Coordinator / Health Informatics Specialist (CAC/HIS) resource levels at all Department of Veterans Affairs Medical Centers (VAMCs) in preparation for the VistA Evolution project that was slated to deploy numerous new applications and make enhancements to existing applications over a period of four to five years (see Appendix A, Parts 1 & 2). Staffing to sustain existing software was found to be inadequate, putting the capacity to successfully deploy new software and applications at significant risk.

Veterans Integrated Service Network (VISN) Chief Health Informatics Officers (CHIOs) were asked to report this information on behalf of their networks. The reported resource levels were compared to a resource model tiered by facility complexity levels which addresses staff requirements for sustainment and new deployment. The models were developed by Applied Informatics Deployment (AID) staff and validated by a focus group of experienced facility CAC/HIS staff (see Appendix A, Part 1, "Resource Model"):

> **Existing Sustainment Model:** The data in this tab is a resource model for HIS/CACs. This describes their generic and application specific work. It provides the estimated hours for high, medium, and low complexity facilities for specific tasks. The total staff is the baseline requirement for a facility to support its current suite of applications.
>
> **New Deployment Related Activity Model:** This model addresses the expertise needed for deployment tasks for new or enhanced applications and defines these tasks. The hours associated with each task were estimated for low-, medium-, and high-complexity applications.

The 2016 Readiness Assessment comparison to this sustainment model revealed that among the facilities that responded (131 of 141) more than 60% were significantly understaffed, having less than 50% of the recommended level of support.

% of Recommended Staffing Level	# of VAMCs
Less than 50%	81
51% to 75%	37
Greater than 75%	13

TABLE 1: NUMBER OF VAMCS WITH STAFFING LEVELS <50%, 51-75% AND >75% IN 2016

The FY20 VHA FIRA was commissioned by the CIDMO Field Informatics Stewardship (FIS) Division. As of December 2019, data were requested on CAC/HIS levels to follow up on the 2016 assessment and report any changes. However, this assessment expanded the assessment scope to all informatics personnel performing both CPRS and non-CPRS

functions. Furthermore, individual informaticists and facility leads (often CHIOs) were queried so their responses could be analyzed alongside VISN-level reports.

With the implementation of Cerner Millennium EHR scheduled for Spring 2020, the FY20 FIRA sought information that could serve to support the training efforts of the of Informatics Workforce Stewardship (IWS) team and optimize the utilization of talented VHA informaticists in enterprise efforts to modernize the delivery of healthcare – as enabled by a fully interoperable EHR.

3 Objectives

The overall purpose of the FY20 FIRA was to inform CIDMO on informatics departments and personnel across the VHA, and to improve informatics support at all VAMCs. The intent was that its findings and results might allow the VHA to:

1. Determine the current state of field informatics staffing at the facility and VISN levels
2. Ascertain the expertise and skills of various technical support personnel and informaticists within the VHA
3. Appropriately prepare transition plans in anticipation of the deployment and implementation of new and modernized clinical applications, including Cerner Millennium
4. Prepare the informatics workforce for the transition to Cerner Millennium by promoting new competencies in performance improvement, project management, data analytics, data science, informatics, patient safety, and other training
5. Ensure informatics staff are adequately equipped to support and maintain VistA/CPRS at legacy sites nationwide

These initiatives support the VHA mission to maintain a single standard of care for Veterans, families, and caregivers across the enterprise throughout the EHR transition and after full operating capability (FOC).

4 Overview

The FY20 FIRA was distributed on Friday, December 6, 2019 and closed on Friday, December 20, 2019. All personnel who perform clinical health informatics duties within VHA at the facility or VISN level were invited to share information on their work experiences, roles, and training. Facility CHIOs or Informatics Leads (where a CHIO was absent) reported on levels of staff resources in their facilities. VISN CHIOs supported the assessment by encouraging their staff to respond to the assessment and by reporting on levels of staffing in their respective VISNs. Participants were informed the assessment was voluntary and all responses provided by staff

would be anonymous.[1] The exception was that individual station numbers for respondents were identified to facilitate data sorting.

In early January 2020, the assessment was re-opened and distributed specifically to facility CHIOs who had not yet provided staffing numbers for their sites. These informatics leads were encouraged to provide numbers for their facilities to be included in the analysis.

4.1 Development and Methods

4.1.1 Assessment Development & Structure

The CIDMO Working Group responsible for the assessment design was comprised of senior health informatics leaders and program analysts from the OHI and the field, including CHIOs, Nursing Informatics Specialists, and leaders in IWS.

The assessment was developed and administered with Verint, an in-house VA-approved survey tool, and VA developers designed the format and collected responses. Developers used a branched structure (questions were categorized under four different role categories or 'branches'), and respondents only saw the questions relevant to the role(s) they selected. These branching roles were "VISN CHIO," "Facility CHIO/Lead/POC," "CAC/HIS," and "Other Informaticist."[2]

The questions were designed to solicit factual data on various aspects of the informatics roles including, but not limited to, staffing numbers, training experience, and retirement eligibility. However, some questions were designed to survey the personal experiences and perspectives of individual informaticists pertaining to, among others, self-reported skills and experience with certain programs and processes.

4.1.2 Assessment Administration

The assessment was initially distributed via email through the Field Health Informatics Council (FHIC) distribution group. The FHIC serves as a national forum for information sharing between the VHA health informatics field staff and the VHA Central Office (VHACO); they hold weekly calls to discuss matters of interest and share resources via an email distribution list. Upon discovery that the FHIC email distribution group is an opt-in database, the assessment was additionally emailed to various informatics groups through distribution lists compiled by the Informatics Workforce Stewardship team. The workgroup aimed to distribute the assessment to as wide an audience of health informaticists across the VHA as possible.

In order to assist informatics staff in their accurate representation of information, the FIRA Working Group hosted information sessions to answer any questions regarding the content and/or objectives of the assessment. Three separate virtual information sessions were held on the 10th, 12th, and 19th of December 2019. These sessions lasted 30 - 60 minutes long and

[1] VISN and Facility Leads reporting data on staff resources at their sites and VISNs had to be identifiable to enable data sorting.
[2] Roles were not mutually exclusive. See Appendix B for full questionnaire.

were moderated by the Associate Director of IWS and other members of the assessment workgroup. Altogether, more than 800 1000 attendees were present on the calls to ask questions about the assessment details and purpose. Many of the questions were centered around the future of informatics roles with the Cerner transition and how the assessment would contribute to increased support and training for staff. At the end of each call, attendees were directed to attend the January 24, 2020 FHIC Showcase where the leadership of CIDMO would be answering these specific questions. Invitations to the virtual meeting for that call were distributed on January 22, 2020.

4.1.3 Analysis Methods

The overall findings of the assessment are presented with both qualitative and quantitative summary analyses. 94 of 141 VAMCs submitted data (67%). Since the total population of informaticists in the VHA is unknown, it is impossible to determine statistical confidence levels for the assessment. Data were analyzed using descriptive statistics. Data were also compared to the 2016 Resource Assessment using the sustainment model.

Qualitative data were analyzed using a thematic approach to pinpoint general trends that appeared in those responses (i.e., free-text entries). These trends were summarized into four major themes that are discussed in detail below.

4.2 Study Population and Participation

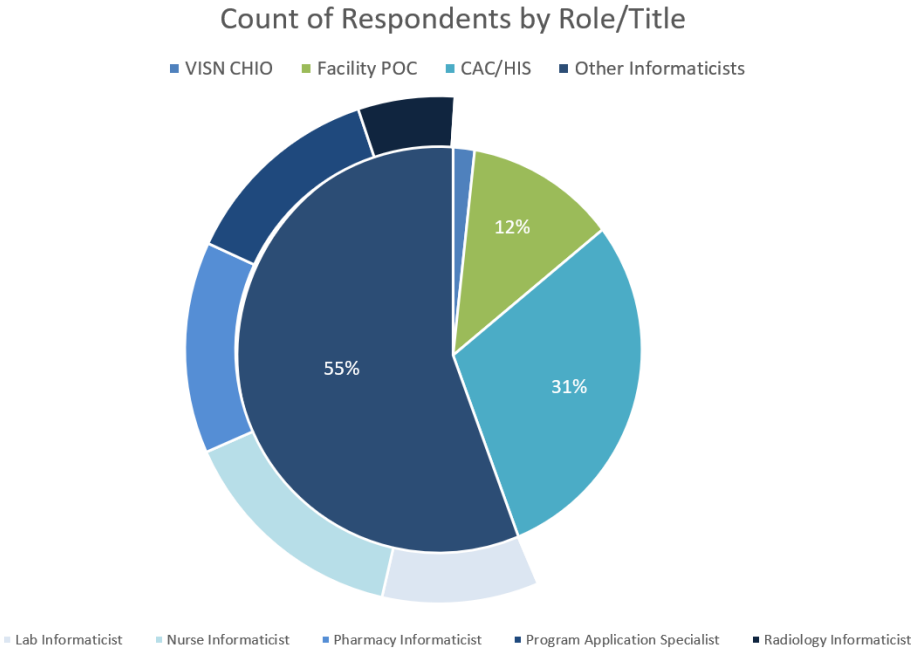


FIGURE 1: VHA INFORMATICIST RESPONDENTS BY ROLE/TITLE

A total of 807 responses were received by the time the assessment was officially closed: 14 respondents identified as VISN CHIOs, 94 as Facility Leads/Persons of Contact (POCs), 256 as CAC/HIS, and 464 as "Other Informaticists". These categories were not mutually exclusive, however, as respondents could self-identify in more than one category. Within the "Other Informaticists" category, respondents identified themselves under various roles, including but not limited to, Program Application Specialist, Radiology Informaticist, Lab Informaticist, Nurse Informaticist, and Pharmacy Informaticist. Respondents could also choose "Other" and write in their appropriate title such as Bar Code Medication Administration (BCMA) Coordinator, Program Analyst, MyHealth*e*Vet Coordinator, etc. Respondents who identified themselves as CAC/HIS staff were also asked to provide their classification per the VA Human Resource Office (HR).

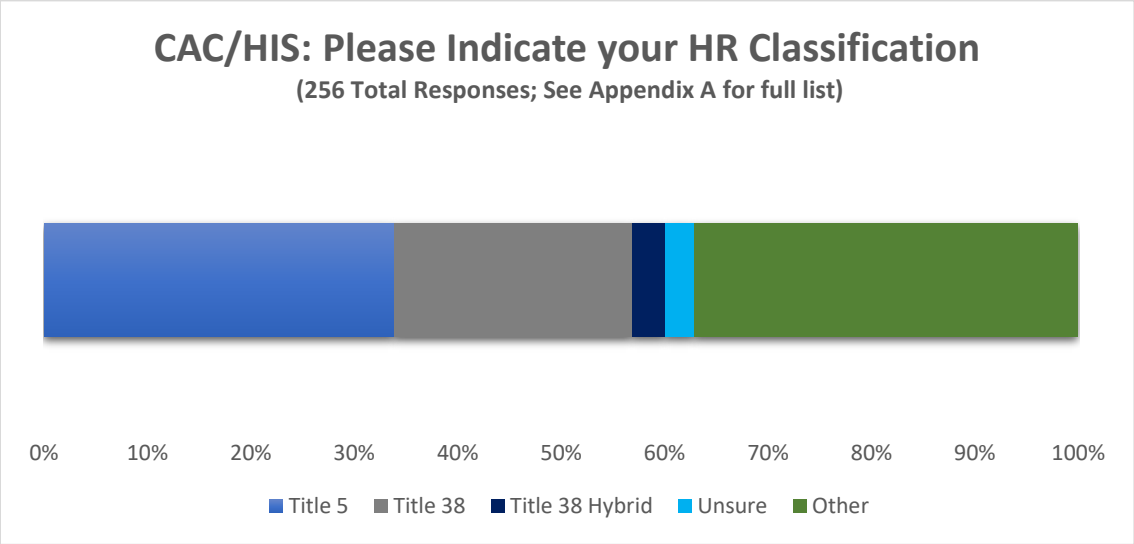


FIGURE 2: CAC/HIS HR CLASSIFICATION

4.2.1 Experience Level of Respondents

Informaticists who responded as Facility Leads and as CAC/HIS staff were asked to provide information regarding their years of experiences in their respective roles. CAC/HIS experience levels were inquired from both the facility lead and the individual responding on their own behalf to allow for comparison and a more comprehensive data set.

How many years of experience do you have in your role as a Facility CHIO/Lead?	Percentage
1 - 4 years	55.7%
5 - 10 years	27.9%
10+ years	16.4%
Total Number of Responses	61

TABLE 2: LEVEL OF EXPERIENCE - FACILITY LEAD (SELF-REPORTED)

Please indicate the number CAC/HIS staff with the following years of experience in their role:	FTEE with the specified years of experience* *Add decimal places for part time (e.g.; 4.50, 5.25, 7.00, etc.)
1 - 4 years	41.3%
5 - 10 years	32.9%
10+ years	25.8%
Total CAC/HIS Reported	473.7

TABLE 3: CAC/HIS STAFF (REPORTED BY FACILITY LEADS)

How many years have you been working as a CAC/HIS?	Percentage
1 - 4 years	40.6%
5 - 10 years	29.7%
10+ years	29.7%
Total Number of Responses	256

TABLE 4: CAC/HIS STAFF (SELF-REPORTED)

5 Results

The response data from the assessment was summarized on a VISN and Facility Level to provide insights into informatics resources at each respective level for all VA Medical Centers and their VISN Offices. Qualitative data results were broken down by topic to elucidate the overall themes that emerged in the analysis:

1. **Training**
2. **Retirement**
3. **Collateral Duties/Overlapping Roles**
4. **Understaffing**

To account for the differences in size, funding, and capacity, some of the quantitative analysis was conducted by the "Facility Complexity" model. VA Medical Centers are divided into 5 complexity categories: 1a, 1b, 1c, 2, and 3 based on numerous factors, including the level of care provided by their intensive care unit (ICU).[3] Thus, the resources available to and required by a facility of each respective complexity differ.

The quantitative data obtained from the assessment was consolidated and visualized using Tableau commercial software which was made available to CIDMO FIS leadership. The dashboard allows users to view the data in one place and allows filtering by VISN or facility. Data presented on the Tableau platform include, among other things, retirement numbers, training methods reported by Facility Leads, and staffing levels. Ultimately, to comply with software available to the VA, the dashboard was converted to the Power BI service.

[3] All VA Medical Centers have at least some capacity to treat patients, although Complexity 1 hospitals have a much greater specialty care capacity. Most of VHA's tertiary care hospitals (Complexity 1) are located in urban areas and are the facilities where smaller rural hospitals (generally Complexity 2 or 3) refer patients in need of specialty care.
U.S. Department of Veterans Affairs, GeoSpatial Outcomes Division – VHA Office of Rural Health. (2015). *A Rural Veterans Health Care Series. 2nd Edition – FY 2015.* Chapter 2. Retrieved from: https://www.ruralhealth.va.gov/docs/atlas/CHAPTER_02_RHRI_Pts_treated_at_VAMCs.pdf

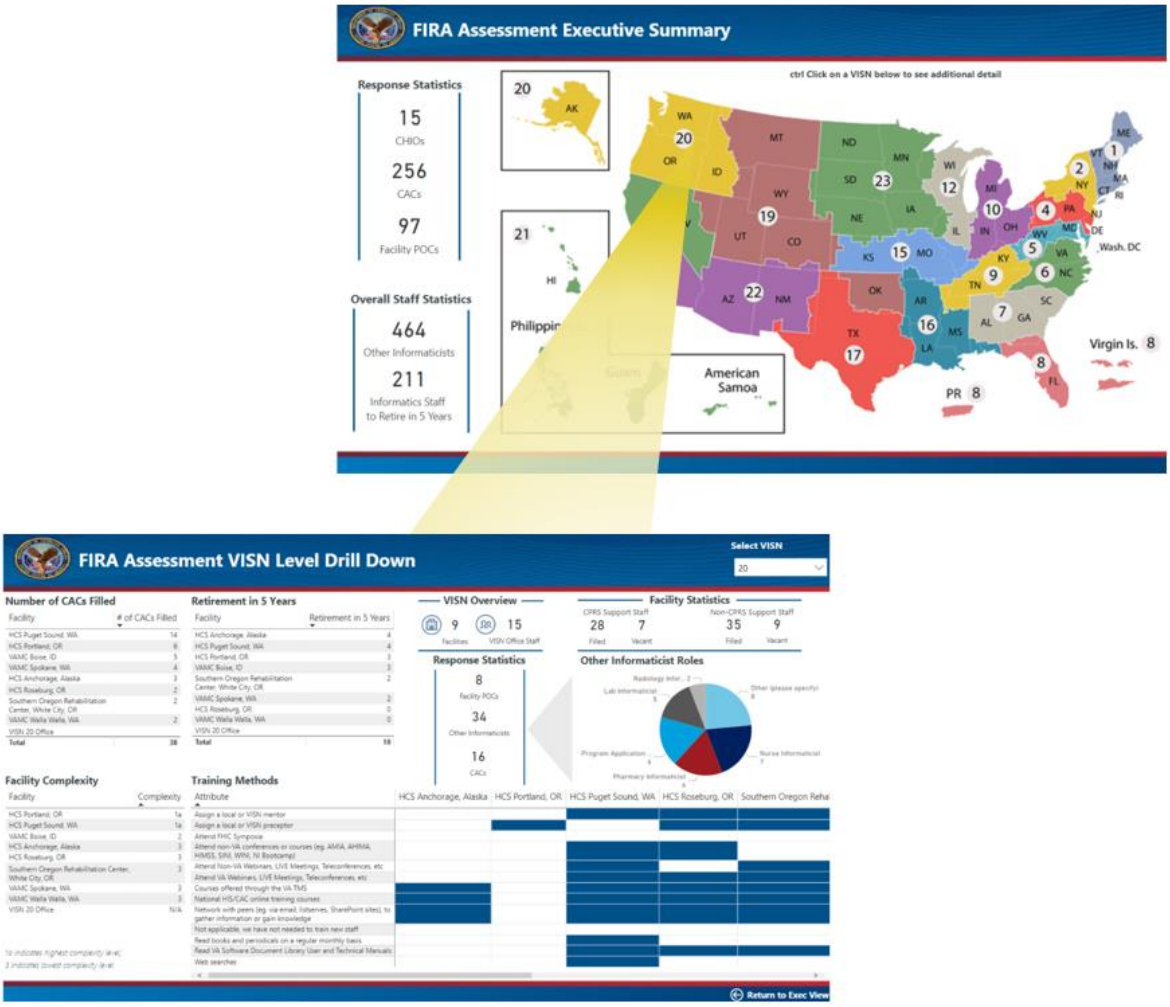


FIGURE 3: POWER BI DEPICTION OF VISN 10 ASSESSMENT DATA

5.1 Overall Trends in Assessment Responses

5.1.1 Training

The assessment included questions about informatics training both on a facility and individual basis. Facility Leads were asked to indicate the informatics trainings offered by the facility to newly-hired and current employees, while individual respondents were asked to indicate the trainings and certifications on their portfolio.

On a facility level, more than half of the facilities who responded to the question “Does your facility offer any informatics trainings” answered “No” or “Unknown.”

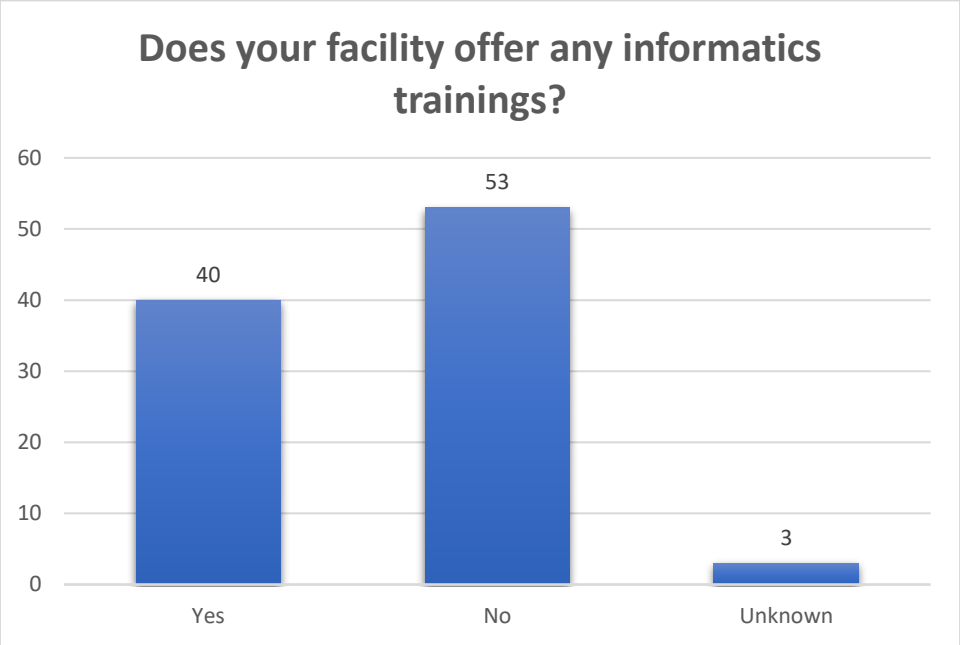


FIGURE 4: FACILITY TRAININGS AS REPORTED BY FACILITY LEADS

Of the facilities that answered "Yes" to that same question, the reported training methods differed for each VAMC. The methods ranged from CPRS Overview and BCMA trainings to VHA Support Service Center (VSSC) local trainings and VISN CAC Coordination Calls.[4] While some facilities provide mentors for new providers and support monthly Automated Data Processing Application Coordinators (ADPACs) education training, others reported that they utilize what is available on the web as time allows. This question did not specifically include informatics training for non-informatics staff, such as staff training on how to use CPRS. However, some respondents wrote in these trainings in their free-text responses.[5]

[4] Trainings reported in free-text comments. See *Facility Informatics Training* in Appendix B.
[5] See *Facility Informatics Training* in Appendix B.

What methods do you use to train new staff at your facility? (Select all that apply)	Percentage
Read VA Software Document Library User and Technical Manuals	74%
Network with peers (e.g., via email, listservs, SharePoint sites), to gather information or gain knowledge	73%
National HIS/CAC online training courses	73%
Course offered through the VA TMS (e.g. The Health Informatics Lecture Series 301)	68%
Attend VA Webinars, LIVE Meetings, Teleconferences, etc.	54%
Assign a local or VISN mentor	46%
Web searches	35%
Assign a local or VISN preceptor	32%
Attend FHIC Symposia	26%
Read books and periodicals on a regular monthly basis	23%
Attend Non-VA Webinars, LIVE Meetings, Teleconferences, etc.	22%
Attend non-VA conferences or courses (e.g. AMIA, AHIMA, HIMSS, SINI, WINI, NI Bootcamp)	21%
Other	12%
Not applicable, we have not needed to train new staff	2%
Total number of responses to this question	**94**

TABLE 5: FACILITY TRAINING METHODS AS REPORTED BY FACILITY LEADS

5.1.1.1 Training amidst EHRM Preparation

Facilities on the West Coast where Cerner Millennium EHR Deployment was scheduled to begin in the Spring of FY20 highlighted novel issues that have risen amidst preparation and training for the EHRM effort. Many of the informaticists in these facilities have had to pivot to acquire training and skills for the Cerner EHR which has left little room for CPRS/VistA training:

"*I am detailed as our EHRM Coordinator, reducing my time spent on traditional CAC duties at this time*." – Clinical Applications Coordinator

"*I am currently at less than 25% on all CAC functions (less than 10% of my time is CAC related, though it is all EHR related). Our facility had 3 CACs. When the first of us was detailed to OEHRM, we had a service line CAC transferred into our department. Currently, we have 4 CACs, but 3 are detailed full-time to OEHRM*." – EHRM Change Coordinator/RN

"*We are spread very thin… [and with] CACs having to stay on top of Cerner implementation news, it's difficult to keep up with core CPRS/VistA support/training due to so many additional duties and projects.*" – Facility CHIO

"We are spread very thin… [and with] CACs having to stay on top of Cerner implementation news, it's difficult to keep up with core CPRS/VistA support/training due to so many additional duties and projects."

– Facility CHIO

These facilities reported that "it is difficult to support both systems simultaneously." Informaticists expressed the need for a national plan that details support for both CPRS/VistA and Cerner before and during deployment, especially for facilities in Phases 1 and 2 of Cerner Millennium deployment. Ideally this plan would streamline training for both EHR systems and ease the pressure on CACs and other informaticists.

5.1.1.2 Training: Individual Perspectives

> **"I love my job and the opportunities to make a difference but at the same time am (sic) frustrated with the lack of organized training… After a little more than 5 years I am finally beginning to put the puzzle together and the lightbulbs are going off."**
>
> – Clinical Applications Coordinator

Notwithstanding the various training methods reported by facility leads, many informaticists individually reported that most of their training happens on the job, and that there is typically no formal training period for new hires. Data on CAC/HIS specifically showed that many of these informaticists receive the bulk of their training on the job.

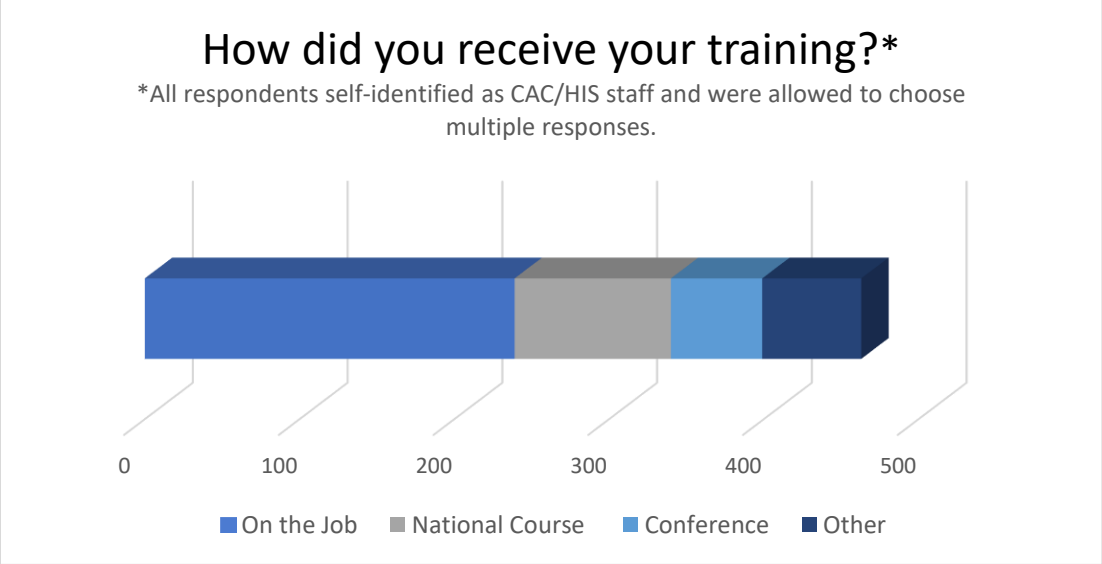


FIGURE 5: SELF-REPORTED TRAINING RECEIVED BY CAC/HIS STAFF

Write-in responses also indicated the perception that there is no formal training for ADPACs.[6] One respondent who self-identified as a Laboratory Information Manager (LIM)/ADPAC stated that they have been in that role for 20 years and spend "a lot of time training and mentoring new LIMs" due to the lack of training. Another informaticist indicated that "some sort of…adequate formal training…is constantly requested" from national groups in messages to leadership, but however, this is still not available.

[6] There is no current standard meaning for the "ADPAC" term in the field, and it is used in different ways to signify various job roles and categories of informaticists. See more on "ADPAC" in the VHA Directive 1181 which detailed changes for the Program Application Specialist (PAS) role.

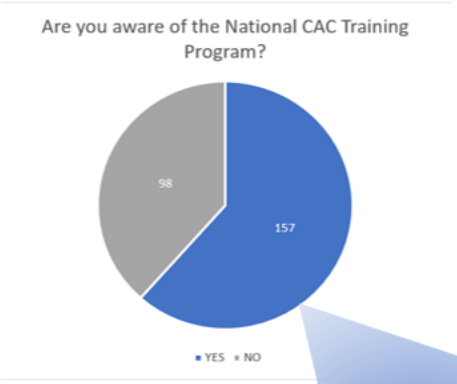
> "*There should be a formal education and training requirement for ADPAC positions. An ADPAC was recently hired for a major clinical service in a busy medical center with no formal training or experience in performing ADPAC duties for that clinical VISTA/PACS package.*"
>
> – Radiology Informaticist

Responses also indicate that promotions are not always accompanied by training, even though they always come with new and increased responsibilities. One respondent who was promoted to Anesthesia Record Keeper (ARK) Coordinator reported that they were not trained for the new role. Another lamented that they were "thrown into" their ADPAC position and had only one week of training with an informaticist who came from another facility. They added that aside from that week, their training involved "calling other sources in the field." This information reinforces the numbers reported by Facility Leads who shared that 69% of training is through peer-to-peer communications. This ADPAC expressed that the importance of "training needs to [be] emphasized to...directors who control the hiring process." Overall, many respondents hoped that the data gathered in this assessment can be used to help provide more standardized and frequent formal trainings.

5.1.1.3 CAC National Training Course

Respondents who identified as CAC/HIS staff were asked a series of questions about the National CAC Training Program, one of which was "Are you aware of the National CAC Training Program?"[7]. The majority of respondents indicated that they were aware of the program. Those who responded "Yes" were asked to indicate the number of courses they had completed as part of the program.

[7] There was a flaw in the structure of this question whereby people who were aware of the program but had not completed any modules were not provided an "N/A" option for the follow-up question. This may affect some of the data presented. See section on "Limitations" for further details.



Courses Offered	Course Completion Rate
Course 1 - Becoming an Effective CPRS Trainer	87.9%
Course 2 - Authorization Subscription Utility/Text Integration Utility (ASU/TIU)	66.9%
Course 3 - Orders and Order Menu Management	64.3%
Course 4 - Consult/ Request Tracking and Clinical Procedures	55.4%
Course 5 - Patient Selection & Patient List Management	48.4%
Course 6 - Notifications	49.0%
Course 7 - Advanced Text Integration Utility (TIU) Part 1	40.1%
Course 8 - Advanced Text Integration Utility (TIU) Part 2	37.6%
Course 9 - Advanced Orders Part 1	30.6%
Course 10 - Advanced Orders Part 2	26.8%
Course 11 - Advanced Orders Part 3	26.1%
Course 12 - Reports Tab (Health Summary)	26.8%
Course 13 - Problem List	28.0%
Course 14 - Cover Sheet	28.7%
Course 15 - CPRS Parameters	27.4%

*Course Completion Rate out of 157 total responses.

FIGURE 6: CAC NATIONAL TRAINING PROGRAM - COURSE COMPLETION RATE

Overall, 11% of CACs who responded reported to have completed all 15 training courses, and 50% have completed at least one but not all courses. Meanwhile, 38% reported that they have not completed any of the courses. Respondents who have completed the courses were also asked whether the course completion competency spreadsheet was completed with their supervisor.

Completed All 15 Courses	11.3% (29)
Completed 1 – 14 Courses	50% (128)
No Courses Completed	38.7% (99)

TABLE 6: CAC NATIONAL TRAINING PROGRAM - OVERALL COURSE COMPLETION RATE

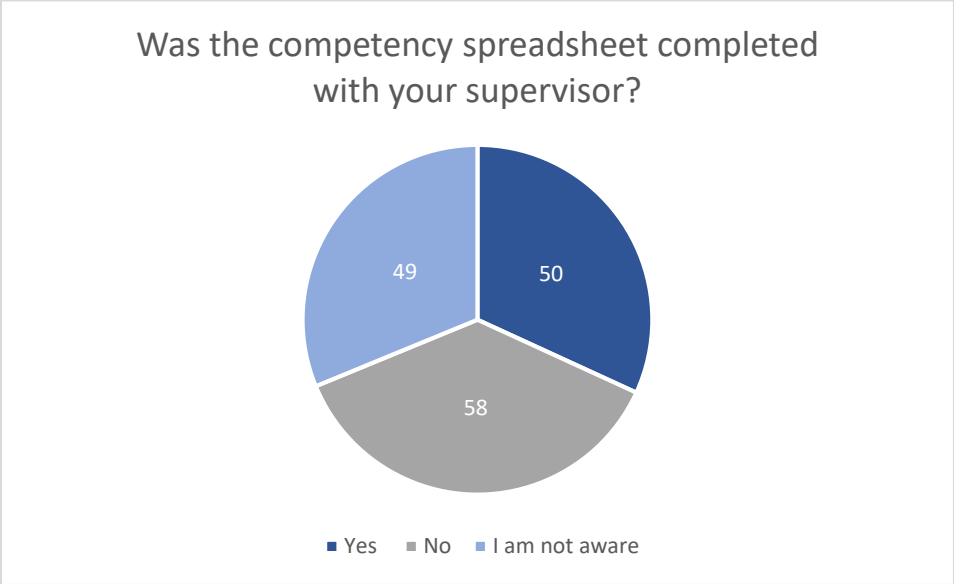


FIGURE 7: CAC NATIONAL TRAINING: COMPETENCY SPREADSHEET

The key takeaways from responses on the National CAC Training Program are summarized below:

- The information presented in the training course is very good and applicable, according to some free-text comments.
- About 50% of CAC respondents have completed at least one course.
- Approximately 11% of CAC respondents have completed all 15 courses.
- The training courses do not cover some important aspects of the job such as Clinical Reminders or Reminder Dialog templates.
- A significant number of CAC/HIS staff who responded to the assessment stated that they were not aware of the National CAC Training program (38%).
- Some of those who are aware of the program stated that they had not had the chance to complete the training modules due to shortage in staff.
- Some CACs are service line ADPACs brought in to support facilities but do not have access to the national training program.

5.1.1.4 Facility Mitigations for Training

Some respondents shared information on programs and efforts that have been implemented at their facilities and VISN Offices to fill in the training gaps:

The Facility Lead for VISN 15 shared that the VISN currently holds a yearly training for all CAC/HIS staff.

Some informaticists working at the VISN level conduct training via Skype to support facility staff

More experienced informaticists provide training for new hires, such as, CACs providing CPRS training for new employees and ADPACs mentoring less experienced staff.

5.1.2 Retirement

Considering the projected 10-year Cerner Millennium deployment schedule, this assessment was also concerned with the future state of informatics resources in addition to the current state. Data on staff who are eligible for retirement within the deployment period were collected to provide more insight into resource levels. Facility leads were asked to provide information on how many of their current FTEE informatics staff are eligible to retire in the next 5 years[8], as well as whether their facility has a formal succession plan for retirement.

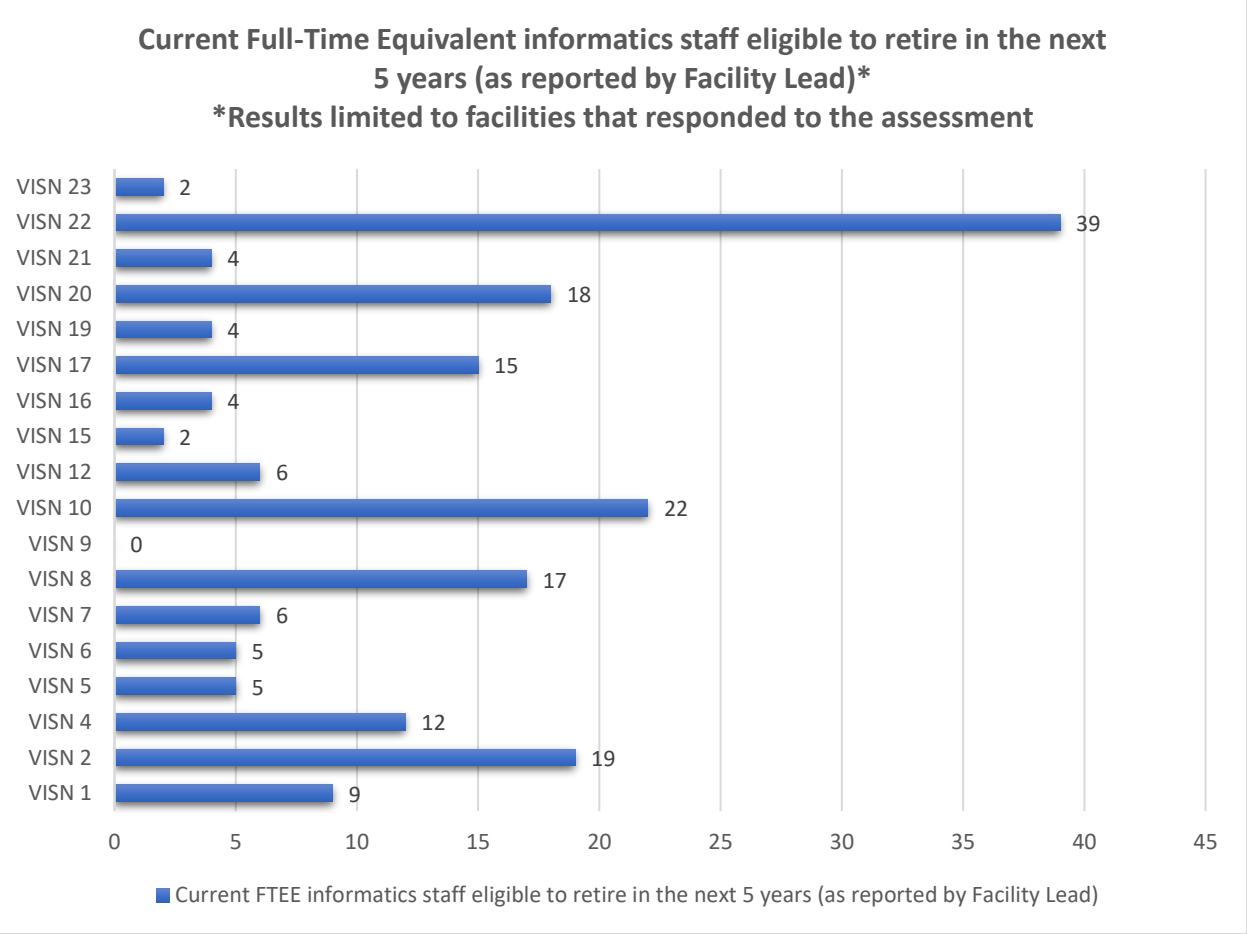


FIGURE 8: RETIREMENT ELIGIBILITY IN THE NEXT 5 YEARS AS REPORTED BY FACILITY LEADS

[8] Question: "How many of your current FTEE informatics staff are eligible to retire in the next 5 years?"

Seven VISNs reported that more than 10 of their informatics staff are eligible to retire in the next five (5) years, with VISN 22 reporting the highest number of soon-to-be retirees at 39.

When facility CHIOs were asked whether they have a succession plan for retirement, 76% of them answered “No” or “Unsure”. Some of the free-text comments suggested that succession planning may be difficult due to the lack of information concerning the future of informatics roles during and post-EHRM.

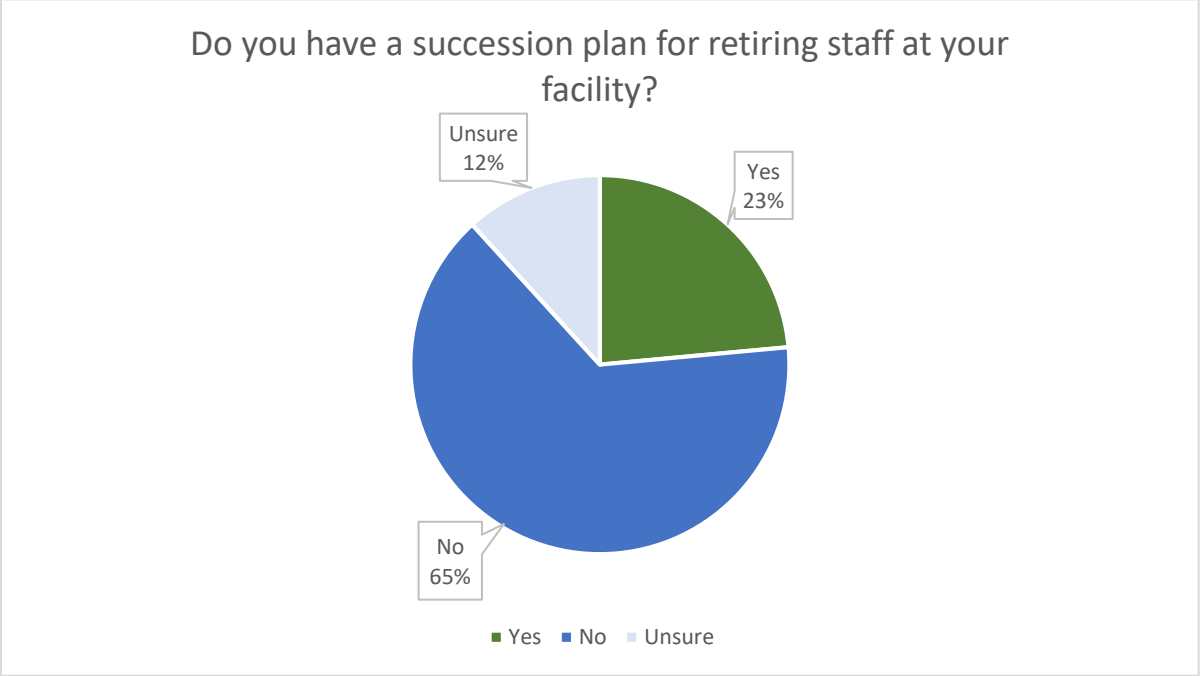


FIGURE 9: SUCCESSION PLAN FOR RETIREMENT

One respondent commented that based on their site visits to 11 facilities in VISN 10, 16 CACs are due to retire within five (5) years from now. However, they noted that some of the sites, despite these high numbers, do not support the Technical Career Field (TCF) program[9] for succession planning. Other comments from individual informaticists indicated that some staff were retiring in as short as three (3) to eight (8) weeks from the assessment period.

5.1.3 Collateral Duties and Overlapping Roles

Another major theme consistent throughout the qualitative responses was the strain of collateral duties on many informaticists. Many respondents reported that unclear job scope and lack of standardization in informatics roles meant that they spent part of their time doing work

[9] “Technical Career Field Program.” VA Careers. https://www.vacareers.va.gov/Careers/TechnicalField/. One track in the TCF program enables sites to bring on HIS trainees at no cost for salary or expenses to the facility. The facility provides the training.

that they felt fall outside of their job descriptions. For example, a respondent who self-identified as a Vendor Device and Software Specialist reported that they perform ADPAC-specific duties as collateral duties since their facility does not have a dedicated clinical ADPAC. Respondents reported having to take on duties where they had little knowledge, duties that took time away from their main roles, or at times a combination of both.

As detailed in the Training section (5.1.1) above, some staff reported that they serve as trainers and mentors for new and less experienced informaticists and spend as much time as they can sharing their knowledge with mentees. One respondent specified that CACs provide all CPRS training for new employees at their facility, including ensuring that new staff members have access to resources they need to do their jobs. Additionally, in facilities where no CHIO is present, CAC/HIS staff or other senior informaticists in other departments have been known to double-up their responsibilities and assume the role of Acting Chief Health Informatics Officer. While these mentorships contribute to the advancement of staff across the Enterprise, these duties can prove cumbersome when performed in conjunction with other full-time responsibilities.

Additionally, many respondents wrote in several different job titles for the same position sometimes even within the same VISN, showing much variation between facilities. Some Facility Leads expressed that this lack of standardization in job titles and the prevalence of performing collateral duties made it difficult to capture their informaticists under specific duties or titles when responding to the assessment.

The analysis also captured the concern regarding the workload of informatics staff at facilities transitioning to Cerner in the coming months. Staff are concerned that the addition of Electronic Health Record Management duties to their daily job tasks will not allow them enough time to do their previously-outlined duties. One respondent stated that all the sites in their VISN “are currently working at various stages of the EHRM project…at high intensity” to prepare for their ‘Go-Live’ scheduled for this year.[10] Another respondent commented that though their facility currently has four CACs, three of them have been detailed full-time to the Office of the EHR Modernization (OEHRM). Responses indicate that supporting both systems simultaneously is difficult and puts pressure on informatics departments to overtask their staff.

[10] “VA EHR Modernization – Initial Operating Capability. 2019. https://www.ehrm.va.gov/about/ioc

5.1.4 Understaffing

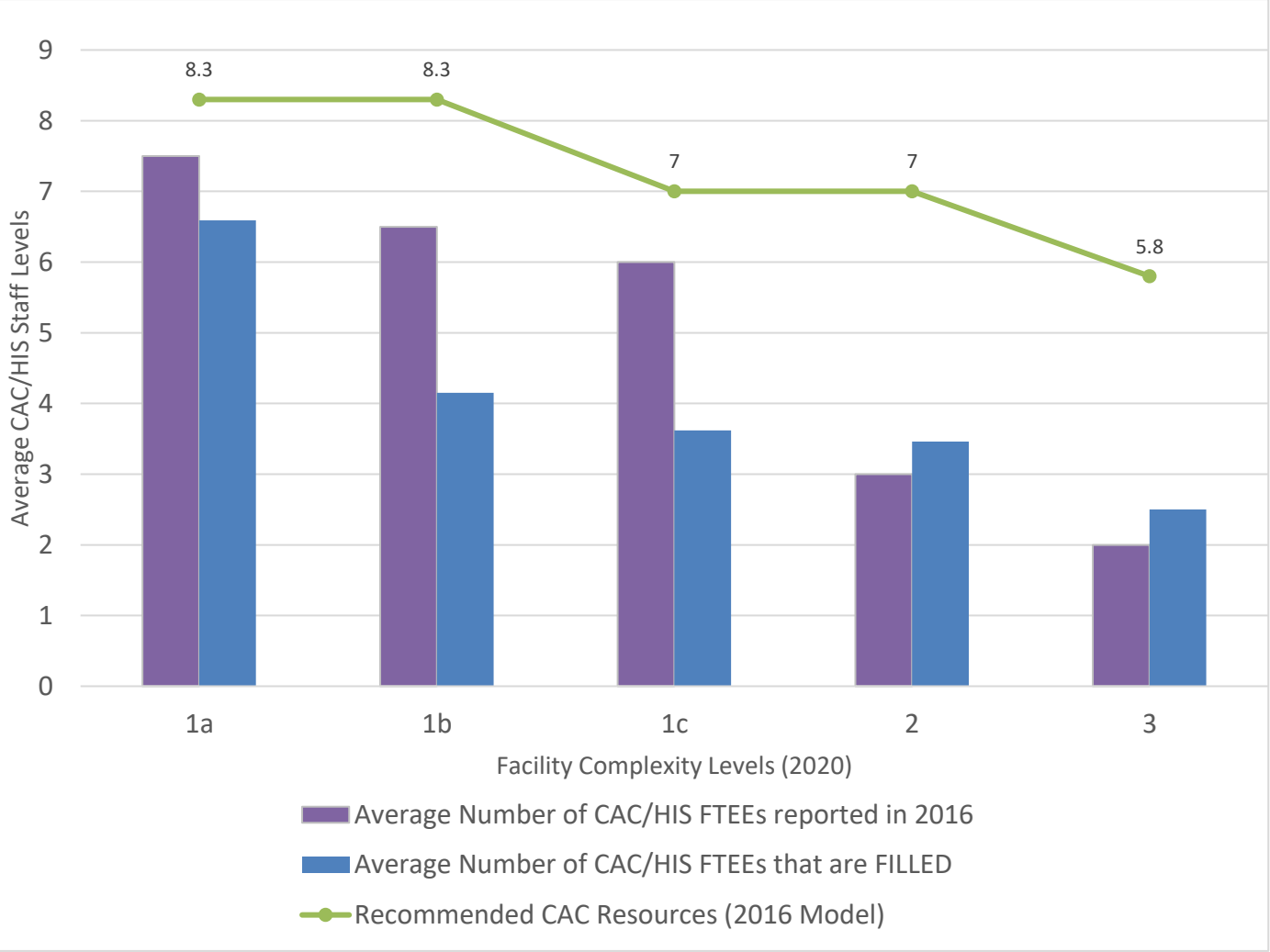
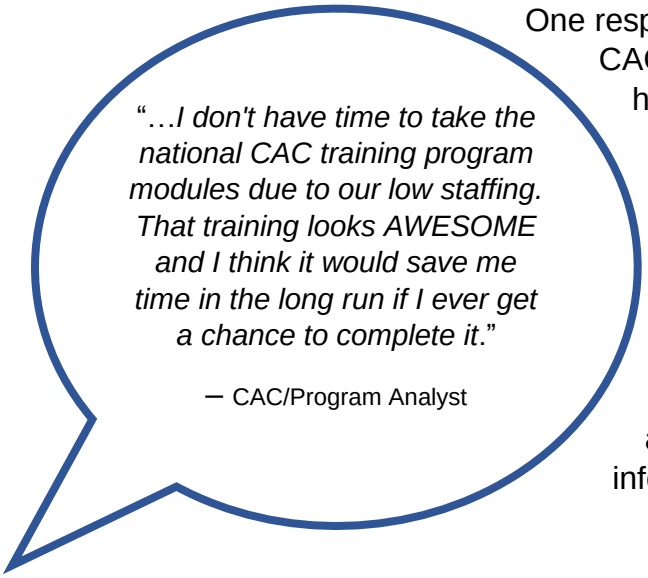


FIGURE 10: FY20 CAC RESOURCE LEVELS VS 2016 REPORTED LEVELS

Data from both the 2016 and 2020 assessments indicate that many sites' CAC/HIS staffing levels are well below the recommended levels in the sustainment model. Anecdotally, similar concerns were reported in the write-in responses concerning non-CAC/HIS informatics resources in the Enterprise. Moreover, as the number of informaticists eligible to retire during the deployment period increases, the need to gain and retain more staff also increases.



One respondent commented that they were waiting for new CACs to be hired or someone to fill in so they can have days off for training. Another mentioned that "their VISN only has two FTEE in total to support all informatics programs with one CHIO supporting VHA EHRM and one Health Systems Specialist (HSS) dedicated to doing all the rest."

Other noteworthy gaps in staffing included comments from respondents reporting issues such as having three CACs serve the needs of about 1700 employees and even lacking a full informatics department.

As previously stated, the 2016 IOC Master Readiness Assessment concluded that many facilities were operating under the recommended levels of CAC staffing. The data collected in the FY20 Assessment also confirmed that facilities are still operating under the recommended levels of staffing. Additionally, in comparison with CAC resource data collected in 2016, CAC numbers reported by more complex facilities have decreased.

Average CAC staffing levels reported in the FY20 Assessment were lower than numbers reported in 2016 for more complex facilities. Averages from both 2016 and 2019 are also lower than recommended levels of CAC/HIS staffing per the 2016 analysis.

5.2 Informaticist Skills and Experience

5.2.1 Skill Level

To determine the levels of skill and types of experiences available in the field, facility leads were asked to provide numbers on some of the applications that their staff support. Individual informaticists were also asked to self-report their proficiency experience with performing certain tasks (example: Figure 11). Staff identifying as CACs were asked a slightly different set of questions from staff identifying as non-CAC "Other Informaticists."

	I have not had education, training or experience in performing this task.	I have had education or training in performing the task, but I have not yet performed it on the job.	I have had education or training in performing this task on the job, and I have some experience performing it on the job (with some supervision).	I have performed this task as a regular part of a job. I have performed it independently and normally without review by a supervisor or senior employee.	I am considered an expert in performing this task. I have supervised performance of this task or I am normally the person who is consulted by other workers to assist them in doing this task because of my expertise.	This task is not relevant to my job **(N/A)**
Building/Developing Documentation Templates	❍	❍	❍	❍	❍	❍

FIGURE 11: SKILLS AND EXPERIENCE MATRIX STRUCTURE

The matrix above represents the format by which informaticists were asked to provide their experience and expertise in performing various clinical tasks. On a high-level, most CACs reported expertise in tasks related to CPRS manipulation and configurations, while most non-CAC informaticists responded that they had no training or experience or that these tasks were not relevant to their jobs – to no surprise. Comments received indicated that all the tasks listed were too limited and represented primary CAC/HIS tasks. This is an area for improvement in the future. See Appendix B for full matrix responses.

Facility leads were also asked to report what other non-CPRS applications their staff support and how many FTEE at their staff support each respective facility. The table below shows the average FTEE allocated to support various applications as reported by facility leads, classified by facility complexity to account for the size of these facilities and the different levels of resources needed.

Please indicate the estimated FTEE allocated to support the following:

Application	1a	1b	1c	2	3
Clinical Information Systems/Anesthesia Record Keeper (CIS/ARK)	2.17	0.64	2.79	0.63	1.68
Dragon	1.74	1.19	1.13	0.83	0.64
Analytics other than FileMan reports (e.g.; SQL queries)	2.14	0.66	1.58	1.25	0.70
Other Commercial Off the Shelf (COTS) applications (Please specify)	0.87	0.39	0.72	0.59	0.57
Other Clinical Programs and Service-Level Application Support (e.g.; Surgery, Lab, Radiology, GPM) (Please specify)	0.76	0.00	0.44	0.00	0.33
Other (Please specify)	0.82	0.81	0.96	0.53	0.83

FIGURE 12: AVERAGE FTEE SUPPORTING CLINICAL APPLICATIONS (ESTIMATE)

5.2.2 VISN-Level Informaticist Activities

Informaticists were also asked to indicate whether they have been tasked to perform duties at the VISN-level. Only 45 out of 464 reported that they work at the VISN-Level indicating that the majority of respondents are facility-based, while 103 out of 464 responding “Yes” to having been tasked to support work at the VISN-level.

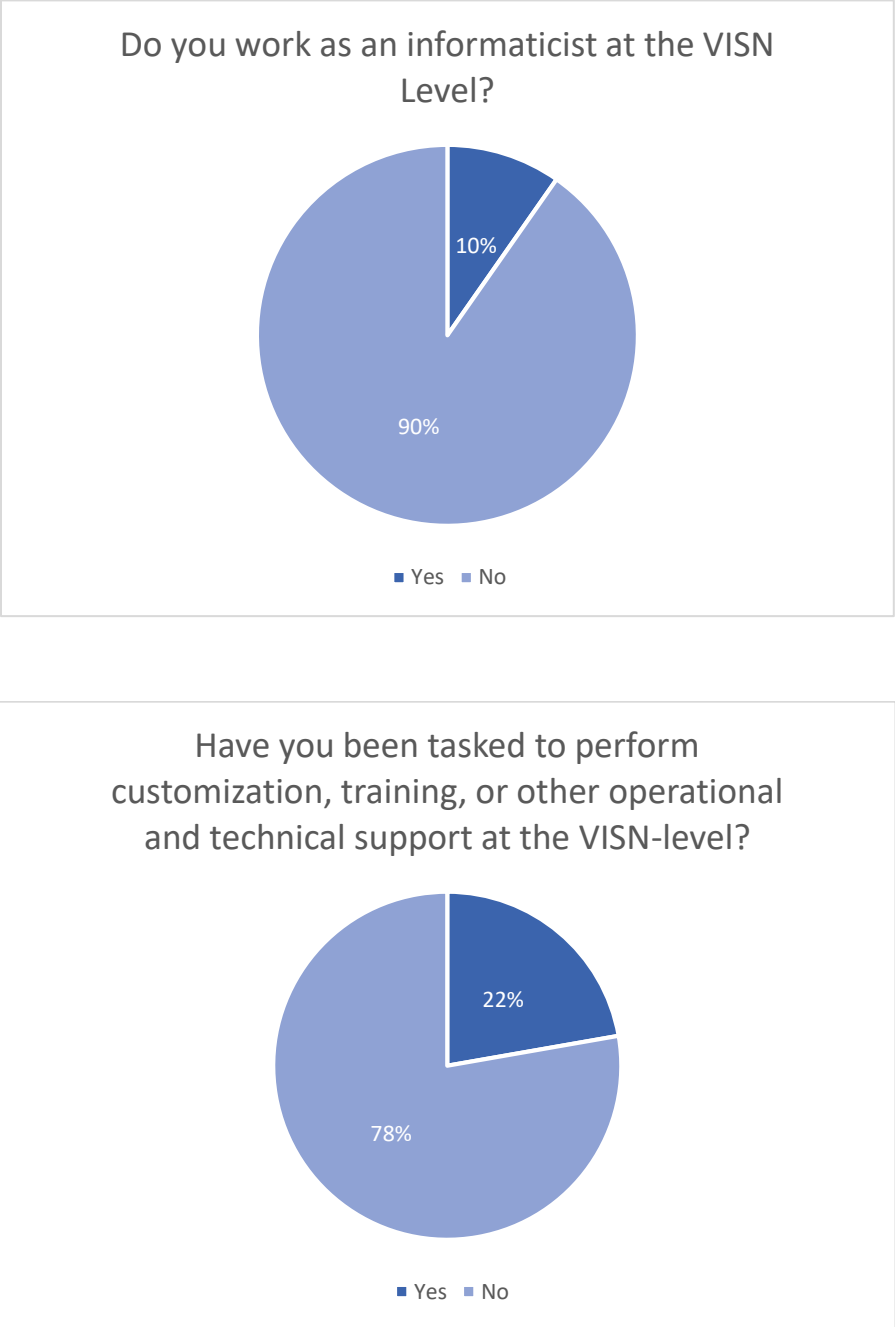


FIGURE 13: VISN LEVEL DUTIES

5.2.3 Certifications

Respondents who identified as non-CAC informaticists ("Other Informaticists") were asked to indicate which certifications and certificates they held, if any, and were provided the options in Figure 13. They were also provided the opportunity to list any additional certifications in a free-text box and responses are summarized below in Figure 14.

Certification (Table Provided in Questionnaire)	Responses
NONE: I do not currently hold a certificate or credential in Health Informatics	325
Certified Associate in Healthcare Information & Management Systems **(CAHIMS)**	2
Certified Professional in Healthcare Information and Management Systems **(CPHIMS)**	0
Certified Coding Associate **(CCA)**	0
Certified Coding Specialist **(CCS)**	3
Certified Coding Specialist – Physician-based **(CCS-P)**	0
Certified Documentation Improvement Practitioner **(CDIP)**	0
Certified Health Data Analyst **(CHDA)**	8
Certified in Healthcare Privacy and Security **(CHPS)**	0
Registered Health Information Administrator **(RHIA)**	8
Registered Health Information Technician **(RHIT)**	6
Certified Healthcare CIO **(CHCIO)**	0
Certified Biomedical Equipment Technician **(CBET)**	1
Certified Laboratory Equipment Specialist **(CLES)**	4
Certified Radiology Equipment Specialist **(CRES)**	0
Certified Healthcare Enterprise Architect **(CHEA)**	0
Certified PACS Associate **(CPAS)**	4
Certified PACS Interface Analyst **(CPIA)**	0
Certified PACS System Analyst **(CPSA)**	0
Certified Associate in Project Management **(CAPM)**	1
PMI Agile Certified Practitioner **(PMI-ACP)** ®	0
PMI Risk Management Professional **(PMI-RMP)**®	1

FIGURE 14: CERTIFICATIONS

Certification (Free-Text Responses)	Frequency
AMIA 10x10	9
ANCC ANA Nursing Informatics	23
ASCP Laboratory Informatics Qualification	1
BCPS (Board Certified Pharmacotherapy Specialist)	3
Board Certified Registered Nurse (RN-BC)	6
Certified Clinical Engineer (CCE)	3
Certified Healthcare Technology Specialist-Clinician/Practitioner Consultant (CHTS-CP)	1
Certified Imaging Informatics Professional (CIIP)	6
Certified Medical Informaticist (MD)	3
Certified Professional Coder (CPC)	3
Clinical Laboratory Science, Certified (Informatics)	4
CPHQ, Certified Professional in Healthcare Quality	2
Decision Support System (DSS)	1
FAMIA	2
Health Informatics Certificate	6
Healthcare Analytics Certificate	5
Healthcare Technology Management	2
Lean Six Sigma	4
Managerial Cost Accounting (MCA)	2
Master of Public Health, MPH	1
Medical Technologist	7
MS, Medical Informatics	4
MSN, Health Informatics	7
PMI PMP	1
Registered Radiologic Technologist (ARRT)	6

FIGURE 15: CERTIFICATIONS - FREE-TEXT RESPONSES

6 Opportunities for Response to the Field

The four themes highlighted above identify specific challenges facing the current informatics workforce. These shortfalls present opportunities that would facilitate the delivery of a single standard of care to VHA beneficiaries.

6.1 Training

According to responses, some measures that could help mitigate the lack of adequate, formal, and standardized training for informaticists include:

- ✓ Informatics skills workshops for baseline, intermediate, and advanced training
- ✓ More in-person training opportunities
- ✓ Mandate CAC/HIS staff complete the National Training Program – local facilities should accommodate time and coverage for their CACs to attend
- ✓ Corporate Data Warehouse (CDW) training for informaticists (working at the VISN level especially)
- ✓ Essential programs and language trainings (e.g., SQL, Excel)
- ✓ Cerner software and data analytics training

The CIDMO strategy for health system modernization requires new and ongoing CPRS/VistA expertise to ensure effective maintenance of legacy systems, particularly at facilities transitioning in the latter phases of Cerner deployment. Additionally, facility staff believe they

will be better equipped to deliver a single standard of care throughout modernization if they have a baseline introduction to Cerner software.

6.2 Retirement

Facilities could benefit from formal, standardized guidelines for retiring staff with options, including but not limited to:

- ✓ Phased retirement plans
- ✓ Enterprise-wide succession strategies, including strengthening facilities' relationships and coordination with the VHA Succession Workforce Plan
- ✓ Retaining more experienced informaticists as mentors and VISN-wide trainers

6.3 Collateral Duties and Overlapping Roles

The proposed CIDMO Career Pathways[11] for EHRM Preparation is crucial to clearly define and standardize roles and duties for informaticists across the Enterprise. This will ensure adequate training, expertise, and guidance for staff who will support various pieces of the puzzle – including legacy systems, Initial Operating Capability (IOC) testing, and the Cerner EHR following full deployment. Additionally, it will ease the burden of informaticists who currently manage their regular duties in addition to the competing needs of other programs and processes.

The broad distribution of the assessment put CIDMO FIS in contact with hundreds more informaticists than were previously connected to the program office. This was evidenced by the 1000+ attendees to the biweekly FHIC Showcase meetings (previously attended by an estimated 300 enterprise informaticists) after the invitation was distributed to FIRA respondents. Consistent communication with the field regarding the proposed structural organization of informatics roles will decrease confusion and inform field staff of anticipated future plans for standardization.

6.4 Understaffing

VA Office of Information and Technology (OIT) support will be critical during IOC testing to supplement legacy test site staff. Additionally, CACs from sites already transitioned to Cerner, with experience in both CPRS and Cerner configuration, are the best candidates to support informaticists at legacy sites scheduled for later phases of Cerner deployment. It is also in the best interest of the enterprise to prioritize retaining current informaticists with multiple years of experience.

[11] Field Health Informatics Community (FHIC) Showcase: Introduction to CIDMO. January 24, 2020.

7 Summary of Findings

The overarching themes in responses were a lack of standardization in roles and titles across the VHA and significant CAC/HIS understaffing. Without a clear, accepted definition of an informatics role to monitor and manage the population, it will continue to be difficult to assess the state of the informatics workforce. Responses also indicated there is no formal, uniformly-applied method to train and equip CACs, ADPACs, and other informatics staff. The findings indicate that there is room and opportunity for new, innovative methods to support field informatics staff.

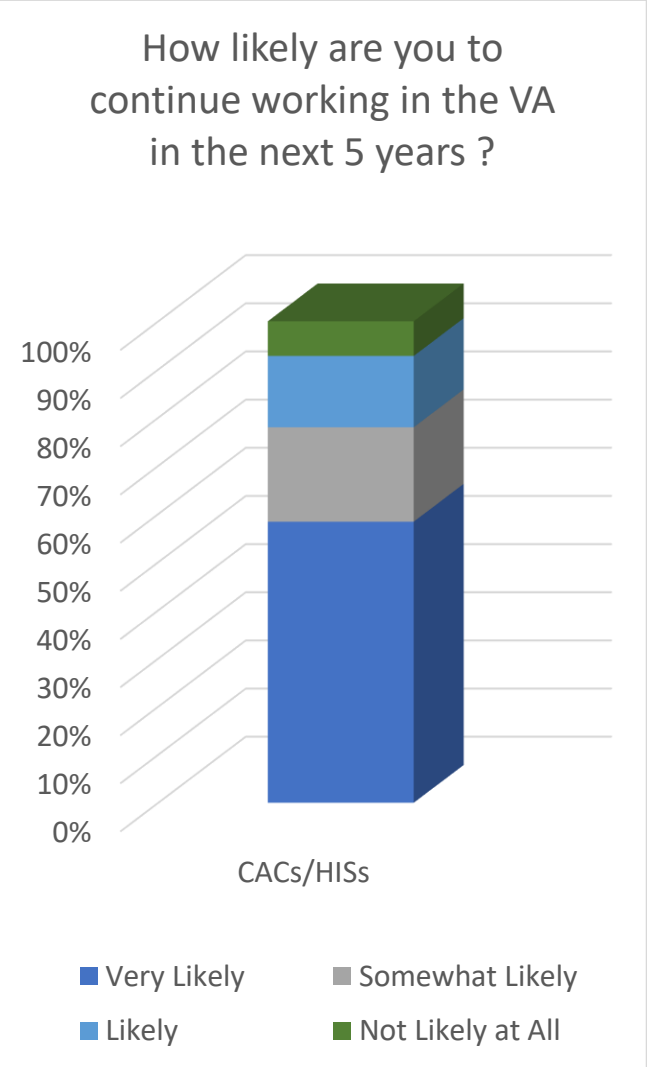


FIGURE 16: CAC/HIS LIKELIHOOD TO CONTINUE WORKING IN THE VA IN 5 YEARS

When asked whether they were likely to remain working in the VA in the next 5 years, a large majority of informaticists responded in the affirmative. Of that number, more than 50% said they are very likely to continue working in the VA in the next 5 years (See Figure 16).

One respondent noted in the free-text comments that they answered “Not Likely at All” but that was not by choice. They stated: “I’d do this forever if I could, but in the new EHRM system, there will no longer be CACs.” These findings prove there is an exigent need for CIDMO Leadership to develop and organize new roles, prepare incumbent staff to perform them, continue to provide information about what the new structure will look like. Many informatics staff are willing to continue to support the VHA and to provide care for Veterans, their families, and their caregivers.

8 Potential Limitations

Certain factors limited the thoroughness of the assessment and analysis. Many of these were structural or external factors outside of the Working Group's control. However, one factor that can be controlled in future iterations of this project pertains to question development. In this assessment, some questions were reported to be ambiguous. This was mitigated with the three information sessions to allow informaticists and their leads to ask questions and gain clarification regarding the assessment questionnaire.

One question could not be remedied after the assessment was distributed. Question 5 to CAC/HIS asked "Are you aware of the National CAC Training Program?" with option "Yes" requiring respondents to indicate how many of the 15 courses they have completed in a follow-up question. The follow-up question did not have an N/A option to account for staff who were simply aware of the program but had not completed any modules. We speculate that some respondents may have changed their response to "*No*" or selected that they had completed Course 1 upon discovering that they could not continue the assessment otherwise.

Other potential limitations are discussed in the subsequent sections.

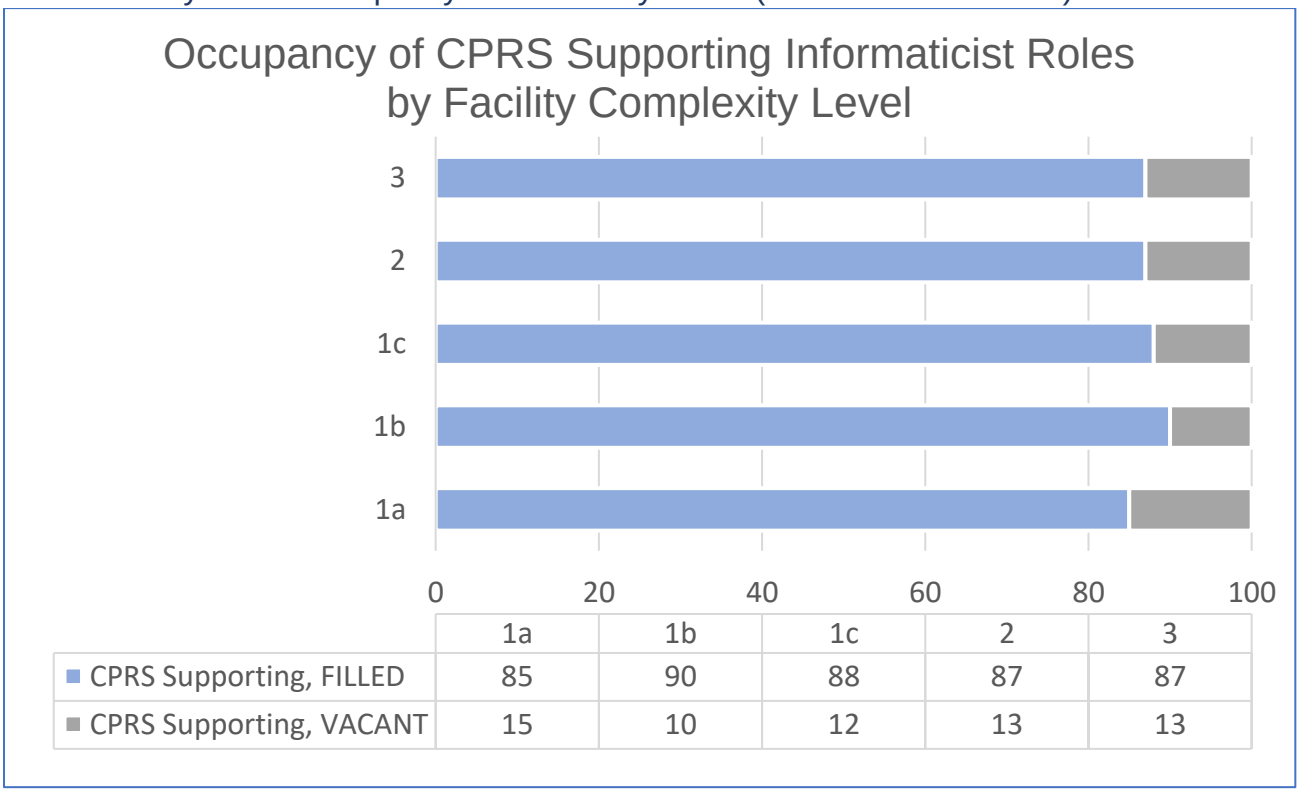
8.1 Restricted Representation of the Informaticist Skillset

This assessment of the VHA informatics workforce sought to identify personnel with the knowledge and skill to manage CPRS and its foundational VistA software applications and eventually support a facility transition to the Cerner environment. Because CACs and HISs are one of the largest segments of the VHA workforce with this skillset, the core set of specific job tasks for supporting CPRS was queried in the questionnaire. However, the Working Group was conscious this limitation would fail to fully capture the nuanced roles, specific job tasks, widespread responsibilities, and significant capabilities of other informaticists working in VHA field facilities. It was difficult to create a collectively exhaustive job role questionnaire because of the lack of detailed and standardized position descriptions. As anticipated, respondents reported that the structure of this assessment failed to target respective duties and skillsets of various informaticists.

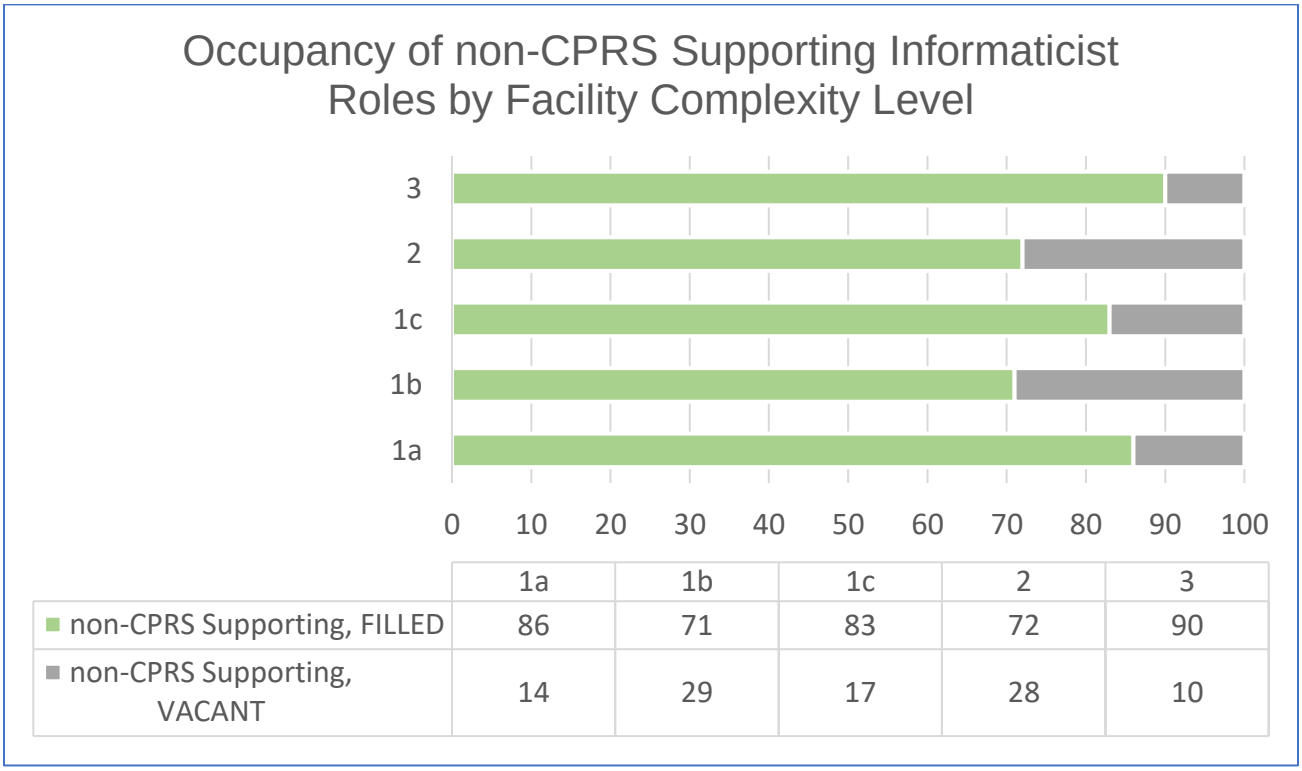
8.2 Skewed Representation of Informatics Staff at the Facility Level

Many VHA treatment facility leads reported most of their individual staff perform a combination of duties that are designated for CAC/HIS, duties that support CPRS, and duties that support non-CPRS applications. Unable to report these individuals as FTEEs as defined by the questionnaire, these facility leads admitted to submitting figures that corresponded to the skillsets at their disposal rather than by headcount. This may account for some disparities in numbers reported versus staff present at the facility.

8.2.1 Facility FTEE Occupancy and Vacancy Rates (CPRS vs Non-CPRS)



	1a	1b	1c	2	3
CPRS Supporting, FILLED	85	90	88	87	87
CPRS Supporting, VACANT	15	10	12	13	13



	1a	1b	1c	2	3
non-CPRS Supporting, FILLED	86	71	83	72	90
non-CPRS Supporting, VACANT	14	29	17	28	10

Given the question's reported ambiguity, no concrete inferences can be drawn from the data collected on CPRS and non-CPRS supporting staff. Additionally, unlike CAC staffing levels, there is no recommended model for staffing non-CPRS informaticists.

Nevertheless, it is worth noting that some facilities still reported vacancies in their informatics departments. One facility POC reported that they have a CAC position that has been vacant for one year and an HIS position vacant for 3 months. One informaticist indicated that a facility on the West Coast has no informatics department, yet recently graduated nurse informaticists are simply waiting for an official role to open for applications. Another respondent reported that the their VAMC does not have an official informatics service at all.

While the data reported above may not present accurate headcounts, the underlining takeaway is that field informatics staff will be critical during the transition to EHRM and in maintaining legacy systems and so vacancies can be justifiably filled.

8.3 Timing of the Assessment

Distributing this assessment in December, during the holiday season, may have compromised the rate of response from the field, when staff are often utilizing personal time off.

9 Next Steps

The Working Group will present these findings to CIDMO leadership and subsequently share the results of the assessment with informaticists in the field.

10 Conclusion

This assessment was designed to determine the as-is state of field staffing levels for key CPRS support personnel, specifically VISN and Field level CHIOs and CAC/HIS and other key informatics staff who support non-CPRS clinical applications. The data will be used to inform Field Informatics Stewardship programs and activities including support for the deployment and implementation of new and existing clinical applications including Cerner Millennium.

The assessment was also designed as a platform for clinical health informaticists to share their thoughts, concerns, and suggestions with VHA leadership. Their responses provided rich and valuable qualitative data that shed light on both the current and anticipated future state of VA Medical Centers nationwide.

Overall, the FY20 results showed the need for standardization in many aspects of clinical informatics, especially regarding roles and duties. As one respondent commented, "if you meet one pharmacy ADPAC, you've met one pharmacy ADPAC." The data reinforced the need for uniform role specifications as proposed in the Informatics Workforce Stewardship's CIDMO Career Pathways plan. Uniform role specifications would also eliminate informaticists' burden of performing collateral duties which, as indicated by many respondents, takes time away from their major duties. Respondents also shared many requests for formal, initial and continued, training for their respective roles. There is considerable room for improvement in enhancing training opportunities to develop VHA informatics staff and to prepare them for the EHRM program.

When compared with the results of the 2016 Readiness Assessment, the data from the FY20 FIRA also showed that CAC resource levels have, on average, further decreased. The low CAC resource levels is, unfortunately, a likely microcosm of total informatics resources for facilities across the VHA who anecdotally report being understaffed in this assessment. Additionally, this decrease was more significant for facilities with a higher complexity level who serve a larger proportion of Veterans, often located in highly populated areas. There is much concern in the field about these staffing levels especially in anticipation of Cerner EHRM. There is a need for education on how informatics staff will be tasked to support with both legacy and Cerner systems as their facilities transition and beyond. Responses frequently reflected a perceived lack of information in the field regarding the future role of Health Informatics staff. One opportunity for the VHA is a formal, centralized channel of communication between leadership and field informaticists. This would promote circulation of crucial information and build a sense of community and trust amongst informatics departments across facilities.

CIDMO's mission to improve the lives of Veterans and health care staff with better information and solutions to enable better clinical decision making, and workflows can only be achieved if the informatics community works together and is adequately equipped to serve Veterans, their families, and caretakers. Standardizing training and careers in addition to clinical processes will ensure that informaticists in the VHA are reaching their full potential and providing health solutions focused on Veteran value. This will also allow the VHA to maintain a single standard of care across the enterprise during the projected 10-year installation schedule.

11 Appendices

11.1 Appendix A

	Name	Description	Document
1	MASTER Readiness Assessment Data – Working Version 2016 08 27	*This section contains the aggregated data from the 2016 Readiness Assessment*	MASTER_Readiness _Assessment - Work
2	2016 Readiness Assessment	*This section contains an explanation of the data contained in the MASTER Readiness Assessment worksheet*	Readiness_Assessm ent_ 2016-10-28.doc

11.2 Appendix B

	Name	Description	Document
1	Questionnaire – FY20 VHA Field Informatics Resource Assessment	*Comprehensive list of questions posed in the assessment*	Questionnaire - FY20 VHA Field Informatics
2	Raw Data: All Responses	*Document populated directly from survey responses (provided by Verint)*	RAW DATA - FY20 VHA Health Informati
3	FAQs – FY20 VHA Field Informatics Resource Assessment	*Frequently Asked Question guide accompanying survey information sent to field informaticists*	FAQs - FY20 VHA Field Informatics Resc
4	Informational Brief	*Overview of the assessment purpose sent to VISN CHIOs prior to assessment launch*	FIRA Informational Brief.pptx
5	Comments	*Free-text comments and questions by all respondents. Organized by role.*	Comments - FY20 FIRA Responses.pdf

6	Facility Informatics Trainings	*Free-text responses by Facility Leads regarding informatics trainings offered at the facility*	FY20 FIRA Responses - Informatics Training
7	Informaticists Skills and Experience Matrix	*Self-reported Skills and Experience by CAC and non-CAC informaticists*	FY20 FIRA Responses - Informaticist Skills a

12 Key Acronyms

Acronym	Definition
ADPAC	Automated Data Processing Application Coordinator
ARK	Anesthesia Record Keeper
AID	Applied Informatics Deployment
BCMA	Bar Code Medication Administration
CAC/HIS	Clinical Applications Coordinator/Health Information Specialist
CDW	Corporate Data Warehouse
CHIO	Chief Health Informatics Officer
CIDMO	VA Clinical Informatics and Data Management Office
CPRS	Computerized Patient Record System
EHR	Electronic Health Record
EHRM	Electronic Health Record Modernization
FIRA	Field Informatics Resource Assessment
FHIC	Field Health Informatics Council
FOC	Full Operating Capacity
FTEE	Full-Time Equivalent Employee
FY20	Fiscal Year 20
IOC	Initial Operating Capability
ICU	Intensive Care Unit
LIM	Laboratory Information Manager
OHI	Office of Health Informatics
OIT	Office of Information and Technology

POC	Person of Contact
TCF	Technical Career Field Program
VA	Department of Veterans Affairs
VHA	Veterans Health Administration
VISN	Veterans Integrated Service Network
VistA	Veterans Health Information Systems and Technology Architecture
VSSC	VHA Support Service Center