NASCIO 2020 State IT Recognition Award Nomination

Category: Information Communications Technology Innovations

Title: Electrifying HealthCare Communication in Corrections

State: Wisconsin

Sponsor: Cathy Jess, Warden (Deputy Secretary, and Secretary during the project)

Jim Greer, Retired (Health Services Director during the project)

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Project Initiation: 12/1/2016

Project End: 3/1/2019

Executive Summary

To improve healthcare related communication, the Wisconsin Department of Corrections (WIDOC) implemented an Electronic Medical Record (EMR) from Cerner Corp. and Dentrix from Henry Schein across 39 sites throughout the state. Specific solution areas included core/foundations, workflow for nursing, provider, dental, mental health, registration, scheduling, HIM/charting, laboratory, meds process, pharmacy, supply chain, and reporting. Also included data warehouse & regulatory, interfaces, testing coordination, roll-out, training, and related infrastructure.

After one of the fastest EMR implementation projects of this size (according to Cerner), WIDOC has improved healthcare communication to address continuity of care between providers and across time, manage the life-cycle of a pill (from diagnosis, order, pharmacy, shipping/distribution, and med delivery), and provide healthcare delivery insights to healthcare staff. As part of the project, bar code scanning and wireless laptops were deployed to eliminate hand written records, improve communication, and reduce medication issues in the pharmacy and also during med administration. Alerts provided guidance to healthcare providers. Lab and other integrations automated lab requests and automatically record results.

The EMR rollouts have been successful due to a high level of collaboration and communication across teams including healthcare and technology management and staff, security officers, facility training officers (FTO), electronic technicians (etechs), Department of Administration, Division of Enterprise Technology (DET) and Department of Health Services (DHS), Cerner, and others. The team also had strong support from the EMR Executive Team and Program Steering Council which provided direction and efficient/effective decision making.

To expedite the project, the DOC utilized a model experience from Cerner to define the initial set up, including 80 workflows, 90 roles, and hundreds of configuration settings. The DOC tailored the model experience for use in the Corrections industry and has made this available to other states and correctional facilities.

Our EMR implementation pilot project, working in conjunction with Cerner, lasted 12 months with seven locations going live at the end of that time. Next, WIDOC staggered implementations across the remaining 32 sites over the course of the subsequent 14 months. Sites were grouped by location across the state. The duration from the start of the project all sites being live was 26 months.

> ### A note from Cathy Jess, EMR Sponsor, 4/2017
>
> "…Implementing an EMR system is a large undertaking. EMR will help ensure inmates receive quality medical care, *streamline communication between DOC facilities, and external healthcare providers*…
>
> Thanks to 62 Subject Matter Experts (SME's), Project Managers, and Cerner staff we have seen great progress in just four months. There are numerous staff from *many departments that are coming together* to ensure we are well prepared to roll-out five [pilot] correctional facilities in December 2017.
>
> I want to personally thank DOC staff for your *teamwork, professional communication* and positive attitude as we make changes in implementing an EMR system into the WI DOC."

The EMR has also helped the state track Covid-19 cases and share information with the Centers for Disease Control and White House Coronavirus taskforce.

Concept

WIDOC addressed healthcare related communication by implementing an Electronic Medical Record. The EMR has many features that facilitate communication across a broad base of stakeholders and technology. These are listed is the diagram to the right and further explained below.
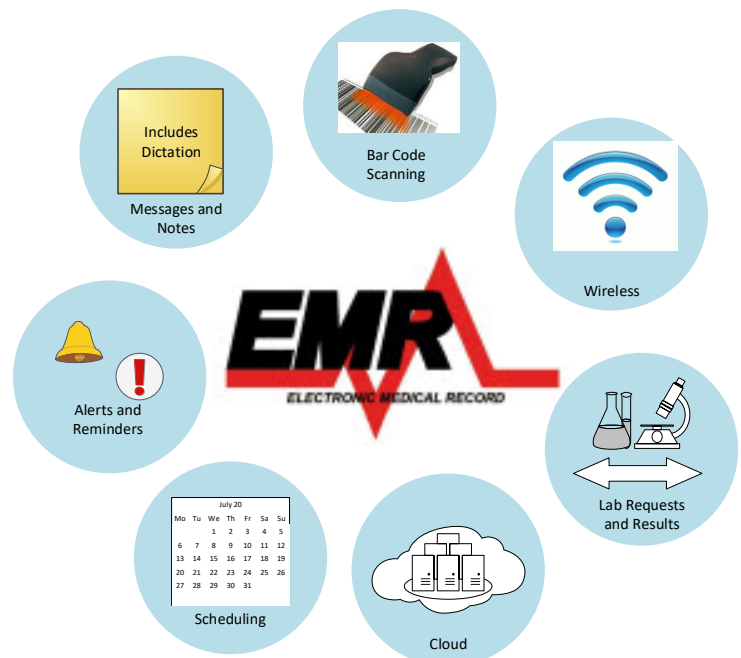
Messages and notes

Cross discipline collaboration is made possible by capturing notes electronically via the patient chart and message center. Dragon Naturally Speaking (medical version) is used for dictation and converts voice to text and saves the results into the EMR. The message center is a notification component used mainly by physicians to endorse results, cosign orders, send internal messages, and more. Providers and medical staff can review, forward and/or complete forms electronically and automatically save patient charts electronically. The Message Center also assists users with organizing their messages to find the most urgent communication easily. Some examples of organizational options include documents, messages, orders, results, priority items, work items, notifications, and proxies.

In addition, we no longer need to move paper health records when an inmate location changes. All health, dental, medication, lab, and psychological services records are available via HIPAA compliant access to those who need them.

Bar code scanning

One large challenge the team overcame was the communication surrounding the process of medication ordering, through its delivery to the patient. Multiple steps are involved including the physician order, pharmacy's processing of the order, shipping the medication to the institution, and finally delivering the med to the patient. The implementation of barcode scanning technology greatly reduced the complexity of, and potential for errors, in the process. Scanners were employed in the pharmacy for fulfillment and medication verification. Scanners connected to laptops are used at the point of delivery to correctly identify the patient and confirm the correct medication is delivered. The EMR is then automatically updated with the medication administration information including refusals as applicable.

Wireless

Restrictive housing and infirmary areas posed an even greater challenge. To establish network connectivity, WIDOC conducted a wireless network assessment for these areas. One or more wireless access points (WAP) were installed to support med administration, nursing and other health encounters taking place cell to cell. Security for wireless was set up to block any unauthorized traffic. Wireless will also be considered for all new construction projects, especially for infirmary, health services, and restrictive housing areas.

Lab requests and results

We created HL7 interfaces to send lab requests from our EMR to our licensed reference labs. These interfaces also send the results back to our EMR and automatically update the patient record. A compendium was required, composed of 800 different labs (3000 lines) and loaded into PowerChart®. Integration testing addressing forty interface core measures was performed over a period of two months and functionality testing of every test detail, including specimen and collection requirements, units of measure, critical values range, results display, reports, and packing list was carried out by staff

from WIDOC, Cerner, ACL and other labs. Zebra label printers, tethered and wireless were purchased, installed, and tested for label alignment and readability. Full lab integration with Cerner Millennium PowerChart® was achieved, enabling communication between providers and labs.

<u>Cloud</u>

We chose to have our system hosted remotely by Cerner, included as part of the software subscription. This removed the need for us to maintain servers, data backups, and the other infrastructure and tasks to keep our data safe. We also implemented two redundant circuits for immediate failover, should the active circuit go down: one redundant circuit is through our normal data center, the other through another data center in a different city. This provides a failsafe should we have an incident that affects our main data center.

The cloud approach also provides us with the ability to compare or benchmark our health services practice and technical environment with other customers. Cerner provides a metrics reporting tool to identify useful metrics and approaches for improving both our users' interaction and satisfaction with the EMR, and improving our patients' outcomes.

In the future, authorized health networks will be able to access health records for those in our care online through interoperability and health information exchanges. This will improve the continuity of care as our inmates are released into the community. To date, we have utilized the cloud to share infection information with the Whitehouse and CDC.

<u>Scheduling</u>

Appointments scheduled in our EMR and dental software are shared via Admission, Discharge and Transfer (ADT) feeds with our main offender management software (WICS). Health appointments are masked in such a way as to avoid any potential HIPAA violations. A daily report of appointments can be run out of WICS allowing officers to escort inmates to their scheduled appointments.

<u>Alerts and reminders</u>

We have implemented automated Cerner alerts and messages informing providers and pharmacists just in time, if there is an issue with an order. Cerner has provided built-in software to assist with inmate safety regarding medication and healthcare events. The program issues an alert during medication administration if there is an issue with that medication. For example, if a nurse scans an inmate's identification and medication, an alert will appear if the medication order expired and meds should not be delivered. Similar alerts fire when placing orders (i.e., inmate is allergic to med).

<u>Project Communications</u>

To lead this project and set up our employees for success, a strong organization and sense of teamwork were essential. To facilitate project and roll-out communications, a team of health services, technology, and DOC Communications staff members created an EMR-specific page on our internal intranet (myDOC). The page was located in the 'Initiatives' area, among others, and included project objectives, resources, timelines, and more information that was helpful to all involved. Access to the EMR was linked from this page, which provided an easy way to communicate to healthcare providers and staff. Links to job aids, roll-out schedule, training resources, and much more was presented on this page.

To ensure efficient cross-team communication and decision making, an EMR Governance Plan was defined to outline the team structure and responsibilities for both Cerner and WIDOC staff. This also helped make sure the contract was executed smoothly. The EMR Executive Team was the highest level of decision making with the purpose of general oversight for all aspects of the programs' work. This team was accountable for the program's strategy and operational, financial, clinical, and roll-out decisions. They also managed risks, resources, and the alignment with the overall vision and outcomes. The following chart indicates how the project was structured and focused on key deliverables by team. The chart also highlighted existing clinical advisory and standards committees would be engaged in the project. In addition, the team recognized that many new or changes to policies and procedures were enabled or impacted by the EMR.

EMR Project Governance

EMR Executive Team

Executive Sponsor
Division Administration
Health Services Dir
Financial Services Dir
Technology Mgt Dir
Cerner Exec Lead

- Highest level decision making
- Oversee progress, risks and resources
- Scope, budget & timeline
- Final operational, financial, clinical and roll out strategy decisions

Assumes Cerner resources will be included within each leadership team, committee and workgroup

Clinical Advisory/Standards Committees

- Existing teams and extension of program steering council
- Focuses on specific clinical disciplines to prepare for electronic medical records
- Assures standardization happens in workgroups
- Resolves conflicts between workgroups and facility teams
- Monitor progress of Workgroups to prevent "silos" and redundancy of work efforts
- Communicates decisions to program steering council
- Escalates issues to program steering council

Program Steering Council

Project Management
Accountable Leaders
Testing Coordinator
Integration Architect
Transition/Adoption Coord
Cerner Clinical Consultant
Cerner Account Mgt

- Develops project plan/road map, reports to EMR Executive Team
- Oversee cross-organizational integration of value objectives, transition planning, workflow changes and resource allocation
- Policy/Procedure change communications
- Workflow and staff role changes
- Training plans
- Backfilling during training
- Decisions impacting two or more facilities
- Maintains scope adherence

Clinical Advisory/Standards Committees

HealthCare Executive Team	Pharmacy and Therapeutics (P&T)	Policy & Procedures (P&P)	Protocol Committee	IT Governance
Health Services Medical Dental Nursing Psychiatry/Psychology Pharmacy	Medical/Pharmacy Physicians Mental Health Nursing (NP, RN) HSU	Nursing Practice Areas Health Records Pharmacy Site Representatives Division P&Ps	Nursing Coordinator Nurse Educator Medical Pharmacy Health Service Mgt (HSM)	Enterprise Architecture Review Committee BTM Architecture IT Change Management

EMR Application Workgroups

Project Management
Clinical/Operations Leads
Subject Matter Experts
Analysts
Metrics/Reporting Analyst
Integration

- Validation of future state workflows
- Adheres to standardized clinical content
- Utilizes standard decision support
- Drives overall work plan
- Manages risks and escalates as needed

Configure Solution areas
- Core/Foundations
- HIM/Charting/Charge Services
- Laboratory
- Meds Process, inc Pharmacy & MAR
- Nursing Workflow
- Physician Workflow
- Mental Health Workflow
- Dental Workflow
- Alcohol and Other Drug Abuse (AODA)
- Specialty Practice Workflow??
Configure Maintenance Applications
- Registration
- Reporting, Data Warehouse & Regulatory
- Supply Chain
- Integration / Interfaces
Lead Conversion and Testing Coordination

Change Management

Physician/MH Champions
Transition / Adoption Coord
Communication Coord
Education Coordinator
Trainers
Value Coordinator

- Define and implement strategies for the organizational change and value measurement
- Communicate and prepare for implementation

Organize Education
- Training Strategy
- E-Learning
- Training Material and Job Aids
Manage Communication
- Scope and Objectives
- Key Messages
- Best Practices
- Rollout
Lead Organizational Change
- New/Updated Policies and Procedures
- Issues Management and Escalation
- Records Management (Electronic/Paper)
- Quality Management, Metrics and KPIs
Change Authorization Board (CAB)

Facility Teams

Wardens/Superintendents
HSU Mgt/Nurse Clinician 4
Cerner Project Mgr
Technology Resources
HSUs and Other Staff
Help Desk, Super Users

- Integrate future state processes and workflows with local devices and facility teams and related infrastructure
- Develop and manage site transition plan

Transition facilities from paper to electronic
- Women's System (TCI, RECC)
- Men (DCI/JBCC, WCI)
- Juvenile (LHS/CLS)
Implement Technology
- Desktop, Network, Peripherals
- Help Desk Procedures
- Security Administration
Ensure Readiness
- Site Specific Policies and Procedures
- Training Plans, Execution
- Super User Support Model
Manage Implementation and Support

Legend: Project Structure   Existing Advisory Teams   Sample of Impacted Deliverables

Significance

The Wisconsin Department of Corrections provides healthcare to more than 23,000 inmates and adjudicated youth across 39 locations. We also provide mental health and counseling support services to many of our 70,000+ offenders who are in the community. We have more than 1,200 health providers and hundreds of pill lines that actively use this solution. We tracked over 975,000 appointments in the EMR for the calendar year 2019. We also filled about 85,000 prescription orders annually.

WIDOC made every effort to implement standard out of the box solutions although a few customizations were made to work in a correctional system. Several configuration changes and interfaces were developed to meet the needs of WIDOC. As a result, the EMR electrified healthcare communication within a previously largely paper based system across many different disciplines. Many are highlighted below.

Pharmacy
"The EMR significantly enhanced patient care on multiple levels. The turnaround time needed for an order to reach the patient has dramatically decreased. Computerized physician order entry (CPOE) has allowed patient orders to be processed in a real-time environment. Additionally, CPOE has eliminated the human error introduced by misinterpreting prescriber's orders during the transcription, order entry, and medication delivery processes, as well as, resolving the legibility issues that are commonly seen with our old workflow. Interdisciplinary collaboration has increased through the sharing of the essential patient information necessary to maximize patient outcomes." *Daryl Daane, Pharmacy Director*

Nursing
"The EMR provided an up-to-date and complete patient health care record to multiple health care staff simultaneously and allowed a more coordinated, efficient approach to patient care. Health information was at the fingertips of staff entering the patient's DOC number rather than staff having to spend time tracking down the location of the paper records or waiting until another staff member was done completing their work for the record to become available. Another early recognized benefit of the EMR during the first week was the improved legibility of records because of the vast reduction in handwritten documentation. Overall, it was great to see various staff pull together throughout the week to accomplish the goal of implementing EMR. We all look forward to fully benefiting from the positive aspects of using an EMR such as, but not limited to, decreased duplication of services, reduction in potential errors by safeguards built within the system, and of course no filing in paper-based records!" *Steve Linn, Nursing Coordinator*

Psychiatry and Psychology
"Good psychiatric care is a vital aspect of inmate health care. The Cerner EMR program has helped psychiatrists provide better care from several standpoints. First, all health care disciplines are using a single integrated problem list that contains active diagnoses and chronic health problems. This has enhanced access to medical diagnoses and helps reconcile psychiatric diagnoses with psychology diagnoses. Second, psychiatrists have ready access to psychology notes that contain routine visits, crisis intervention and observation placements. This gives them a better understanding of the status, functioning, and vulnerabilities of the patients they treat. Third, computer order entry has enhanced pharmacy functions such as real-time medication, interaction alerts, automated lab monitoring of psychotropic medication, and more reliable alerts when inmates miss medication doses. DOC psychiatrists initially entered several basic elements into the Cerner EMR including diagnoses, medication orders, and lab orders. They will continue to use the Diskriter transcription service to create psychiatric notes, which are then electronically transferred to Cerner EMR. We have transitioned psychiatrists to full use of the Cerner EMR, using the software to create full notes in the Cerner workflow. Proper training prior to "go-live" was a key aspect of the successful transition, with use of psychiatry quarterly meetings and in-person classroom training to assist staff to become comfortable with the Cerner interface and workflow." *Dr. Kevin Kallas, Mental Health Director, and Dr. Jeff Anders*

Impact

Improved healthcare communication has many benefits. This section highlights the more significant achievements.

Metric	Pre-EMR	Post-EMR
Order duplication	Order entry tech/RPh had to review the patient profile prior to starting entry to ensure someone was not already entering the same orders.	This step has been eliminated saving time for order processing. Providers enter orders directly and are able to see the full history when working with a patient.

Metric	Pre-EMR	Post-EMR
New order processing for non-urgent orders	Order processing lagged from 0-14 days from the time faxes were received. It was rare that pharmacy was current with the workload. Often times the start dates on the orders had already passed before meds were filled.	Pharmacy is now able to process orders before their start date.
New order processing for urgent orders	Urgent orders needed to be sorted out by staff and sometimes were missed; a time-intensive process.	Urgent orders are now processed within 18 hours (often < 12 hours) of being placed in EMR due to the ability to sort orders by start times.
Refill processing	Multiple refills were being processed manually before due date leading to drug waste, expenses and increased workload for packaging, shipping and reclamation.	Refill processing is automated and initiated in a timely manner. This has streamlined workflow for packaging and shipping, and reduced waste.
NFDR process	Involved considerable time in generating forms and faxing to institutions, receiving responses, and updating legacy pharmacy system.	Streamlined and saves time as every step is incorporated within the EMR.
NDC changes	NDC changes had to be done manually by a pharmacist every time a drug NDC was switched when the current supply for a particular NDC ran out. This was time intensive and caused delays in processing.	Stacking of different NDC of the same medication has eliminated this step.
Medication picking process in the core	Technicians had to make sure that the NDC on the label matched the NDC on the card for the same drug.	Stacking of different NDC of the same medication has eliminated this step.
Inventory management	Calculating quantity on hand for a particular drug was time intensive as inventory was maintained at a NDC level and there could be multiple NDCs on the shelf.	EMR has enabled us to maintain quantity on hand at a drug level due to stacking ability.
Workload assessment	Time-intensive with moderate confidence level.	Real-time picture available with high level of confidence, and saves time.
Med delivery	Meds passed to inmates was tracked on paper, potentially leading to errors; delivery took a long time.	Meds are now scanned and then passed. This removes the possibility of giving the med to a wrong patient, wrong dose, or expired order. Med pass times have been reduced. WIDOC's **barcode scan rate of meds is at 94.2%**, well above Cerner's customer average of 65.7%.

We also now have automated metrics reporting (Lights On Network) identifying best practices and continuous improvement areas for our clinical practice and technology support. This includes, but is not limited to:
- How many patients providers see in a day
- How long clinicians are spending in the charts
- List of top performers and those who could use additional training
- Metrics can be gathered by location, specialty, healthcare practitioner, or across all health services
- System performance, patches to be applied, availability of technology devices, etc.

The example metric on the right, CPOE (computerized physician order entry), indicates an increase in adoption of the EMR from 2017 to 2019. Our current daily average for **CPOE rose from 27.2% to 82.8% in 2019**. At the time of this report, it is up again to 86.4%.

Given this large increase in electronic orders, medication errors have decreased. We have automated medication-to-patient checking at the point of entry, medication fulfilment (pharmacy), shipping, and medication delivery (medication pass) points. In addition, reorder points have been set up for each patient, med room, and pharmacy.

There are **over 200 metrics** being tracked and reported.

% Order Entry (AHRQ)
Medication Process

Options ▼

82.8 Percent 2019

27.2 (48.9%) Change from 2018

72.0 Annual Average Past 5 Years

● ☑ % Order Entry (AHRQ)