CALIFORNIA HEALTH CARE
SAFETY NET INSTITUTE

DATA FOR POPULATION HEALTH

Thursday, February 7, 2019
Oakland, CA

Lessons Learned: EHR Implementation

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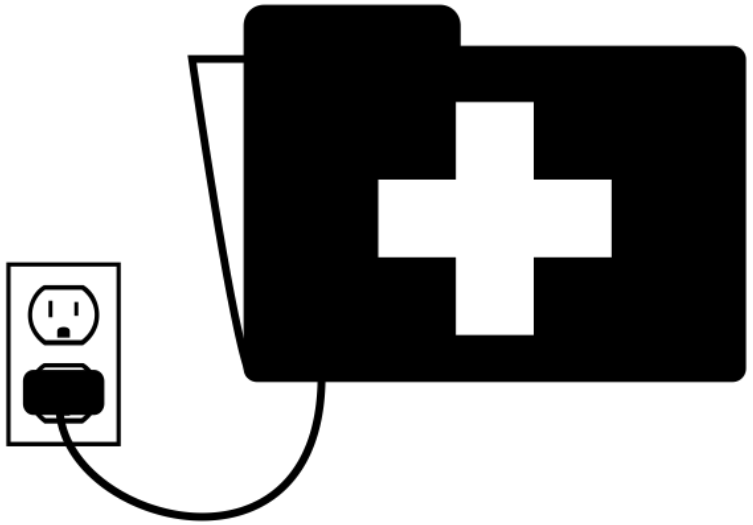
9:00—10:30



LESSONS LEARNED: EHR IMPLEMENTATION

9:00-10:30

Data for Population Health

- Scott Thompson, PRIME/QIP Project Manager, UC Irvine
- Vikram Kumar, MD, Chief Health Informatics Officer, Riverside University Health System
- Theresa Cho, MD, Medical Director, Ambulatory Care Quality, Ventura County Health Care Agency
- Aimee Brecht-Doscher, MD, Associate Chief Medical Informatics Officer, Ventura County Health Care Agency
- Mayra Hernandez, Manager, Population Health and Clinical Integration, Ventura County Health Care Agency

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EHRs at CAPH Systems

Contra Costa
Riverside
Santa Clara
UC Davis
UC Irvine
UC Los Angeles
UC San Diego
UC San Francisco

2019: **Alameda**
2019: **San Francisco**

Los Angeles
San Joaquin
Ventura

2019: **Kern**

Natividad: Meditech (inpt) & EPIC OCHIN (outpt)

2019-2020: TBD
Arrowhead
San Mateo

Impact of EHR Migration on Quality/Value Program Performance – Lessons Learned

UC Irvine Health's Experience

S. Thompson, PRIME/QIP Program Manager – February 7, 2019

UC Irvine Health
EHR Migration Experience

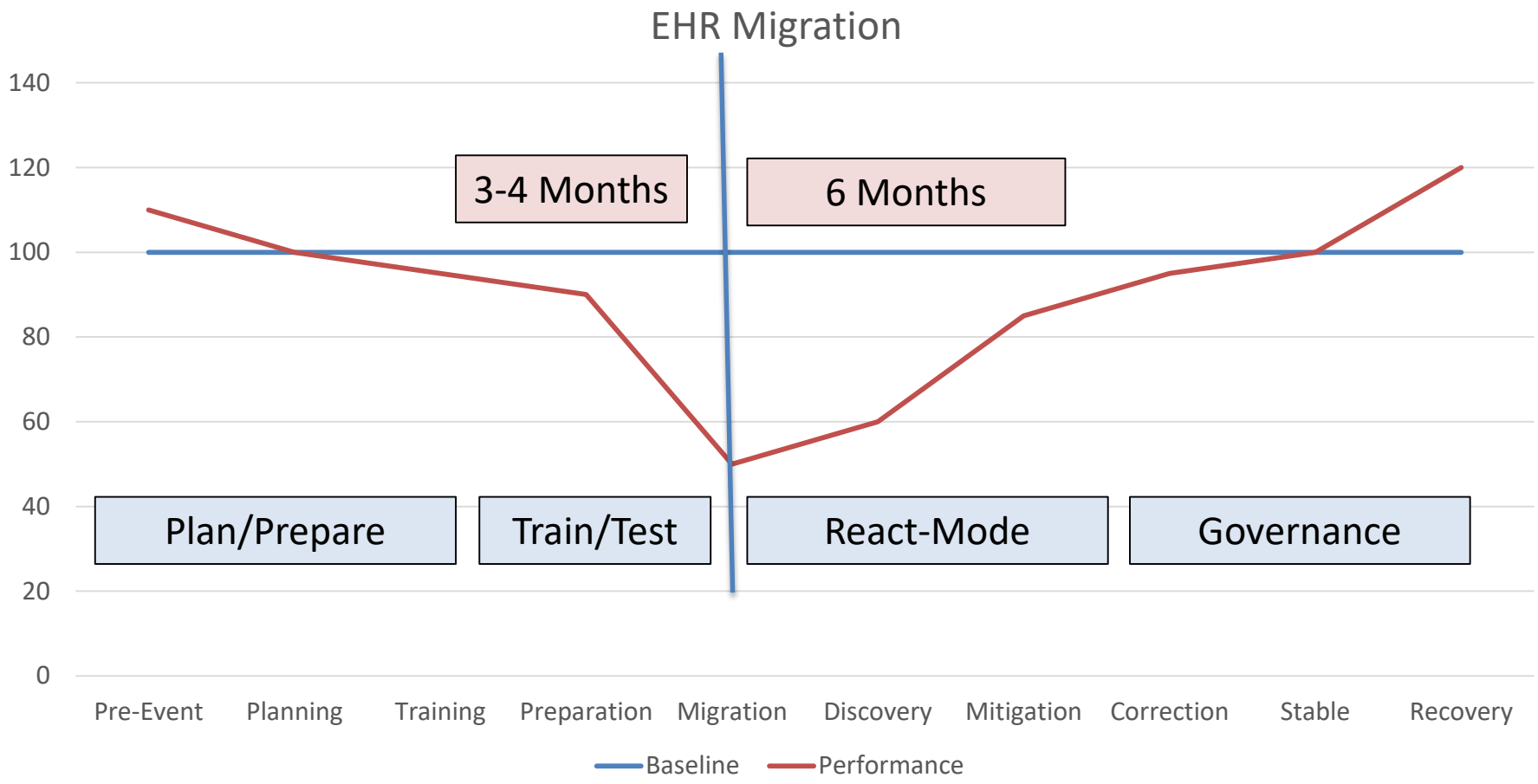
Allscripts to Epic on November 3, 2017

- Shared Epic build with UCSD on established Epic configuration
- Inpatient/Ambulatory, Referral and Billing systems simultaneously
- Shared Epic Governance

Double Upgrade - Epic 2015 to Epic 2018 in December, 2018

- 2-3 day recovery

Quality/Value Performance – Migration Impact



What are we proud of?

Triple Migration hit target schedule – Long Week End

- Two full migration tests flushed out most critical failure issues

Practice = Predictability

Inpatient Operations remained relatively stable

- Majority of attention and testing was focused on Inpatient locations
- Strong clinical leadership and IT staff availability at & after go-live

Where you look, is where you are prepared

Lessons Learned:

Know if your EHR is Word or Excel

Allscripts was linear, process driven and data oriented

- Like an Excel spreadsheet

Epic is narrative, textual and user-driven

- Like a Word document

When you pick up a hammer…
Expect to hit things…

Lessons Learned:

Don’t assume everyone understands, is engaged or ready

Confirm that departmental leadership has identified, tested and confirmed operations prior to training and migration

- UC Irvine clinical practices differ from UCSD Epic build configuration
- Managers focused on daily operations and not migration preparation

Everyone needs to have an oar in the water

Lessons Learned:

EHR functionality has to match clinical operations

The EHR you are handed is only the starting point

- UC Irvine discovered that ambulatory workflows and patient care paths were different from UCSD clinical practice configured in Epic

Clinical workflows and needs should drive EHR functionality

Using EHR functionality to correct workflow problems?

- The workload just tripled

Lessons Learned:

EHR Vendor training is not user training

Vendor training teaches how to use their product

Staff training should teach users how to do their jobs

Invest in training that focuses on workflow and procedures

- Teaching Word does not enable a user to write a good book

If your content follows EHR screens left to right…
you're not providing staff training

Lessons Learned:

Don’t neglect reporting and analytics

Reporting and Analytics not updated with Epic Data

- Matching reports not developed for Epic
- Migration project plan had development ‘after’ the migration

Dangerous to assume resources will be free after the migration

Data Migration/Archiving

UCI Provider information and Lab/Imaging loaded into Epic

- Lab and Imaging results queued back two years and loaded
- Allscripts maintained in Read-Only view linked from Epic

Allscripts charts exported to CCD for Active patients (3 years)

- Epic loaded CCD documents to CareEverywhere
- PAMI data – Problems, Allergies, Medications and Immunizations
- Providers had to reconcile into live Epic EHR

Data Migration/Archiving – Epic Lessons

CareEverywhere content is not available for Epic Live use

- Must be reconciled in order to be seen in the patients chart
- Impacts care, documentation, HMAs, BPAs, Reporting and Pop-Health

Providers only reconcile at Patient Encounters

- Patient data not updated for months or years from Allscripts

Providers uncomfortable reconciling data outside their scope

- Immunizations not routinely reconciled (PAMI CCD data)
- PCP's not reconciling Cardiology information for patients

Scott Thompson, RN MBA

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Riverside University Health System

Epic Implementation
&
Lessons Learned

Vikram Kumar MD - CHIO

2/7/19

Outline

- Lessons Learned
  - Scope
  - Contracting
  - Governance
  - Key Areas of Focus
  - Archival & Data Migration
  - Ancillary Functionality/3rd Party
- Appendix
  - Systems' Descriptions
  - Reasons to "Connect"
  - Contracting
  - Implementation /Timeline

LOMA LINDA UNIVERSITY HEALTH

Riverside University HEALTH SYSTEM

CareCONNECT

SAC HEALTH SYSTEM

Scope

Growth & Business Development

- Strategize over 1, 3 & 5 year needs

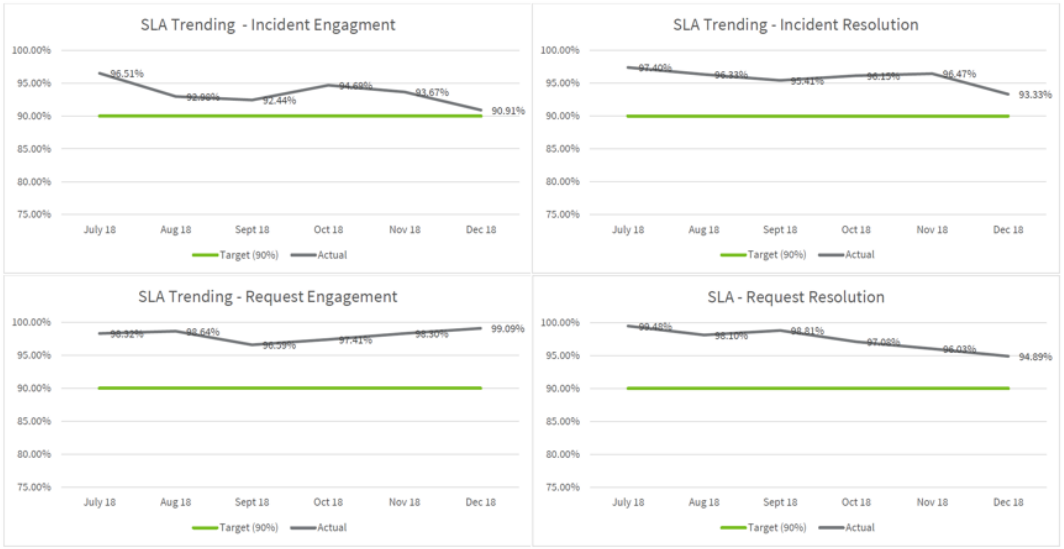
- FQHCs
  - UDS Reporting
- New Clinics or Hospitals
- Urgent Care
- Outpatient Behavioral Health
  - Mild/Moderate
  - SMI – ShortDoyle
- Correctional Health
- eConsults/Telemed
- Workflow Automation – eCheck-in, AutoPay
- Modules – Skinny vs. bells & whistles
  - Evolving RUHS needs
- Data/AI needs

RUHS Support Process
Shared Platform Obligations

- 3 different types

Request Type	Definition	Examples	Method of Entry	Audience	Response Requirements		
					Urgency	Initial Contact	Resolve Goal
Incidents Break-fix	• Something is broken and needs to be fixed • Do not know how to do something in the system • The system is unusable or not accessible	• Used to be able to enter orders but now I cannot • Unsure how to put in orders • Unable to launch Hyperspace	• Email the RUHS Service Desk (Non-critical) • Call the RUHS Service Desk (Critical)	RUHS Users	• Immediate • High • Moderate	• 15 min. • 30 min. • 2 hours	• 1 hour • 8 hours • 2 days
					Complexity	Initial Contact	Resolve Goal
Request Fulfillment Enhancements	• Small changes to the system • Changes to or new access • Ongoing maintenance	• A new medication in the system • A new user that needs a username and password • Changes to a Clinic schedule template	• Submit to RUHS Champions/Approvers for review, if approved they submit a catalog request into LLUH Service Now Portal	RUHS Users and RUHS Champions/ Approvers	• Basic • Advanced • Complex	• 16 hours • 16 hours • 16 hours	• 10 days • 30 days • 60 days
Requests for Change Projects	• Major changes to the system • New functionality or reports • New integration with 3rd Party systems	• Need new behavioral health assessments • Need to create PRIME reports • Setup new data interface with Public Health	• Submit to Physician Advisory Group (PAG) • Submit to Clinician Advisory Group (CAG) • Submit to Shared Steering/Governance	RUHS Users, PAG, CAG, and Shared Governance	• Responses will vary based off of project scope and requirements. • RUHS Approved project requestors will submit an "Idea" in LLUH Service Now to start the discovery process (demand) • LLUH will send RUHS leadership a Statement of Work and Quote		

SLA Performance



Platform Costs

Implementation Budget	$31,577,380
Implementation Actuals (3yr term for Epic licensing completed 8/2018)	$28,868,706
Implementation Savings	$2,708,674
Total Recurring Annual Costs	$9,372,199.96
Projects 2016-2019	$5,016,624

Major Events Timeline

Aug/Oct 2, 2016
- Epic Go-Lives

December 2016
- RUHS met MU EH Stage 1 90 days post live
- CareConnect Support Project Manager added
- Shared Steering Committee

March 2017
- Upgrade Optimization

June 2017
- 1st Business Analyst added

October 2017
- 2017 Version Upgrade

March 2018
- LL / SACHS Indio Go-Live
- Corona Clinic Go-Live

April 2018
- POLST Phase 2 Go-Live

May 2018
- 2nd Business Analyst added

June 2018
- ECG Engagement for FQHC Assessment

July 2018
- Clinical Case Management Go-Live

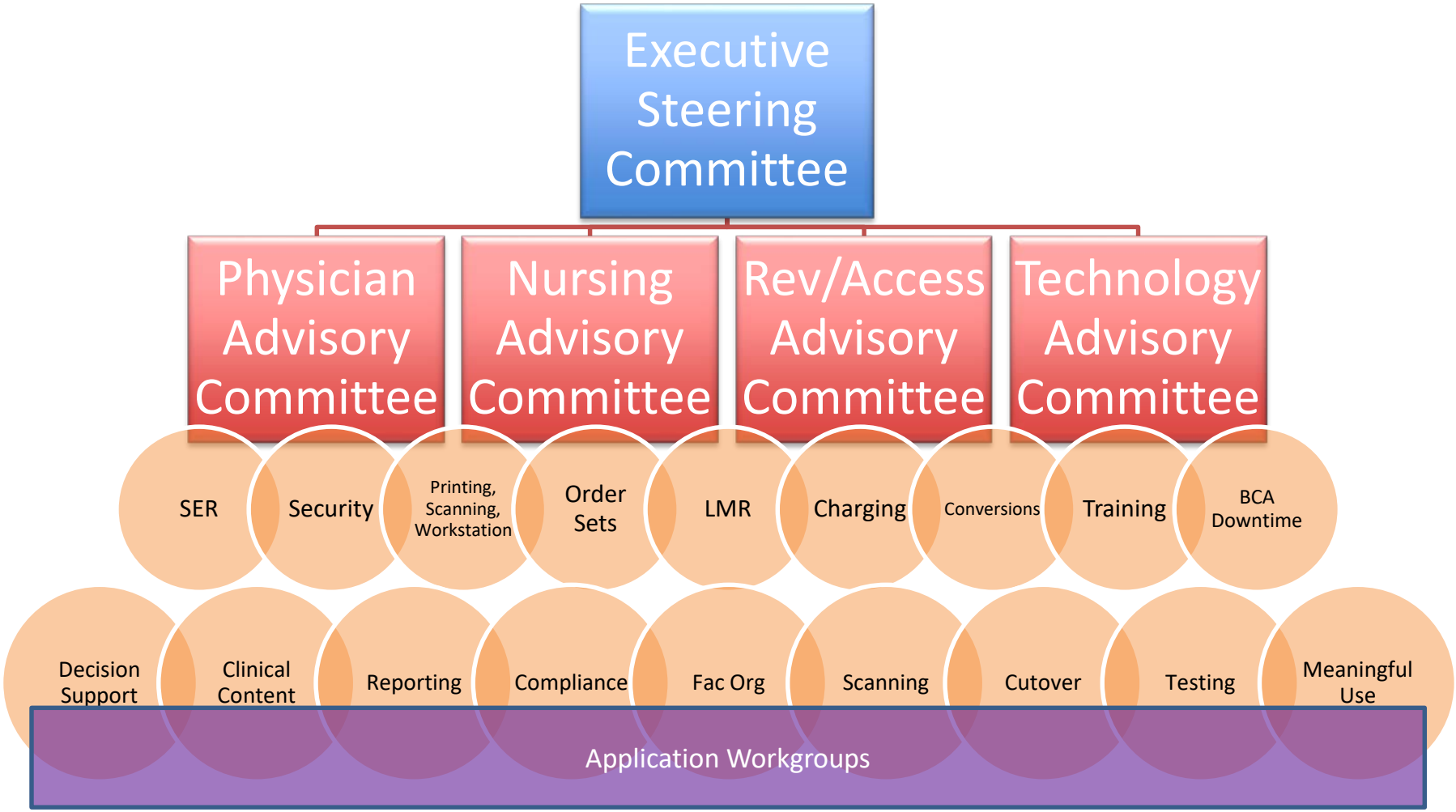
August 2018
- Cactus Clinic Go-Live

October 2018
- 2018 Version Upgrade
- CC Quality Program
- End of ECG Engagement
- Sam Choi AMB Shadow Visit

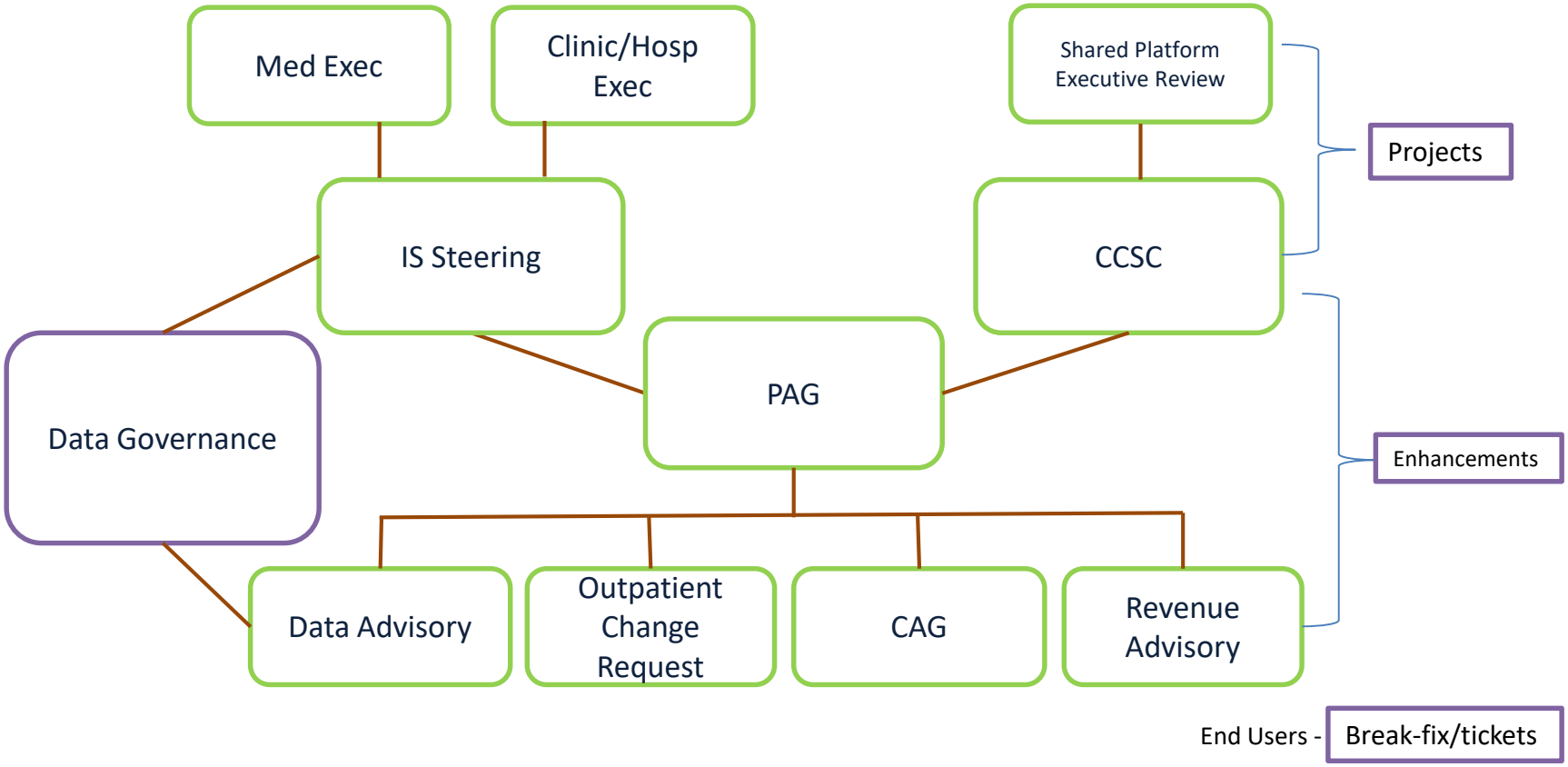
November 2018
- OBIX Go-Live
- Epic THRIVE Training
- Epic Fiscal Visit
- Murrieta Go-Live

January 2019
- Cath Lab Go-Live

Implementation Governance



Current RUHS IS Governance



Other Committees/Groups

- Medical Informatics Committee
- CHIO - Residents Dialogue
- Telemedicine Steering Committee
- Registries/Healthy Planet
- Quality Reporting/Informatics
- Department Expansion

Lessons Learned
Key Areas of Focus

- Staffing
- Training
- Workflows – pre/post
- Data needs – pre, through & post go-live
- Fiscal/RC
- Ambulatory – HB clinics vs. FQHCs
- End-user burden & satisfaction
- Working w/Vendor

Staffing

- RUHS needed to hire temps for training & implementation support; converted to FTEs.
- Team has needed to grow ~15-20% post implementation to meet growing needs
- Implementation with Loma Linda & Nordic
  - Nordic provides ongoing support w/LL
  - FTE vs. consultant balance
- RUHS IT has needed to re-org to evolve

Training

- Governance
  - Training mandatory for RUHS providers
    - Required even with prior Epic experience
    - Reciprocity if previously trained at LL/SACHS on the shared platform
    - Test out
  - Course length currently
    - Averages 4-5 hrs for physicians (often followed by elbow support)
    - Averages 2-4 days for nurses – based on role
- Curriculum Update – needs to be ongoing
- Trainer
  - Staff vs. consultant – RUHS used temps -> FTEs
  - Certification / training for the trainer – travel costs/backfill

Workflow

- Paper to Electronic
- Old to New EHR
  - NextGen + Soarian -> Epic
- Workflows for
  - Patients
  - Physicians, clinical staff, non-clinical staff
- RUHS uses governance groups to engage & communicate workflow changes
- UAT

Workflows evolve.
End-user engagement & communication are key.

Data – RUHS experience

- Governance
  - Access issues for report writers & data analysts
  - Intake/Prioritization
  - Refresh rate of data
  - Data Warehousing, Data Models
- Infrastructure
  - EHR (Epic)
  - Analytics/eMPI (SAS)
  - Visualization (Tableau)
- Data needs for old & new EHR
  - For example RUHS uses an external vendor for PRIME & QIP and internal resources for GPP, WPC

- RUHS experience: 1-2 years from EHR implementation to Data Analytics
- Data infrastructure may need to be rolled out in parallel to EHR rollout.

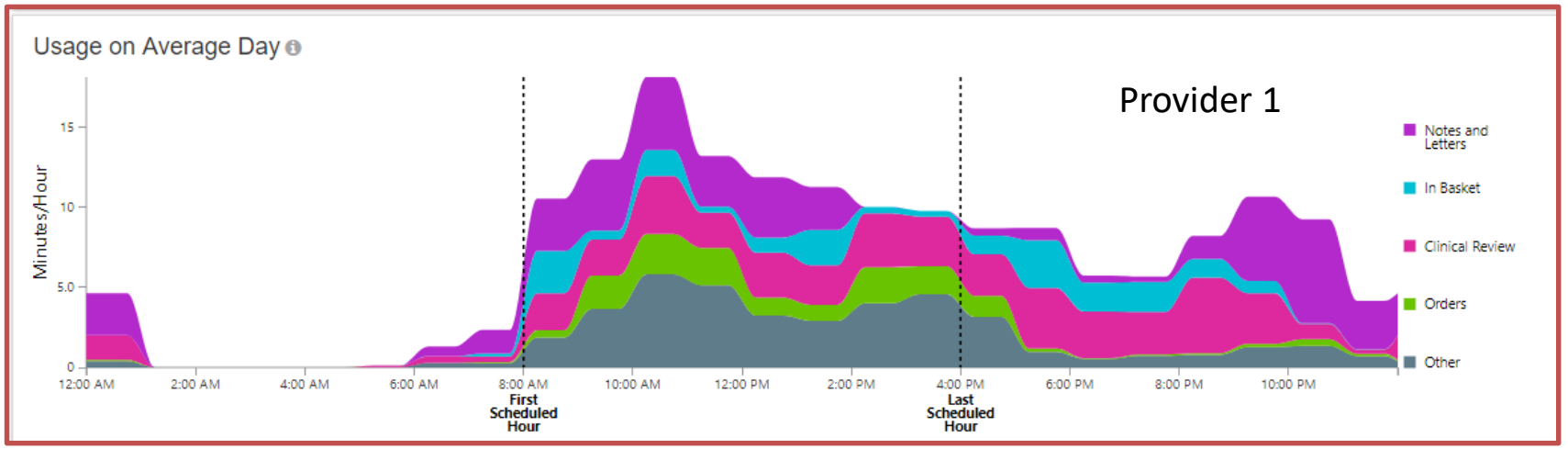
Fiscal/Revenue Cycle
Current Optimization Initiatives

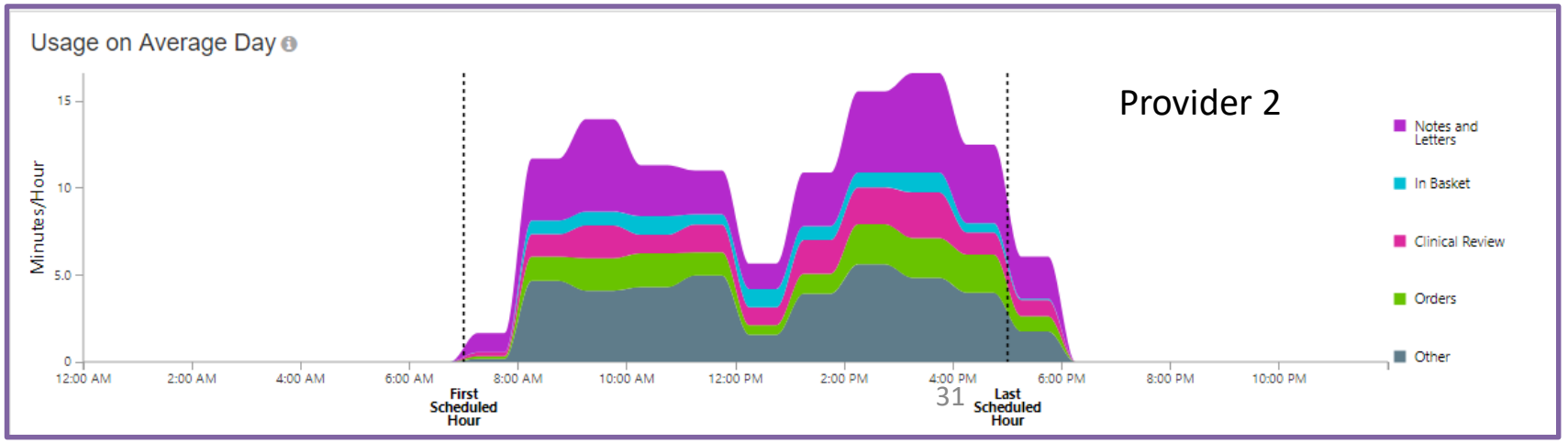
- Platform already exceeds historical charge capture
  - May not be the right benchmark
- LLUH – PB billing / RUHS – HB Billing + FQHCs
  - Optimization
- (Re)training RC staff
- Chargemaster Reconciliation
- Preference Lists/Database Code lookup
- Mapping of Codes
- CPT2 & other Quality codes for P4P
- Claims Data validation
- Inpatient – DNFB, AR improvement
- Fiscal Audit visit from Epic
- JOM with SACHS around IEHP (payor needs)

Important to have Fiscal/RC very closely involved with implementation from start

Physician & End-User Experience

- Support those who implement
- Have a pulse on end-user burden & frustration





End User Burden

- Understand challenges & frustrations
  - Dept meetings
  - Meeting w/mid-management
  - Surveys
- Training – RUHS Epic Thrive
- Team based rounding
  - Optimization tools
- Project rollouts & workflows
  - RUHS eConsults experience

Optimization - Work with the vendor

RUHS Examples of working directly with Epic

- New Modules – Lab, Amb Pharmacy, Dental, Ortho
- New Functionality Demos
- (Re)Training resources – Epic Thrive
- Site Visits
  - Incoming to RUHS for Optimization
    - FQHCs
    - Fiscal/RC
  - Outgoing
    - Other local customers to demo modules/day in life
    - Connect with similar users – for example RC to RC
- Consultant Resources
  - Epic Boost for FQHC & Fiscal optimization
- Bi-weekly calls with vendor rep/Quarterly site visit by rep

Archival/Old EHR

- Data Migration
  - RUHS migrated basic demographics but not 'charts'
  - Link available to old EHR
    - Sparingly used by physicians & clinical staff after 18mo of go-live
    - Mainly used now by HIM, Compliance & Case Management
- Sunset
  - Transition everything vs. retain some (Lab, GL, etc.)
  - Contractual, Technical & Regulatory
- Archival – MediQuant – vendor /Huron – implementation consultant, now RUHS
  - Scope
  - Contract & Implement
  - 3rd Party systems
  - Timelines
- Negotiating your way out of your current EMR contract
  - Difficult conversations with your vendor
    - include your County Counsel
- Data archival system could be your negotiation point
    - Think bigger than just your EMR platform
    - It will cost more and take longer than you think

Ancillary Systems

Pros & Cons to transitioning at the same time

- Lab
  - Stayed on Novius -> will be moving to Beaker Lab
- GL
  - Strata
- Amb Pharmacy
  - Stayed on FSI -> considering transition
- Cardiology
  - Considering Epic Cupid
- 3rd Party Systems
  - May need to migrate vendors that work better with new EHR
    - RUHS recently moved from Phillips Intellispace to Obix
  - Scanning workflows: RUHS newer workflow not as efficacious
- PACS – RUHS Enterprise PACS

Thank you

- Contacts
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  - Vikram Kumar/CHIO v.kumar@ruhealth.org

VENTURA COUNTY
AMBULATORY CARE

LESSONS LEARNED: EHR IMPLEMENTATION

Ventura County Health Care Agency

February 7, 2019

Overview

- Prior to Cerner implementation, we had paper and Meditech.
  - Only 20% of medical record documentation was in Meditech.
  - STAR and PLUS for scheduling, registration, and billing.
  - Cerner selection based on high level of integration with all aspects of operations.

- Big Bang go-live approach at both hospitals and all campus and affiliated clinics on 7/1/13.
  - Goal was to achieve our MU goals by 9/30/13.

Our Challenges

- First major downtime on Day 1 as clinics came on line
- Struggled with slowness and inconsistency
- We opted for a Self-hosted server environment
  - Cerner installed and set up server equipment on-site with our IT to support.

VENTURA COUNTY HEALTH CARE AGENCY

Cerner go-live day 1

Self-hosting challenges: inadequate space

- 5 racks full of servers between the posts
- Thick plastic taped to the floor, posts, and ceiling to create a sealed space

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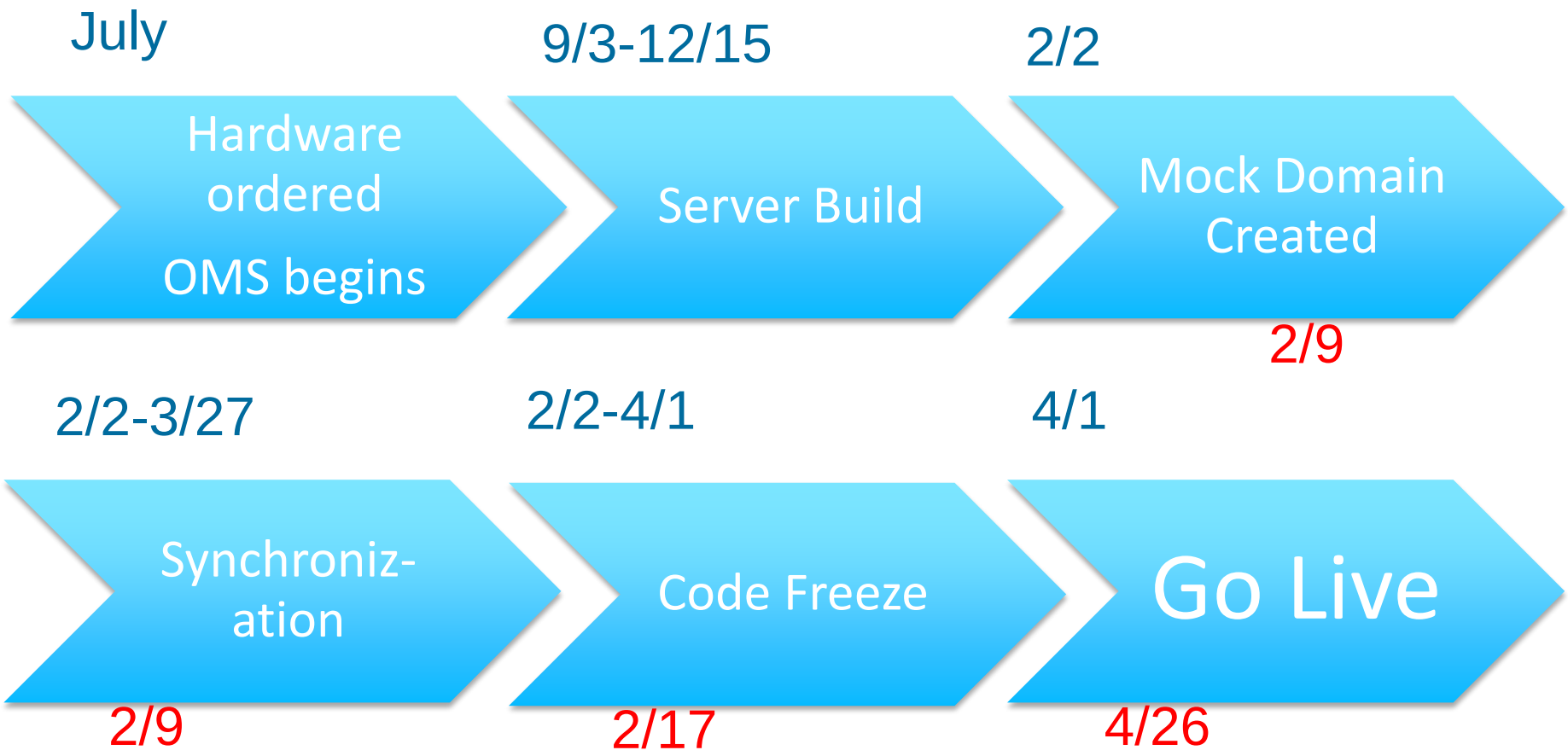
Hosting: unmet needs

- Staff
  - We lacked skilled resources for a complicated system that requires almost daily attention.
- System capacity
  - The system was seriously undersized.
  - Underestimated number of users (1100 instead of 600).
- Equipment
  - The cost and effort to add equipment was very expensive without clear sense that problems would be fixed.
- We moved to RHO in 2014: almost immediately, system stability increased from around 50% uptime to over 99% uptime.

RHO timeline



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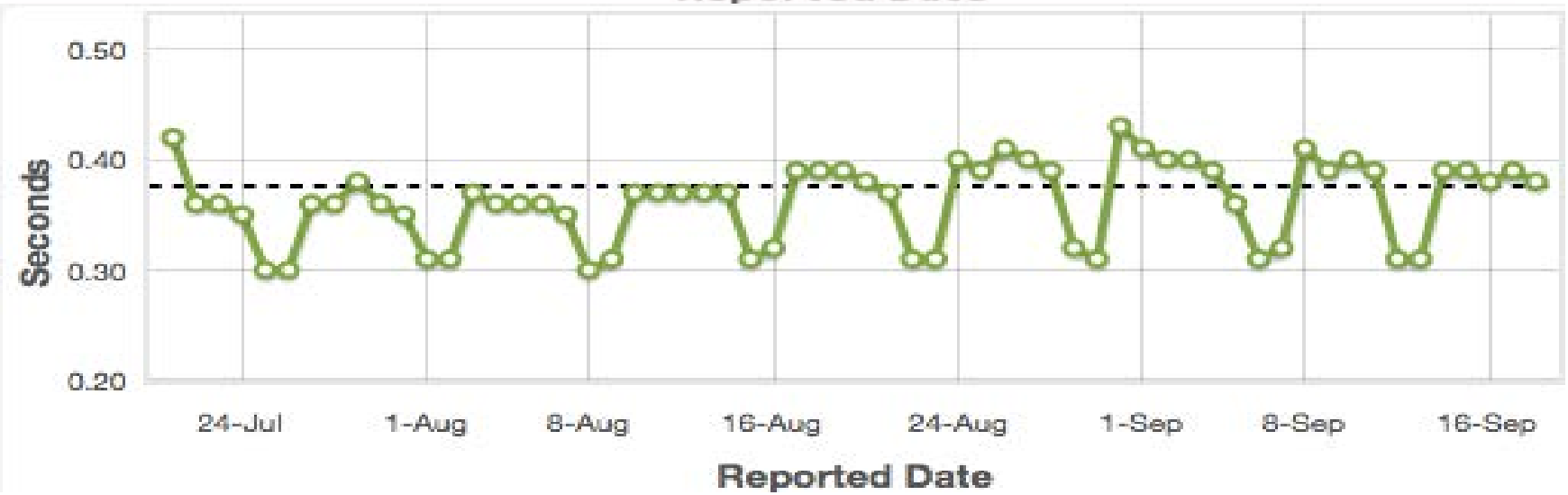
RHO transaction speed



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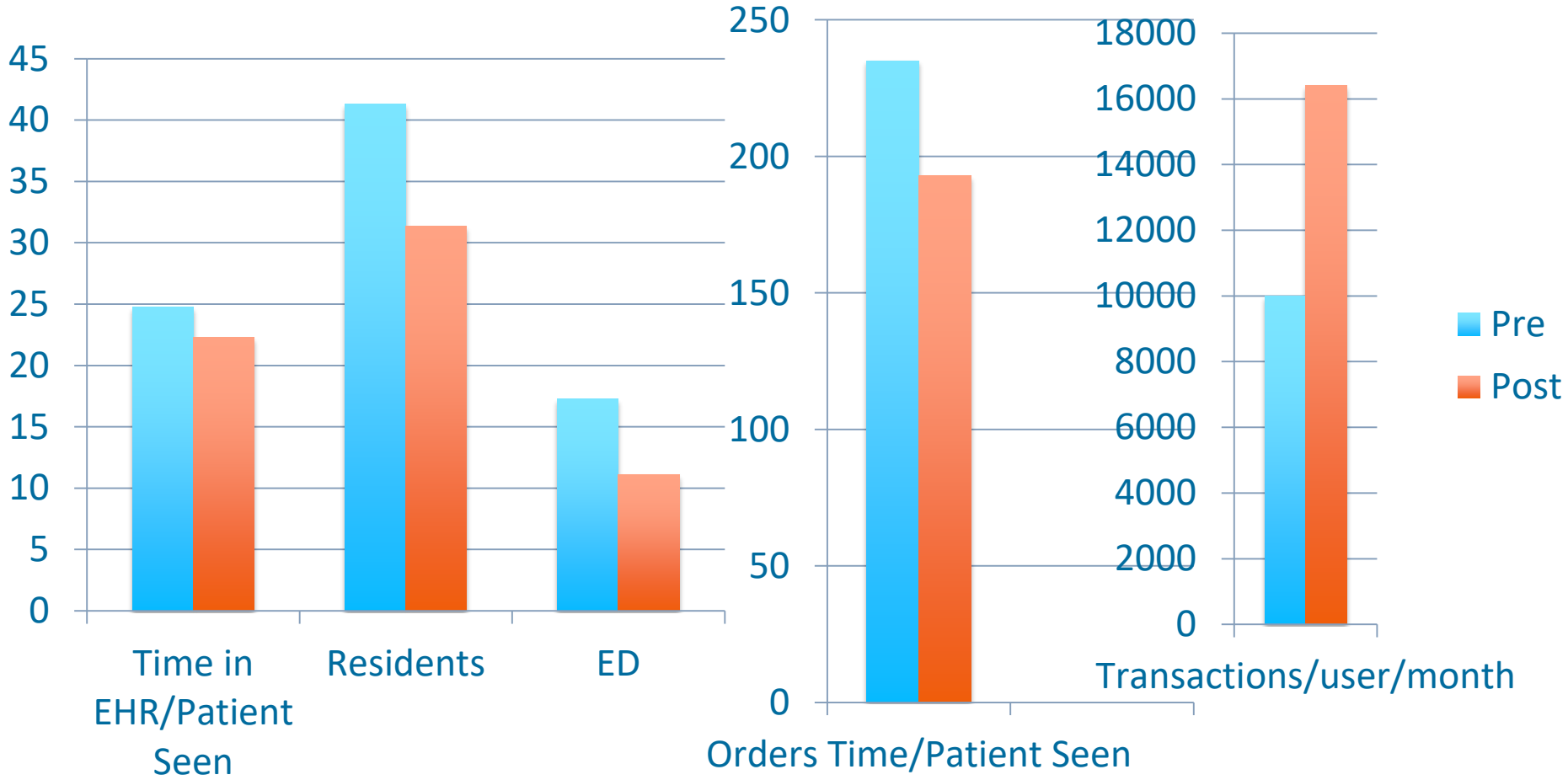
RHO: time spent in EHR



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Lessons learned: hosting

- Self-hosting is not for everyone
- Converting to remote hosting is a big project with the potential for big benefits

Lessons Learned & Advice: Workflows

1. Think ahead about how workflows will carry over from paper to EHR:
   - Evaluate major reporting requirements to develop workflows and reports
   - No one said, *"If West Ventura does it this way and Magnolia does it this other way the canned reports will not work and the data submissions will require custom coding."*

Lessons Learned & Advice: Workflows

2. Create policy changes before implementation

- During initial Cerner configuration, consultants worked with our stakeholders on department-to-department interfaces to make sure everyone documented the same way and data flowed.
- But as we went live, workflows were often rearranged very similarly to how we did it on paper and in Meditech.

Lessons Learned & Advice: Reports

3. Do not allow too much flexibility.

- Clinics often record the same information in different ways.
- The impact is that reporting is made much more difficult.

Lessons Learned & Advice

4. Develop central governance for system change requests.
   - 150 changes are requested per month
   - IT committee challenges
   - Physician Leadership Team
   - CAB

Lessons Learned & Advice

5. Create a reporting group.

- Initially, we hired individuals to develop reports.
- No one oversaw report development standards.
- Future reporting needs were not considered long-term investment.
- Quality of reporting was based on the end-user verifying the data contained in the reports, which works for printing data from an individual chart but not aggregating millions of rows.
- Cerner recommended using canned reports and PowerInsight, which did not yield the data we needed. As a result of this recommendation, there was no funding for report writers.

CONSULTING SUPPORT

Application Managed Services (AMS)

- An extension of Informatics
- Application support for flashes, patches, light upgrades (maybe 5 point releases 15.16 to 15.19), purges, monitoring and proactive support of system performance
- Handle break/fixes as first line of support or second
- Enhancements
- Don’t build new rules or reports but can fix/enhance existing ones
- Don’t do projects (efforts greater than 200 hours)

CONSULTING SUPPORT

Application Managed Services (AMS)

- Experience
  - 90-day start up window to work on common processes
  - Will act in a consulting mode to help your staff
  - Mileage will vary based on which analyst is assigned Highly integrated with RHO and IRC making problem resolution more seamless and timely

CONSULTING SUPPORT

Application Managed Services (AMS)

- Advice:
  - Get SLAs on enhancements in the contract
  - Provide timely feedback on issues
  - Escalate immediately

VENTURA COUNTY
AMBULATORY CARE

THANK YOU

~~Support~~ Group Discussion

Alameda 1 & 2	Kern 1 & 2	San Mateo 1 & 2
Arrowhead 1 & 2	San Francisco 1 & 2	

1. Divide and conquer

- Find color on your badge, and head to that PHS table
  - 1  = table 1; two  = table 2

2. Discuss

- Identify facilitator
- Introductions: name, organization, role, current EHR and when switched
- Answer questions
- Facilitator: move conversation along; make sure all participants get a chance to speak

Timing

- ~ 40 minutes to discuss all topics

Appendix

Riverside University Health System

Epic Implementation
&
Lessons Learned
Vikram Kumar MD - CHIO

RUHS Partnership and Vision

RUHS Reasons to Partner

- Alignment of County health system on one record
- Need for fast implementation and strong support
- Meaningful Use deadlines
  - Did meet EH MU by 12/31/16 for the first time

LLUH Reasons to Extend

- Clinically Integrated Network (CIN)
- Shared patients
- Shared provider base
- PB charge capture increase
  - 34% increase in billed visit for OP clinics and procedures
  - 18 day decrease in posting lag

By the Numbers…

Riverside University Health System (RUHS) – went live 2016

- 2 Hospitals (Medical & Inpatient BH) & 439 Beds
- 12 Federally Qualified Health Center Clinics (FQHC)
- ~45 Hospital-Based Outpatient Clinic Departments
- 6,000+ Employees
- Also includes ~10 Public Health locations (Epic), ~60 Behavioral Health Clinics (NetSmart) & ~10 Correctional Health locations (TechCare)

Epic 'Connect' Partners

Loma Linda University Health (LLUH) – went live 2012-2013

- 5 Hospitals & ~1,000 Beds (hospital #6 to go live in 2018)
- 1,000+ Physicians & ~1M Annual Ambulatory Visits
- 16,000+ Employees

Social Action Community Health System (SACHS) – went live 2016

- 3 FQHC clinics
- ~100k Annual Ambulatory Visits
- 500+ Employees

Ranking LL-RUHS Epic Community Connect

#3 by #beds

#2 by #providers

#1 by complexity

Contracting & Amendments

- Legal – Board approval process
  - Understand MSA, SLA & SOW
  - Understand vendor obligations under each
  - Work with vendor on metrics/timelines/holdbacks
- Amendments
  - are the norm
  - RUHS
    - 2 amendments through implementation
    - Currently in amendment # 5 (> 50 SOWs since go-live)

Shared Governance

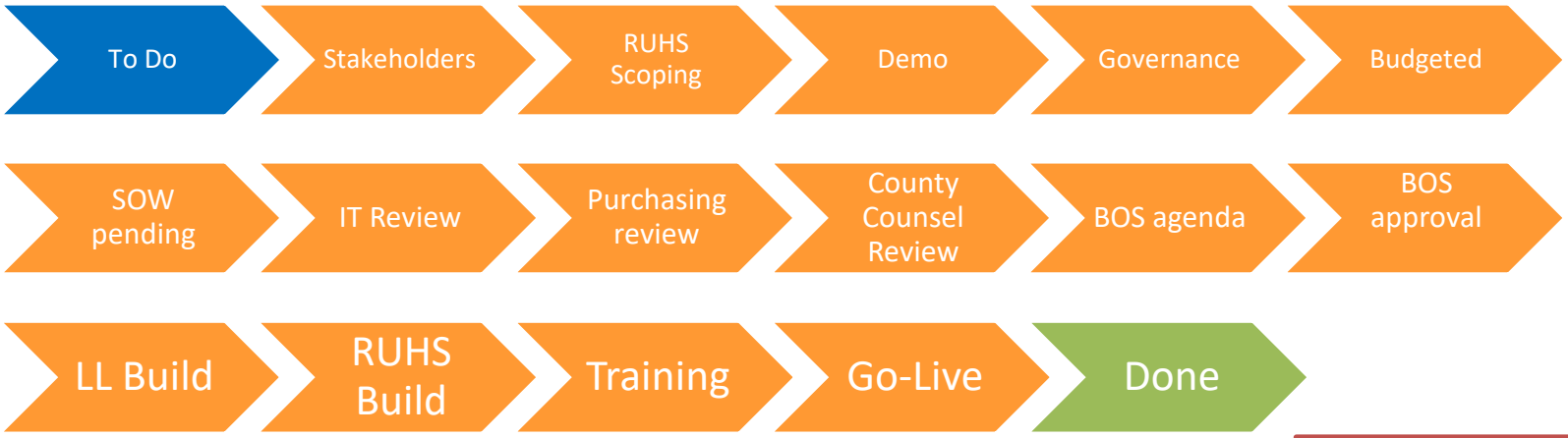
- Community Connect Steering Committee - Charter
  - Responsibility: meets the needs of patients, providers, and health care systems by employing best practices
  - Best Practices as demonstrated by:
    - Epic Model System Content
    - Epic User Content
    - Professional Society, Health Care Agency and other consensus opinion
    - Evidence-based practice

- CCSC - Roster
  - LLUH: CMIO and CIO
  - RUHS: CHIO and CIO
  - SACHS: CMO
  - Community Connect Project Manager

Implementation Timelines

	LLUH	RUHS	SACHS
Ambulatory Clinics	Jul 1, 2012	Aug 2, 2016	Aug 2, 2016
Hospital Go Live	Feb 5, 2013	Oct 2, 2016	
2012 Upgrade	Apr 2014		
2014/15 Upgrade	May 22, 2016		
2017 Upgrade	Oct 22, 2017		
2018 Upgrade	Oct 21, 2018		

RUHS Projects* - SOWs



Important to understand
- What's in your vendor contract?
- How to address upcoming needs?
- Your board approval process for amendments that may become necessary.

*Projects/SOW include
- New Clinics
- New Service Lines
- New modules

Implementation

- People
  - Leadership – needs to have an understanding & get out of the way
  - FTEs
  - Consultants
- Process
  - Governance – pre/post Implementation
  - Change Requests not memorialized in the contract
- Technology
  - Devices, Network, Servers
  - Citrix vs. not
  - SSO
  - Printers
  - Fax/eFax
  - Texting/Robocalls