
CC Electronic Health Record (EHR) Business Case Evaluation

CC Research Hospital Board Meeting
April 12, 2019



Clinical Center

Celebrating 60 Years of Clinical Research



The Clinical Center's EHR Journey

The purpose of the assessment is to methodically arrive at an evidence-based recommendation regarding a "best fit" EHR for the CC for the next 10 years; by synthesizing analysis from data gathering and workshops

 CRIS was first deployed in 2004 and based on Eclipsys Sunrise owned by Allscripts

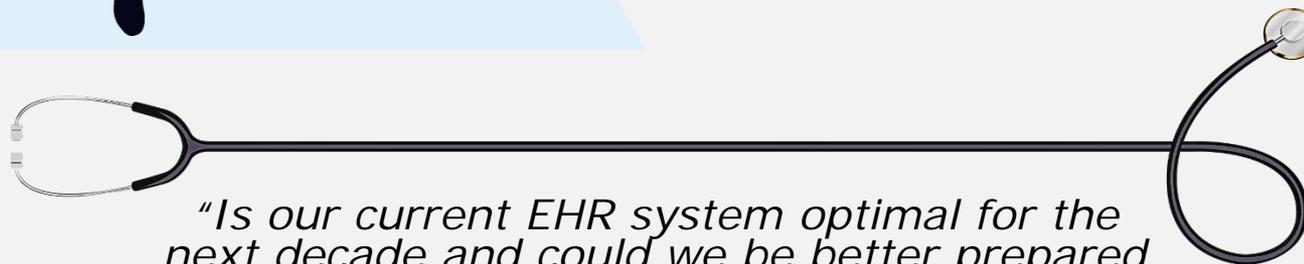
 Highly customized over the years in order to link patient medical information to protocols and meet other NIH research specific requirements



 Customization of CRIS introduces a degree of complexity that presents challenges to end-users and impacts patient safety

The EHR Market Has Undergone Major Changes

- New competitors
- Exponential technologies, such as interoperability, data analytics, machine learning, and virtual health
- Expectations for transparency about safety and technology
- Emergence of personalized medicine
- Advancements in cloud and mobile technologies



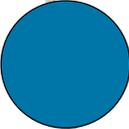
"Is our current EHR system optimal for the next decade and could we be better prepared for the future?"

Scope and Methodology of Analysis

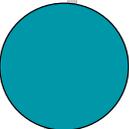
Scope of the work performed included a business case focused on evaluating the needs for an EHR to best support the clinical research mission of the NIH ICs



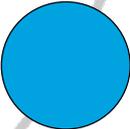
Conducted market scan to identify all viable EHR commercial of-the-shelf (COTS) products, including consulting with industry experts with decades of clinical and EHR analysis and implementation experience



Performed examination of Federal Facilities (DoD/VA) and Academic Medical Centers (AMCs) EHR usage, functionality, selection decision criteria, and lessons learned. Site visits occurred with the Defense Health Agency (DHA), Mayo Clinic, Vanderbilt University Medical Center, Johns Hopkins, Sloan Kettering, and MedStar. Virtual site visit with St. Jude's Children is pending.



Engaged Clinical Center stakeholders (clinicians, executives, IT), through interviews, shadowing and focus groups, to identify current and future functionality needs, and identify critical gaps in current CRIS capabilities



Met with Allscripts, Cerner, and Epic to understand their 5-10 year roadmap for development, including major components now and in the future, and research capabilities for protocol management of clinical care



80+ focus group attendees



6 job shadows



4 AMC and Federal Facility site



Diverse range of stakeholders



7 meetings with CC leaders and CC Directors



3 vendor roadmap sessions visits

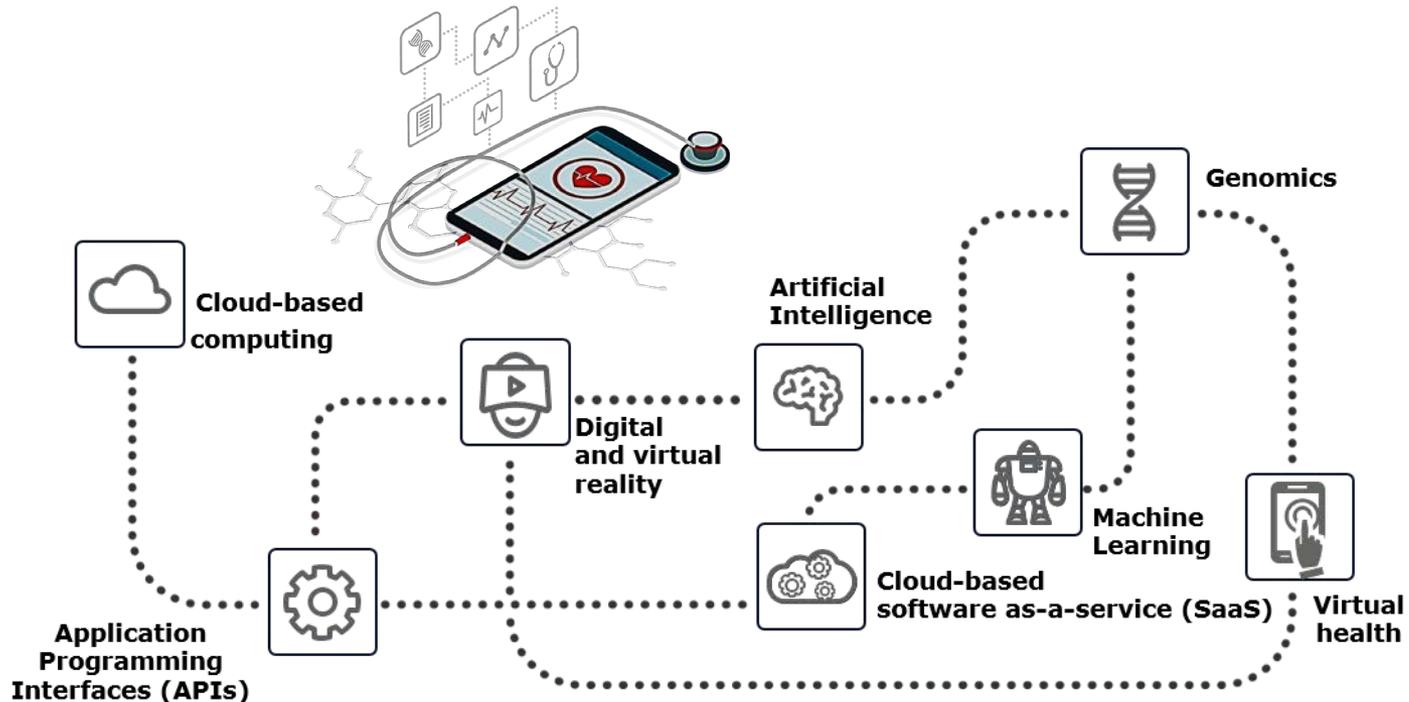
Industry Analysis and Market Trends

The EHR market is rapidly changing and the Clinical Center needs to consider new and emerging technologies when considering current platform improvements

Future Outlook

- 01** **Providing a comprehensive narrative** through data aggregation and APIs
- 02** **Enabling more precise medicine** through computer-assisted analysis, clinical decision support, and genomics-informed medicine
- 03** **Increasing patient safety** by improving access to resources and evidence-based information, and enabling shared decision-making
- 04** **Investing in virtual care** through telemedicine and remote patient monitoring
- 05** **Expanded use of cloud-based technologies** to support rapid scalability of both processing and storage, and easier access to new applications
- 06** **Advancing technologies and expansion of registries** through artificial intelligence (AI), machine learning (ML), and voice recognition tools

Future Capabilities



Market Research

Utilized industry reports such as KLAS, Gartner, financial statements, recent news and publications to summarize EHR features, market share, financial conditions and clients



- Allscripts has 3.5% of acute care and 6.3% of the ambulatory market share
- Northwell Health, University Hospitals of Cleveland, and Memorial Sloan Kettering Cancer Center continue to utilize Allscripts
- 6.1% Global Market Share Growth (2018)



- Cerner has 24.6% of the acute care market and 25.5% of the ambulatory
- 17% Global Market Share Growth in 2018
- The DoD and VA have selected Cerner for their EHR solution because of Cerner's reputation in recent years to support interoperability



- Epic holds 25.8% of the acute care market and 26.8% of the ambulatory
- Offers a variety of data analytic tools
- Top choice amongst physicians and consistently rated Best in KLAS EHR solution



Open platform, robust modules, and cost-effective.



Ability to own the data, lots of options to customize solution, and strong analytic capabilities.



All top AMCs use Epic, increasing interoperability potential. Innovative partnership approach and ability to deliver on time.



Shrinking acute care share; several larger hospitals and AMCs have recently left. Concerns about corporate viability.



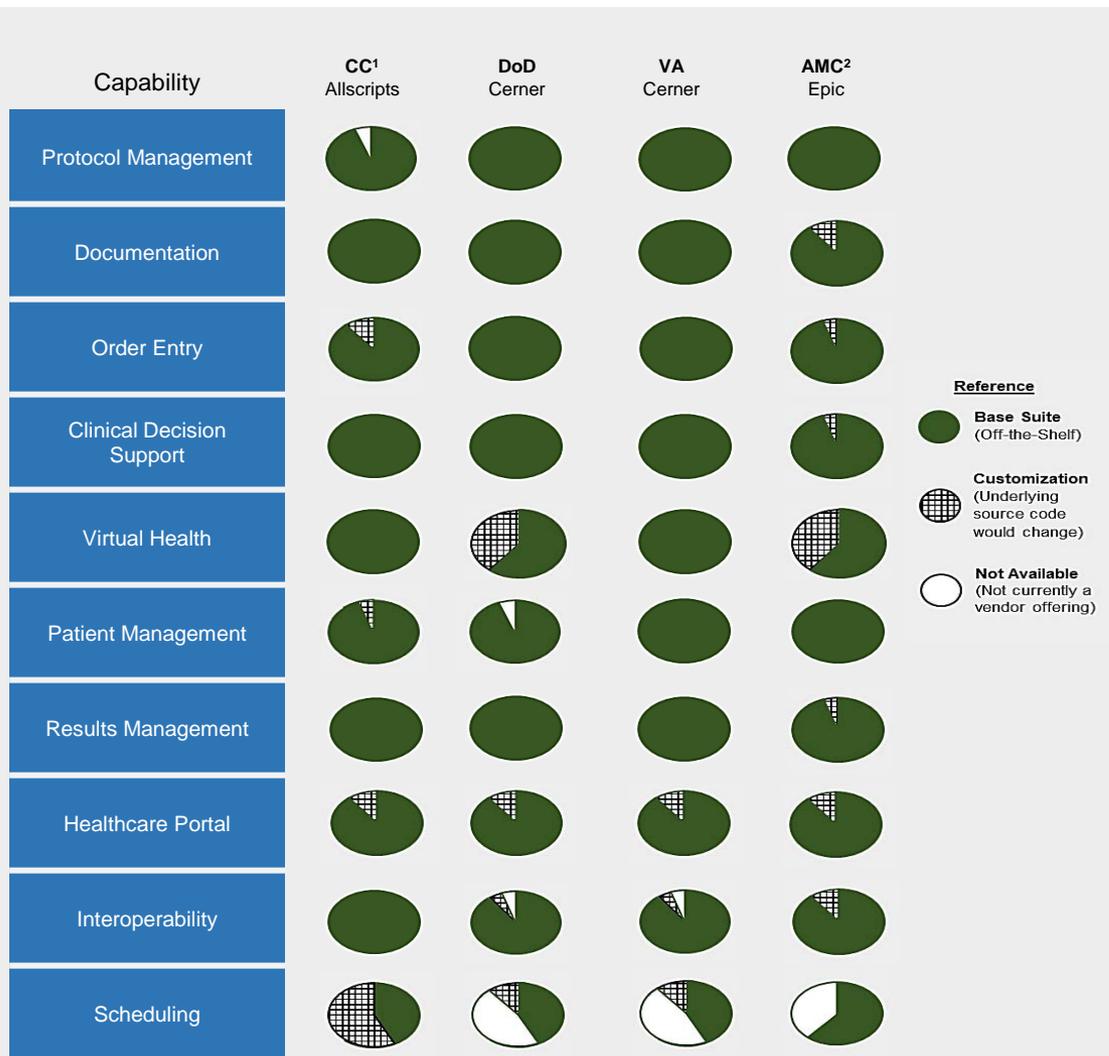
Does not develop all solutions in-house - use M&A when necessary. Issues exist at DoD/VA and these contracts may cause vendor support risks.



TCO can be more expensive than its competitors, but isn't always. More structured environment - limited ability to customize.

EHR Product Review Against CC Requirements

Based on the list of DCRI minimum mandatory requirements mapping was completed to the capabilities of the Allscripts Sunrise, Cerner Millennium, and Epic Foundation suites



¹ Mapping done to what Allscripts Sunrise offers to all clients currently, not necessarily what the CC has accepted within CRIS
² AMC alignment is based on Epic offerings, being that all of the top 20 AMCs use the Epic EHR
 Note: Allscripts responses were submitted by DCRK, DoD/VA responses came from a Cerner client director, and Epic responses were provided by Deloitte Epic-certified SMEs.



Key Insights

Very little distinction between suites, but the VA Cerner product seems to be the most aligned with DCRI requirements. However, the VA Cerner product as envisioned will not start deploying until 2020.

All vendors offer operational/analytical reporting to support development of business intelligence and data warehousing as part of their 'base suite'

Each vendor has a unique definition of 'base suite'; a formal RFI may provide a more accurate representation



Vendor Development Roadmap

Epic has robust research tools already well adopted amongst AMCs including precision medicine and registry plans

Cerner's research capabilities include future plans to improve clinical research, data analytics, and expand capabilities for registries

Allscripts offers research functionality not currently utilized within the CC and future capabilities as part of their Microsoft partnership

Lessons Learned from AMC and Federal Facility Site Visits

In-person and virtual site visits were conducted to further assess the leading vendors' ability to address DCRI requirements, understand the selection process, and identify clinical research usages



Major Themes and Best Practices

No Clear EHR Winner That Holistically Addresses the CC Needs

Strategically Leverage the Pre-RFP Phase to Get the House in Order

Assess CC Infrastructure to Prepare for Upgrades and Future Replacement

Treat This Initiative as "Clinical Process Improvement" vs. Typical IT Project

Consider Pre Go-Live Training & Change Management Strategies

Increase and Enforce System Training



CRIS Functionality and Gaps

The most desired near-term capabilities included enhancements in patient safety and quality clinical care delivery, development of clinical workflows, and stronger EHR governance decision making. Long-term capabilities includes consolidating to one integrated EHR and leveraging data to make better clinical decisions.

Key Themes



CRIS is a great option for a clinically-focused research medical center and meets the majority of CC functional needs, but there is room for improvement



Absence of a cross-organizational Governance structure for clinical processes across protocols impairs knowledge exchange between the CC and ICs; optimization to the existing framework should occur to reduce inefficiencies and safety concerns



Clinicians recognize that **harmonization of clinical workflows is needed to improve business processes**, in addition to a training enforcement mechanism to ensure proper levels of knowledge

Recommendations

While CRIS offers essential basic capability, the current CRIS Allscripts platform, along with the CC learning and development strategy, and governance model will require significant improvement to meet CC's needs over the next 3 to 6 years

Recommendation 1

Maintain and upgrade current CRIS platform and improve key processes

- ✚ Continue to pursue Allscripts/CRIS maintenance and upgrades, to ensure full system functionality and deploy important new functionality
- ✚ Implement process improvement steps to address performance and safety concerns, and prepare for EHR replacement or modernization



This can be accomplished through:

- Develop a strategic plan for clinical research information systems that aligns with the overall CC strategic plan
- Clinical configuration and workflows must be standardized across the ICs and CC to improve patient safety and quality
- Training must be increased and enforced by CC administration, especially training prior to receiving system access for CRIS
- System governance of CRIS and other relevant NIH systems needs reform to include the elimination of duplicate systems to improve accountability, clinical documentation, and patient safety



Recommendations Continued

In combination with Recommendation 1, begin to explore the acquisition of a new EHR platform or a significant upgrade immediately

Recommendation 2



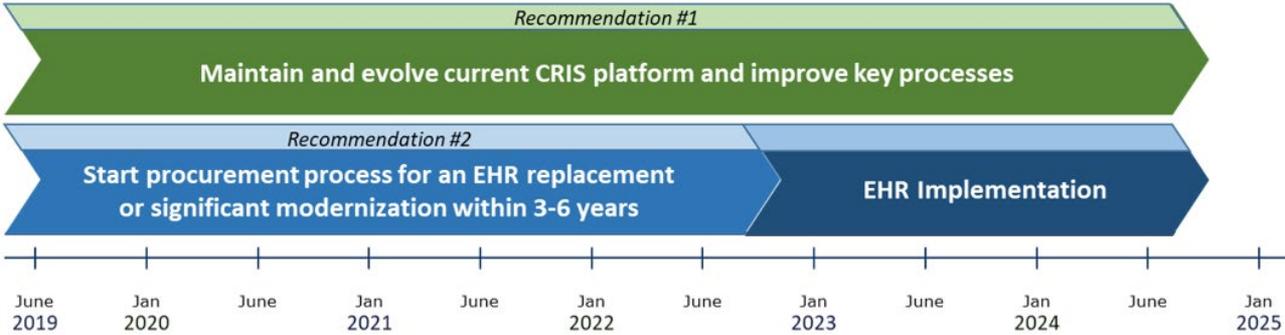
Start procurement process now for an EHR replacement or significant modernization within 3-6 years

 Launch procurement process now due to timelines associated with:

- Funding
- Acquisition approvals
- Requirements development
- Market/vendor research (RFI)
- Proposal and vendor demos
- Contract award



Timeline





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