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County of Los Angeles
CHIEF EXECUTIVE OFFICE
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(213) 974-1101
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SACHI A. HAMAI
Chief Executive Officer

February 4, 2016

To: Supervisor Hilda L. Solis, Chair
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Don Knabe
Supervisor Michael D. Antonovich

From: Sachi A. Hamai
Chief Executive Officer

RESPONSE TO ESTABLISHING A COUNTYWIDE CENTRALIZED ELECTRONIC HEALTH RECORD SYSTEM TO IMPROVE PATIENT CARE (ITEM #25; AGENDA OF APRIL 7, 2015)

On April 7, 2015, the Board directed the Interim Chief Executive Officer, the Chief Information Officer, County Counsel, the Directors of the Departments of Health Services, Mental Health and Public Health, Probation[1], and the Sheriff or designee, to report back in 90 days on integrating electronic health record systems into a single platform so that a unified record exists for each individual patient and so appropriate Los Angeles County (County) employees can have a single portal to access, share and update electronic health, mental health and public health clinical records in real-time. The report was to include a discussion of:

a) The financial and clinical benefits and drawbacks of a single unified County electronic health record system (EHR);
b) Whether integration should be limited to clinical information or whether the departments should also further integrate the claiming systems;
c) The ramifications, if any, of discontinuing or phasing out the use of any existing system built with federal or state funds; and
d) The feasibility of integrating all electronic health record systems into ORCHID, including the potential cost and timeline to do so.

[1] Although not originally included in the Board motion, input from the Probation Department is included in this report back given they have an electronic health record system.

On September 8, 2015, a response to the motion was submitted to your Board (Attachment). The response included feedback from the departments identified above, and although some preliminary assessment and feedback was provided, the report indicated that further evaluation by a consultant was needed to fully respond to the Board's request. The Chief Executive Office (CEO) established the multi-departmental ORCHID/County EHR Strategy Workgroup (Workgroup) comprised of IT, clinical, business and claiming subject matter experts and held workgroup meetings in November 2015 and December 2015. At these meetings, the workgroup discussed high-level business needs and outlined departmentally specific business needs/priorities associated with a possible migration to ORCHID that would need to be evaluated in this assessment.

The CEO and Chief Information Office (CIO) identified Gartner, Inc. (Gartner) to assist with this assessment. Gartner was selected given their extensive prior knowledge of Cerner software solutions and their prior work assessing EHR needs at various County departments. This prior knowledge will greatly diminish the lead-time necessary to get acclimated with the County's existing operations, systems, lines of business and interfaces. Gartner assisted with the development of the Department of Health Services' (DHS) Statement of Work for their ORCHID system and are currently providing assistance to ensure adherence to the project timeline and to ensure successful implementation of the remaining sites scheduled for Spring, 2016. Gartner also recently completed an assessment of the Department of Mental Health's (DMH) Integrated Behavioral Health Information System (IBHIS) EHR and has extensive familiarity with DMH's clinical and claiming needs, as well as their interface with contracted providers. Lastly, Gartner has familiarity with the Department of Public Health's (DPH) business needs as they recently completed an evaluation of DPH's operations to determine that DPH should implement ORCHID as its EHR for certain DPH lines of business. DHS and DPH are currently seeking Board approval of an amendment to an existing Gartner agreement to assist DPH with support planning for ORCHID implementation at 16 Public Health Centers and other offices and to assist with the development of a detailed Statement of Work and with future contract negotiations with Cerner, among other activities. That request for Board approval is consistent with the Board's intent outlined in the April 7, 2015 motion in that it will allow DPH to implement ORCHID as their EHR and result in a single unified platform for at least two of the five departments outlined in the motion.

Gartner met with CEO/CIO staff several times and also met with the ORCHID/County EHR Strategy Workgroup members in December 2015 to discuss their assessment approach and methodology. Gartner agreed to a final Statement of Work in January 2016 and a project start date for the assessment is slated for February 15, 2016.

Gartner estimates completion of this engagement within 14-16 weeks, contingent on the availability of Workgroup member participation. In addition to providing an assessment of whether it is feasible to migrate to a single unified ORCHID system, the assessment will include information about what other counties have done with their EHR's and claiming to ensure best practices are considered. Additionally, as a result of conversations with the Workgroup, information will be gathered to ensure enterprise master patient index compatibility—this will ensure that patients/clients seen by various County departments can be correctly matched to their records. Additionally, the assessment will include a review of the Department of Public Health's Substance Abuse and Prevention Control (SAPC) EHR needs in light of the deadlines and requirements associated with the County's participation in the Drug Medi-Cal Organized Delivery System (DMC ODS) Waiver pilot program[2].

Given the 14-16 week assessment timeline mentioned above, we anticipate providing an update to the Health Deputies in April 2016 and a final report to the Board in June 2016.

If you have any questions or require additional information, please contact me, or your staff may contact Mason Matthews at (213) 974-2395 or mmatthews@ceo.lacounty.gov.

SAH:JJ:SK
MM:EB:bjs

Attachment

c: Executive Office, Board of Supervisors
Sheriff
County Counsel
Chief Information Officer
Health Services
Mental Health
Probation
Public Health

020416_HMHS_MBS_EHR

[2] Due to time constraints associated with meeting DMC Waiver requirements and to ensure the County can fully maximize receipt of additional federal revenue, the assessment will consider whether ORCHID can meet SAPC's needs or whether they should proceed with an open source EHR system specifically designed to meet the needs of substance use disorder providers and their associated privacy requirements.

Attachment

County of Los Angeles
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SACHI A. HAMAI
Interim Chief Executive Officer

September 8, 2015

To: Mayor Michael D. Antonovich
Supervisor Hilda L. Solis
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Don Knabe

From: Sachi A. Hamai
Interim Chief Executive Officer

RESPONSE TO ESTABLISHING A COUNTYWIDE CENTRALIZED ELECTRONIC HEALTH RECORD SYSTEM TO IMPROVE PATIENT CARE (ITEM #25; AGENDA OF APRIL 7, 2015)

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a) The financial and clinical benefits and drawbacks of a single unified County electronic health record system (EHR);
b) Whether integration should be limited to clinical information or whether the departments should also further integrate the claiming systems;
c) The ramifications, if any, of discontinuing or phasing out the use of any existing system built with federal or state funds; and
d) The feasibility of integrating all electronic health record systems into ORCHID, including the potential cost and timeline to do so.

[1] Although not originally included in the Board motion, input from the Probation Department is included in this report back given they have an electronic health record system.

BENEFITS OF A SINGLE UNIFIED COUNTY EHR

Implementing a single unified County EHR would allow the impacted departments to create a single longitudinal record, which is a record of the patient's health state across time (while each department uses different terms to describe the individuals they serve, e.g., consumers, clients, patients, we will refer to them as "patients" in this report). If a longitudinal record is pulled from a stand-alone EHR system, the patient's health state only reflects the information in that system. Although it is possible to compile a patient's data from separate EHRs and present them as a combined longitudinal record, that record relies on a number of factors to ensure it is reliable and it presents only a view of that patient across time that a physician would need to study thoroughly at the point of care. Having a single unified EHR in the County would allow for the longitudinal record to include data from any County department that delivered care to that patient and the data would be discrete and actionable. In this way, a clinician caring for a patient can receive real-time information from the system. Clinicians would be able to receive information about patients across departments, without having to rely on a single point-in-time compilation of records across disparate systems or additional work to query other electronic systems. It would also avoid the need to match their patient across multiple systems and avoid mismatches and identity errors. A single unified EHR would have the capability to avoid providing duplicative services (e.g. through public health and DHS), and allow for more accurate identification of patients at unusually high risk of poor outcomes or needing additional services, such as individuals with simultaneous medical and mental health conditions. Such real-time actionable data is key to clinical decision support and improving safety. For example, it would aid in checking for known allergies and duplicate, or conflicting, medications. Additional information about each department's EHR is included in Appendix I.

Healthcare delivery organizations who implement industry standard best practices use a single unified enterprise EHR. An enterprise EHR is structured not only to support the workflow of the clinicians delivering care, but to collect healthcare information in a manner supporting patient-centered care. This translates into one of the most important features of an enterprise integrated health record – the capture of healthcare information as discrete data within a single EHR database that is actionable. Clinical decision support on an enterprise EHR will allow County clinicians opportunities to improve the safety and quality of care delivered. The ultimate goal of clinical decision support is to "provide the right information, to the right person, in the right format, through the right channel, at the right point in workflow to improve health and healthcare decisions and outcomes" (Osheroff et al. 2004)[2]. As healthcare complexity increases,

[2] Osheroff, J.,Rifer, E., Sittig, D., & Jenders, R. (2004). *Clinical decision support implementers' workbook. Chicago: HIMMS.*

the opportunity and ability to inject evidence-based clinical decision support become more important.

Patients can benefit from capturing patient health information in an EHR, but the information is most valuable if it can be aggregated with patient data from other sources to produce a single, longitudinal record that presents a complete picture of a patient's medical history. This record would include presenting complaints or issues, vital signs, allergies, symptoms, test results, medications, diagnosis treatments, physician/clinical notes (as allowed by HIPAA privacy rules), enabling treatment providers throughout the various care settings to quickly assess the patient accurately to provide specific treatment plans. A longitudinal record would also include lab, pharmaceutical, and imaging orders, as the majority of physical health clinical decisions involve this type of data. In addition to providing support for clinical decisions, longitudinal records comprised of data from various healthcare settings and systems could assist with creating central repositories of data to enable departments to monitor compliance with treatment guidelines, meet reporting requirements and identify best practices to improve care.

There are three ways for the County to achieve a longitudinal health record: 1) via a single unified EHR; 2) the transfer of data via an information hub; and 3) the transfer of data via a health information exchange (HIE)[3]. While these three approaches may allow for the creation of a longitudinal health record, the ability to create a seamless unified health record for patients served by the County would allow for the highest quality data and could have long-lasting physical and mental health benefits for the County's residents, as long as it can meet the requirements of each County department serving those patients.

DRAWBACKS OF A SINGLE UNIFIED COUNTY EHR

The benefits of a single unified EHR in the County must be weighed against the various drawbacks of implementing such a system. The drawbacks would require additional vetting and expertise to evaluate and to determine if the County would benefit from moving toward a single unified EHR. Significant drawbacks include:

- Time to implement – Given the intense amount of attention and resources the implementation of an EHR requires, it is estimated that the transition to a single unified EHR would be a multi-year process. For example, if a decision were made to migrate to ORCHID, DHS would first need to complete its ORCHID implementation in mid-2016 before they could support the work of bringing on another County entity. Beyond that, it is estimated that only one entity at a time

[3] Appendix II provides additional information on options 2 and 3.

could be transitioned to the system, likely starting with DPH Community Health Services given they currently do not have an EHR.

- Financial cost – It is estimated that the cost of transitioning to a single unified EHR and phasing out existing EHRs would be substantial and would not result in any near- or mid-term cost savings. The time, vendor professional services, subject matter experts, infrastructure needs, maintenance of dual systems during the implementation phase, and other unknown costs could be significant. Extensive additional information is needed to determine the financial cost of migrating existing systems to a single unified County EHR. For instance, while Probation and LASD are currently on Cerner systems, those systems are highly customized to meet their justice-related needs, not the day-to-day needs of a health care system, which would preclude a simple conversion to ORCHID, which is also a Cerner system. Such a conversion would likely result in substantial professional services costs from the vendor.

  A single unified County EHR might yield cost savings through shared hosting, maintenance, licenses and IT support costs over the long-term, but these will not outweigh the yet to be developed, unknown costs in the short- and mid-term associated with additional infrastructure, professional services, customizations, clinic downtime, staff training, additional internal IT implementation resources, and so on that would be required over a significant period of time. Such related costs should not be underestimated. Also, since Probation and LASD primarily used County funds for their EHRs and DMH indicates they do not have the ability to get additional State Mental Health Services Act (MHSA) funding to offset such conversion costs (discussed below), the cost to migrate these departments to ORCHID could potentially be fully borne by the County.

  Finally, depending on the new unified system's ability to meet all the business needs and workflow processes of each set of varied users, an analysis would need to be done to evaluate possible residual costs related to gaps in service needs or changes in workflows. For example, if the justice-related departments have to perform new and/or additional steps to utilize ORCHID versus their existing heavily customized EHRs, there could be unavoidable inefficiencies in their use of the new system.

- Differing needs for differing populations – The business needs of each department are quite different and unique, including varying patient care settings, the need to interface and develop cohesive clinical records with contract providers or community partners, the need to protect the information of the juvenile justice population, DMH's role as the Medi-Cal Local Mental Health Plan

(LMHP) administrator, and the need to integrate health/mental health and case management information. Further, the justice-related departments have a need to track the location/movement of inmates 24-7, from one location and/or service to another, not for episodic care, such as admittance/discharge from a hospital. Each department has different workflow processes for each of these scenarios and those would need to be considered in a single unified EHR.

- Enterprise system limitations – A single unified EHR, once established, may be difficult to tailor to a single department's emerging needs going forward.

- Patient identity issues – The shift to a single unified EHR would require the County to work through various issues related to patient identification. For example, LASD uses biometric scanning to track inmates and it could be difficult to reliably link their biometric identity to the sometimes unreliable identity data that exists in other departments. Additionally, LASD indicates that an inmate's Criminal Identification and Information (CII) number, assigned by the Federal Bureau of Investigation (FBI), is protected per the Criminal Justice Information Services (CJIS) Security Policy and cannot be shared or disseminated outside of the justice setting.

- Limited staff resources – Focus on a new EHR migration for departments with an existing system may divert IT, clinical and administrative staff away from their existing job duties, which may lead to detrimental outcomes for their day-to-day operations.

FEASABILITY OF INTEGRATING ALL EHRs INTO ORCHID

If the County decides to migrate departments to a single unified EHR, it would seem to make sense to shift to ORCHID. ORCHID is the only EHR system in the County that has the ability to support all of the clinical and operational functions of each department. IBHIS, DMH's EHR system, as a niche mental health EHR, is not capable of supporting the breadth of clinical practice within Probation, LASD, or DHS. Similarly, Probation and LASD's EHRs are not built for the clinical environment that DHS operates within.

Although ORCHID can likely be adapted to support the full breadth of clinical needs for these departments, and while the County's current contract with Cerner for ORCHID allows for other County departments to access certain set pricing, there are still many considerations to vet before making a definitive decision to migrate all County EHRs to ORCHID. It will be a substantial undertaking to properly identify and thoroughly address issues associated with the benefits, challenges, risks and total cost of ownership of an integrated ORCHID system for all involved departments. As indicated above, extensive

information is needed to more accurately identify costs related to infrastructure, professional services, licenses, maintenance, customization and other associated costs of migration from either a non-Cerner EHR or another Cerner instance onto ORCHID, as well as to develop a realistic timeline for performing such a conversion.

In order to provide a more detailed and accurate response regarding a single unified County EHR, each department would need to clearly document their business needs and verify that ORCHID could meet or be modified to meet those needs. The County does not currently have the requisite expertise or available staffing for a more formal assessment and will require the assistance of an IT consultant to properly assess feasibility, operational implications, and expected costs of such an implementation. The consultant could also further develop any list of drawbacks discovered in the course of its research of the unique needs of each department.

It should also be noted, the migration to a single unified EHR, if so decided, would be a multi-year endeavor that would require a different level of time and effort for each department. It is likely the migration would require continuous evaluation to ensure the decision points along the way are prioritizing a deliberate and well thought-out process, and not just one single upfront decision. The goal would be to develop a system that allows the County to provide the best service for the least dollars at each point along the way.

CLAIMING

Claiming refers to the system infrastructure, processes, and staff work required to claim reimbursement for services provided to patients via each department's electronic information system. There was consensus among the represented departments that it is possible to manage claiming without including it in a single unified EHR system. Additionally, given the complexities of claiming and the specific needs of each department and their associated reimbursement requirements, it is not clear that a single claiming system would be practical. Thus, the decision as to whether to integrate the clinical EHR systems should be made separately from a decision to integrate claiming functions into a single system. Additional information regarding claiming is provided in Appendix III.

PHASING OUT THE USE OF AN EHR BUILT WITH FEDERAL/STATE FUNDS

The ramifications of discontinuing or phasing out the use of an EHR built with federal or State funds were only considered for IBHIS as the Board motion did not contemplate the phase-out of DHS' ORCHID, and Probation and LASD did not use federal or State funding for their systems.

IBHIS was purchased and has been implemented to date through a combination of State MHSA Information Technology funds, federal meaningful-use incentive payments and other DMH funding. If the Board decided to discontinue the use of IBHIS, there is no information about whether State MHSA funds would need to be repaid or whether additional MHSA funds would legally be able to be used to support a new system. County Counsel is reviewing these issues to provide a more definitive response. With regard to federal meaningful-use incentive payments, it does not appear that there would be an issue with these funds, as they are tied to a provider's use of an EHR, not the EHR system itself. County Counsel will continue to review this issue.

NEXT STEPS

Given the need to further evaluate specifics around the benefits and drawbacks of a single unified EHR in Los Angeles County, we will engage IT consultant services to prepare a formal assessment of the feasibility of integrating all County EHRs into ORCHID, including the clinical and operational benefit, potential cost, and timeline of potential integration. The County will request that the IT consultant also survey what other counties have done with their EHRs and claiming systems to ensure that best practices are considered when providing a recommendation.

The CEO will work with the CIO to secure an IT consultant and to assemble a multi-departmental ORCHID Assessment Team (Team) comprised of IT, clinical, business and claiming subject matter experts, to evaluate clinical, business, software and total cost of ownership related to a possible migration to ORCHID. The Team will develop specific goals, objectives and timelines for a well thought-out strategy that can more thoroughly address the issues posed in the Board motion and more thoroughly evaluate the feasibility of migrating to ORCHID. Specifically, the analysis should focus on whether ORCHID can meet the behavioral health and LMHP administrative requirements of DMH, as well as the distinct business needs of LASD and Probation. County Counsel will also more thoroughly address any possible ramifications of phasing out any systems that have been funded with State or federal funds, which could be a critical data point in decision making. We anticipate providing a progress report to your Board in January 2016.

If you have any questions or require additional information, please contact me, or your staff may contact Mason Matthews at (213) 974-2395 or mmatthews@ceo.lacounty.gov.

SAH:SK
MM:EB:bjs

Attachment

c: Executive Office, Board of Supervisors
Sheriff
County Counsel
Chief Information Officer
Health Services
Mental Health
Probation
Public Health

090815_HMHS_MBS_EHR

Appendix I: Electronic Health Record System Background

Currently, four County Departments have implemented EHRs—DHS, LASD, Probation and DMH. DHS, LASD and Probation are currently on Cerner Corporation (Cerner) EHRs, while DMH is utilizing a Netsmart solution. Although DHS, LASD and Probation all acquired Cerner solutions, each was purchased at a different point in time and via different Board-approved contracts and each system has been heavily customized with different workflows and processes to suit each department's clinical and business needs. Additionally, the Probation EHR was implemented in accordance with a settlement agreement with the U.S. Department of Justice (DOJ).

The following is a summary of the existing EHR systems currently operational in the County:

- **DHS' Online Real-Time Centralized Health Information Database (ORCHID):** ORCHID is a Cerner solution using the internet and an industry standard secure Citrix web-based software that has been modified to meet the inpatient/outpatient business and clinical needs of DHS. The implementation of ORCHID began in 2014 and will be completed in March 2016. To-date, DHS has used a combination of federal meaningful use incentive payment dollars and existing DHS funding (no net County cost) to pay for the ORCHID implementation. Three of the six "Clusters" have successfully implemented ORCHID (Harbor UCLA and surrounding Ambulatory Care Network (ACN) facilities, MLK Outpatient Center and surrounding ACN facilities and LAC+USC with its surrounding ACN facilities) which constitutes 75 percent of all DHS clinical care on the enterprise standardized ORCHID system.

- **LASD's Jail Health Information System (JHIS):** JHIS is a Cerner solution that uses the internet and an industry standard secure Citrix web-based software that has been modified to meet the clinical and business needs of LASD's jail setting. By design and policy, JHIS can only be accessed on-site at specific LASD locations and customization includes an interface with the internal Automated Jail Information System (AJIS), including the use of biometric scanning for patient tracking and EHR record retrieval. JHIS was implemented in 1998 and is utilized to track the delivery of health care services and maintain a centralized clinical data repository of all inmates. LASD/DHS oversee an Urgent Care Center (UCC) onsite at Twin Towers Correctional Facility and enter clinical notes into JHIS. DHS also provides specialty services and inpatient care services for inmates at the LAC+USC Jail Ward and DHS uses ORCHID for these services. Additionally, DMH treats clients in the jail setting and DMH clinicians enter notes into JHIS for their jail clients. DPH provides limited services in the jails, including 1) TB screening, diagnosis, treatment, case management and consultation services for inmates which is documented in JHIS, 2) in-custody substance use disorder treatment programming which is documented by DPH Substance Abuse Prevention and Control in a web-enabled system hosted by ISD that allows for data exchange with other departments, as needed; and 3) HIV testing, STD screening and transitional case management, documented in multiple electronic platforms, including HIV Casewatch, STD Casewatch and in the HIV testing database. To-date, LASD's JHIS has been funded through a combination of Inmate Welfare Funds generated through the sale of commissary goods in the jail system and County funding.

- **Probation's Electronic Medical Record System (PEMRS):** PEMRS is a Cerner web-based solution that has been modified to meet the business and clinical needs of Probation, including an interface with their Probation Case Management System (PCMS). PCMS includes information related to a minor's detention status, admission, movement/transfer and other non-clinical information that should be maintained confidentially[1]. DMH clinical staff provide probation

[1] While a juvenile's clinical record can be shared between clinicians for clinical treatment purposes and continuity of care per Health Insurance Portability and Accountability Act (HIPAA) and Confidentiality of Medical Information Act (CMIA), California's Welfare and Institutions Code (WIC) 827 prohibits the disclosure of information identifying a youth's status as a probationer and also restricts the access to the juvenile "case file." Since the clinical and the

youth with care in the camps and halls through their Juvenile Justice Mental Health (JJMH) staff and DHS provides healthcare services to the youth through Juvenile Court Health Services (JCHS) staff. Probation does not directly provide any clinical care to minors in their custody. PEMRS was implemented in 2011 as a DOJ requirement and is used to store and maintain electronic medical records for all detained minors in the care and custody of the County. To date, Probation has used internal County funding to pay for its PEMRS implementation and has not received state, federal or any other source of funding for their system.

- **DMH's Integrated Behavior Health Information System (IBHIS):** IBHIS is a Netsmart Corporation web-based software solution that was implemented in 2012. IBHIS has been implemented in 121 of 131 of DMH's Directly Operated (DO) Providers. Those remaining sites are either Jail Mental Health or Probation sites. Currently, in the jails and probation camps/halls, DMH staff enter data into two systems, pending a final determination on how these programs will implement a final system solution. DMH staff enter clinical information into JHIS and PEMRS and also re-enter limited clinical information into their existing Legacy System (LS) for claiming and workload documentation purposes. To-date, DMH has used Mental Health Services Act (MHSA) Information Technology Funds, federal Meaningful Use incentive payments and other DMH IT funding to pay for its IBHIS implementation.

- **DPH**: DPH does not have an EHR system, but intends to implement ORCHID for its Community Health Services clinics, subject to Board approval and the identification of funding. DPH is working with Gartner Consulting to develop a roadmap for its EHR implementation, including the infrastructure, staffing, and processes that will be necessary for success and the assessment should be completed by Fall 2015. Gartner has provided high-level cost estimates for ORCHID adoption, and DPH will incur additional costs to staff the implementation and system support. DPH will work with DHS, County Counsel, and CIO to refine the cost estimate. DPH indicates the possibility of some revenue generation with the implementation of an EHR given that they will able to capture essential data elements to claim for certain services for which they are unable to claim now. DPH has identified some funding within existing resources to pay for a portion of the anticipated cost, but would still need to identify additional funding to offset the entire system cost.

- **Jail Health Services (JHS):** JHS encompasses services provided by LASD, DMH, DHS, and DPH. DMH is currently discussing a proposed interface of IBHIS with the LASD and Probation EHRs for mental health clinical data, which could possibly commence in late 2015 or early 2016, pending a decision on a final EHR system solution. Additionally, on June 9, 2015, the Board approved the integration of jail health services under the DHS, which will require additional discussion on how to organize the EHR systems to best meet the needs of coordinated patient care provided by the departments. Therefore, this will not be considered in this report.

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juvenile case files are interfaced into PEMRS to meet Probation's business needs, the County needs to carefully address information sharing involving probation youth.

Appendix II: Alternatives to Using ORCHID and/or a Single Unified County EHR

The County could opt to acquire a new unified health record system and migrate all current County departments with EHRs to a new EHR system. The County could go down the path of developing an integrated unified system from scratch and build it to meet the various needs and specifications of the various departments. This option did not seem feasible as the County has already invested tens of millions of dollars and countless hours to launch ORCHID. Given that ORCHID seems to have the ability to be converted into a unified system for the County, the option to discontinue its use and acquire a new system for the County was not pursued.

Further, two available alternatives to a single unified County EHR were reviewed:

1. *A Cerner "hub" that would connect the County's Cerner and non-Cerner EHRs* – All three installations of Cerner in the County, currently at DHS, Probation, and LASD are completely separate and independent "instances" that do not currently share data. In order to aggregate patient data from each Cerner instance and create a more complete picture of a patient's medical history, the County could implement Cerner's interoperability functionality known as the Clinical Exchange Network (also known as the Resonance Hub). The Resonance Hub shares Continuity of Care Documents (CCD) [2] and Transition of Care (ToC) documents that are PDF documents and therefore, generally non-actionable data. The Hub also offers some limited ability to pull discrete data and share it between Cerner systems (this option is not available for sharing between a Cerner system and non-Cerner system). The ORCHID agreement, approved by the Board in November 2012, includes language that allows all County Cerner instances to share information via the Resonance Hub with no per-transaction charge. The Resonance Hub can also exchange information with non-County EHRs, such as the Martin Luther King, Jr. Community Hospital (MLKCH) Cerner instance and DMH's IBHIS. DMH has been working with its IBHIS vendor, Netsmart, on a proposal to integrate IBHIS with the Resonance Hub to exchange clinical information with the other County instances of Cerner, but as noted above, the Resonance Hub does not provide the ability to share discrete, actionable data with a non-Cerner system. Netsmart has done this before elsewhere, but will face the standard challenges to maintain interfaced products. Due to these limitations, the Hub would not replace the granularity of an integrated, single unified data structure that would be present in a single unified EHR.

   The pre-requisite to allow County Cerner instances to exchange information via the Resonance Hub is that all instances be on the most updated software platform. DHS' ORCHID is updated to the most recent software version for those clusters that have gone live. Probation's PEMRS only recently upgraded to the most up-to-date software version in Spring 2015; however, due to the limitations of WIC 827, another technical modification needs to be explored to mask juvenile patient information and the soonest Probation could share information is by the end of 2015. LASD's JHIS is scheduled to be upgraded and available to share information by December 2015. Once all instances are live and on the same software version, the County could implement the Hub to share select information between Cerner instances via CCD's, which will contain general patient information, such as medication, allergies and other pertinent data relevant to their care. Data sharing using the Resonance Hub does not happen automatically—it can only occur upon the submission of a query from one of the participating systems to the Hub. That query will result in the generation of a CCD that can eventually be uploaded into the querying department's EHR as a PDF (non-structured/non-discrete data). Clinician feedback on this query functionality indicates that this can be a delayed process that greatly limits clinical usefulness. The uploaded information does not directly become part of the patient record; instead, it is only

[2] See Appendix IV.

viewable and if a decision is made to incorporate it into a patient's health record, it would transfer in as a "screen shot" and not be integrated into the various viewable data fields in the system. While the ease of implementation and cost of this alternative are benefits, the need to query the information and the fact that the information is not fully consumed into the receiving department's medical record are considered major drawbacks of this alternative.

2. *An HIE that could share data between County and non-County EHRs from any vendor* – Another available option for sharing data among disparate health providers and systems is through an HIE, such as the Los Angeles Network for Enhanced Services (LANES). The County has been working with a public/private organization, LANES, to establish an HIE in Los Angeles. This has largely been driven by the County's need to share data with numerous non-County partners, such as the Community Partners (CPs) to assist with the provision of outpatient primary care services as part of DHS' empanelment for primary care. LANES is planning to go-live by the end of 2015 with a limited set of DHS facilities and Community Partner clinics. While the County will continue to pursue this option due to the need to have a viable HIE in Los Angeles County to connect to non-County providers, drawbacks are similar to those of the Cerner Resonance Hub option above, in that this is a query based option that is not yet designed to be fully consumable into the receiving EHR. While it is possible to transmit discrete data via an HIE and utilize that data in an actionable way, the basic framework for LANES at this time is to initially provide basic data sharing among DHS and non-County physical health providers.

Neither of these options would achieve the same results as a single unified EHR. While information exchange is possible in the near future within the existing Cerner instances residing with DHS, LASD and Probation, sharing through the Resonance Hub and/or an HIE will not create a single County-wide platform for a unified record for each individual patient, nor will it allow the staff using the systems in each department the ability to have a single portal to access, share and update electronic clinical records in real-time. Employees will log into their own system, submit a query and receive information for view and the document can be incorporated into the patient record in their own system. The data is not actionable and the granularity of clinical data can be compromised at each interface point, so although information sharing can be achieved, the quality of data is believed to be greater when it resides within one system.

These alternatives could play a role in improving the integration of health care data in the County and improve the coordination of care for County clients and patients in the future. Therefore, these alternatives will be considered as part of the assessment we are recommended by completed to determine what role they can play in the Board's direction to evaluate a single unified EHR for the County.

Appendix III: Claiming

Claiming in the health/mental health setting, especially for the safety net population, is extremely complicated, with a need to have familiarity with various local and federal rules and guidelines. The ability for County departments to have reliable, accurate and robust claiming capability is of paramount importance. Each department's ability to maximize revenue generation for the various reimbursable services provided will be a key to their success in a post-ACA environment. Currently, claiming is handled differently throughout the County, either with integration of a separate claiming solution to an existing EHR or in a partially automated fashion with extracted data elements from the EHR used as the basis for claiming. If the Board approves the integration of the County's EHR clinical systems into ORCHID, County employees familiar with the Cerner EHR platform state that it integrates well with third-party claiming solutions. A brief description of each department's claiming scenario is included below:

- **DHS:** DHS' claiming solution is not a Cerner product and is interfaced to ORCHID. DHS is investigating technical options for its long-term claiming needs.

- **DMH:** Claiming has been fully implemented in IBHIS for all DO providers. One unique consideration is that DMH acts as the Medi-Cal LMHP administrator for the County on behalf of the State and as such, all of DMH's Contracted Legal Entities (CLE) must claim Medi-Cal reimbursement through DMH. As part of this process, in addition to submitting DO claims to the State for reimbursement, DMH must also process, pay, and then request reimbursement of payments for CLE claims from the State. Therefore, CLEs will always exchange administrative, clinical, and financial data with DMH via interfaces between their own EHR systems and whichever EHR or claims processing system DMH uses. To-date, four of 130 CLEs have interfaces with IBHIS for claiming. DMH will continue to rollout claiming to the remaining 126 CLEs; however, given the complexity of mental health Medi-Cal claiming, additional effort is needed to optimize DMH processes to ensure timely and accurate claims processing when the remaining CLEs go-live, which will likely occur by late 2016. DMH DO claiming is based on the integration of clinical documentation in IBHIS and claims processing module in IBHIS. If DO clinical documentation were shifted to ORCHID, an entirely new claims processing approach would be needed. An alternative approach to DMH CLE claiming may likewise require a viable alternative claiming approach in the absence of IBHIS. Regardless of any possible decision to migrate DMH from IBHIS to ORCHID, it is in the County's best interest to allow DMH to complete the rollout of claiming to the 126 remaining CLEs.

- **Probation:** PEMRS is a multi-department collaboration between DHS, DMH and Probation. PEMRS does not have a claiming module as claiming is currently done by DHS and DMH for a limited subset of Probation youth[3].

- **LASD:** JHIS does not currently include claiming functionality; however, LASD is scheduled to implement a Cerner claiming module in March 2017. Inmate patients are not currently eligible to receive Medi-Cal while in custody, but LASD is currently reviewing the possibility of billing private insurance, including the State Healthcare Exchange, also known as Covered California, for certain non-adjudicated inmate patients.

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[3] Medi-Cal reimbursement is not permitted for in-custody patients and is only permitted for a small number of youth that have been released from custody and are awaiting Suitable Placement (SP). When a youth is awaiting SP or are in SP, they are still in the care, custody, and control of Probation, which can range from 7 to 90 days, with the average at about 30 days. After that timeframe, the youth will typically transition to a group home, foster home facility, or home family setting. During that transitional period, Probation is able to claim for health/mental health treatment.

Appendix IV: Sample CCD Document

Health Summary

Patient	TAMMY BUTLER		
Date of Birth	Jan 22, 1972	Sex	Female
Race	White	Ethnicity	
Contact Info	Primary Home: 209 SE SOMERSET DR LEES SUMMIT, MO 64063-1040, US Tel (Primary Home): (816)467-9853	Patient IDs	79847 2.16.840.1.113883.3.13.3.99.119.101.1
Preferred Language	eng		
Document Id	204A91C0-3B46-4680-A834-82FCE3174C63		
Document Created	Jul 28, 2015 17:23 CDT		
Performer (primary care physician)	Phil Shell, MD		
Contact Info			
Performer (primary care physician)	Bob Smith, MD		
Contact Info	Tel (Work Place): (816)777-9797		
Performer (primary care physician)	James Ahmad, MD		
Contact Info			
Performer (primary care physician)	Phil Heat, MD		

Contact Info	
Performer (primary care physician)	Ali Slimani, MD
Contact Info	
Performer (primary care physician)	Phyllis Robinson, MD
Contact Info	Tel (Work Place): (913)098-7654
Performer (primary care physician)	George Velianoff
Contact Info	
Performer (primary care physician)	Phil Sansale, MD
Contact Info	
Performer (primary care physician)	Jeremy Young, MD
Contact Info	
Performer (primary care physician)	Cari Caprio, MD

Contact Info

Tel (Work Place): (816)939-4330

Performer (primary care physician) Dana Breen, MD

Contact Info

Tel (Work Place): (816)759-4000

Author Millennium Clinical Document Generator

Contact Info

Document Maintained By

Contact Info

Encounter(s)

7/22/15
Iyadat Noor meirheim 30 Helsinki, 00100 Finland 03404949498
Attending Physician: Fincham MD, Colin C

7/21/15
Iyadat Noor meirheim 30 Helsinki, 00100 Finland 03404949498
Attending Physician: Fincham MD, Colin C

7/18/15 - 7/18/15
Avondale Clinic 2800 Rockcreek Parkway Kansas City, MO 64117- US (816) 201-1024
Discharge Disposition: Home or Self Care
Attending Physician: Ahmad MD, James

7/14/15
Baseline West Medical Center 5276 Rockcreek Parkway Kansas City, MO 64117-2521 US 816-565-1853

7/8/15
BW Healthe Clinic 2342 75th Street Kansas City, MO 64115- (816) 555-4545

Attending Physician: Smith MD, Bob
Admitting Physician: Smith MD, Bob

Vital Signs

Most recent to oldest [Reference Range]:	1	2	3	4	5	6	7	8	9	10
Temperature Oral [35.6-37.3 degC]	37 degC (4/3/15 10:52 PM)	37.1 degC (2/18/15 6:53 AM)	38.2 degC *HI* (10/27/14 1:56 PM)							
Temperature Temporal Artery [36.8-37.8 degC]	38 degC *HI* (3/5/15 10:21 AM)									
Peripheral Pulse Rate [60-100 bpm]	83 bpm (4/3/15 10:52 PM)									
Respiratory Rate [14-20 br/mn]	16 br/min (4/3/15 10:52 PM)									
Blood Pressure [90-140/60-90 mmHg]	132/88 mmHg (7/8/15 5:55 PM)	130/86 mmHg (7/8/15 5:55 PM)	132/88 mmHg (7/8/15 5:53 PM)	130/86 mmHg (7/8/15 5:51 PM)	124/84 mmHg (7/8/15 5:47 PM)	120/64 mmHg (7/8/15 5:44 PM)	130/82 mmHg (7/8/15 5:27 PM)	124/68 mmHg (7/8/15 3:33 PM)	122/80 mmHg (7/8/15 3:27 PM)	112/60 mmHg (7/8/15 3:23 PM)

Mean Arterial Pressure, Cuff	77 mmHg (7/8/15 3:23 PM)	85 mmHg (4/3/15 10:52 PM)	102 mmHg (2/18/15 6:53 AM)	100 mmHg (11/6/14 4:06 PM)	111 mmHg (10/27/14 1:56 PM)	92 mmHg (10/21/14 1:40 PM)	102 mmHg (12/20/13 4:01 PM)

Problem List

Condition	Effective Dates	Status	Health Status	Informant
At risk of venous thromboembolus(Confirmed)[1]	4/24/15	Active		
COPD bronchitis(Confirmed)		Active		
Headache(| Confirmed |)(Confirmed)	2010	Active		
Hypertension(Confirmed)		Active		
Type 2 diabetes mellitus(Confirmed)	5/2/12	Active		

[1]Problem added by Discern Expert

Allergies, Adverse Reactions, Alerts

Substance	Reaction	Severity	Status
penicillin	Abdominal pain nausea diarrhea	Moderate	Active

Medications

amoxicillin 400 mg/5 mL oral liquid
5 mL, Oral, q12hr, X 7 days, # 70 mL, 0 Refill(s), 01/15/15 9:12:00 CST, called to pharmacy (Rx), Pharmacy OP Main
Start Date: 1/8/15
Stop Date: 1/15/15
Status: Completed

metFORMIN 1000 mg oral tablet
1 tabs, Oral, BID, # 180 tabs, 0 Refill(s), Pharmacy OP Main
Start Date: 5/2/12
Status: Ordered

Tylenol 325 mg oral tablet
1 tabs, Oral, q4hr, PRN, # 60 tabs, 0 Refill(s), 04/04/15 0:19:00 MSK, other reason (Rx), Pharmacy OP Main
Start Date: 4/4/15
Stop Date: 4/4/15
Status: Completed

Results

Hematology

Most recent to oldest [Reference Range]:	1	2	3
WBC [4.0-11.0 x10^3/mcL]	14.0 x10^3/mcL *HI* (11/3/14 8:21 AM)	11 x10^3/mcL (10/14/14 2:00 PM)	11 x10^3/mcL (12/30/13 10:14 AM)
RBC [3.80-4.80 x10^3/mcL]	3.40 x10^3/mcL *LOW* (11/3/14 8:21 AM)		
Hgb [12.0-16.0 %]	13.0 % (11/3/14 8:21 AM)		
Hct [37.0-47.0 %]	40.0 % (11/3/14 8:21 AM)		
Platelet [150-400 x10^3/mcL]	467 x10^3/mcL *HI* (11/3/14 8:21 AM)		
MCV [80-96 fL]	118 fL *HI* (11/3/14 8:21 AM)		
MCH [27.0-33.0 pg]	38.2 pg *HI* (11/3/14 8:21 AM)		
MCHC [31.0-36.0 %]	32.5 % (11/3/14 8:21 AM)		

RDW [11.8-14.1 %]	12.7 % (11/3/14 8:21 AM)
MPV [7.8-11.2 fL]	8.0 fL (11/3/14 8:21 AM)
Neutro Auto [42.0-75.0 %]	42.0 % (11/3/14 8:21 AM)
Lymph Auto [20.0-55.0 %]	25.0 % (11/3/14 8:21 AM)
Mono Auto [1.0-10.0 %]	4.0 % (11/3/14 8:21 AM)
Eos Auto [<=7.0 %]	6.0 % (11/3/14 8:21 AM)
Basophil Auto [<=1.5 %]	4.0 % *HI* (11/3/14 8:21 AM)

Chemistry

Most recent to oldest [Reference Range]:	1	2	3
Blood Glucose, Capillary [74-106 mg/dL]	9 mg/dL *LOW* (4/9/15 2:49 PM)	10 mg/dL *LOW* (4/8/15 1:12 PM)	
Glucose Random [80-120 mg/dL]	265 mg/dL *HI* (10/14/14 2:00 PM)	265 mg/dL *HI* (12/30/13 10:14 AM)	
Hgb A1c [4.0-6.0 %]	8.5 % *HI* (10/14/14 2:00 PM)	8.5 % *HI* (12/30/13 10:14 AM)	7.5 % *HI* (12/20/13 4:00 PM)
Chol [200.0 mg/dL]	210 mg/dL *HI* (10/27/14 2:06 PM)	260 mg/dL *HI* (10/27/14 1:47 PM)	
HDL [27-67 mg/dL]	35 mg/dL (10/27/14 1:47 PM)	53 mg/dL (12/20/13 4:00 PM)	

LDL [60-139 mg/dL]	135 mg/dL (10/27/14 2:06 PM)	150 mg/dL *HI* (10/27/14 1:47 PM)	126 mg/dL (12/20/13 4:00 PM)
Trig [40.0-160.0 mg/dL]	138 mg/dL (12/20/13 4:00 PM)		
LDL POC [60-0 mg/dL]	81 mg/dL *HI* (10/29/14 3:32 PM)		

Immunizations

Vaccine	Date	Refusal Reason
measles/mumps/rubella virus vaccine	1/5/10	
poliovirus vaccine, inactivated	4/12/10	
poliovirus vaccine, inactivated	1/5/09	

Procedures

No data available for this section

Social History

No data available for this section

Assessment and Plan

No data available for this section

County of Los Angeles
CHIEF EXECUTIVE OFFICE
Kenneth Hahn Hall of Administration
500 West Temple Street, Room 713, Los Angeles, California 90012
(213) 974-1101
http://ceo.lacounty.gov

SACHI A. HAMAI
Chief Executive Officer

December 12, 2017

To: Supervisor Sheila Kuehl, Chair
Supervisor Hilda L. Solis
Supervisor Mark Ridley-Thomas
Supervisor Janice Hahn
Supervisor Kathryn Barger

From: Sachi A. Hamai
Chief Executive Officer

RESPONSE TO ESTABLISHING A COUNTYWIDE CENTRALIZED ELECTRONIC HEALTH RECORD SYSTEM TO IMPROVE PATIENT CARE (ITEM NO. 25; AGENDA OF APRIL 7, 2015)

On April 7, 2015, the Board directed the Chief Executive Officer (CEO), the Chief Information Officer (CIO), County Counsel, the Directors of the Departments of Health Services (DHS), Mental Health (DMH) and Public Health (DPH), Probation[a], and the Sheriff or designee, to report back in 90 days on integrating electronic health record systems into a single platform so that a unified record exists for each individual patient and so appropriate Los Angeles County (County) employees can have a single portal to access, share and update electronic health, mental health and public health clinical records in real time. The report was to include a discussion of:

a) The financial and clinical benefits and drawbacks of a single unified County electronic health record system (EHR);
b) Whether integration should be limited to clinical information or whether the departments should also further integrate the claiming systems;

[a] Although not originally included in the Board motion, input from the Probation Department is included in this report back given they have an electronic health record system.

c) The ramifications, if any, of discontinuing or phasing out the use of any existing system built with federal or state funds; and
d) The feasibility of integrating all electronic health record systems into ORCHID, including the potential cost and timeline to do so.

BACKGROUND

The Chief Executive Office (CEO) established the multi-departmental ORCHID/County EHR Strategy Workgroup (Workgroup) comprised of IT, clinical, business and claiming subject matter experts and held workgroup meetings. At these meetings, the workgroup discussed high-level business needs and outlined departmentally specific business needs and priorities associated with a possible migration to ORCHID that would need to be evaluated in this assessment.

The CEO and CIO, with the assistance of County Counsel, identified Gartner, Inc. (Gartner) to assist with this assessment. Gartner was selected given their extensive prior knowledge of Cerner software solutions and their prior work assessing EHR needs at various County departments. Gartner completed its report near the end of 2016 and the related departments have been moving forward with implementing the recommendations in the report. A copy of the base report, excluding the confidential cost analysis/model, which is being transmitted under separate cover by County Counsel, is attached.

REPORT FINDINGS

The primary finding of the Gartner report is that the integration of the EHR systems into one single unified EHR is feasible. The Gartner report provides the following financial and clinical benefits and drawbacks of a single unified County EHR:

Benefits

- Provides for a single patient record, from a single source, for each consumer of County healthcare and behavioral health services;
- Improves availability of patient data for clinicians during care delivery;
- Reduces the possibility of error during transitions of care;
- Increases efficiency by helping to standardize processes and workflows across departments; and
- Enables long-term financial savings from maintaining one EHR system and leveraging a single set of contract terms.

Drawbacks

- Reduces flexibility and ability to address changes as a single EHR will require ongoing compromises across the participating departments to maintain a single system across multiple care environments;
- Transition to a single EHR will be disruptive to ongoing operations and has high initial costs;
- Dependency on a single vendor/system for all EHR needs; and
- Potential that a single vendor cannot provide for future IT needs or technology innovations.

Gartner also found that the integration should be limited to clinical information and should not further integrate claiming systems at this time. ORCHID is a patient-centric system and includes information about an individual's health status and care. ORCHID does not currently provide for the very specific needs to manage claiming and payment for the purchase of services from third-party care providers. As such, the consolidation effort will be limited to core clinical care delivery, while revenue cycle and claiming/payment systems should continue to be department specific solutions.

For the three departments identified for which an existing EHR solution may be replaced by ORCHID (DMH, Probation, and Sheriff), DMH is the only agency that leveraged State funds to implement its system. Based on input from Gartner and County Counsel, we do not anticipate any ramifications of discontinuing or phasing out the use of the DMH EHR with a different EHR system in the future.

Gartner's confidential cost analysis associated with integration is being provided under separate cover by County Counsel. Generally, the Gartner report indicates the integration could be costly and would likely take a minimum of five years to complete the full conversion.

STATUS OF THE SINGLE UNIFIED EHR

The related departments have been moving toward the implementation of a single unified EHR guided by the Gartner report and the work of the EHR Strategy Workgroup. The establishment of a single unified EHR is also one of the County Health Agency's strategic priorities. The following provides a status for each department:

DPH

DPH did not previously have an EHR and is currently implementing ORCHID. The Board approved an amendment to the Health Agency's ORCHID agreement in February 2017 and DPH expects to implement ORCHID by January 2018. The total cost is estimated to be $10 million and will be funded partially by CEO legacy systems funding and DPH's operating budget.

SHERIFF

Sheriff utilized a Cerner EHR referred to as the Jail Health Information System (JHIS). On June 9, 2015, the Board approved the proposed integration of jail health services staff from the Sheriff and DMH to DHS. This was a two-phase process and the Board approved the second phase in April 2017. On October 31, 2017, the Board approved an amendment to the Sheriff's JHIS agreement to transfer management of the JHIS agreement to the Health Agency and will result in assimilating support fees that will provide a financial benefit to the County. Although DHS' Integrated Jail Health Services will continue to use JHIS for the time-being, this is a first step in transitioning to ORCHID in the future.

PROBATION

Probation currently utilizes a Cerner EHR referred to as the Probation Electronic Medical Records System (PEMRS). As DHS is the provider of health care provided to the youth in the Probation system, Probation and DHS are currently discussing whether DHS should similarly take over the existing PEMRS agreement in advance of converting to ORCHID in the future.

DMH

DMH continues to implement its Integrated Behavioral Health Information System (IBHIS) and expects to have it fully implemented with all of its contacted providers on board by March 2019. As indicated in the Gartner report, Cerner's Millennium EHR (which is the platform ORCHID is based on) does not support all of the behavioral health requirements that DMH needs. While Cerner is planning to include these specific capabilities into the Millennium product over time, DMH will continue to use IBHIS until such time it can be confirmed ORCHID can meet their needs.

SUBSTANCE ABUSE PREVENTION AND CONTROL (SAPC)

In February 2016, SAPC submitted an implementation plan to the California Department of Health Care Services (State) and the Centers for Medicaid and Medicare Services (CMS) to participate in the Drug Medi-Cal Organized Delivery System (DMC-ODS) Waiver. In July 2016, the implementation plan was approved and SAPC had one year to implement all components of the plan. The DMC-ODS is a five-year demonstration project that will provide State and federal funding to enable SAPC to transform into a managed care health plan for specialty substance use disorder (SUD) services.

Participation in DMC-ODS requires SAPC and its provider network to pursue rapid and dramatic information technology (IT) and clinical infrastructure improvements, including the acquisition of an IT system capable of performing DMC-ODS mandated requirements. Given the short implementation timeframe, SAPC had to choose a system that was compliant with the DMC-ODS Waiver requirements and they ultimately chose Netsmart, the same vendor that provides the DMH IBHIS system. The SAPC system is referred to as Sage and the Board approved a new agreement with Netsmart to implement the system on April 4, 2017 (a separate agreement from the IBHIS agreement). Similar to DMH, ORCHID does not currently meet SAPC's need and they will evaluate ORCHID in the future to determine if that changes.

The Health Agency will continue to provide updates to your Board regarding progress on a single unified EHR through various Board reports and Health Agency efforts.

If you have any questions or require additional information, please contact me, or your staff may contact Mason Matthews at (213) 974-2395 or mmatthews@ceo.lacounty.gov.

SAH:JJ:MM
MM:bjs

Attachment

c: Executive Office, Board of Supervisors
Sheriff
County Counsel
Chief Information Officer
Health Agency
Health Services
Mental Health
Probation
Public Health

121217_HMHS_MBS_EHR

Los Angeles County
Assessment for a Countywide Centralized Electronic Health Record System To Improve Patient Care

Final Report

October 2016

Prepared for

GARTNER CONSULTING
Engagement: 330031947

Gartner

Table of Contents

Executive Summary

Migration of all Departments onto ORCHID is Feasible

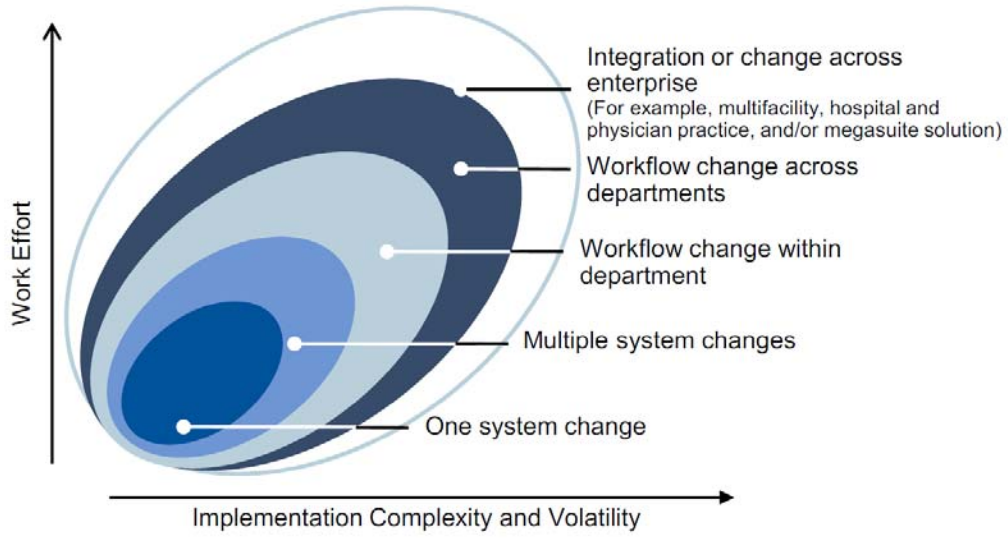
It will be difficult and costly; and there are a number of ways to achieve some of the advantages while the County plans and prepares for the Migrations

- *It is **FEASIBLE***
  - Cerner Millennium is scalable and provides – with some exceptions – the required clinical functionality
  - Significant compromises will have to be made and agreed to on how the system functions and for process/workflow standardization across the Departments
  - There are no technical barriers that would prevent the County from using “ORCHID for all”
  - The security, regulatory and policy issues can be addressed, but there will be residual risks which must be accepted and managed
  - Gartner does not anticipate financial implications nor ramifications related to discontinuing or phasing out existing systems that were built with Federal or State funds (e.g. refund of Grant Funds)
- *It is **HARD***
  - A consolidation into ORCHID means replacing 3 existing functioning EHR solutions from 2 EHR vendors, and reengineering the models of practice in the migrating departments
  - A full migration will take a minimum of 5 years to complete – this will be marathon, not a sprint
  - There are significant operational and business process challenges to overcome and these have substantial model of practice and change management implications for the migrating departments
  - Gartner has identified potential solutions for each of the departments’ collective and individual challenges to make the migration to ORCHID a reality. The migration initiatives’ execution lifecycle will establish a go / no-go ‘Gate’ after each of the solutions to these challenges have been thoroughly planned and executed.

Migration of all Departments onto ORCHID is Feasible

It will be difficult and costly; and there are a number of ways to achieve some of the advantages while the County plans and prepares for the Migrations Cont'd

- *It is* ***EXPENSIVE***
  - The funding and resource requirements for this transformation are significant and long lasting
  - It will cost more than $100 millions dollars and require dozens of dedicated resources with the appropriate skillsets to complete such a migration
  - It will likely take 20+ years for the County to financially benefit from this consolidation
- ***A NUMBER OF THE PROJECTED BENEFITS CAN BE ACHIEVED THROUGH ALTERNATIVE AND PARALLEL INVESTMENTS***
  - In addition to consolidation, there are several approaches that the County can consider to achieve the benefits earlier
  - These approaches can be implemented in parallel, as the County plans, prepares, and implements the consolidation



Source: Gartner (February 2014)

Migration of all Departments onto ORCHID is Feasible

It Provides Benefits and Drawbacks

BENEFITS

Benefits

- Provides clinicians and patients with a seamlessly integrated experience and a single patient record and source of all clinical data
- Improves availability of patient data for clinicians during care delivery
- Avoids errors and patient safety problems
- Supports standard application of evidence based practices
- Supports the long-term, strategic vision for a single longitudinal record for each consumer of the County's direct healthcare services
- Long term IT savings from maintaining one EHR system
- Consistent:
  - Support and optimization through leveraging favorable Cerner / ORCHID relationship terms and structures
  - Services and service levels at lower costs through leveraging Cerner / ORCHID contract terms

DRAWBACKS

Drawbacks

- Loss of:
  - Optimized departmental workflows
  - Flexibility and control for unique and custom, department-specific configurations
  - Full attention to the business case and accountability for results
- Introduces bureaucracy and complexity, requiring compromises across the County
- Transition is disruptive to ongoing operations and has high initial costs
- Dependency on a single vendor / system for all EHR needs
- Potential that vendor does not deliver on expected / desired capabilities both current and future
- Constrained ability to rapidly identify and take advantage of major future technology innovations

Gartner

Migration of all Departments onto ORCHID is Feasible

Migration to Unified Revenue Cycle Management Systems and Claiming and Payment Systems is not feasible

- ***Some departments have very specific needs*** to manage Claiming and Payment for purchase of service third party care providers
  - This ***functionality is not provided by ORCHID***
  - The departments that have this need have implemented specialized systems
  - The requirements are highly specialized and must address specific operational, funding, and regulatory requirements
- The emerging level of maturity of the Revenue Cycle processes among each of the departments, and the differing regulatory and funding program constraints do not support a unified system and set of processes for Revenue Cycle management at this point

Migration of all Departments onto ORCHID is Feasible

Discontinuing or phasing out the use of existing EHR Systems built with Federal or State Funds is not anticipated to result in a County obligation to return funds

- DMH leveraged State funding per the Mental Health Services Act (MHSA) to acquire the Integrated Behavioral Health Information System (IBHIS) to support the delivery of quality mental health services
- MHSA funding expires June 2018, by which time IBHIS will have been in operation for over 3 years
- If the Board decides to migrate DMH onto ORCHID, the migration will most likely not occur prior to June 2018 given the level of effort anticipated to successfully complete the prerequisite activities (Program Initiatives)
- We do not anticipate negative financial implications or ramifications related to discontinuing or phasing out existing systems that were built with Federal or State funds (e.g. refund of Grant Funds)

Migration of all Departments onto ORCHID is Feasible

Recommended Next Steps

- The Board of Supervisors must weigh the benefits to be achieved from a Countywide consolidation on to a single instance of ORCHID against the cost, risk, complexity and impact on participating Departments. Based on information and guidance provided by the involved stakeholders, make an informed decision and provide direction to the Office of the CEO and to the five departments on the best value next steps for EHR investments
- Should the Board of Supervisors decide to invest the dollars, time and efforts to move forward with the Countywide EHR Centralization on a single instance of ORCHID, it must provide a mandate and approve the funds necessary for the full scope of the effort
- The Board of Supervisors must indicate that it understands and supports the need for:
  - Strong Executive Leadership and Investment Governance
  - Responsiveness to the Participating Departments' Mission and Mandates
  - Funding and Resources Required for the Migration and On-Going Sustainability

The notional implementation schedules presented in this report have been developed to assess the overall feasibility and derive high level duration and cost estimates. They are based on the following assumptions:

1) Clear mandate from the Board and commitment to provide the required resources and funding

2) Willingness by County Executive Leadership and participating Departments to lead and manage the organizational changes associated with the effort

These assumptions must be validated and monitored by the County throughout the life of the projects.

Migration of all Departments onto ORCHID is Feasible

Recommended Next Steps, Cont'd

- Regardless of other considerations, the Board of Supervisors should provide direction for DPH[1] to migrate to ORCHID first and as soon as possible. The DPH migration[2] is not dependent on the Initiatives highlighted in this report and significant planning has already begun
- The Roadmap for migration, if approved by the Board, outlines a number of Initiatives which should all be formally established and implemented
  - The initiatives are laid out with a sequence which identifies which initiatives need to be completed successfully as a prerequisite to others
  - The Early Benefits and Program Acceleration Initiatives represents a set of complementary activities which should be given strong consideration in order to accrue some of the benefits early on and ultimately support the migrations to ORCHID
- The County should identify clear gates at which point the governance body can reassess each department's migration to ORCHID
  - Prior to migration onto ORCHID, each department's funding request to the Board of Supervisors should include a cost-benefit analysis

[1] At this time, DPH Labs and SAPC are not within the scope of migration to ORCHID

[2] Since the initial development of this report, DPH has made progress in its migration to ORCHID. As such, the timelines included in this report are no longer entirely accurate.

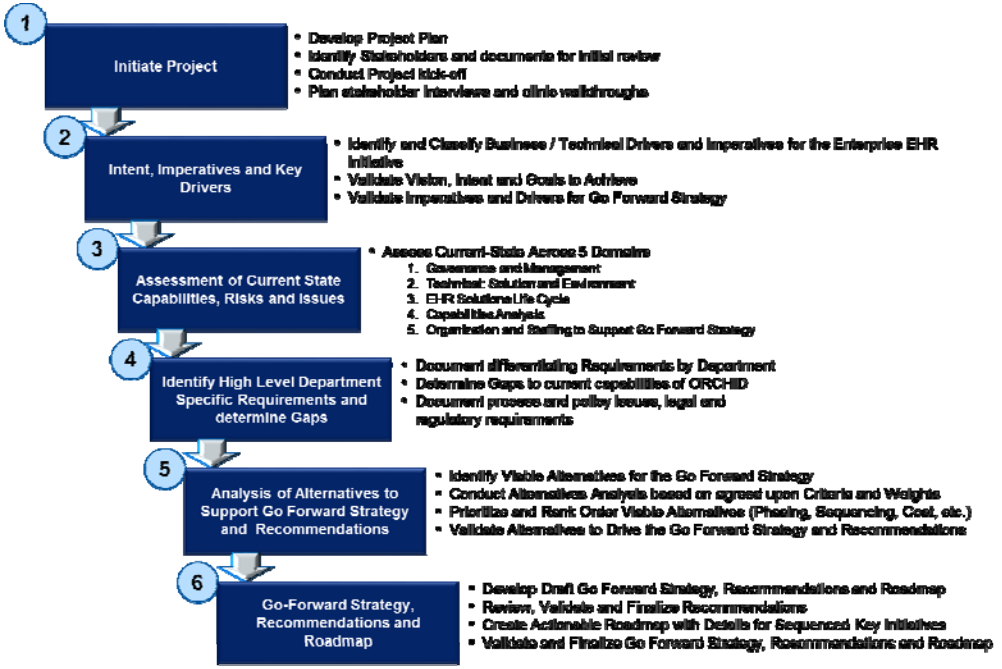
Background

Background

- On April 7, 2015, the LA County Board of Supervisors directed the Interim Chief Executive Officer (CEO), the Chief Information Officer (CIO), County Counsel, the County Agency of Health Services Departmental Directors of Department of Health Services, Department of Mental Health and Department of Public Health; and the Probation Department and Sheriff Department to:
- Report back in 90 days on integrating electronic health record systems into a single platform so that a unified record exists for each individual patient (Integrated Electronic Health Record based in ORCHID)
- The Report included a discussion of:
  - The financial and clinical benefits and drawbacks of a single unified County electronic health record (EHR) system;
  - Whether integration should be limited to clinical information or whether the departments should also further integrate the claiming systems;
  - The ramifications, if any, of discontinuing or phasing out the use of any existing system built with federal or state funds; and
  - The feasibility of integrating all EHR systems into ORCHID, including the potential cost and timeline to do so.
- In the report back to the Board, the County outlined the benefits and drawbacks of a single, countywide EHR and concluded that further analysis is required

Scope and Approach of the Assessment

- A structured process was followed, working with key stakeholders from all involved departments, to determine the current state capabilities, future state needs, gaps against ORCHID capabilities and migration challenges for each department.
- For the technology-related migration challenges, conducted an analysis of alternatives to determine the best option for resolution.
- The roadmap in this report includes a number of initiatives the County needs to complete to realize the vision of a single, unified health record leveraging ORCHID.



In Scope

- County Health Agency departments: Health Services, Mental Health and Public Health
- Physical and behavioral health services provided by DHS and DMH staff, to the Probation and Sheriff's Department
- Direct care delivery for healthcare and behavioral health services provided by LA County Departments

Out of Scope

- Non-EHR capabilities
- EHR solutions for contracted care providers (i.e. systems and support for care provided by contracted providers)
- Analysis of alternatives to a single, centralized EHR to achieve the vision of a Countywide health record

Assessment and Alternatives Analysis Project Objectives

- The objectives of this focused assessment are to provide the County of Los Angeles with answers to the following questions:
  - **Time to implement** — What is the estimated transition time to a single unified EHR?
  - **Financial cost** — What is the cost of transitioning to a single EHR? What are cost, budget and funding implications associated with such a transition?
  - **Differing needs for differing populations** — Can a single EHR meet the different needs of each department? Can it accommodate varying patient care settings, the need to interface and develop cohesive clinical records with contract providers and community partners, the need to protect the information of the juvenile justice population, DMH's need to fill its role as the Medi-Cal Local Mental Health Plan (LMHP) administrator, and the need to integrate health/mental health and case management information?
  - **Enterprise system limitations** — Can a single unified EHR, once established, remain flexible and be tailored to a single department's emerging needs going forward?
  - **Patient identity issues** — Does the County have a sufficiently robust Master Patient Index solution in place to meet the specific requirements of all stakeholders, specifically the Sheriff and Probation?
  - **Limited staff resources** — Does the County have the resources to focus on a new EHR migration for departments with an existing system?

Assessment and Alternatives Analysis Project Critical Success Factors

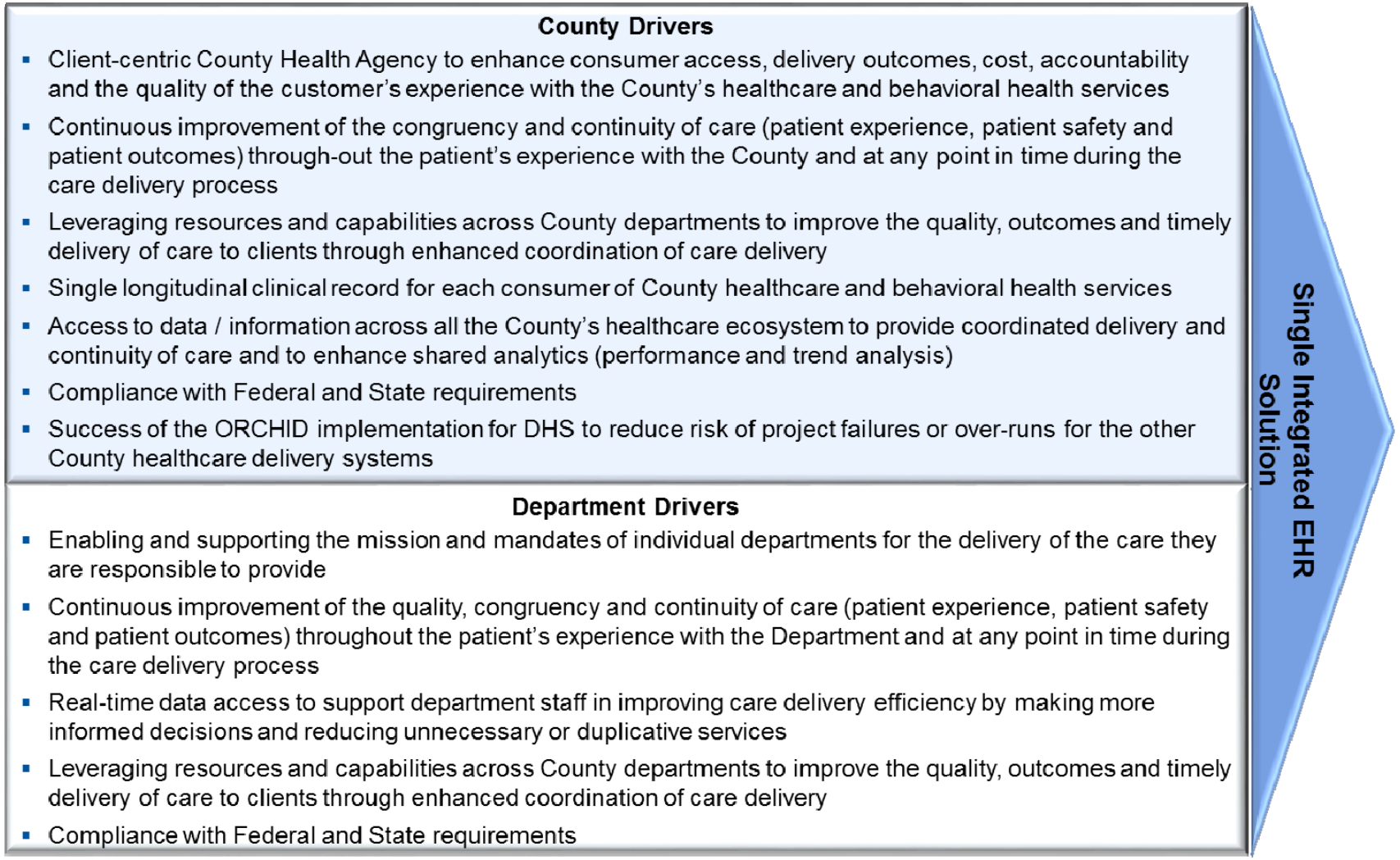
In order to ensure a thorough analysis and ensure buy-in from the participating departments, Gartner addressed the following critical success factors:

- ***Develop Consensus on Business Imperatives and a Unifying Vision*** — Business imperatives, drivers and future state vision for an enterprise approach for an electronic health record system(s) and health information technology to improve the continuity, coordination and congruence of care across LA County
- ***Involve the Right People and Focus on the Right Issues*** — Representative stakeholders focusing on transformation to improve access, outcomes, cost and quality of healthcare
- ***Understanding Departments' Unique Needs, Demands and Requirements*** — Current programs and services supported by an EHR; planned additional support and/or enhancements; and other Department Line of Businesses that could be impacted or supported by an EHR
- ***Identify the Scope and the Benefits to be Achieved Through an Integrated Enterprise Vision and Approach*** — Departments of Health Services, Mental Health and Public Health, Probation, and the Sheriff, County CEO, County CIO and Board of Supervisors

Assessment and Alternatives Analysis Project Critical Success Factors, Cont'd

- ***Identify Common Workflow and Data Sharing Needs Through-out the Life of a Case for Shared Consumers*** — Opportunities for improving continuity, coordination and outcomes of consumer health and care management services through technology enablement
- ***Establish a "Wise" Investment Foundation for a Sequenced Enterprise Approach for Electronic Health Records and Health Information Technology*** — Prioritize and sequence investments based on value provided to the County and its constituents
- ***Establish Proper Governance to Establish Priorities and Make "Go Forward" Investment Decisions*** — Leadership, structure and process for making decisions

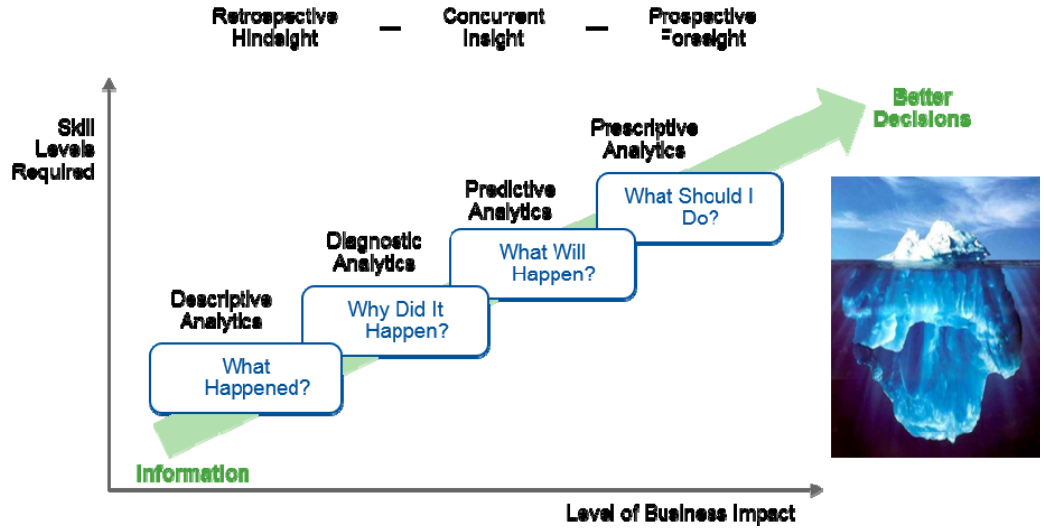
Summary of Go-Forward Drivers for the Departments and the County



Financial, Clinical, and Operational Benefits and Drawbacks of a Single Unified County EHR System

Clinical and Operational Benefits of a Single Centralized EHR

- A single, unified EHR solution for all County provided physical and behavioral health services provides patients and providers with a seamlessly integrated experience through a single patient record and a single source of all clinical data including:
  - Patients receiving care from different departments will access and interact with a single patient portal, as allowable
  - There will be a streamlined process for patient registration
  - Providers will experience a consistent look and feel, no matter where in the County they provide care
  - Providers will have all health related data available in a single system



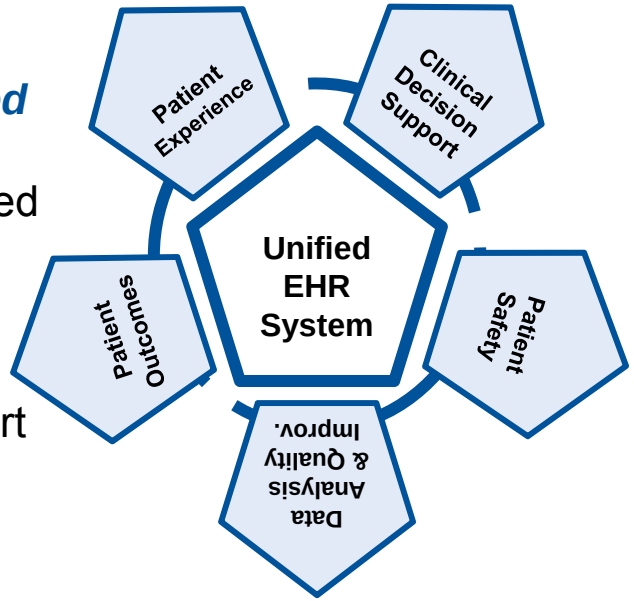
Clinical and Operational Benefits of a Single Centralized EHR, Cont'd

- A single, unified EHR aligns with many of the County and Departmental Go-Forward Drivers. A single, unified system inherently facilitates:
  - Single longitudinal clinical record[1] for each consumer of County healthcare and behavioral health services
  - Enhanced consumer access, improved delivery outcomes, reduced costs, clear accountability, and high quality-customer experience with the County's healthcare and behavioral health services
  - Real-time access to a complete set of data to support department staff in improving care delivery by making more informed decisions and reducing unnecessary or duplicative services
  - Continuous improvement of the quality, congruency and continuity of care (privacy, patient experience, patient safety and patient outcomes) throughout the patient experience across and within all of the departments in the Health Agency and at all points in time during the care delivery process

[1] Contract Providers support the longitudinal clinical record, however are not within the scope of migrating to ORCHID. For example, DMH's Contract Providers account for approximately 85% of the Medi-Cal mental health claims volume in the County.

Clinical and Operational Benefits of a Single Centralized EHR, Cont'd

- Benefits of a single, unified EHR include the following:
  - ***Supports standard application of evidence based practices*** due to standardized processes and workflows within and across departments and aligned with evidenced based practices
  - ***Increased quality of care with prudent use of clinical decision support*** - numerous studies indicate that judicious use of clinical decision support works, especially when information is automatically pushed to clinicians rather than requiring them to "ask" for it
  - ***Avoid errors and patient safety problems*** inherent in processes that involve multiple roles and cross care-venue boundaries
    - Use of a single enterprise EHR reduces the possibility of error during transitions of care
    - Consistent clinical workflow processes across the Health Agency

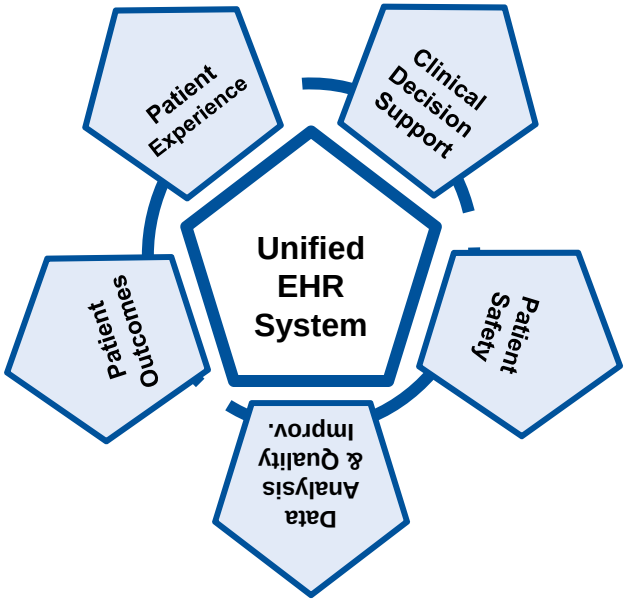


"EHRs are evolving from a hospital-centric data capturing functionality to a patient-centric solution delivering actionable insights and helping the clinical users."

Source: Gartner Research, April 2016 G00297711

Clinical and Operational Benefits of a Single Centralized EHR, Cont'd

- ***Improve availability of patient data*** for clinicians
  - Making patient data more available, readable and shareable (while secure) can reduce errors, improve medication reconciliation, and reduce decision/care delays or redundant tests/procedures
- ***Improve availability of rich patient data*** for analysis and continuous quality improvement
  - Clinical effectiveness and continuous quality improvement are fed more, better and faster by rich clinical data of increasingly better and standardized quality readily available for analysis in near real-time



Clinical and Operational Drawbacks

- Loss of:
  - Optimized departmental workflows
  - Flexibility and control for custom, department-specific configurations
- Dependency on a single vendor/system
  - The County will be heavily dependent on Cerner for its current technical capabilities, future strategic roadmap, staff skillsets / expertise and resource availability as its implementation, enhancement, and ongoing operations partner
- Potential that vendor does not deliver on expected / desired capabilities both current and future
  - Megasuite vendors, such as Cerner, aren't equally good at everything; their development priorities will never exactly match the list or timing of every specific department's needs, and may fall short in some specific clinical and operational domains critical to some participating departments

Clinical and Operational Drawbacks, Cont'd

- Reduced flexibility and ability to address changes
  - A single system will require ongoing compromises across the participating departments, inhibiting rapid responsiveness to changing needs
  - There will be less flexibility to implement custom configurations to support department-specific workflows and environments
  - Focus on utilizing a single megasuite solution may constrain departments' abilities to innovate and respond to changes in their environments
  - Innovative County stakeholders may perceive ultimate decision makers as indifferent obstructionists to their ability to fulfill their mission and mandates
- Constrained ability to rapidly identify and take advantage of major technology innovations
  - Leveraging a variety of health information technology vendors can expose the County to opportunities for more innovative ideas and solutions
  - An "eyes open" approach gives the County important practical perspectives on how competitive and ready the megasuite vendor's (Cerner) next offerings are, as well as how to predict the real time between their promises and delivery
- Transition is disruptive
  - The onset of each transition through the migration effort, primarily those coming from their own established EHR systems, will be a tremendous undertaking and the disruption to the departments' ability to fulfill their mission and adapt to the changes should not be underestimated

Financial Benefits and Drawbacks

Benefits

- Focus is on Strategic Investment for the long-term vision for the County
- Realize estimated recurring annual savings between $7 and $8 million* from maintaining one vs. four separate EHR systems, consolidated licensing and hosting costs
- Leverage favorable contract terms the County has negotiated with Cerner in the ORCHID contract
- Creates the potential for operational savings related to consolidation of support, benefits from standardized workflows and sharing resources across departments
- Increased capability for cost recovery (at no incremental cost) as ORCHID will be ready for itemized billing
- Consistent services and service levels at lower costs through leveraging Cerner / ORCHID contract terms
- Potential cost avoidance from improved care and reduced readmission

Drawbacks

- Significant investment – likely well in excess of $100 million** – for the next 5 years to prepare for and execute the departmental transitions
- Potentially increased cost of business operations in some departments due to loss of integrated workflows
- No immediate cost savings as transition costs balance out savings for at least 17 years
- Risk of budget overruns due to complexity of departmental migrations
- Potential financial implications to early termination of current EHR contracts (Probation – Cerner; Sheriff – Cerner; DMH – Netsmart)
- Risk of litigation costs due to incorrectly merged records

*Estimates do not consider reduction in County support staff. Underlying assumptions are preliminary and pending validation with County.

**Estimates account for full cost of all County staff required, external vendor costs for the EHR and a 25% contingency. Underlying assumptions are pending validation with County.

Feasibility of Integrating All EHR Systems into ORCHID

Summary

Migration Challenges and EHR Centralization Initiatives

High Level Timeline and Costs

Summary

Feasibility of Integrating All EHR Systems into ORCHID

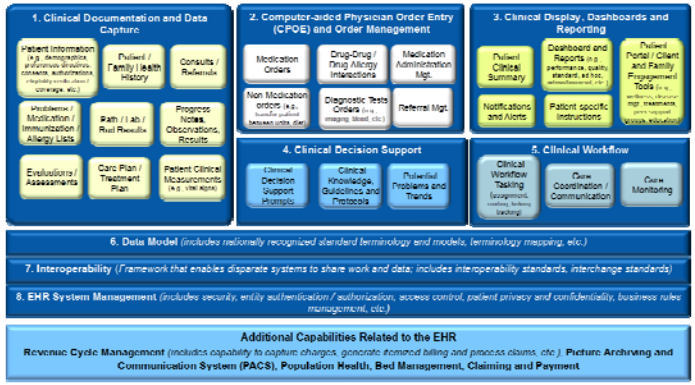
Technical and Operational Feasibility

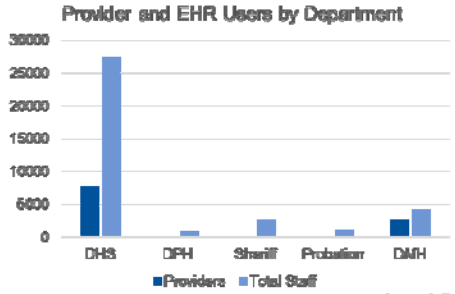
- It is ***technically and operationally feasible*** to transition all five departments onto a single instance of ORCHID as an integrated EHR over a period of time
- ***The transition will be complex and costly***, and the County will need to balance the cost, risk, timing and operational impact with the overall benefits in its decision to move forward with a single centralized EHR
- Through analysis of the complexity and cost of making the transition, 9 Migration Challenges have been identified that will impact the departments that are not currently using ORCHID
  - ***DPH has relatively low complexity, risk, and cost*** since its model of care is closest to that of DHS and it effectively has no electronically supported workflows and clinical documentation
  - ***Probation and Sheriff have similar levels of complexity and risk to one another***, which fall between that of DPH and DMH since they have similar models of care as one another and as DHS, ***but there are a number of technical and operational challenges that will need to be addressed***
  - ***DMH has the highest level of complexity and risk*** since there are specific features and functions required for Behavioral Health, for example the DMH community based behavioral health direct care delivery model has some highly specialized requirements, and exchanges clinical data in near real time with the contracted providers using Web Services
- A set of initiatives have been identified that the County will need to complete in order to address the Migration Challenges of the EHR Centralization Program for a single instance of ORCHID

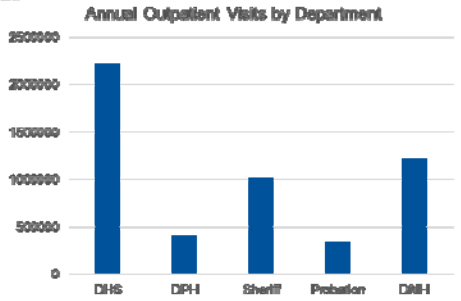
Feasibility of Integrating All EHR Systems into ORCHID

Functional Feasibility

- ORCHID – the Cerner Millennium EHR software as it is deployed by DHS – is a full featured and robust EHR solution
  - ***ORCHID includes all of the 8 EHR capabilities*** and has been successfully implemented in a wide range of environments ranging from ambulatory clinics to inpatient care, specialty care, psych ED, rehabilitation and others.
  - ***ORCHID is technologically robust and scalable*** – adding additional locations and users will not be a challenge from a capacity and performance perspective.
  - ***ORCHID has an existing governance and support structure*** that can be leveraged and grown to include additional departments under the agency.
  - ***The Cerner ORCHID contract includes pre-existing pricing for expansion*** to other departments as contemplated by this study. In the long term, this will result in lower ongoing support costs and a more streamlined support model.
  - Based on preliminary analysis, support for ***Community Behavioral Health functionality has to be further matured*** to meet all of County's needs



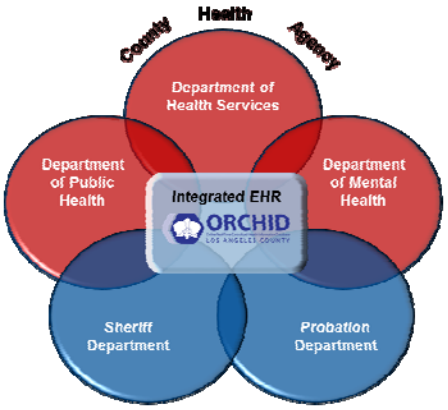




Feasibility of Integrating All EHR Systems into ORCHID

Alignment of Care Delivery Models

- ***DHS, Sheriff and Probation are all delivering health care using a similar model*** and need similar EHR capabilities as DHS – despite some significant operational differences.
  - All County staff providing health care services operate under the newly created Health Agency
- ***Sheriff and Probation are using Cerner Millennium today***, meaning that the software solution itself does not present limitations and it is possible to recreate any specially customized functionality in ORCHID if necessary, even though a shared system will require compromises by the migrating departments
- Today, ***Cerner Millennium does not support all of the Behavioral Health (BH) specific requirements necessary for DMH***. However Cerner has acquired a niche Community BH solution (Anasazi), and while they will not integrate Anasazi with Millennium, they have an aggressive plan to take the learnings from this acquisition to build out specific BH capabilities into the core Millennium platform over time.



Cerner

Gartner

Migration Challenges and EHR Centralization Initiatives

Technical and Operational Challenges of Moving to a Single Centralized EHR

- Using a structured approach* and working with stakeholders from all departments to identify a series of Migration Challenges
- Migration Challenges were addressed using 3 criteria: Complexity, Availability of Mitigation Options and Impact on Operations

- The Migration Challenges have been rated as to their degree of difficulty as follows:
  - **Low Difficulty (Green):** Clear path forward, has been done previously, available in Cerner, expected to work with normal migration effort, little to no risk or policy implications.
  - **Medium Difficulty (Yellow):** Several alternatives available to address, clear path on mitigation effort, some risks and complexity anticipated. Some impact on workflow and business processes.
  - **High Difficulty (Red):** No clear path to mitigate the challenge, alternative solutions may require further investigation, will likely require significant effort. Requires policy decisions and will likely have major impact on workflow and/or include business process change

	Migration Challenge	Difficulty**
1	Support for specific security and privacy regulations	
2	Ongoing access to EHR data extracts and specialized reporting and analysis to meet regulatory requirements	
3	Integration with the departments' case management system (PCMS and AJIS) to support workflow and reporting requirements	
4	Use of specific patient identifiers originating in the departments' case management system	
5	Support for a hybrid in-patient / out-patient model of care that supports multiple encounters during one "admission"	
6	Specialized workflows and reporting to comply with Correction specific requirements, high volume transactions and frequent patient location changes	
7	Specialized behavioral health clinical and administrative functionality	
8	Dashboard display of comprehensive summary of patient information to support communication and workflow	
9	Effective integration with contracted providers, MediCal insurance plans, other County departments, and non-County primary care providers to enhance care coordination and complete claiming and payment	

* Refer to Attachment 4 for more detail on approach and methodology

** The difficulty rating presented here is the most difficult of the three when there were differences among departments

Alternatives Analysis to Address the Migration Challenges

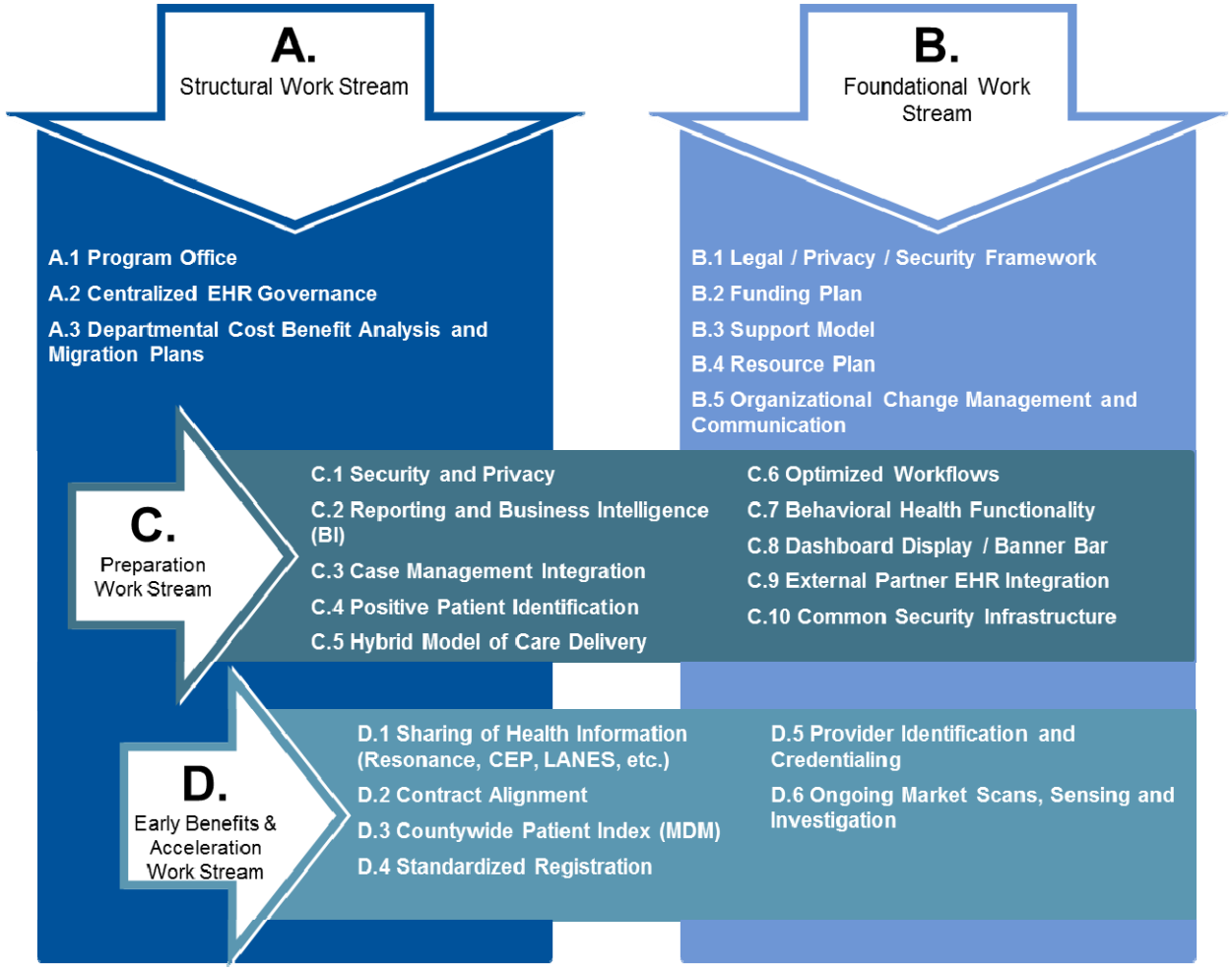
- To address each Migration Challenge, several alternatives were developed which were reviewed and finalized with input from County stakeholders
- An alternative was identified which best addressed each Migration Challenge (selected alternatives will need to be reviewed and confirmed by Cerner via detailed analysis of the key issues to be addressed)
- Execution of the selected alternatives are included within the Preparation Initiatives which are necessary for the overall success of the EHR Centralization Program

Four Streams of Work are Required for EHR Centralization Program Success

- There are four key streams of work which are required for the success of the EHR Centralization Program. Each of the Work Streams includes a number of clearly defined Initiatives as follows:
  - ***Structural Work Stream*** – Includes initiatives which set up organizational structures and detailed analysis necessary prior to embarking on the Program
  - ***Foundational Work Stream*** – Includes initiatives which produce the core plans required to prepare for a successful Centralized EHR Program
  - ***Preparation Work Stream*** – Includes initiatives which address the Migration Challenges, and implementing the selected alternatives
  - ***Early Benefits and Program Acceleration Work Stream*** – Includes initiatives which are not strictly necessary for the Centralized EHR Program but which will drive early benefits, accelerate the consolidation and prepare for the departmental migrations

Work Streams and Initiatives for the Centralized EHR Program

The four Work Streams and the Initiatives which comprise them are as follows:



EHR Centralization Work Streams

A. Structural Initiatives – Establishing an Environment that Enables Success

- Integrating all EHR systems into ORCHID is a significant ***paradigm shift for the County*** from a department centric approach that is focused on optimizing business processes around department missions to an ***enterprise, patient-centric approach*** that is ***focused around the care*** provided to an individual regardless of the department.
- Embarking on this journey requires ***commitment from the highest Executive levels and a robust organizational support structure***.
- The County ***must establish an environment that positions the EHR Centralization Program for success***, including the following three Structural Initiatives:
  - EHR Program Office
  - Centralized EHR Governance
  - Departmental Cost Benefit Analysis and Migration Plans

EHR Centralization Work Streams

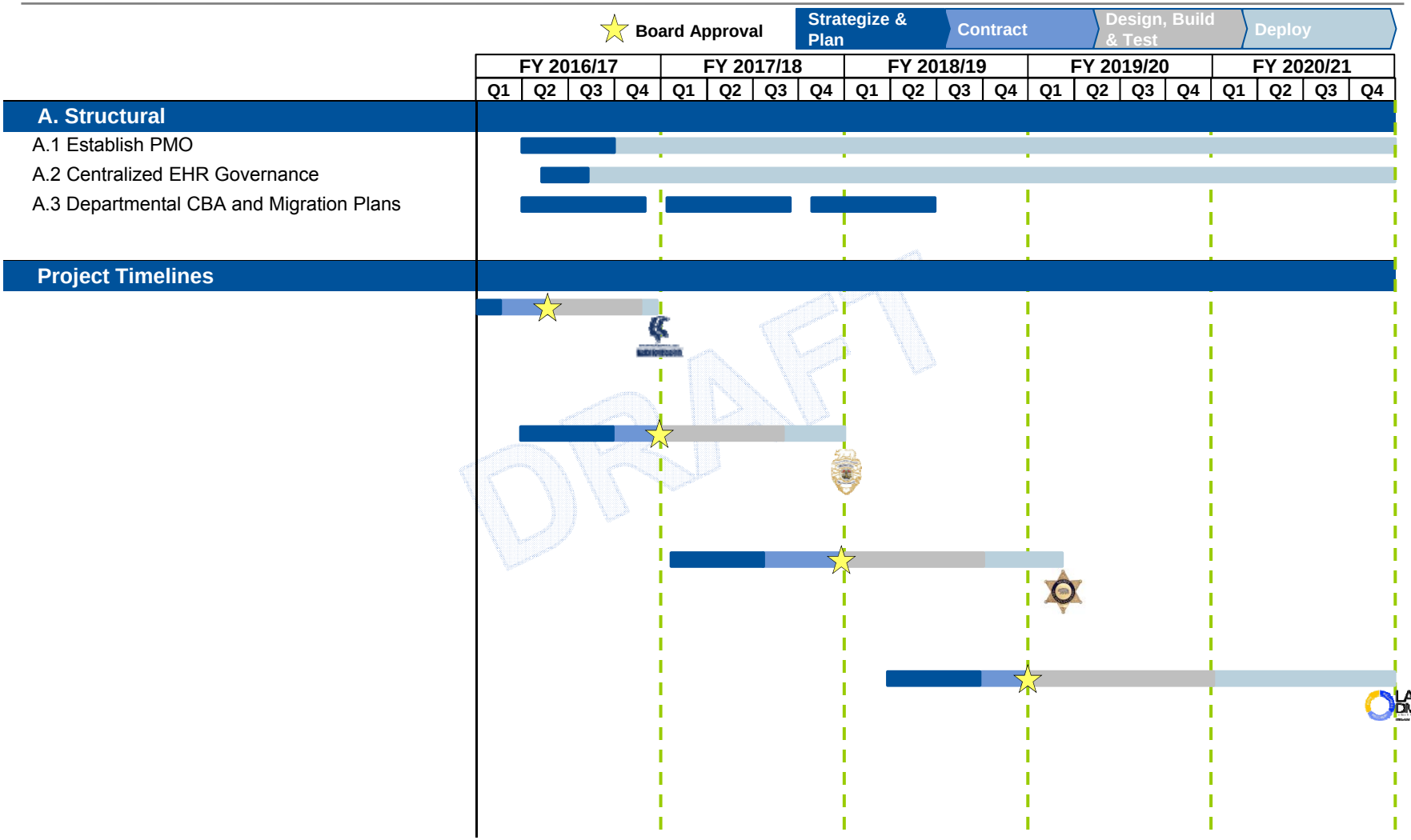
A. Structural Initiatives – Establishing an Environment that Enables Success, Cont'd

1. **EHR Program Office** – Create a Centralized EHR Program Office that is responsible for all aspects of planning, implementation oversight of the centralized EHR related projects, enhancements, and ongoing maintenance. The Centralized EHR Program Office will have complete visibility into all project costs and risks, as well as any interdependencies among projects.
2. **Centralized EHR Governance** – Establish a Centralized EHR governance structure that focuses on What decisions need to be made, Who has decision and input rights, and How are the decisions formed and enacted.
3. **Departmental Cost Benefit Analysis and Migration Plans** – Prior to commencing each Department's migration project, the EHR PMO should conduct a Cost Benefit Analysis that compares anticipated quantitative benefits against the current Total Cost of Ownership for each Department, reflecting the most current and/or confirmed costing information. Leveraging the resulting analysis, a detailed Migration Plan should be developed that describes and communicates, at a minimum, the approach, anticipated level of effort and the estimated timeframes for each migration effort. Based on this further analysis, determine the key gates and 'go' / 'no-go' decision to move forward to the next milestone / gate within each Department's migration.

A. Structural Work Stream | B. Foundational Work Stream | C. Preparation Work Stream | D. Early Benefits and Program Acceleration Work Stream

EHR Centralization Work Streams

A. Structural Initiatives – High Level Timeline



EHR Centralization Work Streams

A. Structural Work Stream | **B. Foundational Work Stream** | C. Preparation Work Stream | D. Early Benefits and Program Acceleration Work Stream

B. Foundational Initiatives – Commit the Resources to Execute the Migrations and Maintain ORCHID

- To set the foundation, the Program will need early ***resolution of legal, privacy and security issues*** to establish the legal framework within which the ORCHID footprint will be expanded across the County.
- The complete migration of the four Departments onto ORCHID will be ***a multi-year endeavor, requiring significant financial and human resources***. Without the County's commitment to provide the resources required, there is a high risk that the consolidation effort will stall before its completion due to funding constraints and competing interests for resources.
- The ***Centralized EHR Program is unsustainable without a cross-departmental Support Model for ongoing maintenance and operations***. This needs to include governance, delivery support model, funding and resource plans.
- To ensure sustained success of the centralization effort and the ongoing maintenance and operations of ORCHID, the County must address the following five Foundational Initiatives:
  - Legal / Privacy / Security Framework
  - Funding Plan
  - Support Model
  - Resource Plan
  - Organizational Change Management and Communication

EHR Centralization Work Streams

B. Foundational Initiatives – Commit the Resources to Execute the Migrations and Maintain ORCHID, Cont'd

1. **Legal / Privacy / Security Framework** – Create a workgroup to identify and address all legal, privacy and security related issues across the departments as they relate to the Centralized EHR migration efforts. This effort will include harmonizing policies, determining legal, privacy and security requirements for migration onto a single instance of ORCHID and/or clinical data sharing with other County Service Providers. This initiative will also result in an agreement on how any residual risks, which cannot be properly addressed through technology, will be mitigated. Finally, it will include interfacing with other external organizations (such as the Department of Justice) to obtain necessary documentation and approvals.
2. **Funding Plan** – Identify Program and project costs, including a 10 to 15 year Total Cost of Ownership (TCO) at a level of detail required by the Agency and the County for budget planning. This will need to include upfront project costs as well as ongoing operation, maintenance, and enhancement costs.
3. **Support Model** – A sustainable model for supporting the Countywide, Centralized EHR Program across all of the departments and within the Agency must be defined and is a prerequisite to any migration and the development of an overall resource plan.

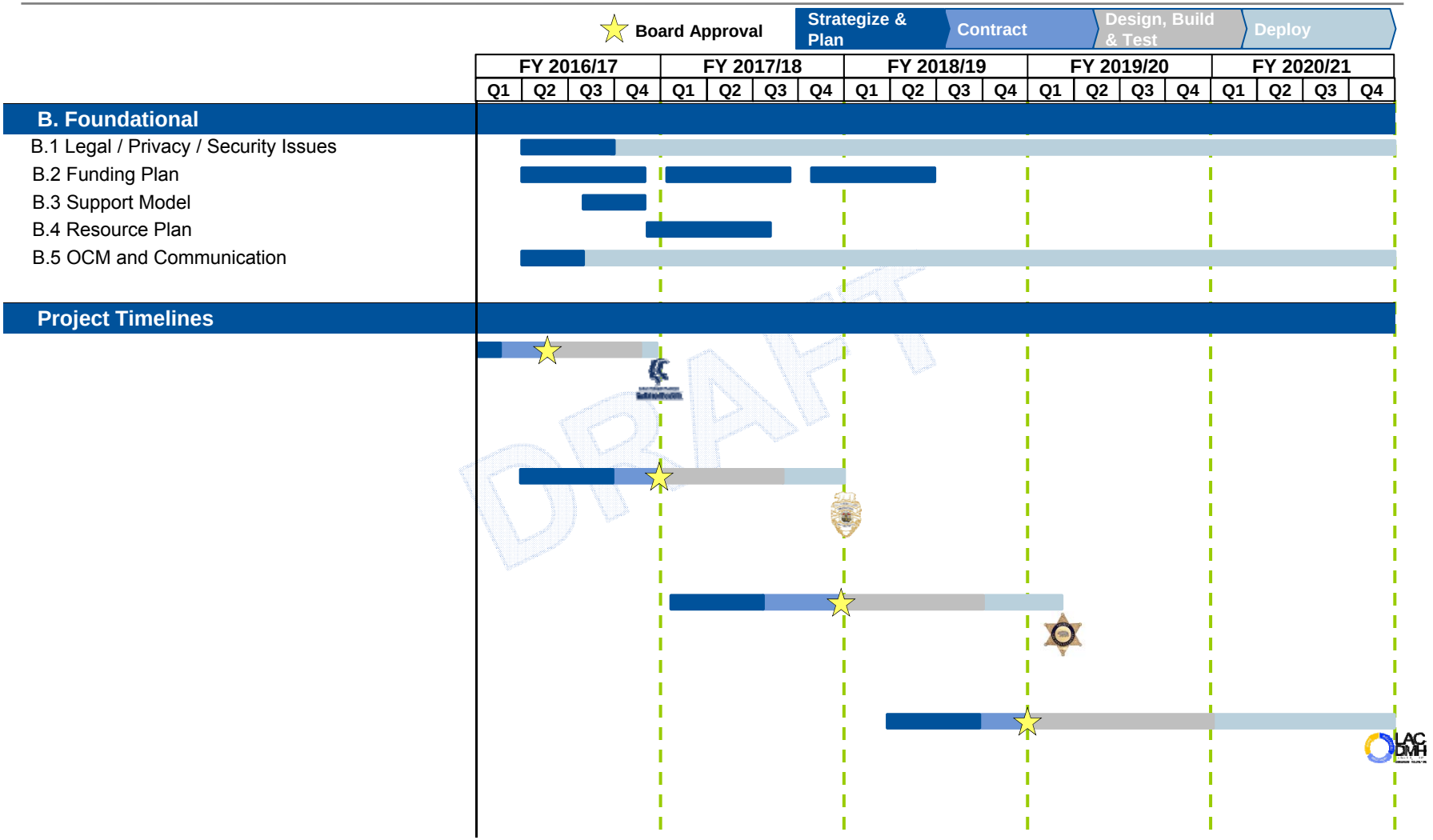
EHR Centralization Work Streams

B. Foundational Initiatives – Commit the Resources to Execute the Migrations and Maintain ORCHID, Cont'd

4. **Resource Plan** – The County needs to design an implementation roadmap and delivery structure for the overall Countywide, Centralized EHR Program, and develop an approach to filling all of the necessary roles during the EHR migrations. The Resource Plan will also need to include the roles, responsibilities and resources required for ongoing Maintenance and Operations (M&O) activities.
5. **Organizational Change Management and Communication** – Given the magnitude of change for most of the departments, it is imperative that the County create an organizational change management function to position the Countywide, Centralized EHR Program for success. This initiative will address communications, change and adoption, as well as program specific training needs.

EHR Centralization Work Streams

B. Foundational Initiatives – High Level Timeline



EHR Centralization Work Streams

C. Preparation Initiatives – Preparing for the Departmental Migrations

- Deployment of ORCHID to the Probation Department, the Sheriff's Department and DMH requires ***ten specific technology related initiatives to address the identified migration challenges***. Some of these initiatives are specific to a single department, while others such as Security and Privacy or Reporting and Business Intelligence are of global nature.
- To successfully migrate all departments to ORCHID, the County must address the following ten Preparation Initiatives:
  1. Security and Privacy
  2. Reporting and Business Intelligence (BI)
  3. Case Management Integration
  4. Positive Patient Identification
  5. Hybrid Model of Care Delivery
  6. Optimized Workflows
  7. Behavioral Health Functionality
  8. Dashboard Display / Banner Bar
  9. External Partner EHR Integration
  10. Common Security Infrastructure

EHR Centralization Work Streams

C. Preparation Initiatives – Preparing for the Departmental Migrations, Cont'd

1. **Security and Privacy** – Separate generic clinical data from criminal justice data, implement technical solutions for restricting access based on organization, encounter, role, and context and mitigate residual risk through policy.
2. **Reporting and Business Intelligence (BI)** – Create an Operational Data Store (ODS) that is a replica of the entire production database and can feed department specific data marts on a nightly basis in order to provide a platform for query and analysis for each department to address Migration Challenge 2 – Ongoing Access to EHR Data Extracts and Specialized Reporting and Analysis to Meet Regulatory Requirements.
3. **Case Management Integration** – Integrate with departmental case management system using department integration engine to address Migration Challenge 3 – Integration with the departments' Case Management System to Support Workflow and Reporting Requirements.
4. **Positive Patient Identification** – Document the direction provided by County Counsel and County Privacy Officers, obtain external approvals as necessary, and work with the vendor to develop plans for design and configuration which will address the approved approaches to address Migration Challenge 4 – Use of Specific Patient Identifiers Originating in the departments' Case Management System.
5. **Hybrid Model of Care Delivery** – Configure ORCHID to allow for multiple encounters during one admission (i.e. replicate current functionality in JHIS and PEMRS in ORCHID) to address Migration Challenge 5 – Support for a Hybrid In-Patient / Out-Patient Model of Care that Supports Multiple Encounters During One "Admission".

EHR Centralization Work Streams

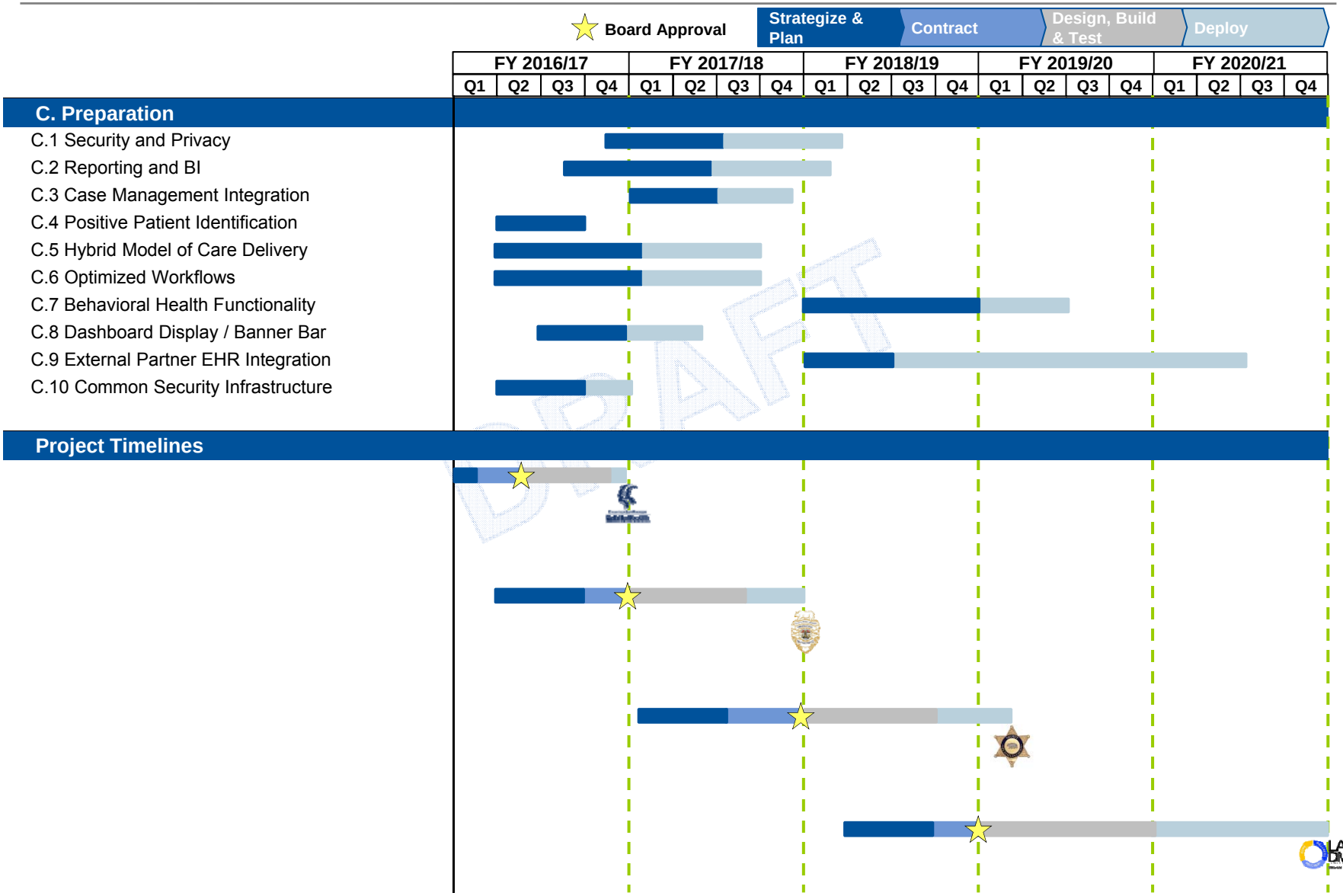
C. Preparation Initiatives – Preparing for the Departmental Migrations, Cont'd

6. **Optimized Workflows** – Build out all the unique workflows in ORCHID to meet requirements to address Migration Challenge 6 – Specialized Workflows and Reporting to Comply With Correction Specific Requirements, High Volumes, and Patient Location.
7. **Behavioral Health Functionality** – Identify the minimum number of critical functional and workflow gaps in the current ORCHID implementation, and migrate once Cerner has developed and released those critical capabilities into production, and over time work with Cerner to improve the functionality to address Migration Challenge 7 – Specialized Behavioral Health Clinical and Administrative Functionality.
8. **Dashboard Display / Banner Bar** – Use alternative means within the Cerner platform (e.g., Cerner MPages development toolkit) to deliver department specific messages and alerts to address Migration Challenge 8 – Dashboard Display of Comprehensive Summary of Patient Information to Support Communication and Workflow.
9. **External Partner EHR Integration** – Work with Cerner to recreate the capability that DMH has developed to integrate IBHIS with the Contracted Providers' EHR Systems to share a patient's critical data across Contracted Providers and Directly Operated sites to address Migration Challenge 9 – Effective Integration to Enhance Care Coordination and Complete Claiming and Payment. The effort also requires redevelopment by Contracted Providers to properly integrate with ORCHID.
10. **Common Security Infrastructure** – Deploy MS Active Directory (AD) domains for all departments that need to access ORCHID as their core EHR solution.

A. Structural Work Stream | B. Foundational Work Stream | C. Preparation Work Stream | D. Early Benefits and Program Acceleration Work Stream

EHR Centralization Work Streams

C. Preparation Initiatives – High Level Timeline



EHR Centralization Work Streams

D. Early Benefits and Program Acceleration Initiatives

- Completing the full consolidation into ORCHID will be, at minimum, a five year process.
- Gartner has identified a number of ***alternative and parallel investments to consolidation that will allow the County to achieve some of the benefits*** from a full consolidation
  - In addition to consolidation, there are several approaches that the County can consider to achieve benefits earlier
- These initiatives are complementary to the migrations to ORCHID and can ***provide early benefits which stand alone***, but can also be leveraged to ***accelerate the consolidation***.
- Six Early Benefits and Program Acceleration Initiatives were identified:
  1. Sharing of Health Information (Resonance, CEP, LANES, etc.)
  2. Contract Alignment
  3. Countywide Person Index (MDM)
  4. Standardized Registration
  5. Provider Identification and Credentialing
  6. Ongoing Market Scans, Sensing and Investigation

EHR Centralization Work Streams

D. Early Benefits and Program Acceleration Initiatives, Cont'd

1. **Sharing of Health Information** – Leverage existing County technology infrastructure investments such as Cerner Resonance and Clinical Exchange Platform (CEP) as well as HealtheIntent and LANES to initiate exchange of Care Summaries between the County departments as well as with key external care delivery partners.
2. **Contract Alignment** – Align and harmonize the various contracts with Cerner as opportunities present (e.g. contract renewals, amendments). While this standardizes contract management and service delivery in the short run, it will also facilitate the transition to the ORCHID Agreement.
3. **Countywide Person Index (MDM)** – Engage the Countywide MDM project to ensure that all County EHRs are connected via the IBM InfoSphere Advanced MDM / Initiate solution. This will yield immediate benefits in terms of better patient identification and facilitate future transition to a single Enterprise Master Person Index.
4. **Standardized Registration** – Develop a common registration infrastructure and processes that will allow essential demographic data to be looked up and pre-populated for all core County healthcare delivery organizations. This will yield immediate benefits for all patients and standardize the registration process in preparation for the transition to ORCHID.

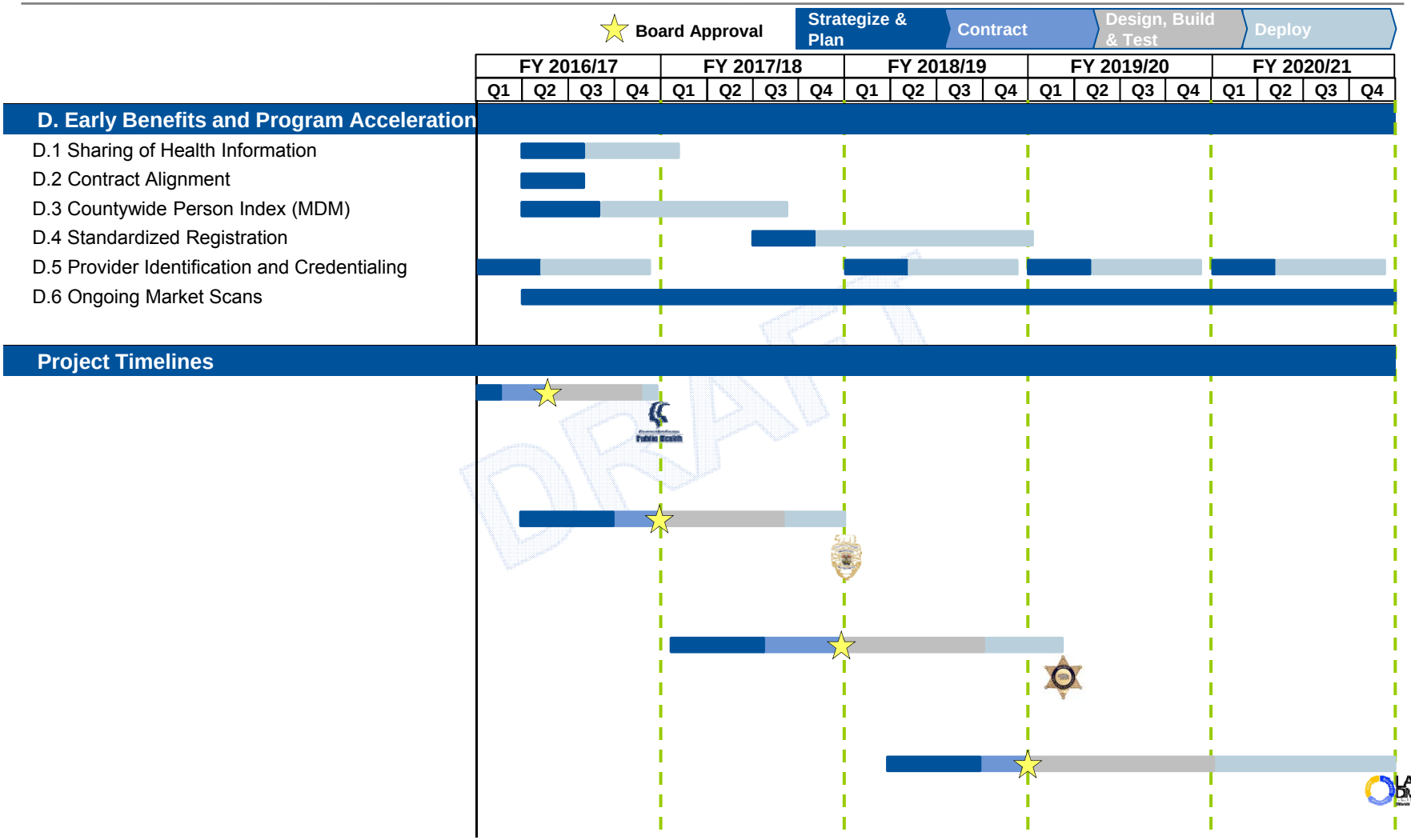
EHR Centralization Work Streams

D. Early Benefits and Program Acceleration Initiatives, Cont'd

5. **Provider Identification and Credentialing** – While creating a single enterprise wide Provider Identification and Credentialing solution is a pre-requisite to the migrations, the County can benefit immediately and independently from an enterprise provider index regardless of the centralization (Cactus is the solution currently used by ORCHID, and which could provide a County-wide solution).
6. **Ongoing Market Scans, Sensing and Investigation** – Changes in legislation, federal and state requirements related to healthcare as well as technology advancements will continue to influence how the County provides care. The goal of this initiative is to set up a process and structure to monitor the regulatory environment and market place to determine when products and vendors are ready to address the specific needs as identified in the Migration Challenges (especially to identify the earliest time when Cerner's ability to serve the specific Behavioral Health requirements of DMH). Additional opportunities may arise leveraging the HealtheIntent Population health implementation DHS has just launched (e.g. for single patient record and analytics).

EHR Centralization Work Streams

D. Early Benefits and Program Acceleration Initiatives – High Level Timeline



High Level Timeline and Costs

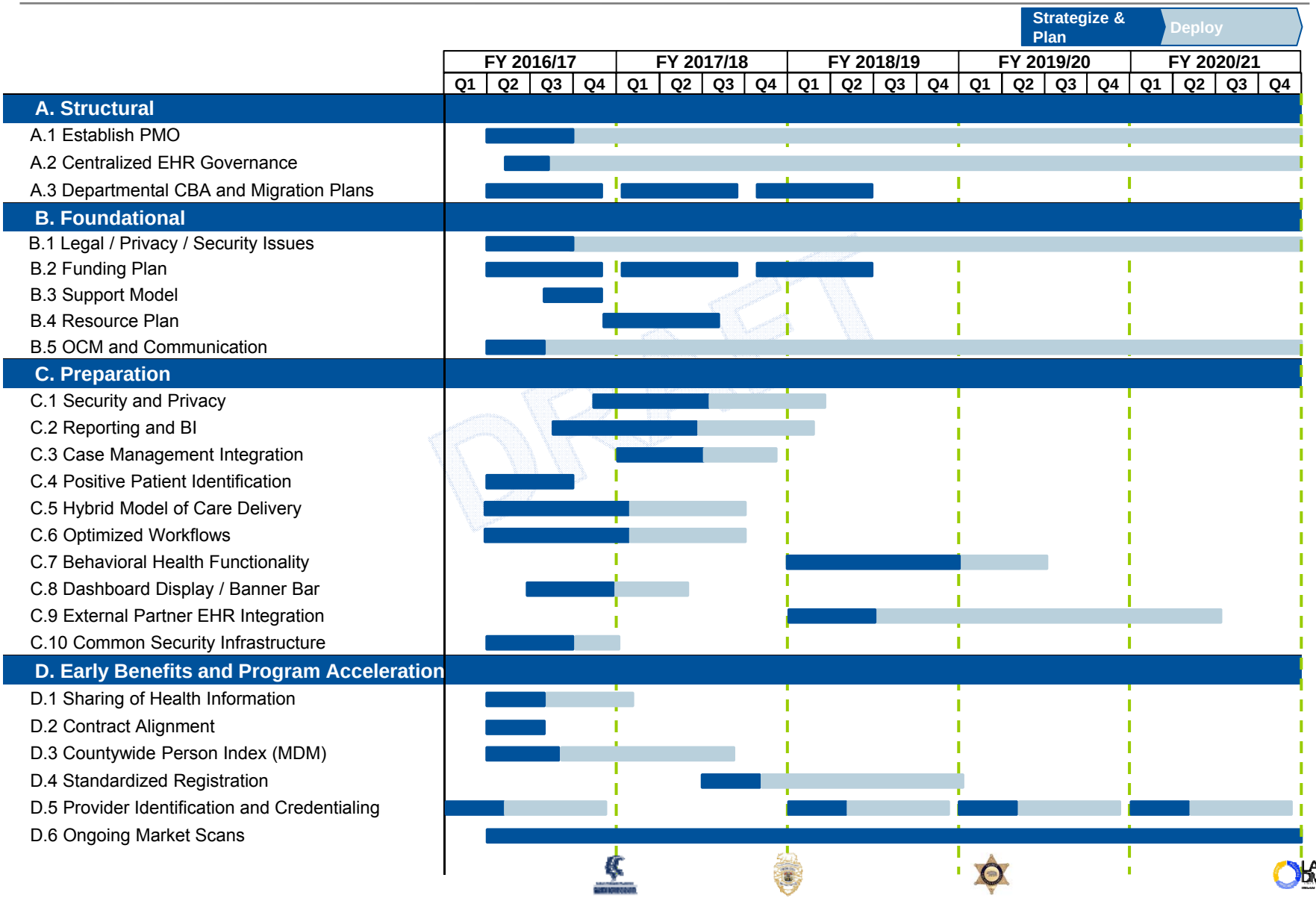
High Level Timeline and Costs

Summary Findings

- The Initiatives will take at least five years to complete making the reasonable assumption that, with adequate planning and preparation one department could go live almost each year
- The proposed sequence is based on doing the least complex migrations first and the most complex ones last
- Given that, the Department of Public Health should be the first migration to ORCHID
  - There is little to no risk to move forward with the project prior to completing the identified Initiatives
  - The majority of the planning and Statement of Work development has been completed
- Prior to each project initiation and at each gate, a ‘go’ / ‘no-go’ decision should be made based on an evaluation of the cost and benefit trade off and of the market conditions at that time.
- Approval must be received from the Board of Supervisors prior to each Department’s migration.

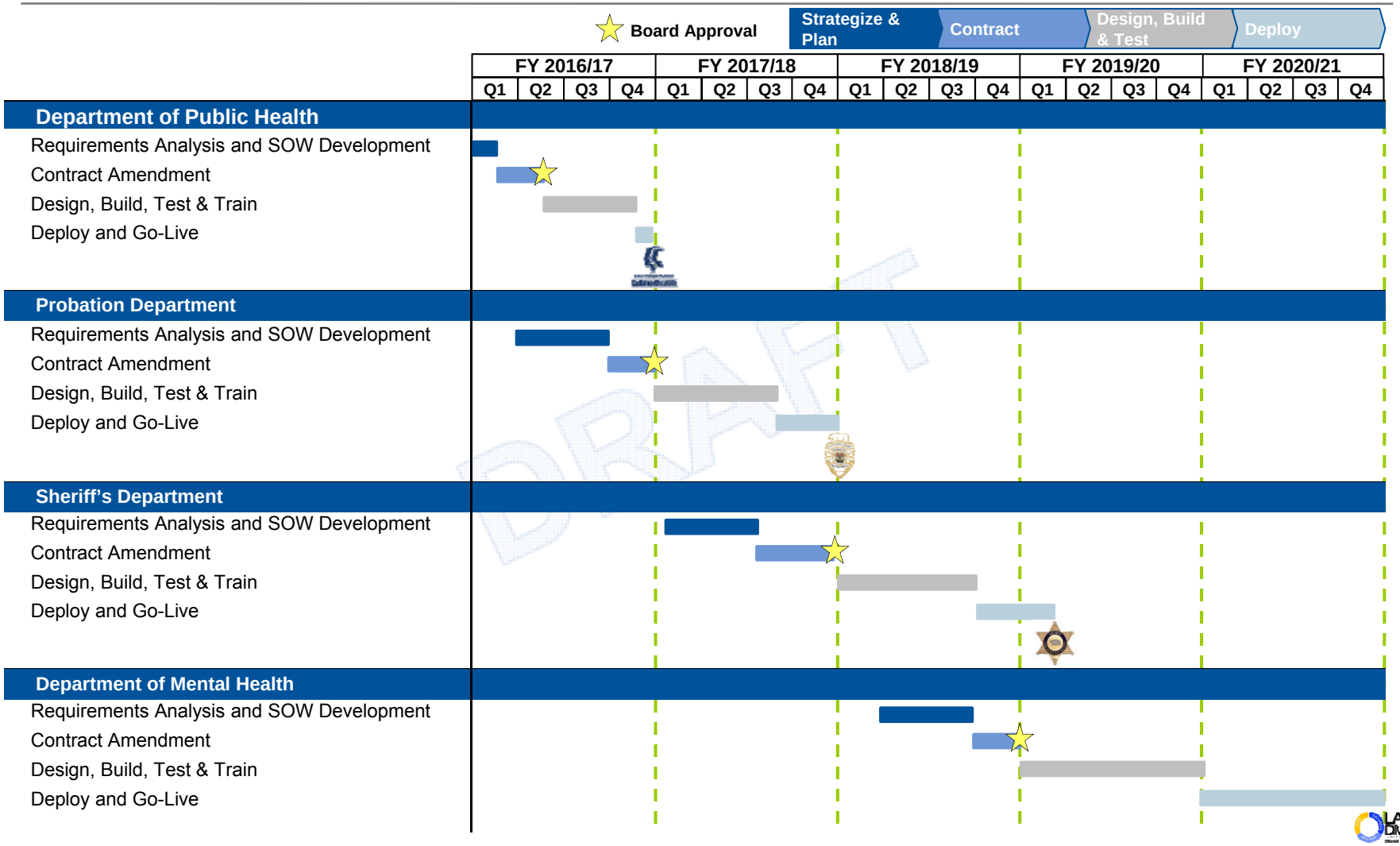
High Level Timeline

All Work Streams and Initiatives



High Level Timeline

Department Migrations



Consolidation of Revenue Cycle, and Claiming and Payment Systems

Consolidation of Revenue Cycle, and Claiming and Payment Systems

- A single instance of ORCHID as the enterprise ***EHR contains patient-centric, electronically maintained information about an individual's health status and care***, focuses on tasks and events directly related to patient care, facilitates and enables influence of workflows and clinical pathways, enables the practice of evidence-based medicine, and is optimized for use by clinicians while also providing functionality for patients. ORCHID can meet these needs.
- Some of the ***Departments have very specific needs to manage Claiming and Payment for purchase of services from third party care providers***
  - This **functionality is not provided by ORCHID**
  - The Departments that have this need have implemented specialized systems
  - The requirements are highly specialized and must address specific operational, funding, and regulatory requirements
- ***The still improving level of maturity of the Revenue Cycle processes*** among each of the Departments, and the differing regulatory and funding program constraints, ***prohibit the implementation of a unified system and processes for Revenue Cycle management***

Revenue Cycle Management and Claiming and Payment Plans and Recommendations

- The Department of Mental Health has the most complex revenue cycle management and claiming and payment needs, which are currently being supported by Netsmart Avatar MSO
- It is the intent of the other Departments under consideration to maximize revenue by implementing their own claiming and payment solutions (DPH is considering leveraging the DHS approach, Sheriff is considering using the Cerner solution, Probation and DMH have no further plans)
- The County's consolidation effort, focused on the sharing of clinical information and delivery coordination across the continuum of care, should at this time be ***limited to core Clinical Care Delivery***
  - Revenue cycle management and claiming and payment systems should continue to be Department-specific solutions, addressing their unique business needs until such time that all Departments are on ORCHID, and there is a robust claiming solution available from Cerner that can meet all needs.
  - Given the County's intent for an integrated and comprehensive longitudinal patient record, the consolidation effort should be focused on the core care delivery capabilities
  - Consolidation of the clinical EHR components is a large and complex undertaking, and expanding the scope will make the overall effort an even riskier and greater challenge
  - Integration of revenue cycle and claiming and payments systems can be reevaluated at a later time based on market scan of available capabilities against all County needs

Potential Ramifications of Discontinuing or Phasing Out the Use of Any Existing System Built with Federal or State Funds

Potential Ramifications of Discontinuing or Phasing Out the Use of Any Existing EHR System Built with Federal or State Funds

- Among the Departments for which an existing EHR solution may be replaced by ORCHID, the Department of Mental Health (DMH) is the only agency that leveraged State funds to design, develop and implement its system
- DMH leveraged State funding per the Mental Health Services Act (MHSA) to acquire the Integrated Behavioral Health Information System (IBHIS) to support the delivery of quality mental health services
- MHSA funding expires June 2018, by which time IBHIS will have been in operation for over 3 years
- If the Board decides to migrate DMH onto ORCHID, the migration will most likely not occur prior to June 2018 given the level of effort anticipated to successfully complete the prerequisite activities (Program Initiatives)
- We do not anticipate financial implications or ramifications related to discontinuing or phasing out existing systems that were built with Federal or State funds (e.g. refund of Grant Funds)

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Gartner

Appendix A – Structural Work Stream Mini-Charters

A.1 Establish a Program Office for the Countywide, Centralized EHR Program

Description

- Create a Centralized EHR Program Office that is responsible for all aspects of planning, implementation oversight of the centralized EHR related projects, enhancements and ongoing maintenance.
- The Centralized EHR Program Office will have complete visibility into all project costs and risks, as well as any interdependencies between projects and will report progress and issues to the Health Agency, CEO and the Board.

Key Activities

- Establish and formally charter the Centralized EHR Program Office
- Recruit resources with the appropriate skillsets and staff the Program Office
- Formally fund and charter foundational initiatives and each migration project
- Develop and document overall Program plan to capture all projects and related initiatives, identifying any project dependencies, Program/project risks and issues
- Define and document project management methodology and standard reports/templates for use across all projects
- Manage and track delivery at both the Program- and project-level against scope, schedule and budget
- Participate in ORCHID governance to provide Program status updates, facilitate project decision-making (when required) and document decisions / action items

Roles and Resources

- **Initial Setup:**
  - Program Director (1x)
  - Program Manager (1x)
  - Program Admin (1x)
- **PMO:**
  - Program Director (1x)
  - Program Manager (1x)
  - Program Admin (1x)
  - Change Management Leads (2x)
- **Shared Project Specific Resources:**
  - Project Managers (4x)
  - Business Analysts / Trainers (8x)

Timeline

- **Initial Setup:** 6 months
- **PMO:** Ongoing
- **Start:** Immediately after the decision to proceed

Dependencies

- Establish Centralized EHR Governance
- All approved ORCHID and Centralized EHR related projects

A.2 Establish Centralized EHR Governance

Description

- Establish a Centralized EHR governance structure that focuses on *What* decisions need to be made, *Who* has decision and input rights, and *How* are the decisions formed and enacted.
- Empower the Centralized EHR governance teams with the authority to decide the road map for achieving the target state vision and to execute/govern the steps to get there.

Key Activities

- Establish and formally charter a Centralized EHR governance structure that, at minimum, includes:
  - **Centralized EHR Steering Committee** – Sets strategic priorities regarding ORCHID projects, balancing enterprise versus program/department needs; Focuses on accountability and ownership
  - **Centralized EHR Data Governance Steering Committee** – Sets strategic priorities for new reporting needs; Develops and defines data standards; Enforces data governance policies
  - **Mechanisms for Consulting with Departments** and for effective decision making and direction setting across the Centralized EHR Program, such as an effective Steering or Oversight committee which hears directly from Department clinical and administration leadership
- Appoint Committee members, document their respective roles, responsibilities and voting rights and criteria
- Identify and appoint the Executive Sponsor, who will Chair the Centralized EHR Steering Committee
- Develop formal process for modification and enhancement requests to ORCHID and how these requests would be prioritized (operations vs. migration projects)

Roles and Resources

- EHR Steering Committee:
  - Departments: Clinical Directors/Leads, IT Leads (10x @ 10%)
  - County: CEO, CIO, Counsel (3x @ 10%)
- EHR Data Governance Steering Committee
  - Departments: CIOs, Clinical Informatics, Information Architects, Data Analysts, Clinical Directors/Leads (15x @ 10%)

Timeline

- **Initial Setup:** 3 months
- **Governance:** Ongoing
- **Start:** Immediately after the decision to proceed

Dependencies

- Establish a Program Office for the Countywide, Centralized EHR Program
- Resolve Legal / Privacy / Security Issues

EHR Centralization Work Stream

1. Structural Initiatives – Establish Centralized EHR Governance

- As multiple departments migrate to ORCHID, all stakeholders will insist that their use of documentation is the most important and must be paramount
- Without precise, complete and structured documentation, it will be difficult to properly manage care, accurately bill for services performed, perform outcome studies or defend a position in a medicolegal forum
- In order to effectively address foreseeable challenges, a governance process across relevant stakeholders that brings to light documentation challenges and value propositions, and establishes a baseline for prioritizing issues and opportunities, must be implemented. The governance group will need to:
  - Work with clinical leaders to determine documentation best practices and create documentation policies
  - Configure ORCHID to maximize documentation efficiency, and understand which documentation shortcuts can add value and which might actually reduce the potential value of the EHR
- Clinical documentation is a critical component of care delivery and it will be critical to ensure standard and consistent practices across all ORCHID users

Source: Gartner Research, July 2016 G00281200

A.3 Departmental Cost Benefit Analysis and Migration Plans

Description

- Prior to commencing each project, conduct a Cost Benefit Analysis per Department to support a 'go' / 'no-go' decision on moving forward with a Department's migration to ORCHID
- Develop a detailed Migration Plan that describes and communicates the approach, anticipated level of effort required and the estimated timeframes for each implementation

Key Activities

- Determine and quantify anticipated benefits to migrating to ORCHID for each Department
- Compare anticipated quantitative benefits against the Total Cost of Ownership model and determine the breakeven point
- Validate Cost Benefit Analysis with the Department
- Develop a detailed Migration Plan that, at minimum, accounts for project approach, level of effort and project timeline while taking into account current market conditions (e.g., County, Department, technology)
- Work with the Agency executives and CEO to determine 'go' / 'no-go' decision to move forward with the project
- Present decision to the Board of Supervisors and gain approval

Roles and Resources

- Project Sponsor (1x @ 5%)
- Project Manager (1x @ 25%)
- Initial Core Planning Team (3x @ 25% from each Department)
- Departmental Representatives (3x – 5x @ 25% from each Department)

Timeline

- **Planning**: 6 – 8 months per Department
- **Start**: Immediately after the decision to proceed

Dependencies

- Funding Plan
- Resource and Staffing Plan
- Ongoing Market Scans, Sensing and Investigation

Appendix B – Foundational Work Stream Mini-Charters

B.1 Resolve Legal / Privacy / Security Issues

Description

- Create a SME Workgroup to identify and address legal, privacy and security related issues across the Departments as they relate to the Centralized EHR migration efforts.
- Collaborate with appropriate stakeholders to harmonize policies, determine legal, privacy and security requirements for migration onto a single instance of ORCHID and/or clinical data sharing with other County Service Providers.

Key Activities

- Review and catalog departmental policies, legal mandates and privacy/confidentiality needs to identify conflicting language/directives
- Determine, agree on and document enterprise-wide policies and privacy/confidentiality requirements
- Review Department-specific security requirements (e.g., Probation Sealing of Record) and agree on approach to mitigate migration challenge
- Work with Cerner to implement the necessary changes to ORCHID to account for agreed upon requirements
- Communicate with and seek approval from State and Federal partners on proposed interpretations to legal mandates, where applicable
- Identify mitigation activities / contingency plans in the event requested approvals are not granted
- Review DHS/Cerner contract terms to ensure applicability for and agreement by the migrating Departments (e.g., offshore development)
- Work with Cerner to update contract terms (e.g., Statements of Work, Service Level Agreements, Schedule of Payments, etc.), as applicable, to align with enterprise needs
- Develop policies for areas where no technical solution is available or limited
- Oversee workflow modifications to align with policy changes and provide training to end users, as needed
- Create and staff a structure to review and address legal / privacy / security issues as they arise

Roles and Resources

- County Counsel (5x @ 25%)
- County / Department Privacy Officers (5x @ 25%)
- Information Security Officers (5x @ 25%)
- Clinical and Operations Department Representatives (5x @ 25%)
- Project Team and Cerner (accounted for in PMO)

Timeline

- **Planning:** 6 months (Note: more time may be required if legislative changes required)
- **Execution Oversight**: 24 – 36 Months
- **Start:** Immediately after the decision to proceed

Dependencies

- Establish Centralized EHR Governance
- Resolution of all Solution Migration initiatives with Security or Privacy implications

B.2 Funding Plan

Description

- Identify Program and projects costs at a level of detail required by the Agency and the County for budget planning.
- Develop budget requests and obtain funding approvals prior to commencing each project.

Key Activities

- Develop a detailed Total Cost of Ownership (TCO) model which includes:
  - Upfront costs – Department and Agency infrastructure, software licenses, third party services (design, configuration, and deployment), program and project teams, Department specific resources, reduction in revenues during and shortly after go-lives
  - Ongoing operation, maintenance, and enhancement costs – Centralized EHR support organization, Department support and maintenance resources, optimization and enhancement, version upgrades, ongoing vendor maintenance and support, infrastructure upgrades, etc.
- Validate the TCO model with current DHS ORCHID Cerner and Departments
- Work with the Agency executives and CEO to develop the funding mechanisms for the Program and each project
- Identify individuals within the Agency (or one of the Departments) who can provide financial reporting and control
- Develop and implement reporting and monitoring processes

Roles and Resources

- Project Sponsor (1x)
- Project Director (1x)
- IT Financial Analysts (2x – 3x @ 50%)
- Financial Monitoring and Control (1x @ 50%)
- Agency administration (Finance) as needed

Timeline

- **Planning**: 6 – 8 months per Department
- **Start:** Immediately after the decision to proceed

Dependencies

- Establish a Program Office for the Countywide, Centralized EHR Program
- Resource Plan

B.3 Support Model

Description

- Design the model for supporting the Countywide, Centralized EHR Program across all of the Departments and within the Agency

Key Activities

- Develop a set of principles and a high level governance structure that will be used to guide the overall operations of the Centralized EHR
- Obtain agreement from the Agency and participating Departments for the principles and governance structure
- Identify the services and the organizational capabilities required to deliver those services for each of the key phases:
  - Design and configuration
  - Testing
  - Data Conversion
  - Training
  - Deployment
  - Ongoing operations
- Design a support structure to deliver those services which includes:
  - Role definitions
  - Allocation of roles and responsibilities across the Centralized EHR Program organization, the Agency, and Departments
  - Estimates of resource requirements over time
- Develop a set of principles and a high level governance structure that will be used to guide the overall operations of the Centralized EHR

Roles and Resources

- Project Sponsor (1x)
- Project Director (1x)
- Initial core planning team (1x – 3x @ 25%)
- Department Representatives (1x – 2x from each Department)

Timeline

- **Planning**: 3 – 4 months
- **Start**: In parallel to obtaining funding approval

Dependencies

- Establish a Program Office for the Countywide, Centralized EHR Program
- Funding approval
- Department engagement

B.4 Resource and Staffing Plan

Description

- Design an implementation roadmap and delivery structure for the overall Countywide, Centralized EHR Program and develop an approach to filling all of the necessary roles

Key Activities

- Confirm overall roadmap and phases for the Centralized EHR Program
- Identify the key roles, skillsets and resources that will be needed for the overall Program and as they will be required over time for each phase
- Identify the number, type, and timing of resource requirements by each type of organization such as:
  - Program specific resources
  - Department specific resources
  - Vendor resources
- Develop a plan to fill those resource needs including recruiting, hiring, and backfilling, third party service procurement, etc.
- Identify the funding necessary
- Work with the Agency, CEO, and Department of Human Resources (DHR) to obtain approvals for approach and funding

Roles and Resources

- Project Sponsor (1x)
- Project Director (1x)
- Initial core planning team (1x – 3x @ 25%)
- Department Representatives (1 from each Department @ 20%)
- Agency administration (Procurement, HR, CEO) as needed

Timeline

- **Planning**: 6 – 8 months
- **Start**: Subsequent to completion of the Support Model

Dependencies

- Support Model
- Establish Centralized EHR Governance
- Funding Plan

B.5 Organizational Change Management and Communication

Description

- Create an organization change management function to position the Countywide, Centralized EHR Program for success

Key Activities

- Conduct stakeholder analysis for the Program as a whole and for each Department individually
- Develop detailed and Department-specific plans which take into account Department culture, resources, and current successful practices for:
  - Communications (identify necessary messages, audience, media at each stage in the program)
  - Change and Adoption (identify key influencers, specific issues to address at the relevant times, develop network of change agents and implement a plan to encourage and support them to drive adoption and change throughout the program) Program specific resources
  - Training (an overall plan which will have the necessary flexibility to address Department specific constraints and opportunities)
- Identify roles and responsibilities for the Organizational Change and Communication within the Program Office and across Departments
- Ensure relevant budget is available and assign responsibility and accountability according to the plan
- Some key message areas will include addressing:
  - Policy harmonization across departments
  - Managing the perception and reality of “moving backwards” - losing some department specific functionality and of losing control and flexibility

Roles and Resources

- Project Sponsor (1x)
- Project Director (1x)
- Change Management and Communications team (1x – 3x @ 100% during migrations, 20% during planning)
- Department Change Agents – nurses and physicians and others at the Departments as needed

Timeline

- **Implementation**: Throughout the Program, with relatively light engagement until active planning starts with each Department
- **Start**: Planning and engagement starts during the approval process

Dependencies

- Availability of financial and human resources for the Program Office
- Engagement of Departments and availability of resources and necessary capabilities and skills

Appendix C – Preparation Work Stream Mini-Charters

C.1 Security and Privacy – Support for Specific Security and Privacy Regulation

Description

- Separate generic clinical data from criminal justice data, implement technical solutions for restricting access based on organization, encounter, role, and context and mitigate residual risk through policy to address Migration Challenge 1 – Support for Specific Security and Privacy Regulations

Key Activities

- Secure required approvals to proceed with planning
- Assign project planning team resources (Project Manager, Business Analyst, Security Architect)
- Develop project charter
- Develop and document detailed implementation data model for the separated Case Management and EHR system implementation
- Develop detailed security models for the Centralized EHR implementation to accommodate the unique privacy requirements of any remaining justice related data elements and information to prevent disclosure of private information to unauthorized users
- Define requirements for sealing of any justice related Probation information to comply with regulation and conduct JAD sessions
- Pilot the new security design for each department that is candidate for migration
- Execute the systems separation plan for Probation and Sheriff
- Test and deploy new security model(s) in ORCHID

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (3x – 4x @ 50%)
- Security Architect (1x – 2x @ 50%)
- Department Representatives (3x – 4x @ 50%)
- AJIS and PCMS vendor

Challenges/Risks

- Requires sophisticated and mature security administration processes and capabilities
- Requires a number of workflows that require criminal justice information to be developed in an alternate system
- May experience decrease in workflow efficiencies and cycle times due to reconfiguration of systems and workflows compared to current operations
- May compromise patient safety if certain workflows require the need to document in 2 separate systems

Timeline

- **Planning:** 6 – 8 months
- **Implementation**: 6 – 8 months
- **Start**: 8 months prior to implementation of the first Department's migration onto the single instance of ORCHID

Dependencies

- Implementation of Countywide Active Directory security infrastructure
- Existing Department EHR to ORCHID Migration initiative
- Establish a Program Office for the Countywide, Centralized EHR Program
- Resolve Legal / Privacy / Security issues

C.2 Reporting & BI – Enabling Ongoing Access to EHR Data Extracts and Specialized Reporting and Analysis to Meet Regulatory Requirements

Description

- Create an Operational Data Store (ODS) that is a replica of the entire production database and can feed department specific data marts on a nightly basis in order to provide a platform for query and analysis for each department to address Migration Challenge 2 – Ongoing Access to EHR Data Extracts and Specialized Reporting and Analysis to Meet Regulatory Requirements

Key Activities

- Secure required approvals to proceed with planning
- Assign project planning team resources (Project Manager, Business Analyst, BI Architect)
- Develop project charter and business case
- Conduct JAD sessions with Departments that will migrate to ORCHID within the next 12-24 months to develop detailed BI and Data requirements
- Conduct analysis of already available tools within the Agency or the County
- If necessary
  - Develop and release a Request for Proposal for vendor proposals and detailed cost estimates
  - Evaluate proposals and select a vendor to implement the new BI infrastructure
- Secure final approval for project implementation
- Assign LA County team for execution
- Procure and deploy all net new IT infrastructure for ODS, Dept. Data Mart and BI tools (Cloud or hosted) based on LA County BI Standards
- Develop and deploy new processes for data extraction, data transformation, and load into new operational Data Store and Data Marts and BI Competency Center
- Develop and deploy new reports, dashboard, and ad hoc query infrastructure for each Department
- Conduct user training and provide support as required

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (3x – 5x @ 50%)
- BI Architect (1x @ 75%)
- Data Architect and Database Administrators (3x @ 75%)
- BI Tools Development SMEs (4x @ 50%)
- Department Representatives (5x – 6x @ 25%)

Challenges/Risks

- High cost to build and maintain
- Will likely require acquisition of other technologies and tools to maintain the data store and to do the extraction, analysis, and reporting
- Departments will need to build up internal expertise (train/recruit)
- Potential for reporting and analyses that differ within and across Departments due to differing interpretations and differing analytical approaches
- Sealing of minor information will require information to be deleted in multiple locations

Timeline

- **Planning:** 8 – 10 months
- **Implementation**: 4 – 8 months
- **Start**: 12 months prior to implementation of the first Department's migration onto the single instance of ORCHID

Dependencies

- Implementation of Countywide Active Directory security infrastructure
- ORCHID Enhancements release schedule
- Existing Department EHR to ORCHID Migration initiative
- Establish a Program Office for the Countywide, Centralized EHR Program

C.3 Case Management Integration – Enabling Integration with the Departments' Case Management System to Support Workflow and Reporting Requirements

Description

- Integrate with departmental case management system using department integration engine to address Migration Challenge 3 – Integration with the Departments' Case Management System to Support Workflow and Reporting Requirements

Key Activities

- Secure required approvals to proceed with planning
- Assign project planning team resources (Project Manager, System Analyst, Technology Architect)
- Develop project charter
- Secure vendor proposal(s) and detailed cost estimates for integration to case management systems (AJIS and PCMS) via the existing Probation and Sheriff integration engines to ORCHID
- Secure final approval for project implementation
- Assign LA County team
- Develop and execute project management plan

Note: This initiative assumes that neither AJIS nor PCMS will be replaced by the time of Probation's and Sheriff's migration to ORCHID. Any replacement initiatives should be closely coordinated with the EHR migration.

Timeline

- **Planning:** 4 – 6 months
- **Implementation**: 3 – 5 months
- **Start**: 6 months prior to implementation of Probation's or Sheriff's migration onto the single instance of ORCHID

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Systems Analysts (1x @ 50%)
- Integration Architect (1x @ 50%)
- Department Representatives (2x @ 50%)
- County ISD (1x @ 50%)

Challenges/Risks

- ORCHID cost and complexity would increase due to need to support multiple interface engines and approaches

Dependencies

- eGate modernization initiative
- Sheriff or Probation's EHR to ORCHID Migration initiatives
- Establish a Program Office for the Countywide, Centralized EHR Program
- Positive Patient Identification
- Optimize Workflows

C.4 Positive Patient Identification – Enabling Use of Specific Patient Identifiers Originating in the Departments' Case Management System

Description

- Obtain clear definition from County Counsel and County Privacy Officers as to the extended use of PDJ# and CII# by authorized Agency staff to address Migration Challenge 4 – Use of Specific Patient Identifiers Originating in the Departments' Case Management System

Key Activities

- Assign County Counsel and Privacy Officers to work with DOJ to clarify and confirm the regulatory obligations associated with the protection of justice systems' IDs such as PDJ and CII numbers assigned by Probation and Sheriff, respectively
- Identify and evaluate policy and procedural options that may be available to the County to enable further authorized access to the assigned justice system ID by County health professionals
- Evaluate ORCHID security models that can enable the protection of the justice system's IDs
- Determine final technical solution that can meet DOJ's security and privacy requirements
- Develop and execute Project Plan for implementation of the technical solution
- Update County policies and procedures as necessary

Timeline

- **Planning**: 4 – 6 months
- **Start**: Immediately after the decision to proceed

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Legal Counsel (2x @ 10%)
- Privacy Officers (2x @ 10%)
- Security Architect (1x @ 20%)
- Security Administrators (2x @ 20%)
- Department Representatives (2x @ 20%)

Challenges/Risks

- Effort will be required by County Counsel to determine if it's permissible to share the justice case number within ORCHID by all authorized users
- May require DOJ approval, which may be difficult to obtain
- Sheriff patients will now have other County data, which may not be valid because it has not been positively identified
- Note: Per an analysis by the District Attorney, the CII# is not considered protected justice information.

Dependencies

- Implementation of Countywide AD security infrastructure
- Existing Department EHR to ORCHID Migration initiative
- Establish a Program Office for the Countywide, Centralized EHR Program
- Case Management Integration
- Optimize Workflows

C.5 Hybrid Models of Care Delivery – Enabling Support for a Hybrid In-Patient / Out-Patient Model of Care that Supports Multiple Encounters During One "Admission"

Description

- Configure ORCHID to allow for multiple encounters during one admission (i.e. replicate current functionality in JHIS and PEMRS in ORCHID) to address Migration Challenge 5 – Support for a Hybrid In-Patient / Out-Patient Model of Care that Supports Multiple Encounters During One "Admission"

Key Activities

- Engage Cerner SMEs to identify strategies to support a hybrid in-patient / out-patient model within the ORCHID Cerner Millennium implementation
- Develop guiding principles for custody specific ORCHID localization (e.g. "as little as possible – as much as needed", "EHR for clinical encounters")
- Leverage the current hybrid model implementation to document the current workflows and key success measures
- Conduct JAD sessions and work with Cerner and internal County resources to develop the requirements for new hybrid processes in ORCHID
- Implement the changes required in ORCHID
- Pilot the new hybrid processes to evaluate the impact of the new hybrid model in ORCHID for Probation and Sheriff
- Identify learnings from the Pilot, make additional changes, and expand to full deployment

Timeline

- **Planning:** 8 – 10 months
- **Implementation**: 6 – 8 months
- **Start**:12 months prior to implementation of the first Department's migration onto the single instance of ORCHID

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (3x – 5x @ 25%)
- Cerner EHR SME (2x – 3x @ 25%)
- Department Representatives (2x – 3x @ 25%)

Challenges/Risks

- Will require significant cost and effort to conduct the justice workflow redesign processes and then build out necessary workflows in the justice case management system
- Will create Department-specific workflows, contrary to current ORCHID single, enterprise-wide design principles and implementation
  - Introduces cost and complexity into operations and support
  - Reduces ability to deploy resources in multiple environments
  - Reduces ability to rely on consistent interpretation of ops data

Dependencies

- ORCHID Enhancements release schedule
- Existing Department EHR to ORCHID Migration initiative
- Establish a Program Office for the Countywide, Centralized EHR Program
- Optimize Workflows

C.6 Optimized Workflows – Enabling Specialized Workflows and Reporting to Comply With Correction Specific Requirements, High Volumes, and Patient Location

Description

- Build out all the unique workflows in ORCHID to meet requirements to address Migration Challenge 6 – Specialized Workflows and Reporting to Comply With Correction Specific Requirements, High Volumes, and Patient Location

Key Activities

- Engage Cerner SMEs to identify strategies to support the specialized workflows within the ORCHID Cerner Millennium implementation
- Develop guiding principles for custody specific ORCHID localization (e.g. “as little as possible – as much as needed”)
- Leverage the current custom workflow implementation to document the current processes and key DOJ metrics and time constraints
- Conduct JAD sessions and work with Cerner and internal County resources to develop the requirements new custom workflows in ORCHID
- Implement the required changes in ORCHID
- Pilot the new custom workflows to evaluate the impact of the new workflows in ORCHID for Probation and Sheriff
- If the pilot is considered successful for each, expand to full deployment

Timeline

- **Planning:** 8 – 10 months
- **Implementation**: 6 – 8 months
- **Start**: 15 months prior to implementation of the first Department’s migration onto the single instance of ORCHID

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (3x – 5x @ 25%)
- Cerner EHR SME (2x – 3x @ 25%)
- Department Representatives (2x – 3x @ 75%)

Challenges/Risks

- Will require significant cost and effort to conduct the justice workflow redesign processes and then build out necessary workflows in the justice case management system
- Will create Department-specific justice workflows

Dependencies

- ORCHID Enhancement release schedule
- Existing Department EHR to ORCHID Migration initiative
- Establish a Program Office for the Countywide, Centralized EHR Program
- Case Management Integration
- Hybrid Model of Care Delivery

C.7 BH Functionality – Enabling Specialized Behavioral Health Clinical and Administrative Functionality

Description

- Identify the minimum number of critical functional and workflow gaps in the current ORCHID implementation, and migrate once Cerner has developed and released those critical capabilities into production, and over time work with Cerner to improve the functionality to address Migration Challenge 7 – Specialized Behavioral Health Clinical and Administrative Functionality

Key Activities

- Secure required approvals to proceed with analysis
- Assign project planning team resources (Project Manager, Business Analysts, Dept. Reps)
- Identify key DMH user groups with Community Behavioral Health differentiated needs
- Conduct JAD sessions with key department representatives to develop detailed and prioritized requirements
- Conduct gap analysis against existing and planned Cerner Millennium product roadmap
- Prioritize the required BH functional needs that are essential to potential migration to ORCHID
- Review requirements with Cerner and determine a timeline for availability of required functionality
- Secure contract with Cerner to the high priority functionality
- Configure the solution and deploy

Timeline

- **Planning:** 10 – 12 months
- **Implementation**: 4 – 6 months
- **Start**: 24 months prior to implementation of DMH's migration onto the single instance of ORCHID

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (6x @ 25%)
- Technical Architect (1x @ 25%)
- Department Representatives (8x @ 25%)

Challenges/Risks

- Some of the required functionality for current model of mental health care delivery will not be addressed at the time of migration
- Some residual operational risk will remain whose impact has to be assessed in more detail
- Improved functionality may come at a high cost and over a long period of time
- Loss of required/current functionality may have a negative impact on end user acceptance, quality of care and worker efficiency/productivity

Dependencies

- ORCHID Enhancements release schedule
- Existing Department EHR to ORCHID Migration initiative
- Establish a Program Office for the Countywide, Centralized EHR Program
- Establish Centralized EHR Governance
- Ongoing Market Scans, Sensing and Investigation

C.8 Enabling Dashboard Display of Comprehensive Summary of Patient Information to Support Communication and Workflow

Description

- Use alternative means within the Cerner platform (e.g., Cerner MPages development toolkit) to deliver Department specific messages and alerts to address Migration Challenge 8 – Dashboard Display of Comprehensive Summary of Patient Information to Support Communication and Workflow

Key Activities

- Secure required approvals to proceed with planning
- Assign project planning team resources (Project Manager, Business Analyst, Technology Architect)
- Develop project charter
- Conduct JAD sessions with each department to develop detailed requirements for required alerts
- Work with Cerner to obtain detailed project plan and cost estimates for implementation of new dashboard functionality
- Secure final approval for project implementation
- Assign LA County implementation team
- Develop, pilot and deploy new custom dashboard and alerts for each of the departments
- Conduct user training and provide support as required

Timeline

- **Planning:** 4 – 6 months
- **Implementation**: 3 – 5 months
- **Start**: 6 months prior to implementation of the first Department's migration onto the single instance of ORCHID

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (3x @ 25%)
- Technology Architect (1x @ 25%)
- Cerner Millennium SME (1x – 2x @ 25%)
- Department Representatives (5x – 6x @ 25%)

Challenges/Risks

- Will require modifications to current workflows and will requisite training
- Requires configuration and ongoing maintenance and support efforts
- Global dashboard, which is consistently present when a patient's record is open, may result in less readily available critical information for Department specific operations

Dependencies

- ORCHID Enhancements release schedule
- Existing Department EHR to ORCHID Migration initiative
- Establish a Program Office for the Countywide, Centralized EHR Program

C.9 External Partner EHR Integration – Enabling Effective Integration to Enhance Care Coordination and Complete Claiming and Payment

Description

- Work with Cerner to recreate the capability that DMH has developed to integrate IBHIS with the Contracted Providers' EHR Systems to share a patient's critical data across Contracted Providers and Directly Operated sites to address Migration Challenge 9 – Effective Integration to Enhance Care Coordination and Complete Claiming and Payment. The effort also requires redevelopment by Contracted Providers to properly integrate with ORCHID.

Key Activities

- Secure required approvals to proceed with planning
- Assign project planning team resources (Project Manager, Business Analyst, System Analyst, Integration Architect)
- Develop project charter
- Conduct JAD sessions with DMH to define the integration requirements
- Secure vendor commitment for implementation of a real-time integration approach with contract providers via Web Services
- Secure final approval for project implementation
- Assign LA County team
- Develop, pilot and deploy ORCHID interface to Netsmart's CalPM and MSO for Claiming and Payment
- Develop, test and pilot new Web Services interface for ORCHID
- Develop and execute migration plan for all DMH contracted providers
- Conduct training and provide support as required

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (2x @ 25%)
- Systems Analyst (2x @ 25%)
- Integration Architect (1x @ 25%)
- Cerner Millennium SME (2x @ 25%)
- Department Representatives (2x @ 25%)

Challenges/Risks

- Highly dependent on Cerner's willingness and ability to support web services integration
- Even with Cerner agreement, likely not available in the near future due to the amount of technical changes required
- Potential loss of information/communication needed for specialty mental health care coordination and management across the Local Mental Health Plan between directly operated and contracted providers

Timeline

- **Planning:** 4 – 6 months
- **Implementation**: 20 – 24 months (initial implementations 6 – 12 months, with a phased rollout to contracted providers after that)
- **Start**: 30 months prior to execution of DMH's migration onto the single instance of ORCHID

Dependencies

- Cerner Millennium legacy Architecture constraints
- Modification to Netsmart contract agreement
- ORCHID Enhancements release schedule
- Establish a Program Office for the Countywide, Centralized EHR Program
- BH Specialized Functionality
- Contracted Providers ability/willingness to redevelop integration

C.10

Common Security Infrastructure – Enabling Secure Access to ORCHID from all Departments Using LAC MS Active Directory Infrastructure

Description

- Deploy MS Active Directory (AD) domains for all departments that need to access ORCHID as their core EHR solution

Key Activities

- Secure required approvals to proceed with planning
- Assign project planning team resources (Project Manager, Business Analyst, Security Architect)
- Develop project charter
- Develop AD migration plan for departments that have not yet migrated to the new security infrastructure
- Obtain proposals and detailed cost estimates from vendors
- Select a vendor for deployment of AD infrastructure
- Secure final approval for project implementation
- Assign LA County team for execution
- Procure and deploy all net new IT infrastructure for AD deployment
- Execute migration plan
- Conduct user training and provide support as required

Timeline

- **Planning:** 4 – 6 months
- **Implementation**: 3 – 5 months
- **Start**: Immediately after the decision to proceed

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (1x @ 25%)
- Security Architect (1x @ 25%)
- Active Directory SME (3x @ 25%)
- County ISD (2x @ 25%)
- Department Representatives (5x – 6x @ 25%)

Challenges/Risks

- N/A

Dependencies

- ORCHID Enhancements release schedule
- Existing Department EHR to ORCHID Migration initiative
- Establish a Program Office for the Countywide, Centralized EHR Program

Appendix D – Early Benefits and Program Acceleration Work Stream Mini-Charters

D.1 Sharing of Patient Summary Information Between LAC Departments For Care Coordination Using Resonance, CEP, LANES, etc.

Description

- Leverage existing LAC technology infrastructure investments such as Cerner Resonance and Clinical Exchange Platform (CEP) as well as LANES to initiate exchange of Care Summaries between the County departments as well as with key external care delivery partners.

Key Activities

- Secure required approvals to proceed with planning
- Assign project planning team resources (Project Manager, Business Analyst, Integration Architect)
- Develop project charter
- Identify and validate Use Cases and data elements that would be valuable for care coordination purposes
- Identify and address any security and privacy regulations that may inhibit or prohibit the sharing of the identified data elements
- Connect the department's EHR system to the information exchange infrastructure that can best meet the intent of the care coordination use cases identified
- Pilot exchange of the desired health information over the selected exchange infrastructure
- Provide training on the new model of practice to all users of the expanded health data sets
- Execute the full implementation plan
- Implement metrics to measure the benefits of clinical data sharing and care coordination

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (2x – 3x @ 50%)
- Integration and Data Architects (2x – 3x @ 50%)
- Department Representatives (3x – 4x @ 75%)

Timeline

- **Implementation**: 4 – 6 months
- **Start**: Immediately

Dependencies

- LANES Deployment Completion
- Availability of Resonance and CEP software licenses
- Deployment of Resonance and CEP into Production

D.2 Contract Alignment

Description

- Align and harmonize multiple County DHS Contracts with Cerner regarding application and infrastructure software licensing and implementation, M&O and Enhancements services.

Key Activities

- Secure required approvals to proceed with planning
- Assign project execution team resources (Project Manager, Contract Analysts, Legal Support)
- Develop project charter and goals
- Analyze each of the three departments' Cerner contracts
- Identify opportunities to leverage common software licensing terms
- Identify negotiation points of leverage
- Identify target savings opportunities
- Identify Enterprise Cerner negotiations team
- Engage Cerner in negotiations to streamline current County contracts

Roles and Resources

- Project Manager (1x)
- Contract Analysts (1x – 3x @ 25%)
- Legal Support (1x @ 50%)
- Department Representatives (3x @ 25%)

Timeline

- **Implementation**: 2 – 4 months
- **Start**: Immediately

Dependencies

- ORCHID, PEMRS, JHIS Contracts
- Availability of Procurement and Contracting Resources
- Legal Support for Procurement

D.3 Countywide Person Index (MDM)

Description

- Engage the Countywide MDM project to ensure that all County EHRs are connected via the IBM InfoSphere Advanced MDM / Initiate solution.

Key Activities

- Secure required approvals to proceed with planning
- Assign project planning team resources (Project Manager, Business Analyst, Data Architect)
- Develop project charter
- Identify and validate Use Cases and data elements that would be a part of the MDM strategy for the 4 departments
- Identify and address any security and privacy regulations that may inhibit or prohibit management of master data
- Connect the department's EHR system to the MDM infrastructure
- Pilot management of the desired master health information
- Execute the full implementation plan
- Implement metrics to measure the benefits of clinical master data management at an enterprise level

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (2x – 3x @ 75%)
- Integration and Data Architects (2x @ 75%)
- Department Representatives (4x @ 75%)

Timeline

- **Implementation**: 9 – 12 months
- **Start**: Immediately

Dependencies

- CW-MDM Pilot Project
- IBHIS Integration Infrastructure
- PEMRS and JHIS migration timelines

D.4 Standardized Registration

Description

- Develop a common registration infrastructure that will allow core demographic data to be looked up and pre-populated for all core County healthcare delivery organizations

Key Activities

- Secure required approvals to proceed with planning
- Assign project planning team resources (Project Manager, Business Analyst, Integration Architect)
- Develop project charter
- Identify and validate Use Cases and data elements that would be needed for registration process
- Identify and address any security and privacy regulations that may inhibit or prohibit the sharing of the demographic data
- Connect the department's EHR system to the MDM infrastructure that can prepopulate the registration information
- Pilot new registration process
- Provide training on the new process with all users of the new registration process
- Execute the full implementation plan
- Implement metrics to measure the benefits of the common registration process

Roles and Resources

- Project Sponsor (1x)
- Project Manager (1x)
- Business Analysts (2x – 3x @ 50%)
- Integration and Data Architects (2x @ 25%)
- Department Representatives (4x @ 75%)

Timeline

- **Implementation**: 12 – 18 months
- **Start**: 1st Quarter of 2018

Dependencies

- ORCHID Deployment Completion
- Availability of enterprise MDM infrastructure (CW-MDM)
- Completion of Common Registration Process Initiative

D.5 Provider Identification and Credentialing

Description

- Create a single enterprise wide Provider Identification and Credentialing solution (i.e. migrate to Cactus currently used by ORCHID)

Key Activities

- Secure approval for the project and develop Project Plan, budget and high level implementation schedule
- Identify and assign appropriate project resources
- Negotiate necessary extension to vendor license agreements and develop vendor support service agreements
- Develop a phased plan for the transition of provider identification and credentialing to Cactus, Department-by-Department
- Develop any necessary interfaces to systems that will be retained and to current EHRs if those are required for the transition period
- Develop new provisioning and accreditation processes
- Staff up the credentialing group for the additional workload
- Provide training to provisioning teams and other relevant staff
- Perform any required data conversion from existing systems and system deployment

Roles and Resources

- Project Director (1x)
- Department interface development teams (1x from each Department @ 50%)
- ORCHID interface development team (vendor resources and 2x internal ORCHID / DHS resources @ 20%)
- Department staff that conduct provisioning and accreditation management as needed

Timeline

- **Planning:** 2 – 4 months per Department
- **Implementation**: 5 – 7 months per Department
- **Start**: Concurrent with overall Centralized EHR platform design

Dependencies

- Availability of resources from third party vendors for necessary interfaces
- Internal Department approvals and process design for new provider identification and credential management processes

D.6 Ongoing Market Scans, Sensing and Investigation

Description

- Monitor the market place and specific vendors to determine when products and vendors are ready to address the specific needs of the Departments as identified in the Migration Challenges
- Advise project leadership of changes that may impact the migration plan and adopt planning documents

Key Activities

- Identify the key vendors and solutions that require monitoring, such as:
  - Cerner's ability to address
    - LA County specific mental health provider documentation, billing, and claims and payment
    - Department specific privacy and security
  - Cerner and other population health vendor's ability to provide cross-agency reporting and analysis
  - Project and initiatives related to the current Case Management systems within Probation and Sheriff
- Identify and assign resources to conduct reviews, peer interviews and vendor demonstrations to assess the state of the market and maturity of new solutions
- Conduct regularly scheduled reviews (and apply new information and findings as they become available) to refine the roadmap and approach regarding the sequencing of deployment of the Centralized EHR within and across Departments

Roles and Resources

- Solution Architect (1x @ 5%)
- Market Research Resources (potentially Consultants)
- Governance and review body

Timeline

- **Implementation**: Ongoing from program inception
- **Start:** Immediately after the decision to proceed

Dependencies

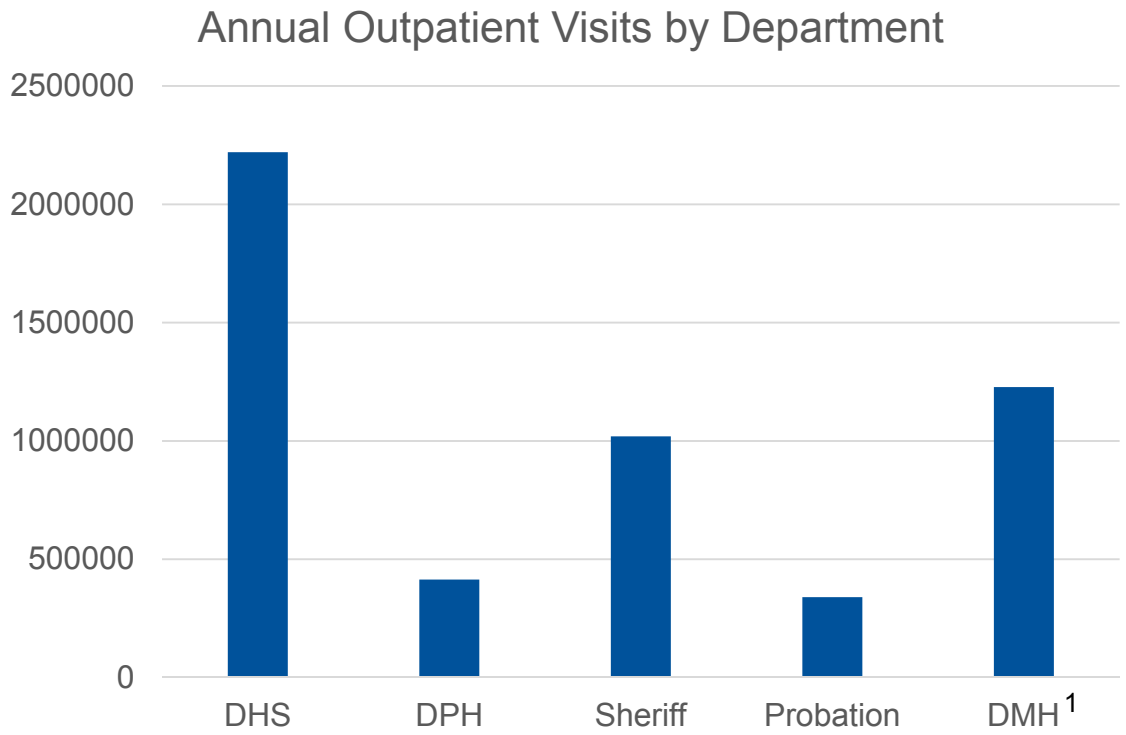
- Technical knowledge and expertise
- Centralized EHR implementation plan

Appendix E – Key Project Inputs and Gartner Research

Project Participants

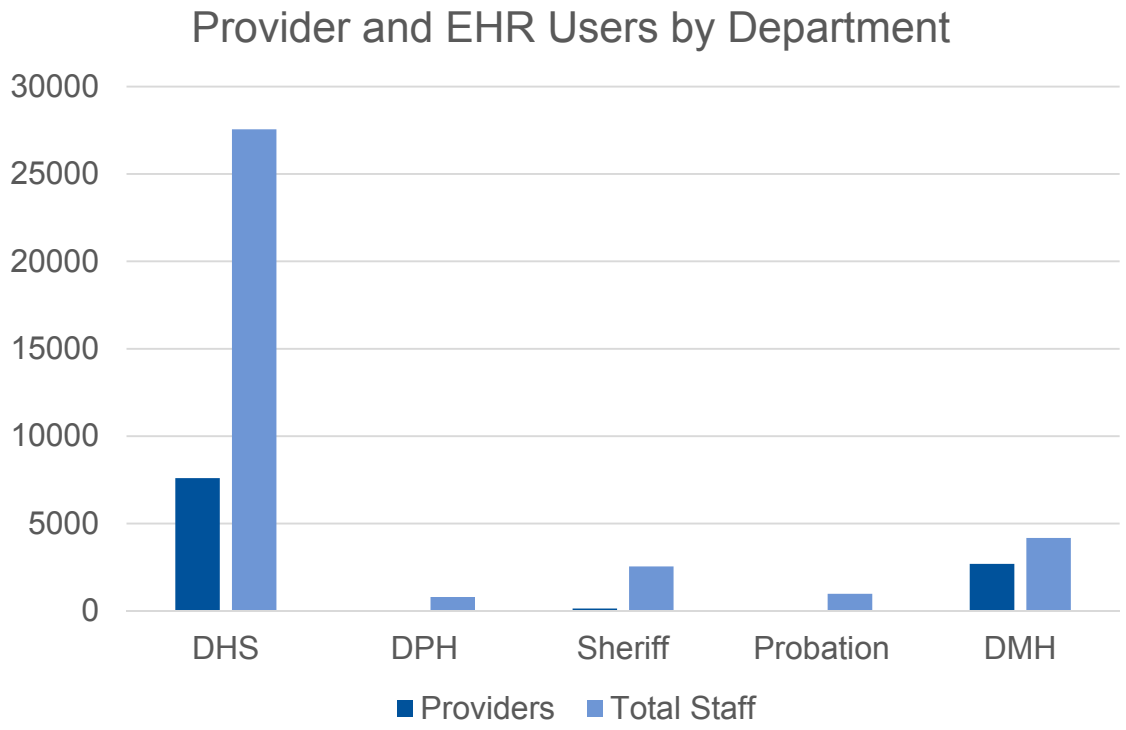
Name	Dept	Name	Dept	Name	Dept	Name	Dept
Erika Bonilla	CEO	David Oh	DHS - JCHS	Racheal Burgess	DMH	Kai-Jen Cheng	DPH
Manuel Valenzuela	CEO	Gene Cupp	DHS - JCHS	Robert Rivera	DMH	Leola Mercadel	DPH
Mason Matthews	CEO	Heidi Mittwer	DHS - JCHS	Robin Kay	DMH	Marc Yang	DPH
Armand Kok	Cerner	Thomas Wong	DHS - JCHS	Roxanne Locket	DMH	Marilyn Smith	DPH
Jodi Drury	Cerner	Adrina Moreno	DMH	Stephen Stanfield	DMH	Mike Janson	DPH
Len Giuffre	Cerner	Alex Camacho	DMH	Suhasini Shah	DMH	Mike Tormey	DPH
Henry Balta	CIO	Anita Khurana	DMH	Zena Jacobi	DMH	Noel Barakat	DPH
Jeff Zito	CIO	Bob Greenless	DMH	Gail Blesi	DMH - JJMH	Wesley Ford	DPH
Peter Loo	CIO	Bradley Bryant	DMH	Michael Fitzpatrick	DMH - JJMH	Jim Kalyvas	Foley
Sanmay Mukhopadhyay	CIO	Charlie Diaz	DMH	Misty Furbush	DMH - JJMH	Aaron Broom	Probation
Andrea Ross	Counsel	Dave Anderson	DMH	Alicia Chang	DPH	Dominic Gonzalez	Probation
Anthony Peck	Counsel	Dennis Murata	DMH	Andre Nazarians	DPH	Fredrick Macwan	Probation
Brandi Moore	Counsel	Dr. Roderick Shaner	DMH	Anna Long	DPH	Scott Sanders	Probation
Lillian Anjargolian	Counsel	Irma Castaneda	DMH	Ben Schwartz	DPH	Sharon Harada	Probation
Manuel Valenzuela	Counsel	Jay Patel	DMH	Brian D'Arrigo	DPH	Thida Van	Probation
Sharon Reichman	Counsel	Jeffrey Aguilar	DMH	Carol Floyd	DPH	Amy Huynh	Sheriff
Stephanie Reagan	Counsel	Jen Hallman	DMH	Chien-ju Wang	DPH	Edward Matzen	Sheriff
Veronica Pawlowski	Counsel	Jennifer Hallman	DMH	David Cardenas	DPH	John Carr	Sheriff
Anish Mahajan	DHS	John Ortega	DMH	David Hoang	DPH	Kevin Kuykendall	Sheriff
Christina Ghaly	DHS	Juan Fermin	DMH	Deborah Davenport	DPH	Kimberly Saucedo	Sheriff
Hal Yee	DHS	Judy Wherry	DMH	Debra Ruge	DPH	Lourdes Lucas	Sheriff
Jennifer Pap	DHS	Karen Streich	DMH	Doug Frye	DPH	Lucky Perera	Sheriff
Jose Casanova	DHS	Karen Van Sant	DMH	Erick Cerna	DPH	Mohamad Sufi-Ismail	Sheriff
Karen Bernstein	DHS	Kwan Liu	DMH	Gary Tsai	DPH	Nickolay Teophilov	Sheriff
Kevin Lynch	DHS	Margo Morales	DMH	Gema Morales-Meyer	DPH	Ping Cheong	Sheriff
Nick Bell	DHS	Na Dang	DMH	Jeanne Smart	DPH	Randy Soriano	Sheriff
Pam Griffith	DHS	Neena Paltanwala	DMH	Jeremy Cortez	DPH	Scott Goodwin	Sheriff
Robert Bart	DHS	Pansy Washington	DMH	Jim Green	DPH	Soheil Naimi	Sheriff
Shari Doi	DHS	Paul Arns	DMH	Joan Sturgeon	DPH		
Tyra Lindsay	DHS	Presley Becerra	DMH	John Eid	DPH		

Annual Outpatient Visits by Department



[1] Directly Operated outpatient visits only.

Provider and EHR Users by Department



Issues in Interfacing Healthcare Applications

- Truly integrated applications almost always work together better than interfaced applications
- A representative list of issues in interfacing healthcare applications is provided below:

When the Interfaced Applications…	The Agency May Have to…	With These Impacts…
Have different tools for administration and configuration.	Coordinate duplicative and interdependent configuration changes, often timing releases together on multiple systems.	Longer response times to user requests. Higher likelihood of errors in making changes, resulting in increased support calls, user frustration, uncoordinated care and possible patient safety issues.
Each has its own clinical decision support.	Coordinate duplicative and interdependent rules, often timing releases together on multiple systems.	More tedious process for implementing and amending rules. Extremely tedious process for auditing automated rule firing and troubleshooting unintended consequences of new rules. Users ignoring clinical decision notifications, longer time to improve clinical performance and patient safety issues.
Share the responsibility for managing medications between physicians, nurses and pharmacists.	Work with the vendors to get exact agreement on the microsteps involved in managing intravenous medications, and communicating these changes to documentation and medicine administration systems.	Errors and manual work-arounds in processes that are central to managing the patients that are most critically ill.
Should update common patient demographics.	Get vendors to modify their systems to agree on the details of the data – for example, how many different phone numbers may a patient have. Resolve concerns that the different rules for editing administrative data on some of the interfaced systems will cause downstream problems in billing or collections.	Delays in installing and upgrading interfaces. Increased testing for new software releases. Usually requires departmental users to use multiple systems rather than enter changes to administrative data, adding to training costs. Errors in synchronizing data among the systems, creating problems with departmental billing, patient contact and scheduling.
Are built on different technologies.	Maintain skill sets on all relevant technologies.	Increased staffing levels and training costs. Longer problem resolution time.

Source: Gartner Research, Sept 2010 G00206865

Trade-Off Considerations in Deciding to Use Application Integration Approaches

Consideration	Favors	Explanation
Complex shared data models	True integration	The data that is shared among the applications contains many highly interrelated details about clinical treatment or care. Tighter coupling between the applications adds concern that subtle differences will delay interface development, requiring changes in one application or the other. Often, subtle problems don't show up until the interfaces are in production.
Complex shared interactions	True integration	The processes that are being coordinated among the systems require frequent interactions (for example, several updates per day). Each application has its own inherent structure of events associated with a process. If these are different, interface development and maintenance will require changes to the applications making interfaces more expensive, delaying deliveries and increasing the testing requirement.
Response time	May favor true integration, but a careful analysis is required	If a user must wait for two systems to complete an action, problems are more likely and harder to identify.
Overall availability	Can favor either approach	Where interfaced applications can function independently, an interfaced approach can increase net reliability. For example, when the admitting system is down, the laboratory can operate using a "quick admit" function.
Both applications are always used by the same users	True integration	Where the interactions are limited to certain classes of patients or encounters (such as labor and delivery or heart catheterization), the need for tight coupling may be reduced, making interfacing easier to accept.
Applications that have special technologies	Interfacing	Where one of the applications has requirements to interface with special equipment during the course of a procedure, such as an imaging procedure, anesthesia or outsourced transcription. The special capabilities of a departmental system product may override the complexities of maintaining interfaces.
Highly coded data	True integration	The process of introducing changes to code sets involves coordinated code maintenance on multiple systems.
Bidirectional updating	True integration, although practical considerations frequently cause HDOs to tolerate minor data inconsistencies	Where the same data fields must be updated in either system. Departmental disagreements on the “source of truth” will delay projects. Data loss may occur due to concurrent updates.
Naïve use expectations	Usually favor true integration	Users will be disappointed unless they can understand the trade-off from the view of the entire Healthcare Delivery Organization (HDO).

Source: Gartner Research, Sept 2010 G00206865

Revenue Cycle Management (RCM) is a Megaprocess that Includes a Multitude of Tasks

- Tasks may be performed prior to, during and/or after the patient visit
- Each step may be performed using a variety of systems, and data from one step or multiple steps is fed into subsequent steps until all information needed for billing is collected

Front End	Middle	Back End
▪ Patient Scheduling ▪ Preregistration/Certification ▪ Medical Necessity Checks ▪ Eligibility/Benefits Verification ▪ Referral Management ▪ Registration/Identity Verification ▪ Patient Responsibility Estimate ▪ Financial Counseling ▪ Point-of-Service Collections	▪ Charge Capture/Charge Description Master ▪ Abstracting ▪ Coding ▪ Utilization Review/Care Coordination ▪ Audit Management	▪ Billing ▪ Claims Processing ▪ Collections/Follow-Up ▪ Patient Statement Processing ▪ Online Bill Pay ▪ Remittance Processing ▪ Denial Management ▪ Appeals Management ▪ Payment Posting/Electronic Funds Transfer ▪ Contract Modeling/Expected Reimbursement
Revenue Cycle Management Process – Key Dependencies (Summarized)		
▪ Clinical Care Delivery Processes (care delivery, clinical documentation, select EHR supported processes, care coordination and ancillaries) ▪ Financial Administration (contract management, general ledger and materials/supply chain management ▪ Other (business intelligence/enterprise analytics, document management and customer relationship management)		

Source: Gartner Research, June 2014 G00263061

RCM as an Enterprise Capability

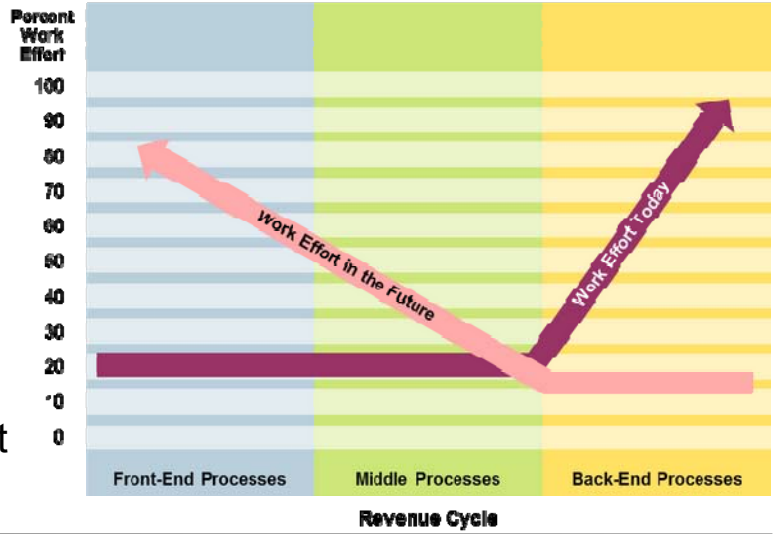
Market Direction

From Siloed to Cross-Organizational View

- New Payment Models – Clinical outcomes are now being linked to revenue cycle outcomes or payments to support new payment models. Applications must support health information exchange and business intelligence throughout the revenue cycle. RCM solutions that support an integrated view of services across the enterprise and the continuum of care will be crucial.
- New Stakeholders and Paradigms – More transparency between providers and payers, as well as visibility into the process, will be critical to optimizing RCM. The long-term goal should be to achieve enterprise integration within the provider organization, as well as across strategic partners, including patients and consumers.

From Back End to Front End

- Shift of Work Upstream – As part of revenue cycle transformation initiatives, providers have been shifting revenue cycle work effort upstream where the person responsible for addressing any issues can take action on it.
- Faster, More Accurate Decision Making – The shift of revenue cycle tasks upstream allows decisions to be made at the time of service or as close to that time as possible.



Source: Gartner Research, June 2014 G00263061

RCM as an Enterprise Capability

Market Direction, Cont'd

From Manual, Disjointed to Fully Automated

- Automated, Standardized Workflows – RCM applications must support electronic processing with automated, standardized workflows in which information moves seamlessly from one revenue cycle process to the next. Data is collected once, then used within the enterprise system as needed.
- Common Application Framework – A standard structure that allows a complete view of cross-functional workflows in which updates and changes can be made holistically.
- Flexible Integration – RCM applications must offer flexibility and the ability to integrate functionality with other applications (e.g., supply chain management, CRM).

From Retrospective Toward Real-Time and Predictive

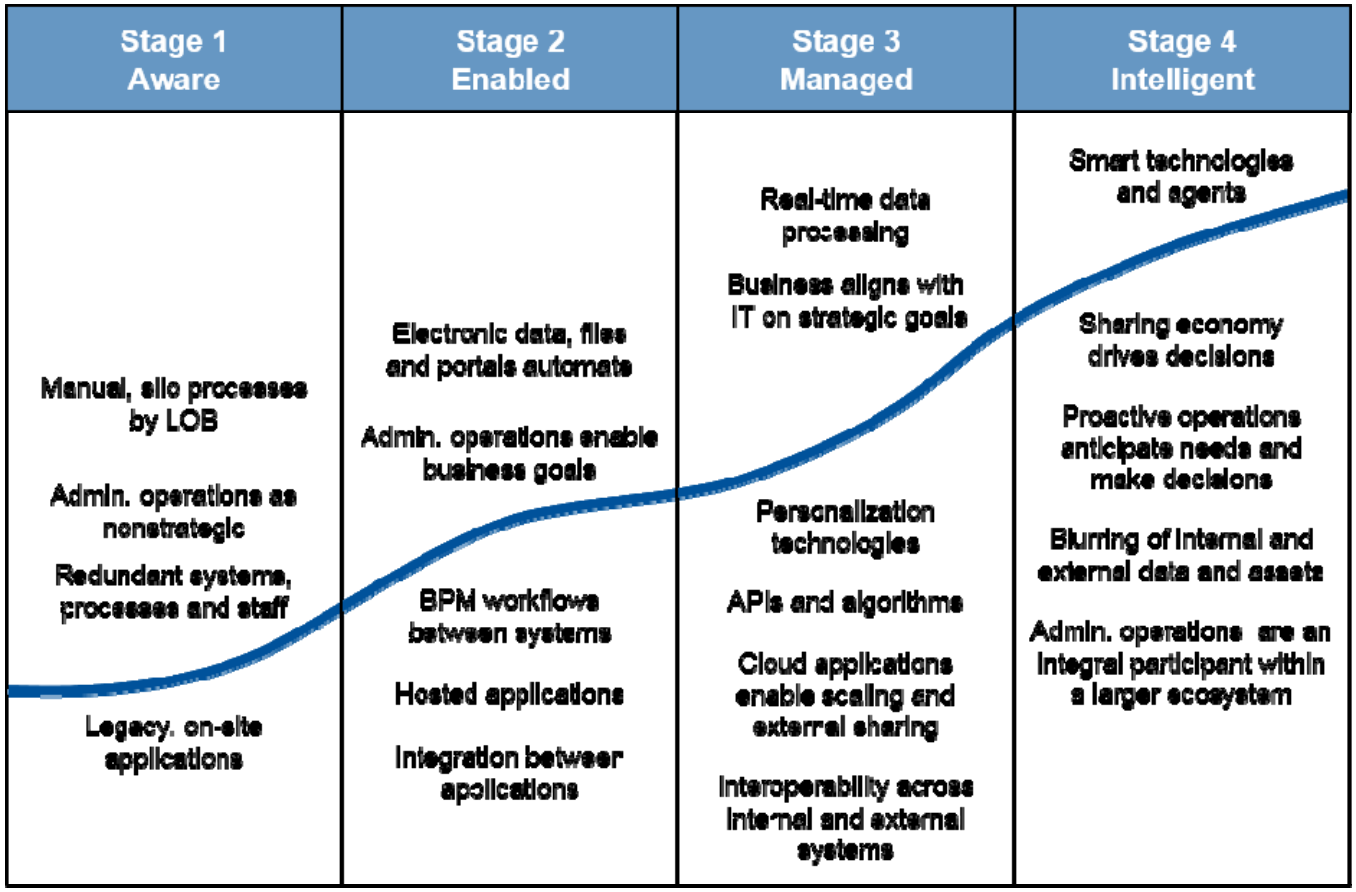
- Real-Time Focus – The ideal goal is to move to a real-time revenue cycle in which faster, data-driven decision making can occur. This real-time focus requires the use of data analytics at all stages of the revenue cycle, utilizing integrated clinical and revenue cycle data.
- Proactive Monitoring – The real-time revenue cycle allows for active monitoring and use of alerts when key data changes or has the potential to impact revenue.

From Limited Interaction to Patient Engagement

- Enterprise Customer View – Given the increasing role of the consumer, applications must support customer interaction in the RCM, as well as clinical processes, as part of management patient engagement.
- Support Self-Service and Mobilization – Online bill pay and mobile payment functionality are required to support patients who are making more frequent payments for healthcare services and want more direct and easy access.

Source: Gartner Research, June 2014 G00263061

Payer Administrative Systems Modernization Maturity Model



Source: Gartner Research, May 2016 G00302699

Payer Administrative Systems Modernization Maturity Model

Attributes of Effective Payer Administration

	Level 1 – Aware	Level 2 – Enabled	Level 3 – Managed	Level 4 – Intelligent
Omnichannel	Low	Low to Medium	Medium to High	High
Collaborative	Low	Low to Medium	Medium	Medium to High
Interoperable	Low	Low to Medium	Medium to High	High
Real-time Processing	Low	Low	Medium	Medium to High
Operationally Efficient	Low to Medium	Medium	Medium to High	High
Intelligent	Low	Low	Low	Medium to High
Description	A payer operating at this maturity level demonstrates limited operational efficiency, no electronic processing and minimal customer support. Products, systems and services are distinct and operated along specific lines of business or customer type. People perform the work that disconnected processes and systems cannot.	With the adoption of electronic files and processes, payers operating at this level are able to increase the sharing of data and extend e-services to external suppliers, partners and customers. Immature data analytics enable personalization of services, but are unidirectional (pushed) and lack coordination across administrative areas.	Digitization of data enables real-time data exchange and analysis. Interoperability and the use of APIs extend services across internal and external systems, and facilitate the coordination of healthcare and cost decisions. Algorithms identify opportunities to increase personalization, and omnichannel distributions streamline the delivery of products and services.	A payer at this level of maturity possesses extreme operational efficiency and uses smart administration as an enabling technology to differentiate the payer's value proposition and incur new sources of revenue, as well as new levels of customer loyalty.

Source: Gartner Research, May 2016 G00302699