

# Evolution of EMR Adoption and Lessons Learned

Steve Lutz – Business Development Director



# Cerner today

  
**24,000+**  
ASSOCIATES

hospitals  
**5,741**

OVER  
**450,000**  
PHYSICIAN USERS

physician practices **13,941**  
**3,000+** Home Health Care & Long-Term Care Facilities

**103** clients named Health Care's Most Wired 2016

**52** client hospitals named US News and World Report Most Connected

**345+** PATENTS WORLDWIDE

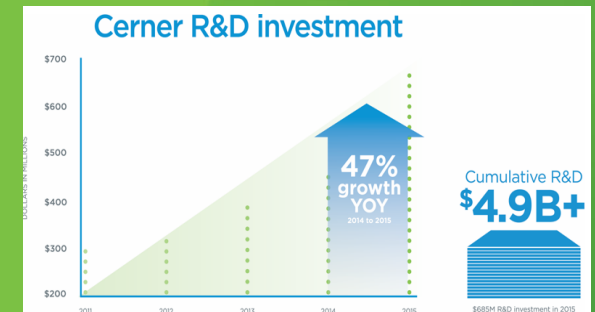
over **25,000** PROVIDER FACILITIES   
in **35+** COUNTRIES

Updated 11/2016 in 10 DIFFERENT LANGUAGES

OVER **\$4.9B**  
CUMULATIVE R&D INVESTMENT

**\$4.4** BILLION 2015 REVENUE 

HIMSS **6** **596** ACUTE CLIENTS **50** HIMSS **7**  
**871** AMBULATORY CLIENTS **412**



# My Journey



- **Started 2001 – United States as technology consultant**
- **2004 Moved to UK – implementation architect**
- **2007 Moved to France – consulting lead**
- **2009 Moved to Australia – account executive**
- **2016 Moved to Singapore – Business Development Director**

Some things have never changed..





# Creating a sustainable health system



# Where to start?

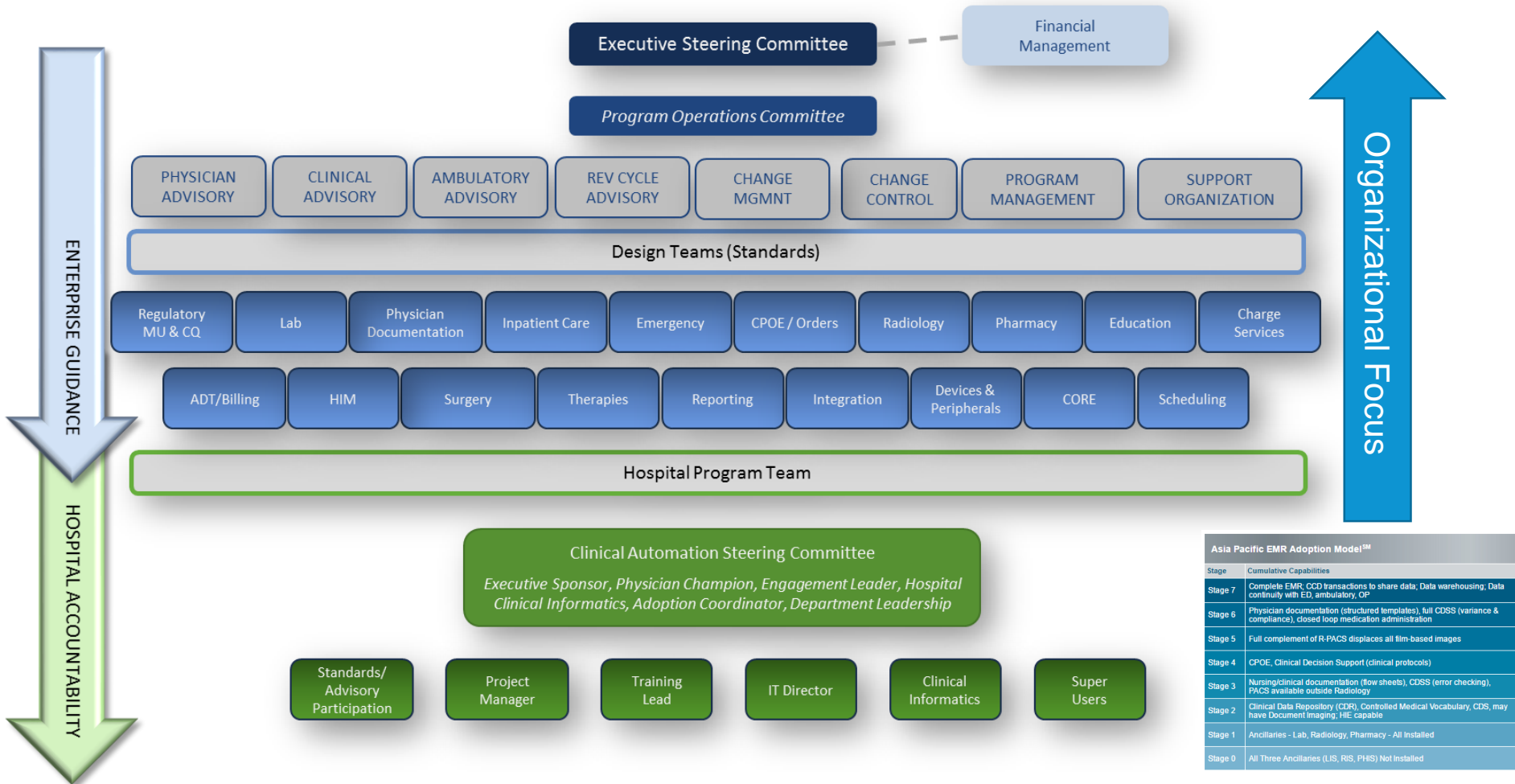
Asia Pacific EMR Adoption Model <sup>SM</sup>	
Stage	Cumulative Capabilities
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), closed loop medication administration
Stage 5	Full complement of R-PACS displaces all film-based images
Stage 4	CPOE, Clinical Decision Support (clinical protocols)
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology
Stage 2	Clinical Data Repository (CDR), Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable
Stage 1	Ancillaries - Lab, Radiology, Pharmacy - All Installed
Stage 0	All Three Ancillaries (LIS, RIS, PHIS) Not Installed

## Cerner Solution Portfolio

Clinical Solutions			Departments & Specialties		Ambulatory	Post-Acute
Acute Care			Laboratory Millennium PathNet	Emergency Department Millennium FirstNet	EHR Millennium PowerChart Ambulatory	Long Term Care Millennium PowerChart LTC
EHR Millennium PowerChart PowerChart Touch		Workforce Management Clarvia	Radiology Millennium RadNet	Surgery Millennium SurgiNet	Practice Management Millennium Practice Management	Behavioral Health Millennium Behavioral Health
CPOE Millennium PowerOrders	Care Plans Millennium PowerPlan	Device Connectivity CareAware iBus	Inpatient Pharmacy Millennium PharmNet	Critical Care Millennium iNet	Mobility Millennium PowerChart Touch	Home Health & Hospice HomeWorks
Documentation Millennium PowerNote	ePrescribe Millennium ePrescribe	Smart Room Technologies CareAware	Retail Pharmacy Etreby	Labor & Delivery Millennium PowerChart Maternity, Fetalink	Rehab Millennium Rehabilitation	
Nursing Advanced Care Documentation	Care Team Planning CareCompass	Patient ID PatientSecure	Oncology Millennium PowerChart Oncology	Cardiology Millennium PowerChart Cardiovascular		
Enterprise Solutions			Content Mgmt.	Population Health	Interoperability	Decslon Support
Revenue Cycle Management			Document Imaging Content 360	Population Health Management HealthIntent	Health Information Exchange Cerner Hub HIE	Quality Management Millennium Lighthouse
Patient Accounting Millennium Patient Accounting	Eligibility & Benefits Millennium Eligibility Management	EDI Services Millennium Transaction Services	Patient Signature Mobile Patient eSignature	Registries HealthRegistries	HISP Cerner Direct HISP	Operational Reporting PowerInsight Explorer
Registration Millennium Registration	Enhanced Medical Necessity Enhanced Medical Necessity for Acute	Care Management Millennium Care Management	Enterprise Data Warehouse HealthEDW	ProviderPortal HealthLife	Research Millennium PowerTrials	
EMPI Millennium EMPI	Health Information Management Millennium HIM		Patient Portal HealthLife	National HIE Commonwell Health Alliance	Public Health Reporting HealthSentry	
Scheduling Millennium Scheduling	Contract Management Millennium Contract Management					

Critical: Clear vision of future state from buying phase

# Program Governance



Stage	Cumulative Capabilities
Stage 7	Complete EMR, CCD transactions to share data, Data warehousing, Data continuity with ED, ambulatory, OP
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# Implementation: Critical Success Factors

## Critical Success Factors

Patient Centric – Decisions made with a central focus on the patient

Clinician & Business Office Led – Engagement and leadership for projects provided by physicians, clinicians and revenue cycle leaders

Organizational Leadership – Deep involvement and accountability by organizations' leaders

Change Management – Execution of training and adoption to advance learning organization

Governance & Project Management – Oversight, decision making process, and management to execute on projects






Communication – Candid and frequent dialogue across organizations and from CEO to project teams





Program Executive Office

# Guiding Principles

-  Standardization of clinical and business processes across the Services and MHS
-  Design a patient-centric system focusing on quality, safety and patient outcomes that meet readiness objectives
-  Flexible and open, single enterprise solution that addresses both garrison and operational healthcare
-  Clinical business process reengineering, adoption, and implementation over technology
-  Configure not customize
-  Decisions shall be based on doing what is best for the MHS as a whole – not a single individual area
-  Decision-making and design will be driven by frontline care delivery professionals
-  Drive toward rapid decision making to keep the program on time and on budget
-  Provide timely and complete communication, training, and tools to ensure a successful deployment
-  Build collaborative partnerships outside the MHS to advance national interoperability
-  Enable full patient engagement in their health

# Sense of Purpose / value / feedback loop

## Medical Errors Are Third Leading Cause of Death in the U.S.

10 percent of U.S. deaths are due to preventable medical mistakes.

By [Steve Sternberg](#), Senior Writer | May 3, 2016, at 6:30 p.m.



Medical errors are an "epidemic" that claim hundreds of thousands of lives annually, according to a new analysis. GETTY IMAGES

### Healthcare of Tomorrow

The health care industry is evolving, thanks to policy changes, societal shifts and technological advances. [Healthcare of Tomorrow](#) from U.S. News & World Report examines the challenges facing health care, and how it must change to face the future. See more U.S. News [special reports](#).

**U.S. News & World Report**  
BEST HOSPITALS PRESENTS  
**HEALTHCARE OF TOMORROW**  
NOVEMBER 1-3, 2017 | WASHINGTON, D.C.

[Learn More](#)

VS

## North York General Hospital Receives 2016 HIMSS Enterprise Davies Award

February 01, 2017



- NYGH implemented closed-loop medication administration (CLMA.) By leveraging information technology at every step in the process, CLMA eliminated manual entry of medications and fires an alert if a medication about to be administered does not match the drug, dose, route, timing and/or intended patient indicated in the active orders on the electronic chart. From 2010-2015, NYGH has prevented more than 11,000 medication errors using CLMA.
- Through the use of computerized provider order entry (CPOE) and clinical decision support in the form of order sets and alerts, NYGH cut expected VTE occurrences in half.
- Through safety and quality initiatives driven through CPOE, clinical decision support and medication reconciliation, NYGH significantly lowered the probability of in-hospital death from medication errors, pneumonia and exacerbation of chronic obstructive pulmonary disease (COPD).

"The challenge of implementing change of this scope and scale was immense, but possible, thanks to great teamwork and a constant focus on the quality and safety benefits we are celebrating today," said Dr. Tim Rutledge, president and CEO, North York General Hospital. "Receiving the Davies Award is a reflection of the commitment to excellence of our people, the staff and physicians who made it happen."

Adoption

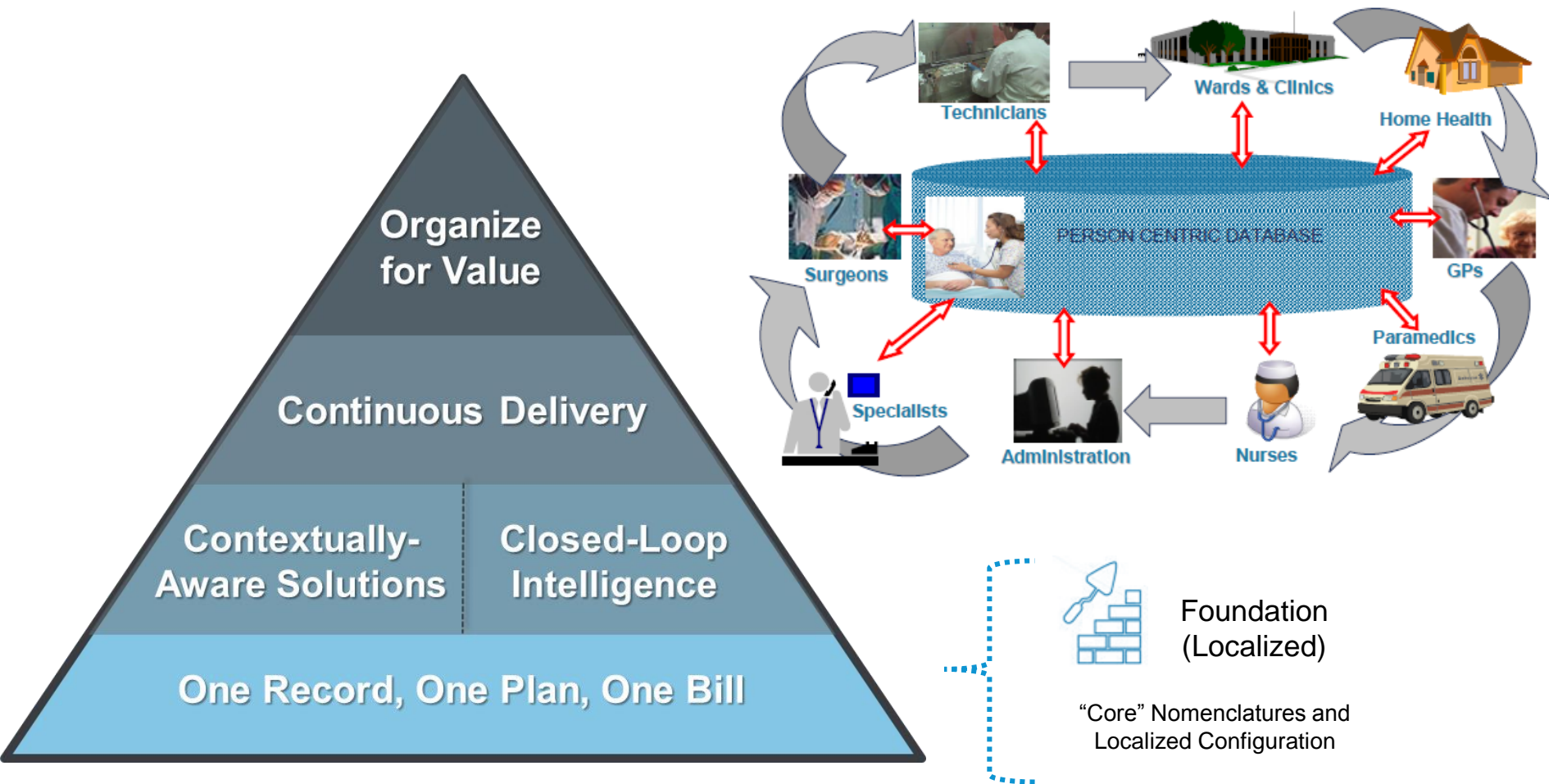
~~Life~~ is a journey, not  
a destination.

Ralph Waldo Emerson





# One Record, One Plan, One Bill





## Primary Care



Internal Medicine



Cardiology



Gastroenterology



Neurology



Ophthalmology



Urology

Hematology  
& Oncology

Nephrology



Otolaryngology



## Pediatrics



## Women's Health

Emergency  
Medicine

Intensivist



Anesthesiology

Cardiothoracic  
Surgery

Neurosurgery



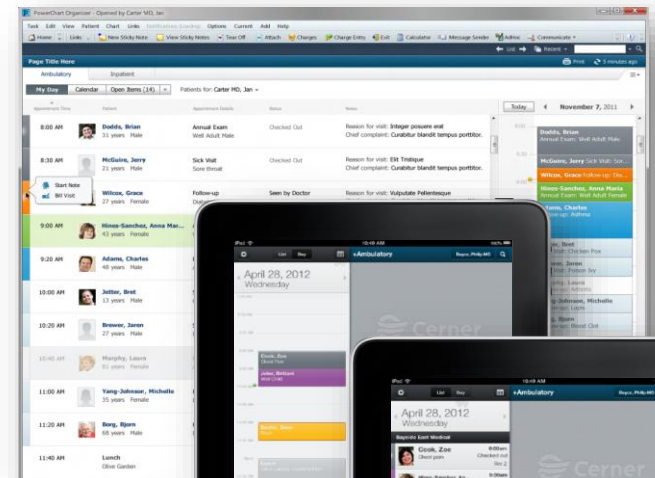
## Orthopaedics



## General Surgery



## Vascular Surgery





# Intuitive Use



Can the  
system do XYZ?



How does the  
system do XYZ?

**“This application is amazing. I don’t know what kind of feedback you have received with regards to the app but this is the first time I am able to finish a note in 1-2 minutes after seeing patients. If Banner decided not to go with this I would want to know if I could pay out of pocket for it. It is of great value to me!!!”**

***Physician – Banner Health***

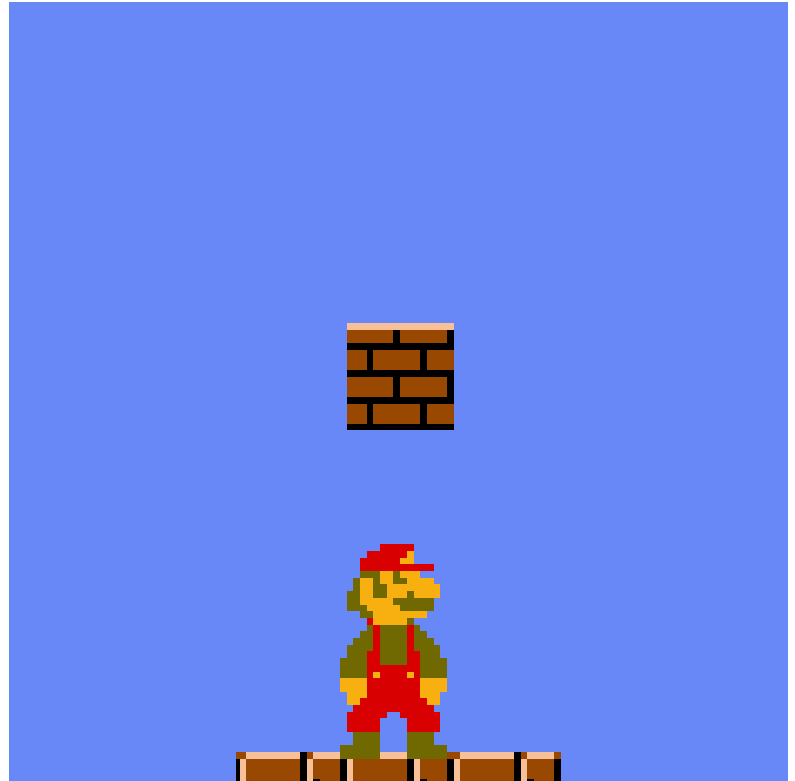


# Connecting data across the ecosystem

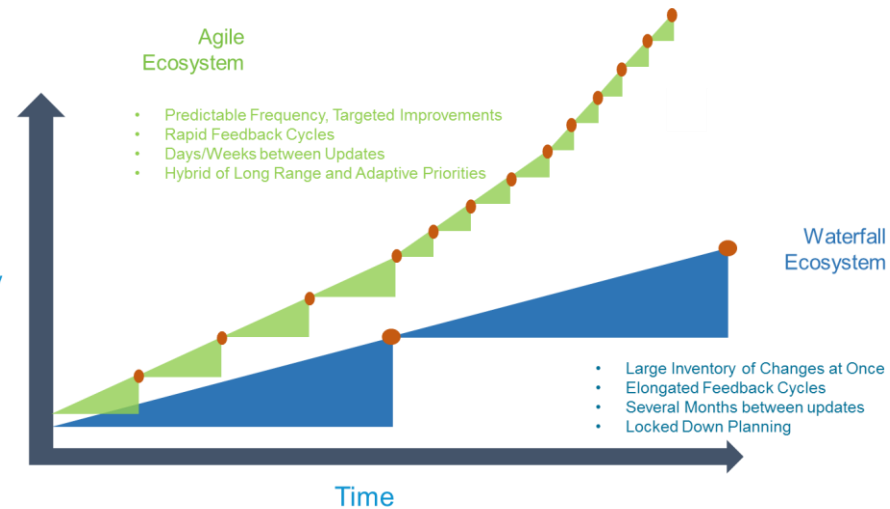
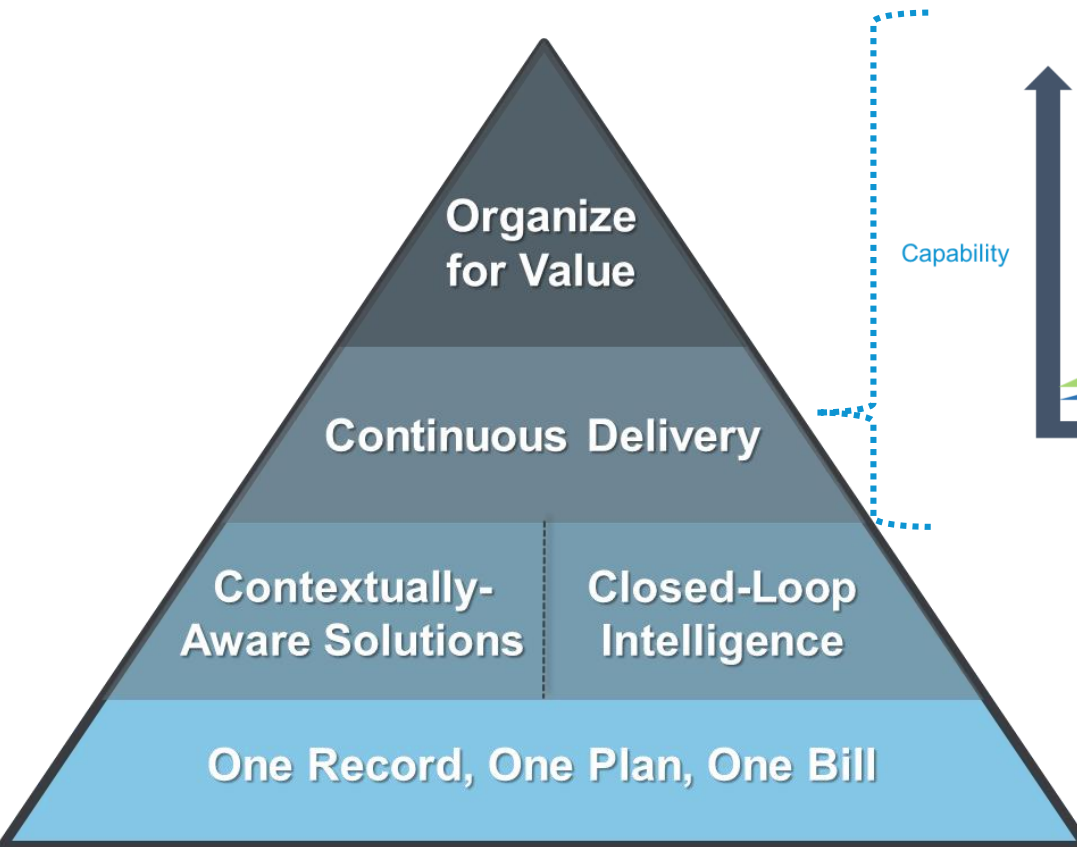


**right person,** at the **right place,** at the **right time.**

# Reward System



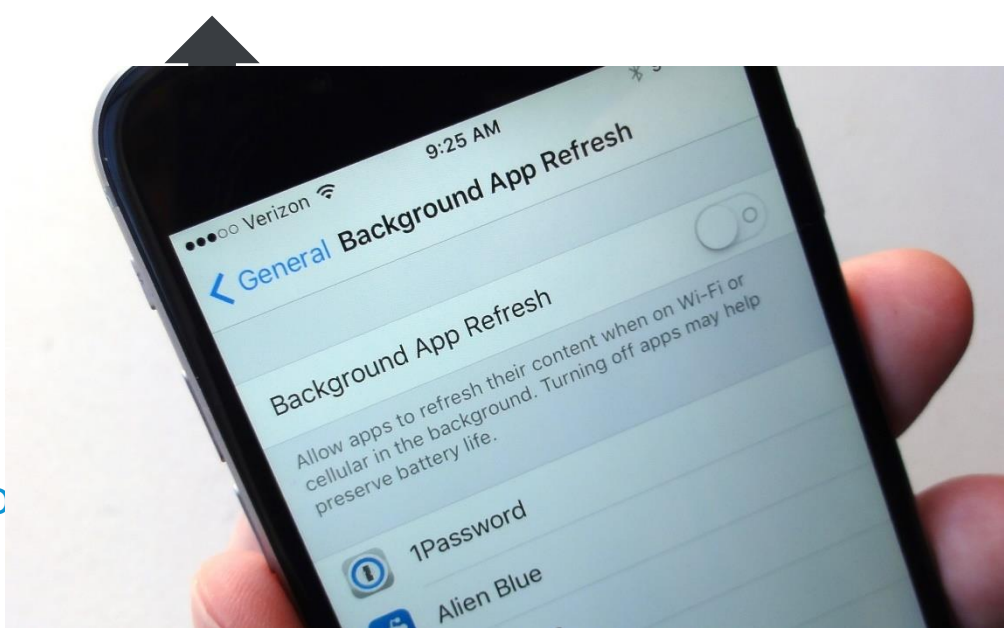
# Continuous Delivery (and Adoption)





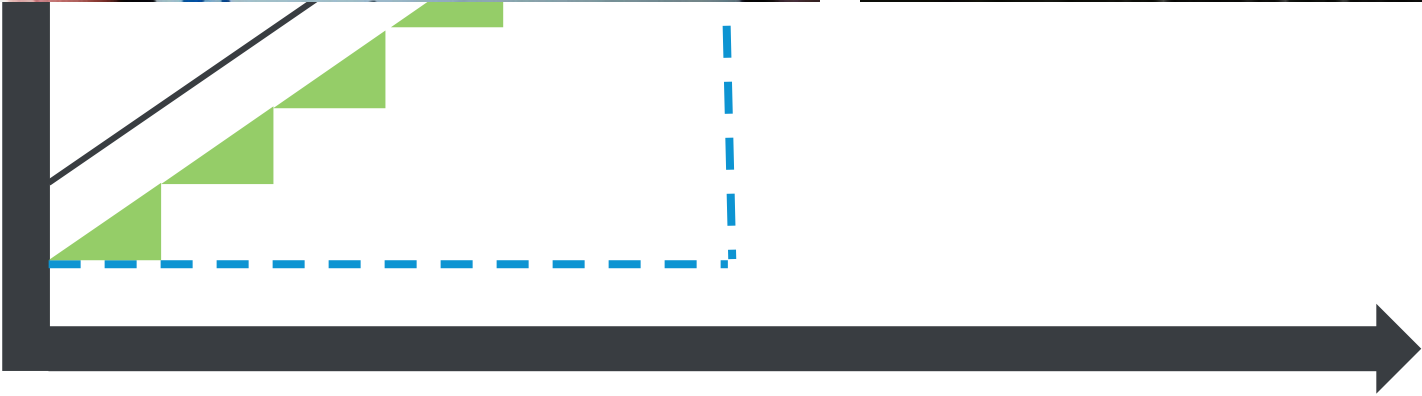
# Continuous Advancement: Shorter Path to a Better Experience

Cap



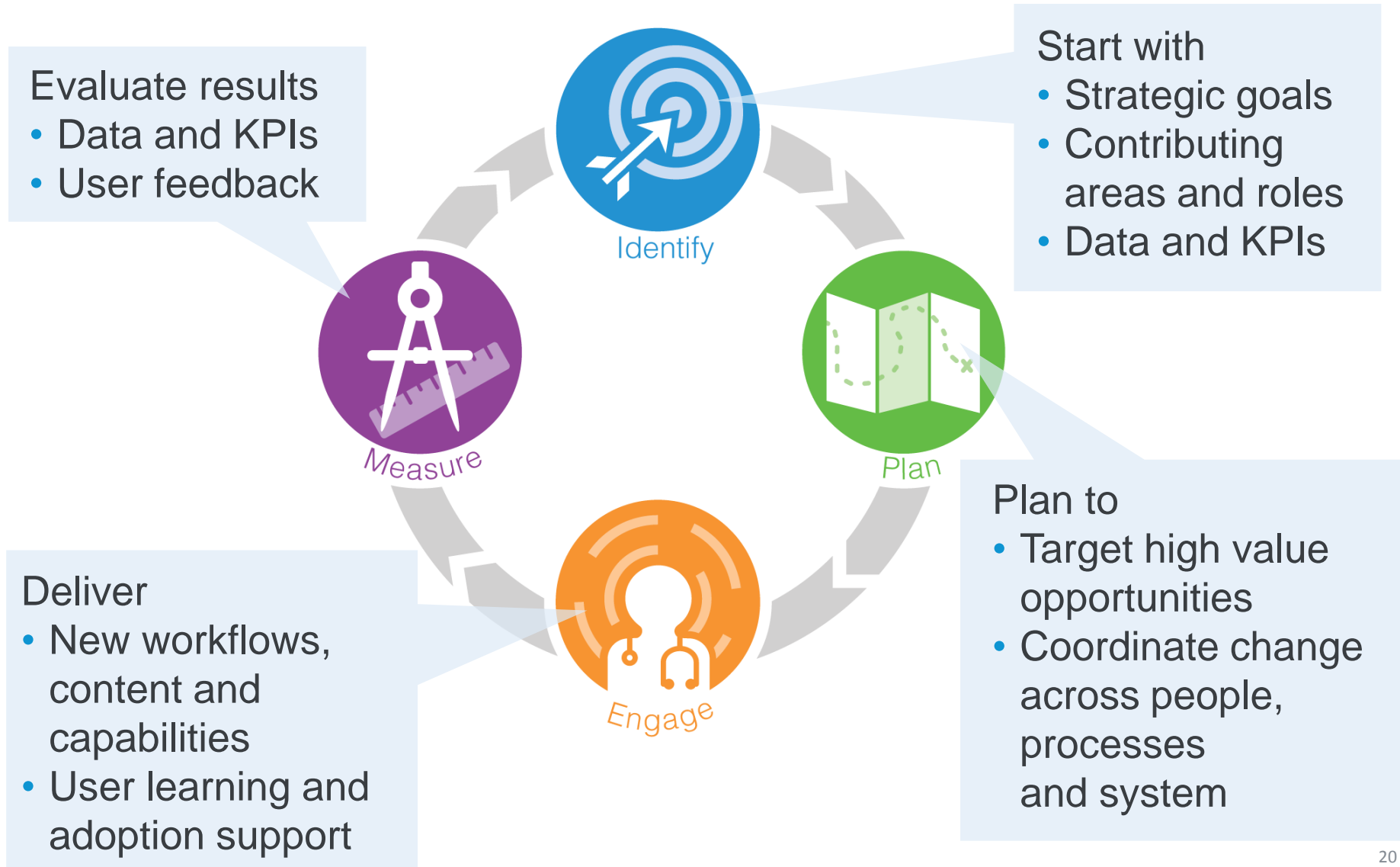
Continuous  
ment

odel



Time

# Continuous Advancement



## Dr. Nelson

■ 31:04 per patient  
45% adoption



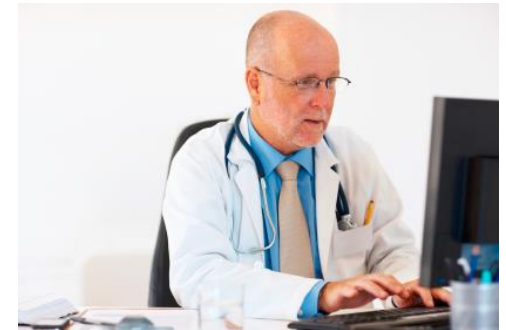
## Dr. Thomas

● 14:01 per patient  
93% adoption

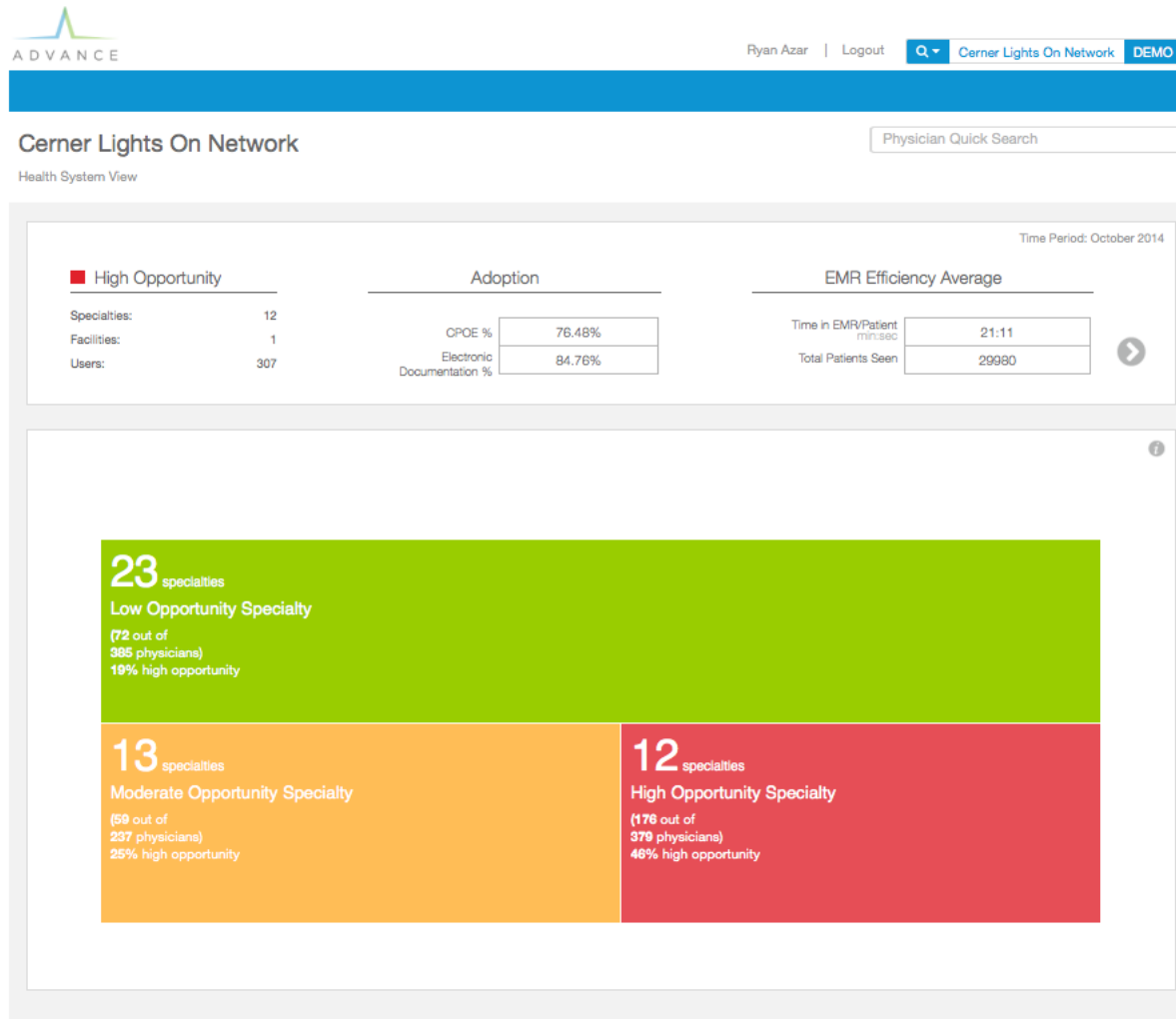


## Dr. Wright

▲ 20:31 per patient  
88% adoption



# Who Needs Help - Understanding at a Glance



- Specialty View
  - Find the Service Areas With Greatest Need
- Facility View
  - Find the Locations With Greatest Need
- User View
  - Finds the Users With Greatest Need

# Zero In On Highest Need - Intelligently Deploy Resources



Ryan Azar | Logout

Q Cerner Lights On Network DEMO

## Cerner Lights On Network

Health System View

Physician Quick Search

Time Period: September 2014

### High Opportunity

Specialties: 14  
Facilities: 2  
Users: 304

### Adoption

CPOE % 79.61%  
Electronic Documentation % 70.45%

### EMR Efficiency Average

Time in EMR/Patient min:sec 20:52  
Total Patients Seen 46822



**52** users  
Internal Medicine  
(52 out of 128 physicians)  
41% high opportunity

**39** users  
Family Medicine  
(39 out of 65 physicians)  
60% high opportunity

**36** users  
Pediatrics  
(36 out of 64 physicians)  
56% high opportunity

**26** users  
Emergency Medicine  
(26 out of 78 physicians)  
33% high opportunity

9 users  
Gerontology

7 users  
Neurology

Physical Medicine & Rehabilitation

3 users  
Pediatric Endocrinology

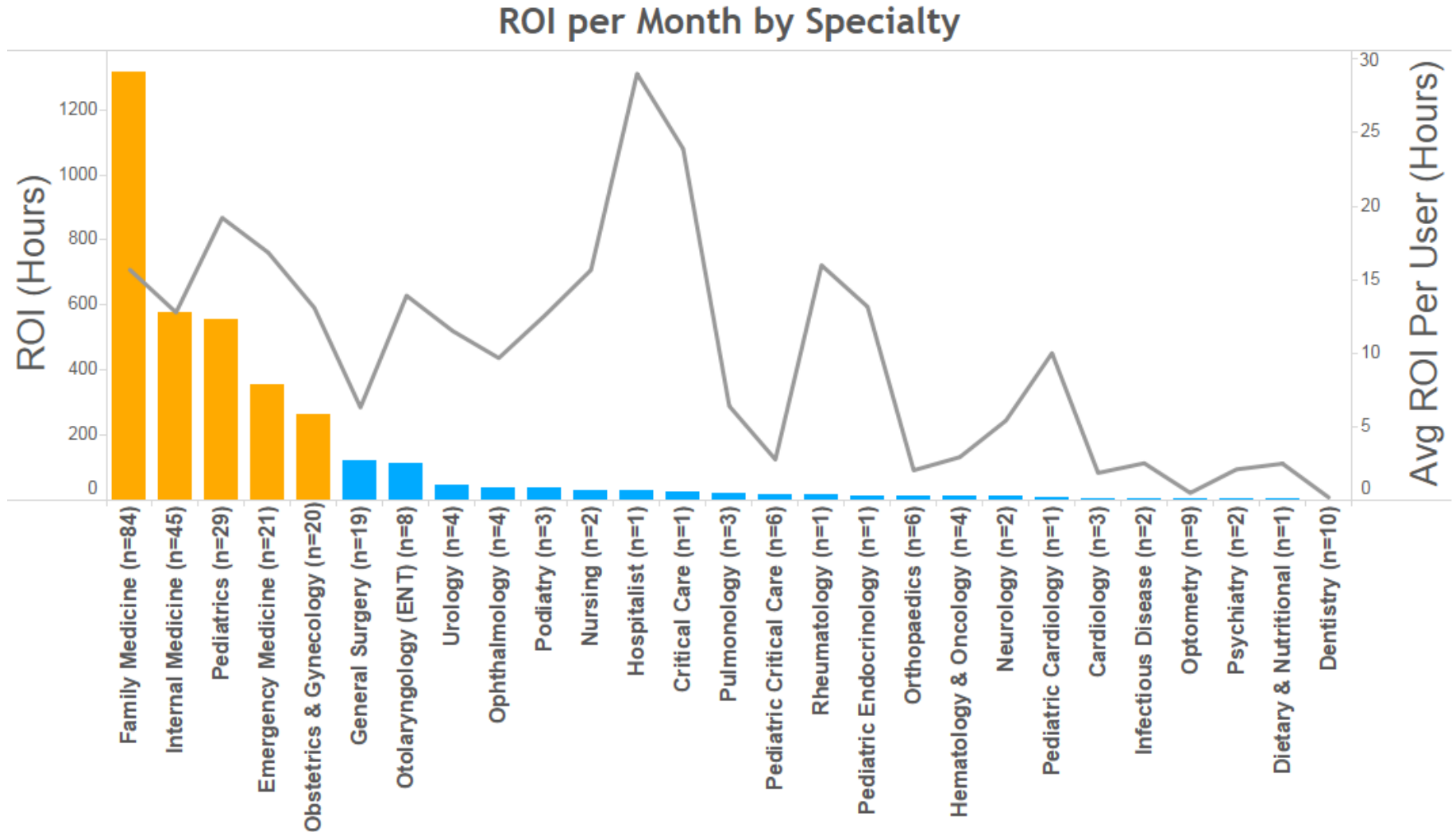
Anesthesiology

4 users  
Urology

- Target by Largest Number Needing Help (Size)
- Target by Largest Percentage Needing Help (Color Intensity)
- Factoring in for Influential or High Production Groups
- Align Physician Support Resources to the Right Locations



# 5 Specialties account for 80% of Productivity ROI Opportunity



# Identify – Who to Help

Cerner Advance

Emily Pennington | Logout

Cerner Lights On Network DEMO\_ADV Physician

Process Management Dashboard Reporting

Cerner Lights On Network

Health System View

Physician Quick Search

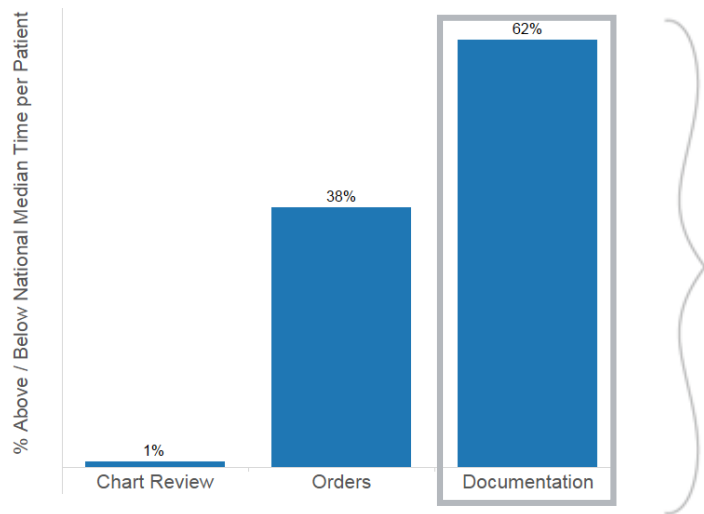
High Opportunity

Specialties: 13  
Facilities: 10  
Users: 50

13 specialties  
High Opportunity Specialty

	Adjusted Time in EMR	Actual Time in EMR	Adoption	Patients Seen	Total Potential Savings (hrs)	Potential Savings Per User (hrs)
Search	>,<=,##-#,>=<=	>,<=,##-#,>=<=	>,<=,##-#,>=<=	>,<=,##-#,>=<=	>,<=,##-#,>=<=	>,<=,##-#,>=<=
Family Medicine	▲ 22:59	21:26	85.26%	2,160	236.5	14.8
Internal Medicine	▲ 19:27	17:43	86.46%	5,813	201.1	8
Cardiology	■ 17:25	14:12	84.59%	2,195	136.9	12.4
[Not Mapped]	● 16:02	14:38	86.68%	3,777	94	4.5
Pediatrics	▲ 13:37	11:47	86.61%	1,947	30.7	4.4
Endocrinology	■ 33:15	31:11	91.18%	148	29.8	29.8
Nephrology	■ 19:29	18:18	77.59%	193	20.4	5.1
Gastroenterology	▲ 11:51	10:17	83.52%	1,027	11.4	2.3
Neurology	■ 18:03	15:51	76.81%	370	8.5	4.3
General Surgery	■ 10:07	08:26	69.85%	870	7.7	1.1

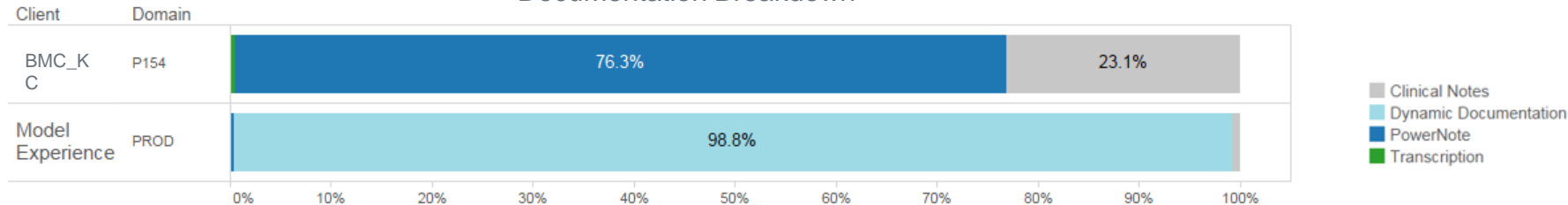
# Identify - Further Analyze by Specialty



An average user in Primary Care is **62%** less efficient in Documentation than peers.

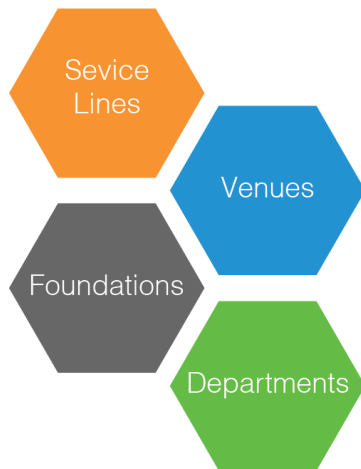
62% = 
$$\frac{11.7 \text{ min Local} - 7.3 \text{ National}}{7.3 \text{ min National}}$$

Documentation Breakdown



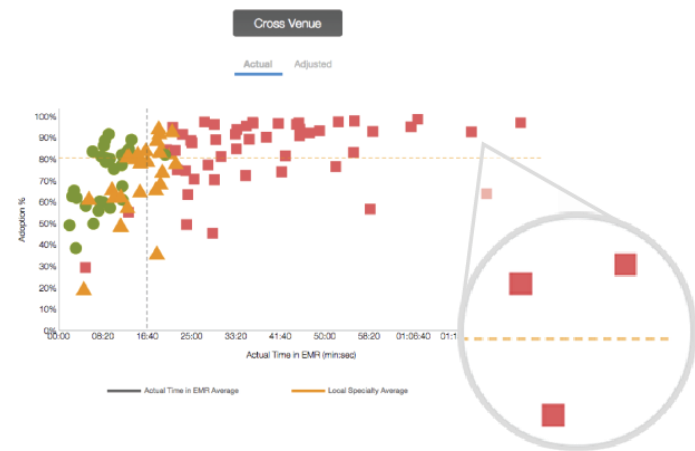
# Plan - How to Help

## Technical



- Review current system design
- Highlight opportunities proven to help

## Behavior Change / Training



- Recommendation: Use more favourites
- Detailed action: Add 10 most common lab orders to favorites folder
- Benefit: Reduce overall ordering time

# View and Target In-Need Providers

Download

By Venue

By Physician

☐ Show No Data Physicians

Opportunity	Actual Time/Patient	Adoption	Patients Seen/Day	Patients Seen	% After Hours	
	hour:min:sec	% Adoption	patients/day	count	6pm - 6am	
<input type="text" value="Search"/>	<input type="text" value="&gt;,&lt;=#-##,&gt;=&lt;="/>	<input type="text" value="&gt;,&lt;=#-##,&gt;=&lt;="/>	<input type="text" value="&gt;,&lt;=#-##,&gt;=&lt;="/>	<input type="text" value="&gt;20"/>	<input type="text" value="&gt;,&lt;=#-##,&gt;=&lt;="/>	
<input checked="" type="checkbox"/> Patel MD, Samir B		56:29	94.89%	5.11	92	34.22%
<input checked="" type="checkbox"/> Ryckley Anp, Janice B		55:02	91.66%	6.15	80	84.54%
<input checked="" type="checkbox"/> Dan MD, Seejil S		43:43	37.44%	5.71	97	67.63%
<input checked="" type="checkbox"/> Wilson MD, Malissa B		51:37	85.96%	5.31	154	46.89%
<input checked="" type="checkbox"/> Lindsay Aprn, Melissa N		48:33	69.52%	3.69	48	98.23%
<input type="checkbox"/> Holloway MD, India K		48:33	84.1%	3.44	62	76.02%
<input type="checkbox"/> Entzminger MD, Lakeisha A		52:35	95.35%	3.75	60	19.32%

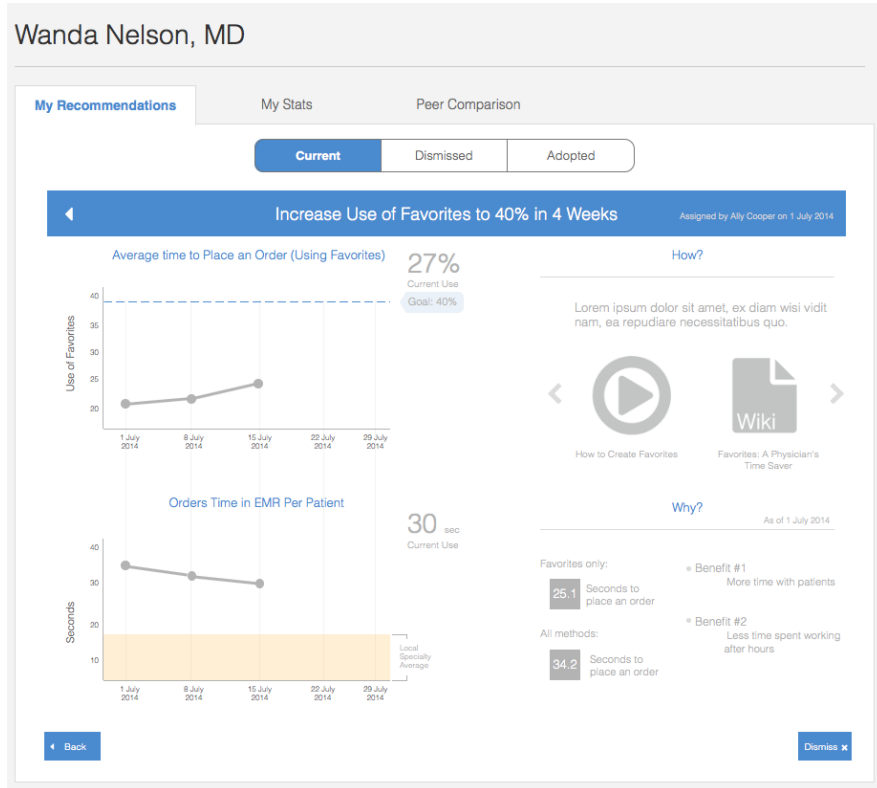


# Personalised Clinician Engagement



- Partnering Data With One-on-One Interaction
- Establish Trusted Relationship and Understanding
- Interactions Tracked for Improved Resource Management
- CRM-like Understanding Physician Experience

# Reinforce Clinician's Improvement

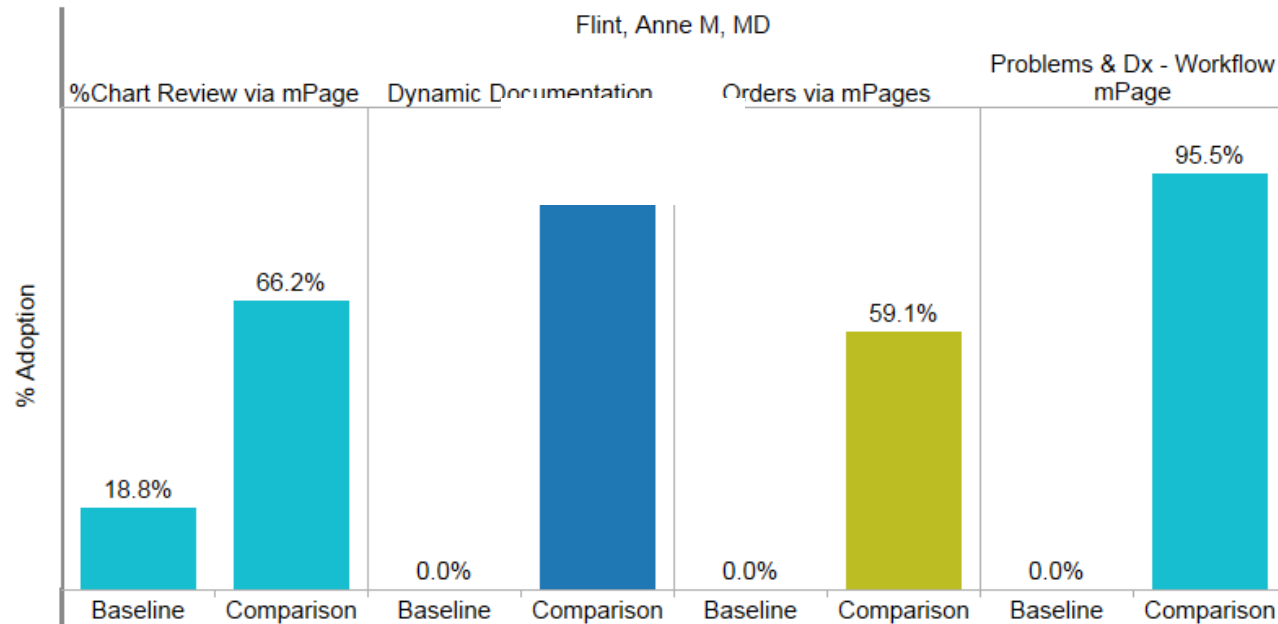


- Engage physicians in context of their work
- Track metric-based improvement goals
- Leverage associated learning assets
- Review personal efficiency and adoption metrics
- Compare metrics to local and national peers

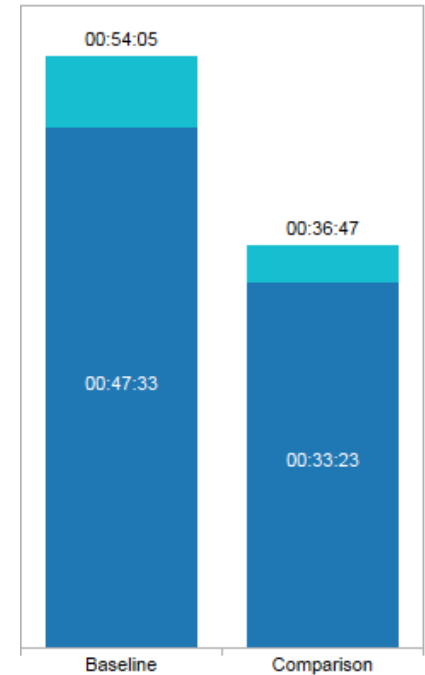
Dr. Nelson is a high adopter of all new functionality, and saw a **32%** decrease in adjusted time per patient

### Adoption of Key Functionalities

Flint, Anne M, MD



### Active & Adjusted Time Per Patient



■ Active Time Per Patient  
■ Adjusted Time Per Patient

Users: 1  
Baseline: October 2016  
Comparison: 12/13/2016 – 01/29/2017



**23%**

less time  
documenting

Increased user  
productivity



**\$145k**

Eliminated  
transcription costs

Reduced 3<sup>rd</sup>  
party expense



**\$840k**

Medically-  
necessary duplicate  
lab tests

Increased  
reimbursement



**85%**

Clean claim rate -  
requires no manual  
intervention

Reduced effort to  
collect



**16%**

Improvement in  
untracked  
telemetry  
equipment

Reduced  
bottlenecks

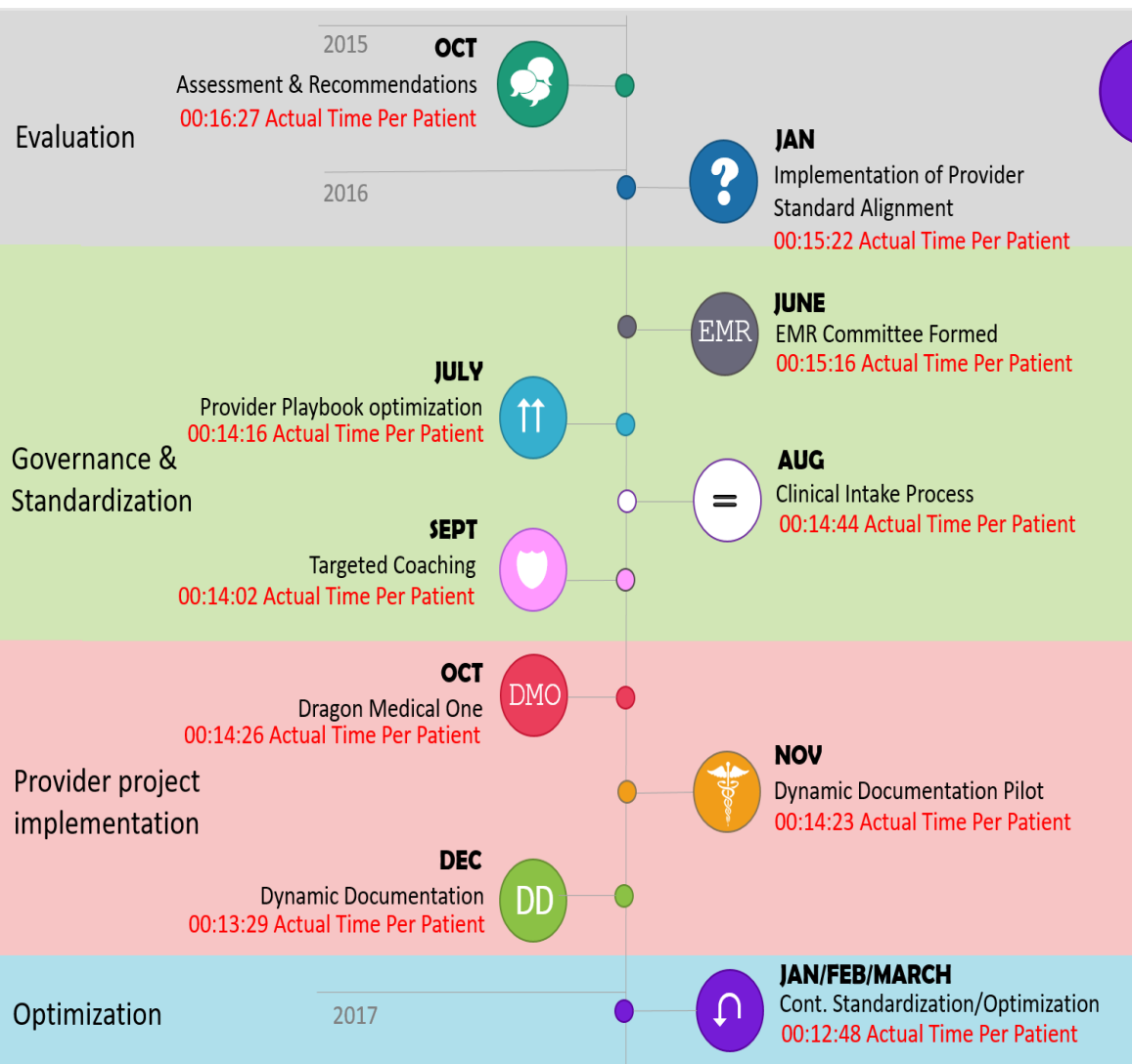


**13** day

Improvement in  
charge capture

Faster time to  
collect

Creating  
**healthier**  
stories



## Cont. Standardization/ Optimization

**Goal: Increase provider adoption and efficiency of Dynamic Doc & Dragon**

### Action Items:

- Review of playbooks
- Implementing time saving tips & tricks
- Targeted coaching
- Additional training classes offered

### Current Outcome:

- 40% Docs = Dynamic Documentation
- 85% providers using Dragon Medical One

00:12:48 Actual Time Per Patient



And 3.5 min/patient adds up...26 hours/month



30 Extra Bedtime Stories

*Date Night*  
x2

8 Workouts



4 Pool Parties

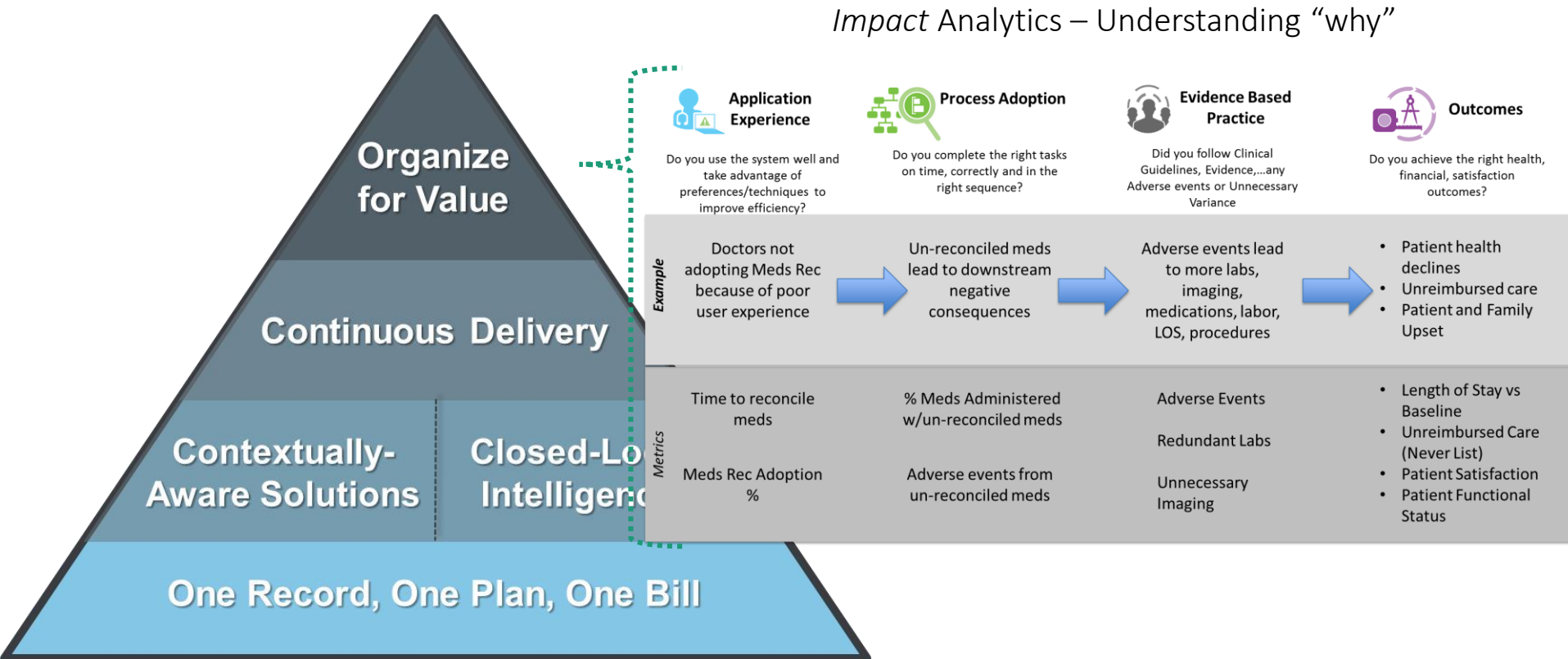


4 Soccer  
Games



1 Graduation Ceremony

# Organize for Value (Outcome versus Install)





# External Validation of Effort to Adopt

## Why Share Notes?



Communicate and Engage

Get started →



Improve Quality of Care

A doctor's experience →



Take Medication More Effectively

What we're learning →



Manage Chronic Illness

A patient's story →



Support Caregivers

Find out how →

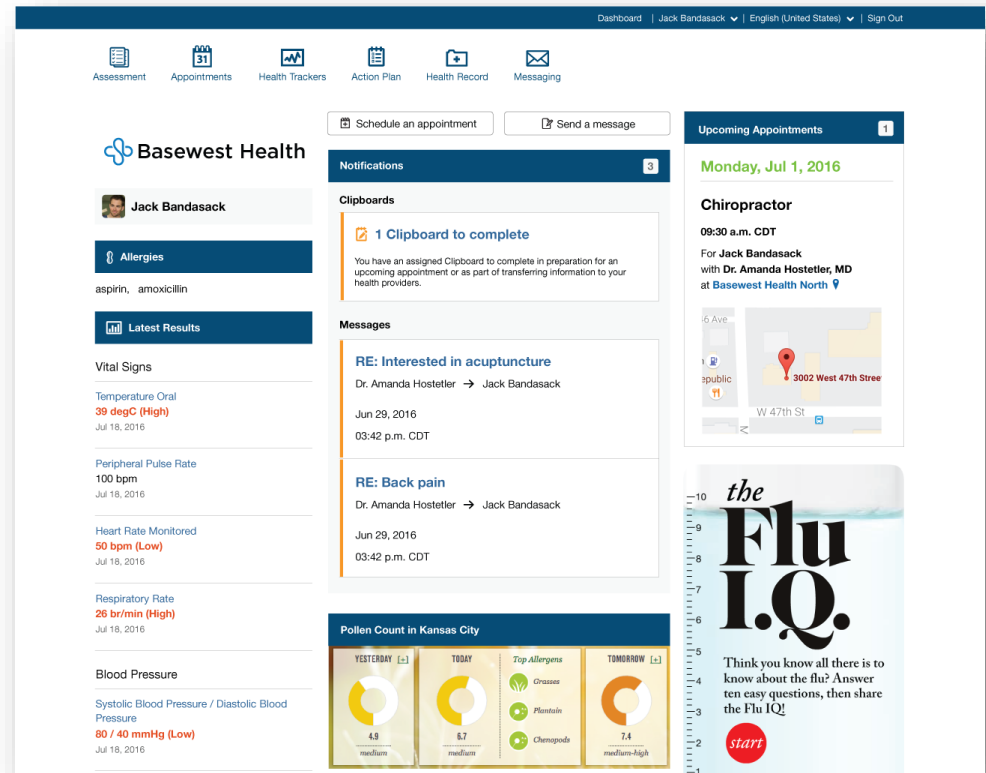


Make Care Safer

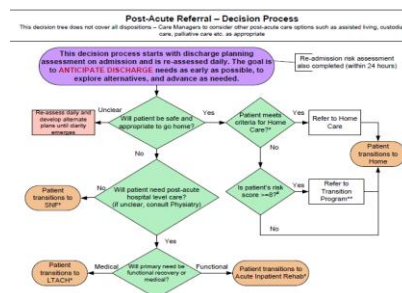
The latest research →

# Person Interaction Beyond Care Setting

- Notify patients on a configurable list of events
  - Care team message
  - Lab (or group of lab) results
  - Notes
  - Radiology and pathology reports
  - Appointment reminder
- Notify patients based on their communication preferences
  - Email
  - Text
  - Push

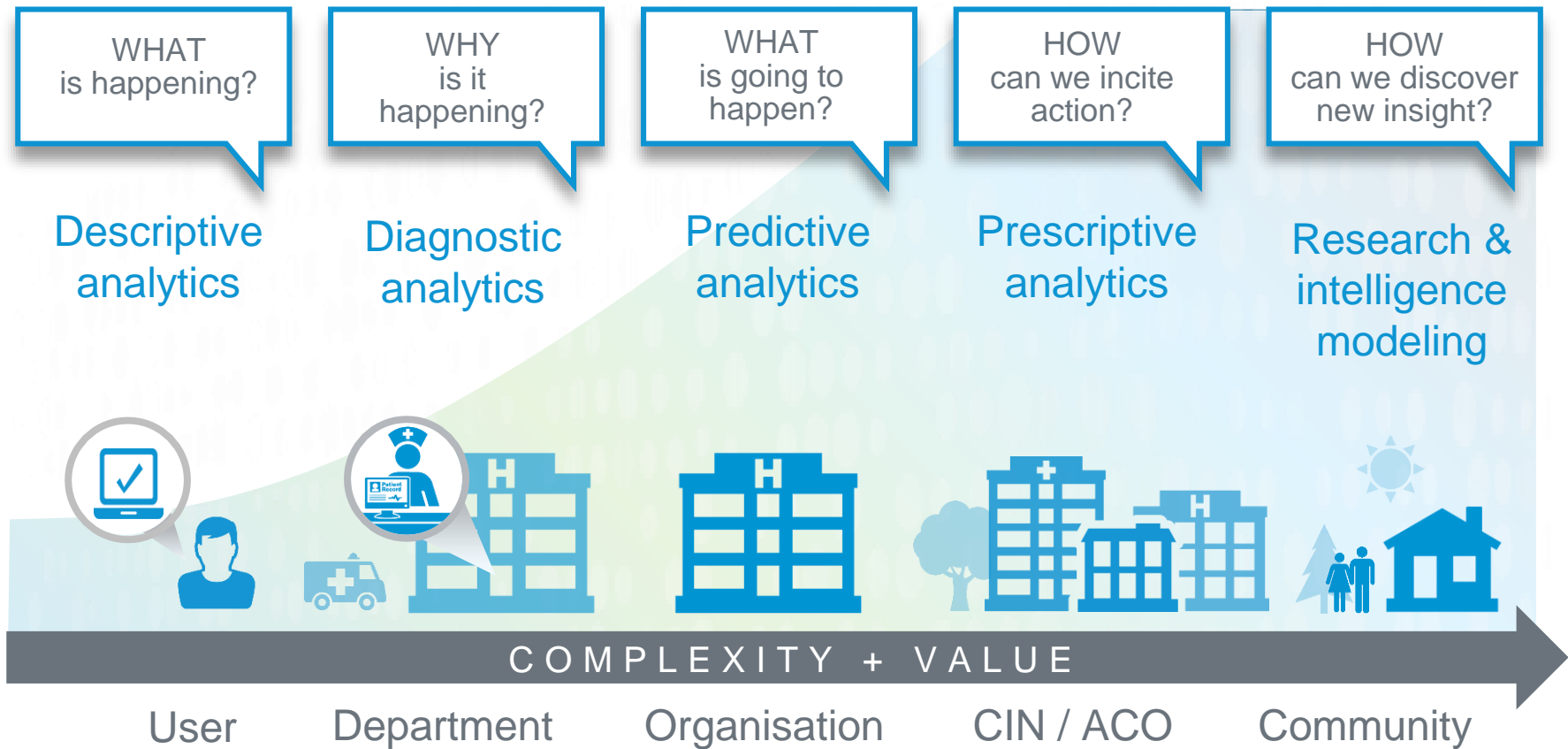


## Open Platform Ecosystem



✓ Registries	✓ Readmission Risk
✓ Record	✓ Transitions of Care
✓ FHIR	✓ HCC
✓ Care Management	✓ Personnel/Org
✓ Consumer	✓ MPM
✓ Data Syndication	

# Being the foundation of the bigger picture



Thank you

