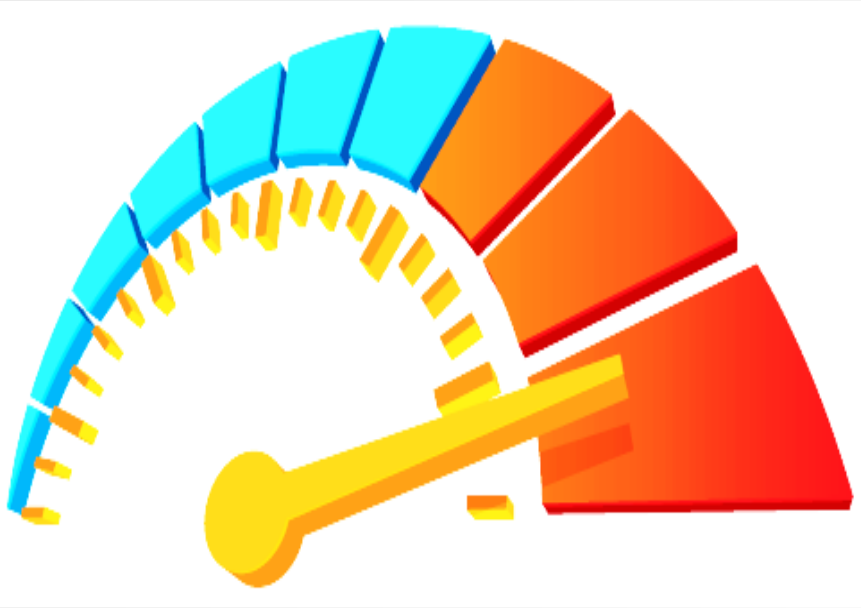
Ted Talks: The Future is so Bright – I Gotta Wear Shades… Powered by AMDIS

- From Here to There, Moving the Needle on Clinical Improvement

Judi Binderman, CMIO, Community Medical Centers, Fresno, CA

- Encounter Notifications - simple, yet refined – foundational to Regional Transformation
  - Samit Desai, CMO, Audacious Inquiry, Johns Hopkins, Baltimore, Maryland
- "Decision Support: It's not all about alerts"
  - John Lee, CMIO, Edward Hospital, Chicago, IL
- "Nothing About Me Without Me: A CHIO's Journey Through a Medical Identity Mixup"
  - Joe Schneider, CMIO, Dallas, TX
- Cautionary Tale, Schreiber's 10 sociotechnical steps to a successful EHR migration, or "How I learned to love all over again"
  - Richard Schreiber, CMIO, Geisinger Holy Spirit, Camp Hill, PA

The future is so Bright Shades…



From Here….to There

Moving the Needle on Clinical Improvement

Judi Binderman, MD
VP-CMIO
Community Medical Centers

Where is Clovis/Fresno, CA?

Community Medical Centers

Community Regional Medical Center

Clovis Community Medical Center

Fresno Heart & Surgical Hospital

Community Behavioral Health Center

Snapshot:

- Not for profit safety net provider
- 1117 Beds & growing
- 58,000 Admissions annually
- 172,000 ED visits
- 10,000+ births annually
- UCSF affiliate-Academic program
- 1300 Affiliated physicians
  - 300 Residents
  - 350 Med Students
- EPIC EMR x 6 years
  - Double upgrade to 2017 in Sept 2017

The Goal

- Save Lives, Improve Health
  - Goal is to deliver high value, high reliability care
  - Out of date or ineffective processes and EHR content are a risk to patient safety
  - Example of magnesium use in preeclampsia and preterm labor order sets
- Improve Clinical Workflow
  - Design and educate for adoption
  - Enable tools for assistance to do the right thing
  - Maintain focus to build 'new habits' avoiding crisis of the moment
- Remain in compliance
  - Evidence based practices
  - Regulatory requirements for documentation, ordering
- Cultivate Data Curiosity
  - Data driven decision-making
  - Monitor progress in quality improvement initiatives

Change Management Lifecycle

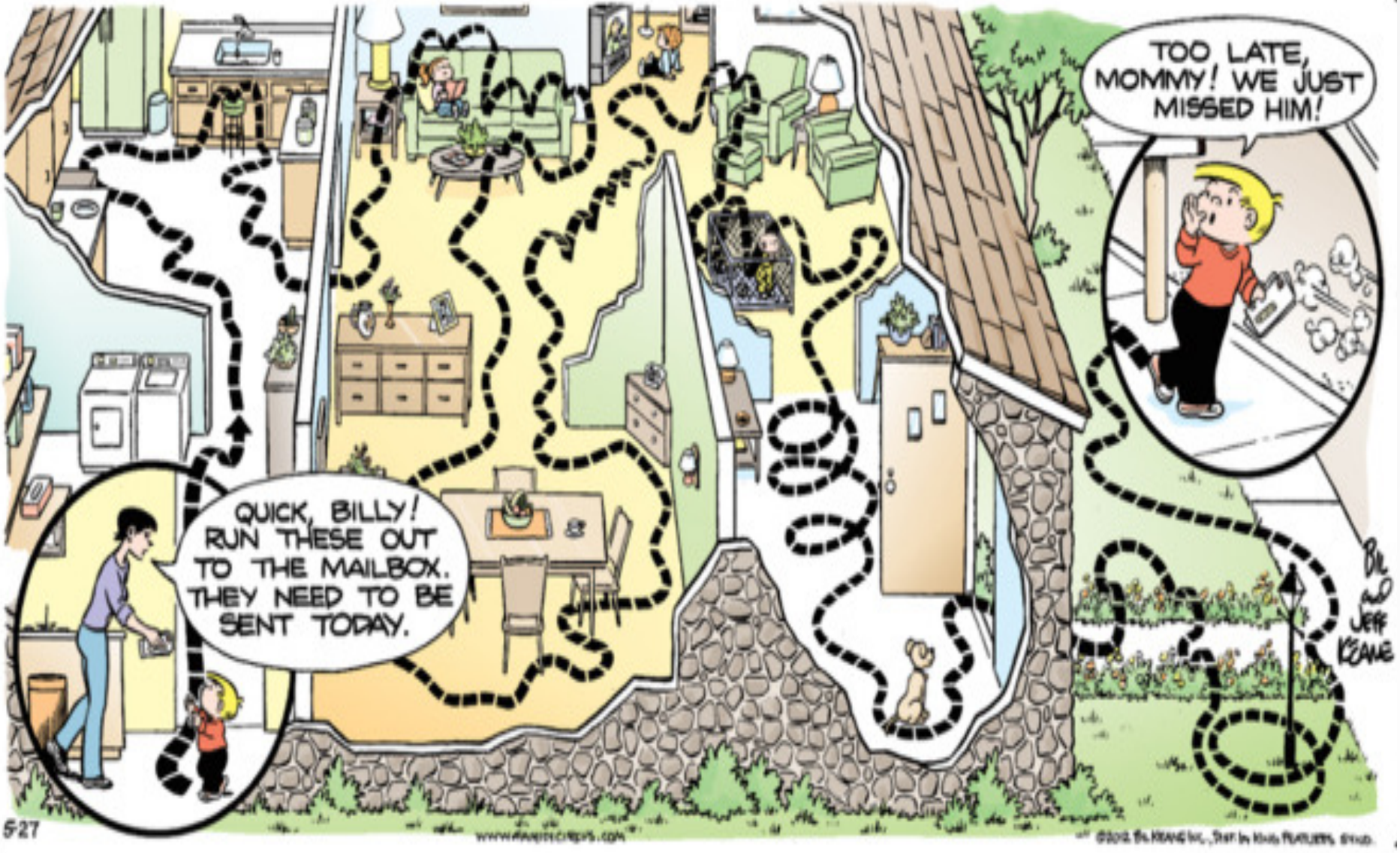
Take Stock of Current Practice

Identify Tools Available to Measure

Define Metric(s) of Success

Gather, Interpret and Utilize Data

Institute Change, Monitor


QUICK, BILLY! RUN THESE OUT TO THE MAILBOX. THEY NEED TO BE SENT TODAY.
TOO LATE, MOMMY! WE JUST MISSED HIM!
BIL AND JEFF KEANE
5-27

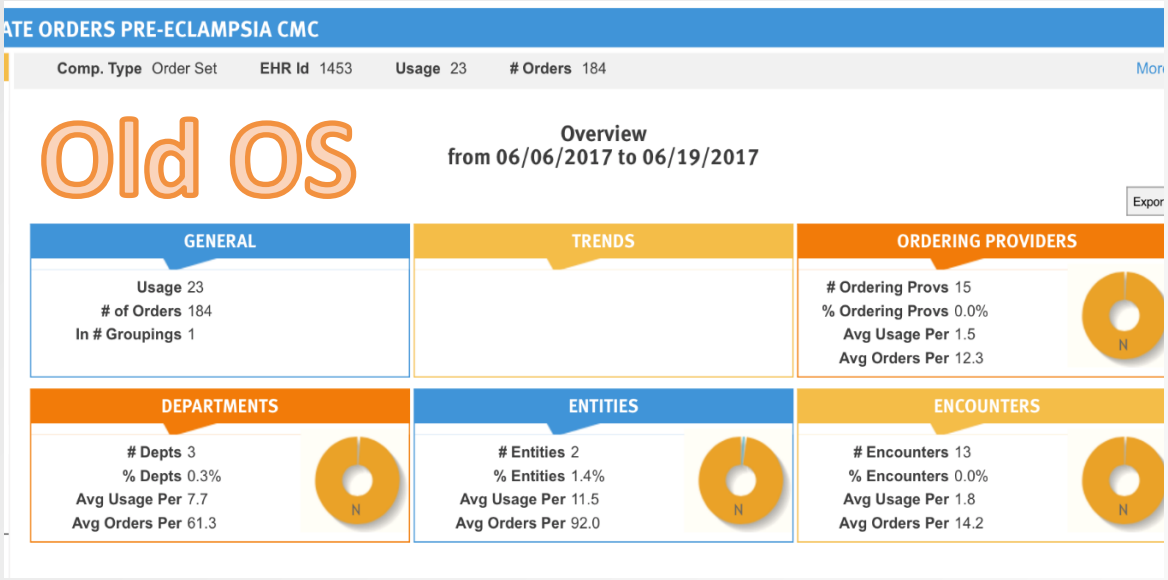
The Community Experience

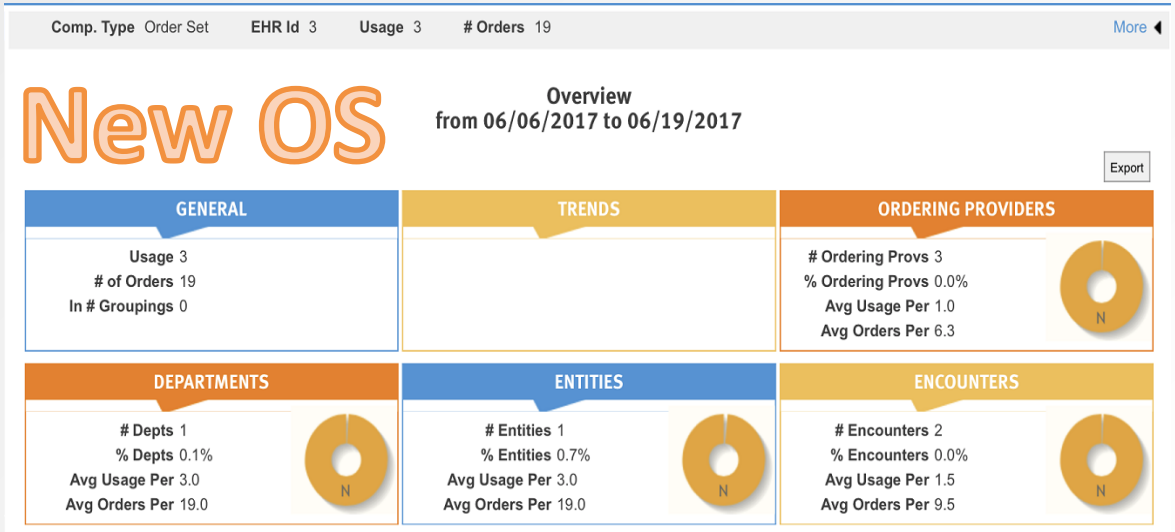
COMMUNITY
MEDICAL CENTERS

- Governance Model and Team Structure
  - Clinical Consensus Groups
- Process and Tools
  - Introduce LogicStream
- Use Cases and Results
  - Order sets/orderables (Women and Children Optimization teams)
  - Alerts – 5 Rights, actionable in workflow

Pre-eclampsia OS

- Initial OS in use >1 year
- Recommendation to decrease loading Mg dose and management of levels
- Desire to introduce new OS, gradually retire old set
- Monitor compliance with introduction of new set
  - **How many uses of new OS vs old OS?**
  - Who is continuing to use old OS?
  - Adequate education/communication?
  - Who has saved as favorite?





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Old OS

Restrict By	User EHR Id	Name	Type	Specialty	Usage	# of Orders
	4819		Physician	Obstetrics & Gynecology	4	43
	9160		Physician	Obstetrics & Gynecology	3	40
	7[illegible]259		Resident	Obstetrics & Gynecology	2	3
	7[illegible]279		Resident	Obstetrics & Gynecology	2	2
	705147		Resident	Obstetrics & Gynecology	2	15
	0358		Physician	Obstetrics & Gynecology	1	7
	5913		Physician	Obstetrics & Gynecology	1	10
	703418		Resident	Obstetrics & Gynecology	1	13
	704223		Resident	Obstetrics & Gynecology	1	1
	8076		Resident	Obstetrics & Gynecology	1	10
	8491		Physician	Obstetrics & Gynecology	1	18
	8513		Physician	Obstetrics & Gynecology	1	1
	9662		Physician	Obstetrics & Gynecology	1	9
	9966		Resident	Obstetrics & Gynecology	1	1
	9971		Resident	Obstetrics & Gynecology	1	11
				Totals	23	184

New OS

Single physician has used both!

Restrict By	User EHR Id	Name	Type	Specialty	Usage	# of Orders
	0358		Physician	Obstetrics & Gynecology	1	1
	4819		Physician	Obstetrics & Gynecology	1	17
	5556		Physician	Obstetrics & Gynecology	1	1
				Totals	3	19

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New OS

OB Residents are still using old OS; none have used new…

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  - **Who has saved as favorite?**

Old OS

- 32 physicians saved as favorite
- Total items 'personalized' = 387
  - Of these, 15 were Mg loading dose
  - Of these 15, 12 changed to same as new desired dose

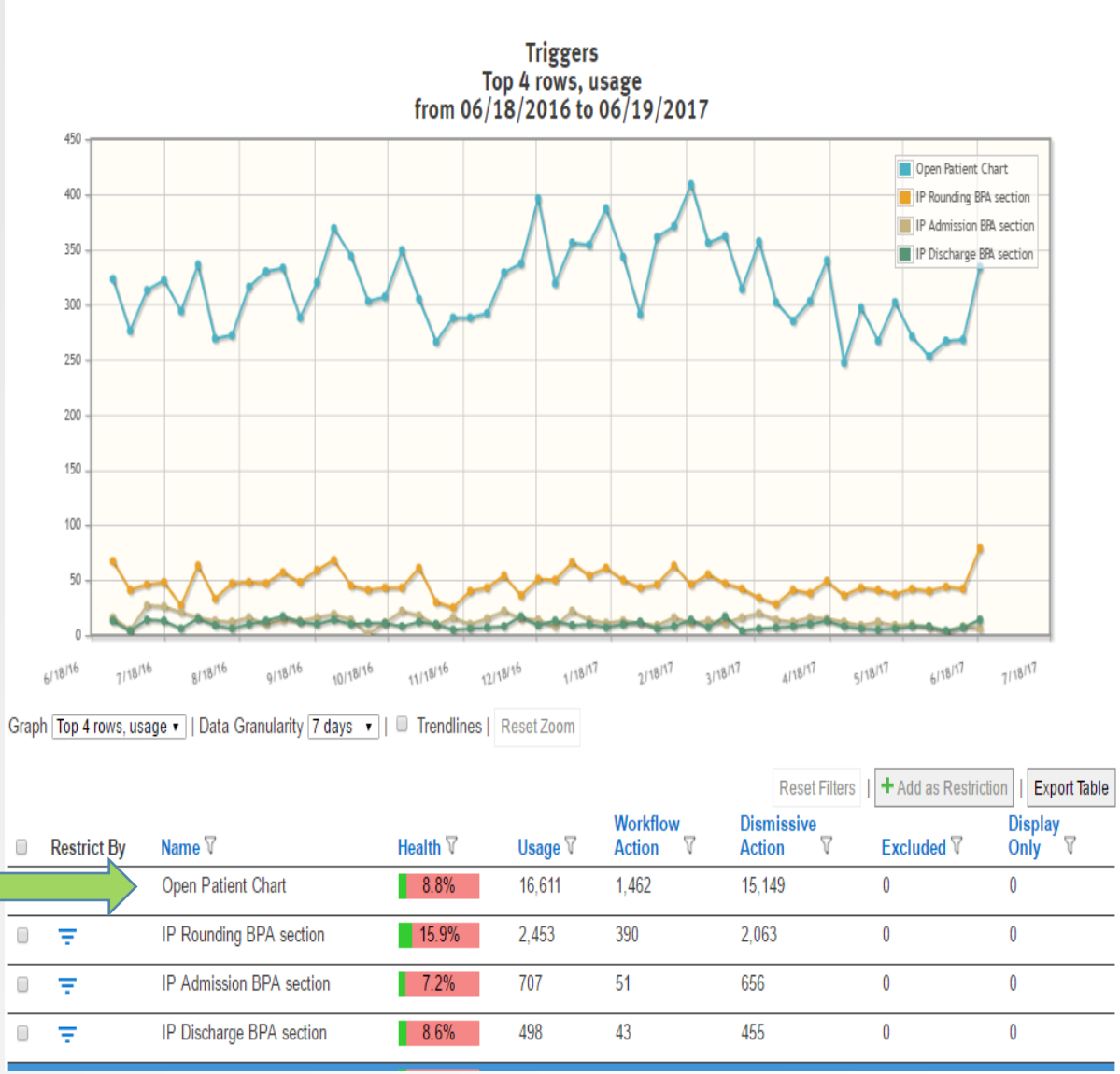
New OS

None have saved as a favorite

Catheter Removal Order

To Minimize CAUTI

- Created alert for Foley insertion without a removal order
- To Determine Effectiveness:
  - **What are the triggers?**
  - **Which triggers are most effective?**
  - What are actions taken?
  - If acknowledged, why?



Restrict By	Name	Health	Usage	Workflow Action	Dismissive Action	Excluded	Display Only
	Open Patient Chart	8.8%	16,611	1,462	15,149	0	0
	IP Rounding BPA section	15.9%	2,453	390	2,063	0	0
	IP Admission BPA section	7.2%	707	51	656	0	0
	IP Discharge BPA section	8.6%	498	43	455	0	0

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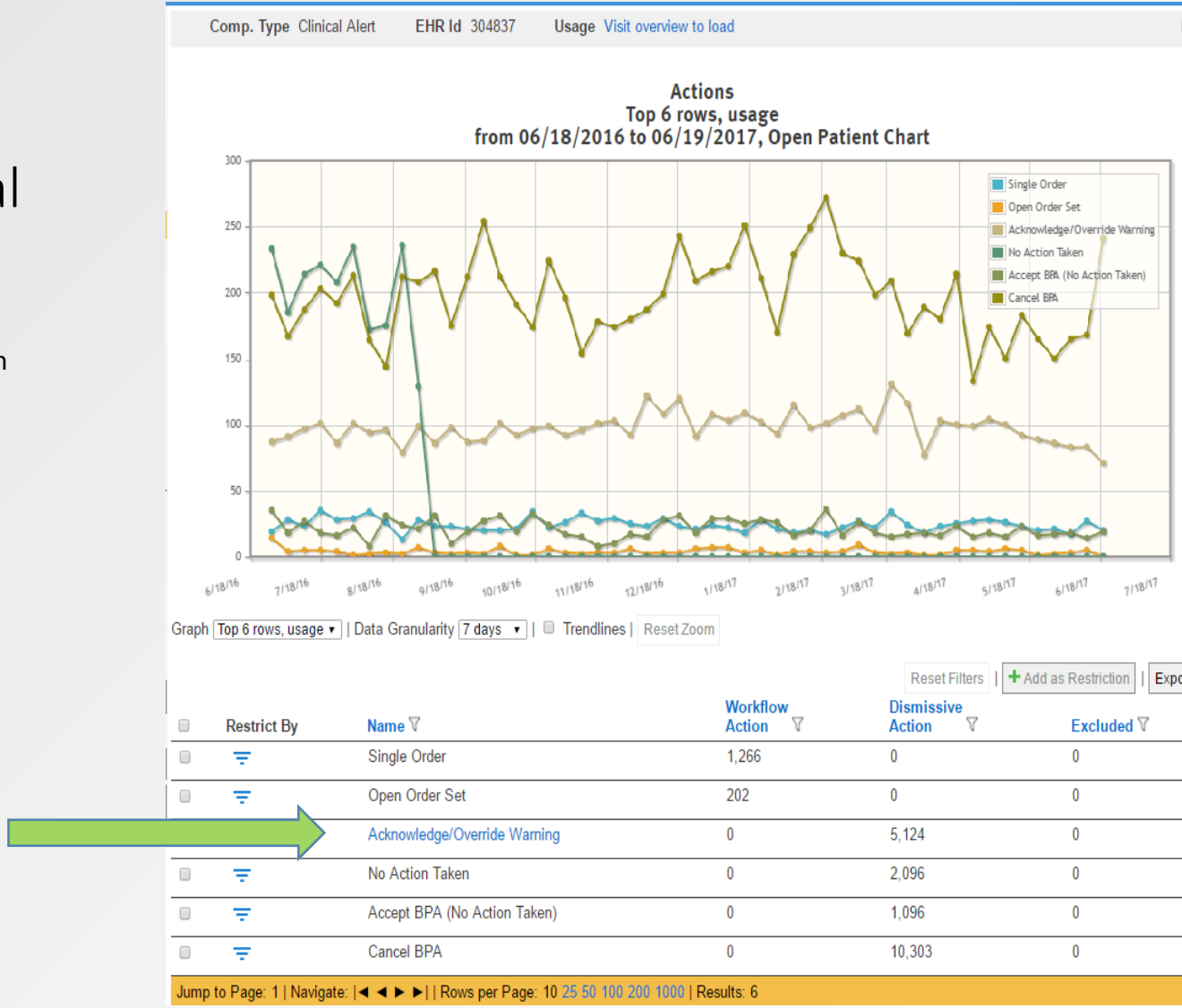

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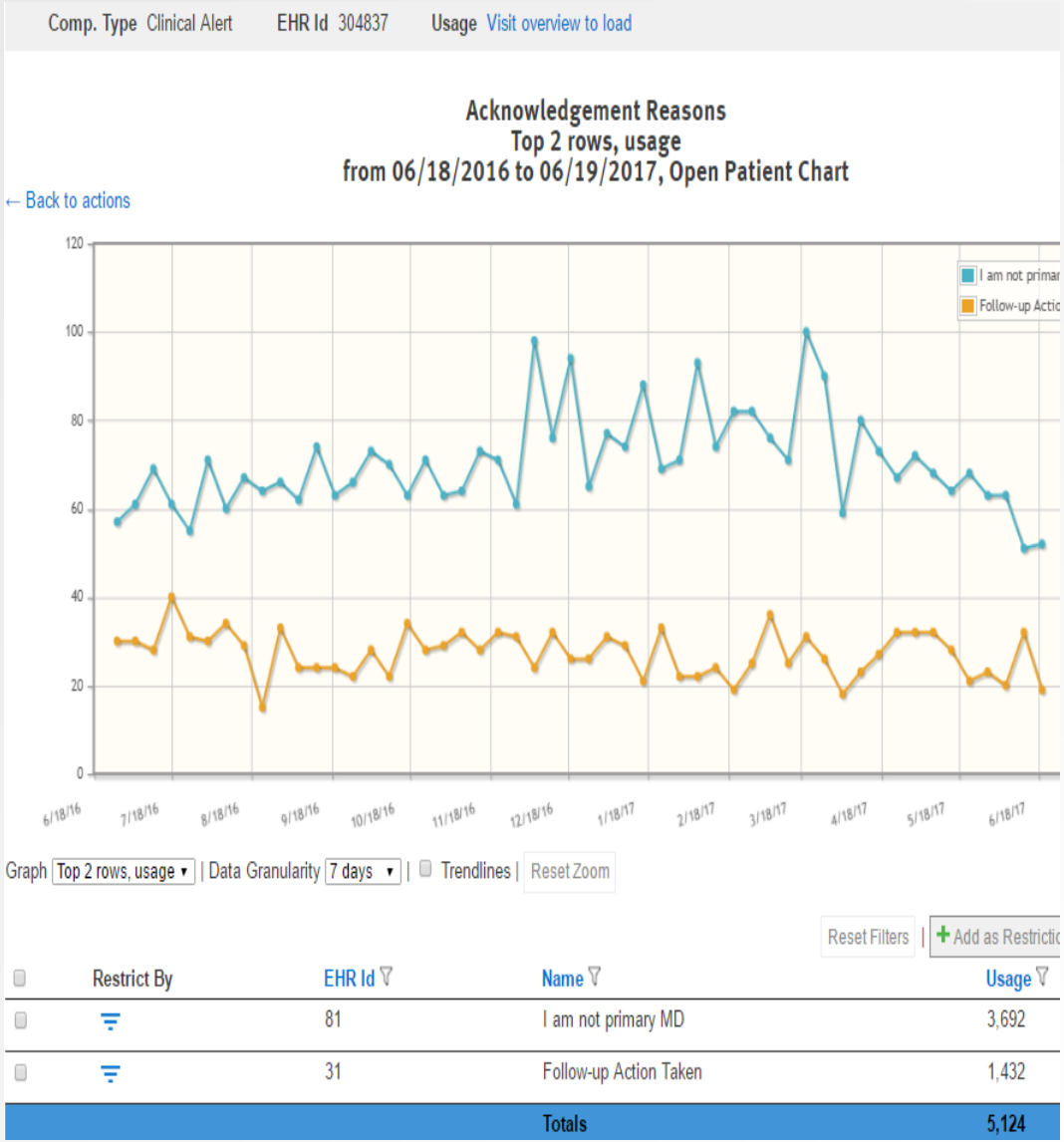


Where to Next?

- Training additional groups in use
- Focusing on 2 key organizational efforts:
  - ERAS
  - Line Documentation
- Using to identify tools available to CCGs as baseline
  - Teach support teams to use LogicStream to measure effectiveness and compliance with new tools to change practice
  - Develop standardized ‘monitoring’ program/process for groups to use
- Build custom populations for additional monitoring of ongoing quality initiatives

Summary

- We’re finally putting information in the hands of the users!
- Enhanced support for continuous process improvement
- Cultivate data curiosity and self-service
- The future is bright!

CRISP

Encounter Notification Services:

Foundational to Regional Transformation

Samit Desai, MD

7160 Columbia Gateway Drive, Suite 230
Columbia, MD 21046
877.952.7477 | support@crisphealth.org
www.crisphealth.org

- Samit Desai, M.D
  - Senior Adviser, CRISP
  - Chief Medical Officer, Audacious Inquiry
  - Former CMIO at St. Agnes Healthcare | Ascension

CRISP…

HOME SERVICES CONNECTED PROVIDERS FOR PATIENTS RESOURCES POLICIES ABOUT

Health Information Exchange Services

CRISP HIE SERVICES

CLINICAL QUERY PORTAL

The CRISP Portal is a free tool available to clinical staff. As clinical information is created and shared with CRISP, it is made accessible in real time to participating health care providers through the CRISP Portal.

ENCOUNTER NOTIFICATION SERVICE (ENS)

ENS enables physicians to receive real-time alerts when a patient is hospitalized.

LEARN MORE

PRESCRIPTION DRUG MONITORING PROGRAM (PDMP)

The PDMP monitors the prescribing and dispensing of drugs that contain controlled dangerous substances (CDS).

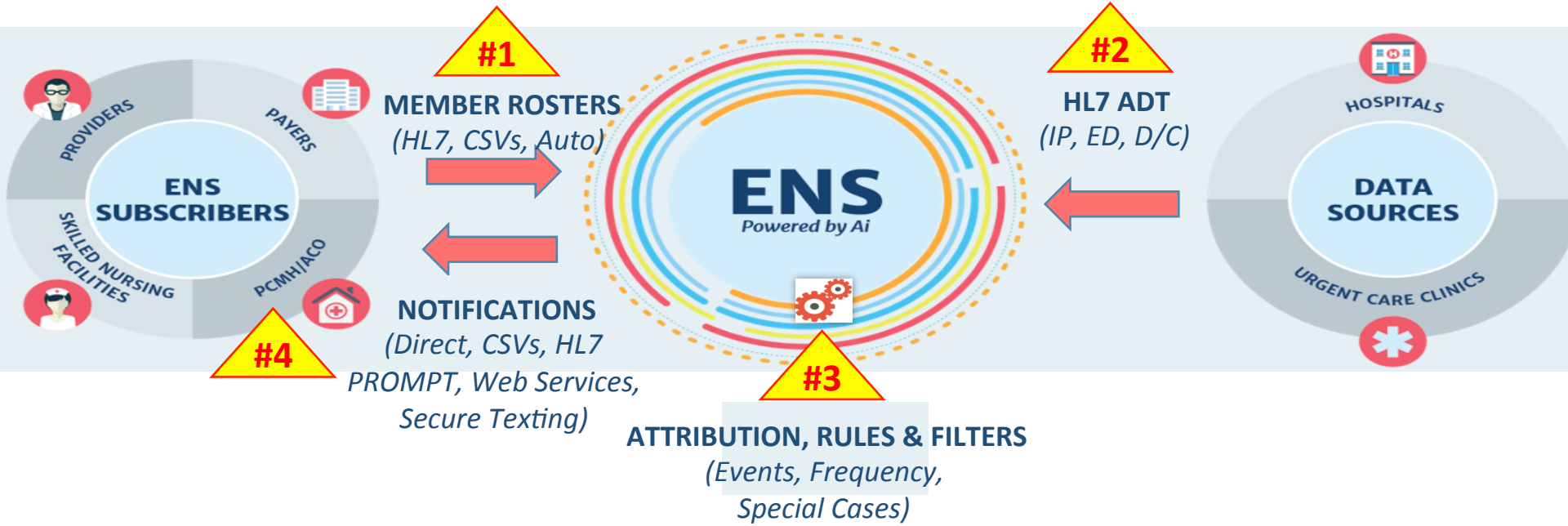
Maryland's Global Budget Revenue (GBR)

Years 1 and 2 Performance, Updated August 2016

Integrated Care Network

- State has invested $$ in CRISP to support an ‘Integrated Care Network’ serves as the foundation for Health IT enabled Population Health.
  - Regional Shared Care Alerting initiative
  - Ambulatory and Post Acute Care connectivity
  - Convey patient attribution to Care Programs, Care Managers, PCPs

Encounter Notification Service



ProMPT

ENS Encounter Notification Service® | PROMPT Proactive Management of Patient Transitions

Filter by Name or MRN

Any Participants (2) | Add Filters | Custom Filters:

All | Not Started | In Progress | Completed

# of Notifications: 100322

JOSEPH VITAS (3022779)
Lorien Life Center at Elkridge
12/10/17 12:50 PM
IP Admit

KRISTEN MCGRATH (3160901)
Howard County General Hospital
6/16/17 10:13 PM
ER Registration
mirgraine

THOMAS COFIELL (3114944)

JOSEPH VITAS (3022779)

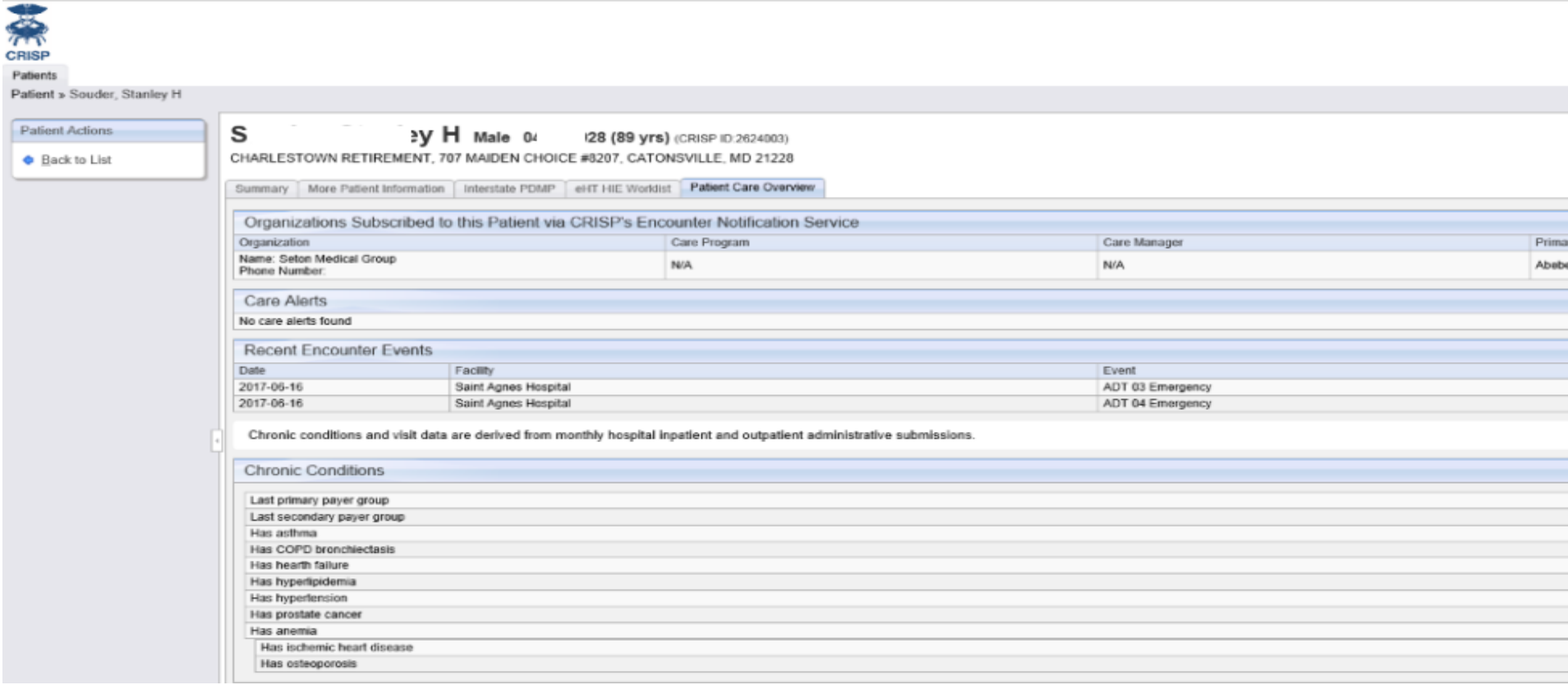
(home)

MRN:	3022779
Date of Birth:	10/3/36
Gender:	M
Address 1:	457 Gayle Drive
City:	Lithicum
State:	
Home Phone:	
Email:	

Most Recent Event

Event Date:	12/10/17 12:50 PM
Admit Date:	12/10/17 12:50 PM
Discharge Date:	
Point of Care:	Lorien Life Center at Elkridge
Event Type:	IP Admit
Admit Source:	
Hospital Service:	

Query Portal with Panel Attribution



Panel Loading

Serial #	Data Field	Description	Required / If Available	Data Typ	Length	comments
1	AACode	Assigning Authority code corresponding identifiers in 'Patient_ID' column.	Required	String	20	This column indicates the co for patient identifiers used i
2	Group	Name of the group this list of patients belong to	If Available	String	50	
3	Member_Status	Flag to indicate whether to Add/Update/Remove the patient from ENS	Required	String	10	Valid values = Add/Update/R
4	Patient_ID	Unique ID assigned by the assigning authority for this patient	Required	String	50	An alphanumeric identifier t identifies the patient
5	First_Name	First Name of this patient	Required	String	30	
6	Middle_Name	Middle Initial/Name of this patient	Required	String	30	
7	Last_Name	Last Name of this patient	Required	String	75	
8	Name_Suffix	Suffix of the patient's name	If Available	String	10	
9	Address_1	Line 1 of this patient's address	Required	String	75	
10	Address_2	Line 2 of this patient's address	If Available	String	75	
11	City	City of this patient's address	Required	String	50	
12	State	State of this patient's address	Required	String	15	2 letter state abbreviation
13	Zip	Zipcode of this patient's address	Required	String	10	e.g 21228, 21228-6178
14	Birthdate	Date of Birth of this patient	Required	Date		CCYY/MM/DD CCYY-MM-DD MM/DD/CCYY MM-DD-CCYY
15	Gender	Patient's gender	Required	String	10	M/Male, F/Female, U/Unkno
16	SSN	Social security number of this patient	If Available	String	15	It is recommended to send S available.
[illegible]	Home_Phone	Hom[illegible]ne number of this patient	[illegible]ilab[illegible]	String	15	It is recommended to have a [illegible]mber.

Use Cases

Improved Care Coordination

Health plan case managers can receive timely ENS notifications about hospitalizations, act promptly, and direct members to the most appropriate care settings.

Improve Patient Satisfaction

ENS notifications improve communications, and streamline workflows between care providers and case team managers – this leads to greater patient engagement and satisfaction.

Avoid Unnecessary Readmissions

Knowing when, where, and why your patients are hospitalized provides actionable data to identify, intervene, and avoid unnecessary readmissions.

New Revenue Opportunities

ENS notifications provide opportunities for providers, health systems, hospitals, and ACOs to use transitional care CPT codes, and capture related revenue for Medicare patients.

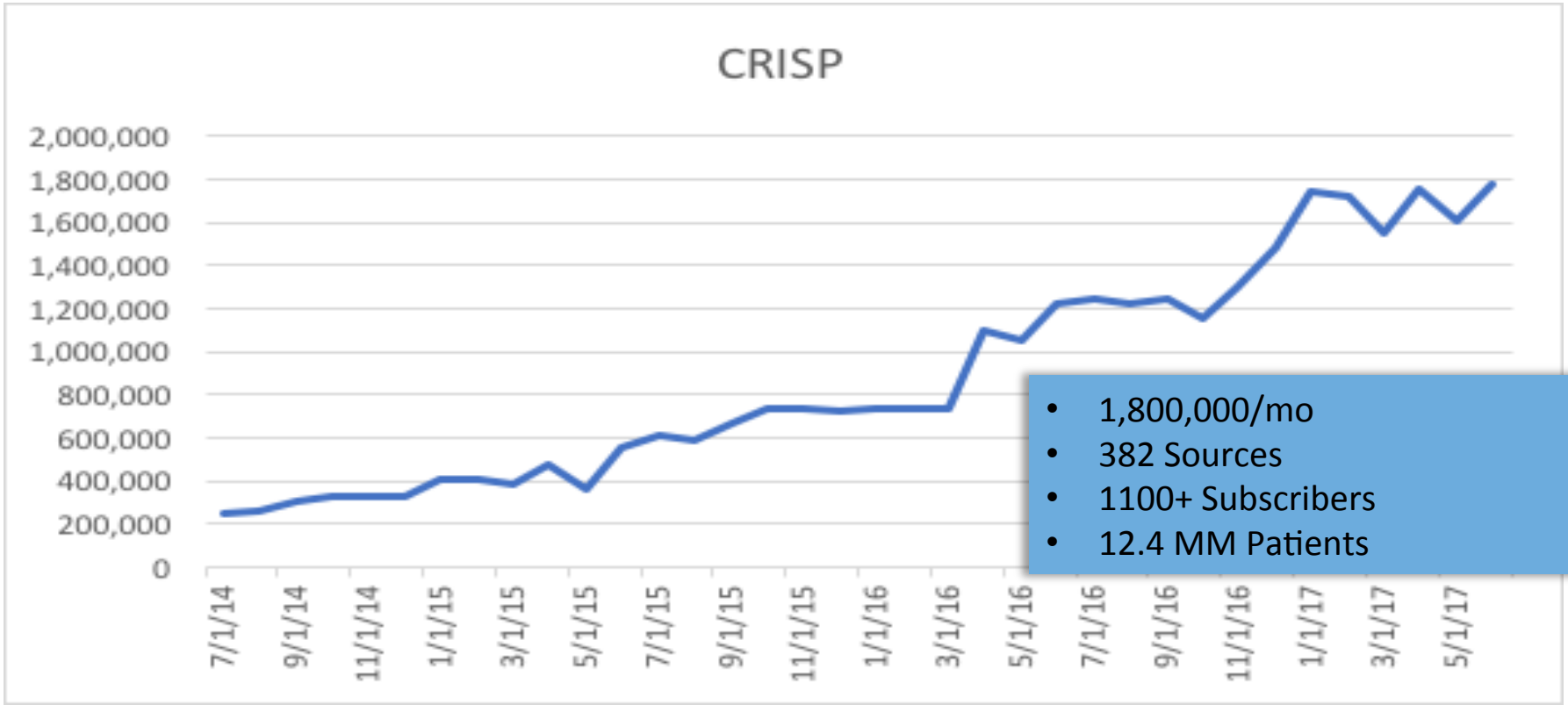
Meaningful Use Compliance (Stage 2)

Enables the automatic routing of discharge summaries from hospitals in a manner compliant with MU requirements for Transitions of Care.

Grow Your Information Network

ENS tools allow HIOs to onboard new subscribers and manage configurations so providers get notifications delivered when and where it matters most.

Adoption

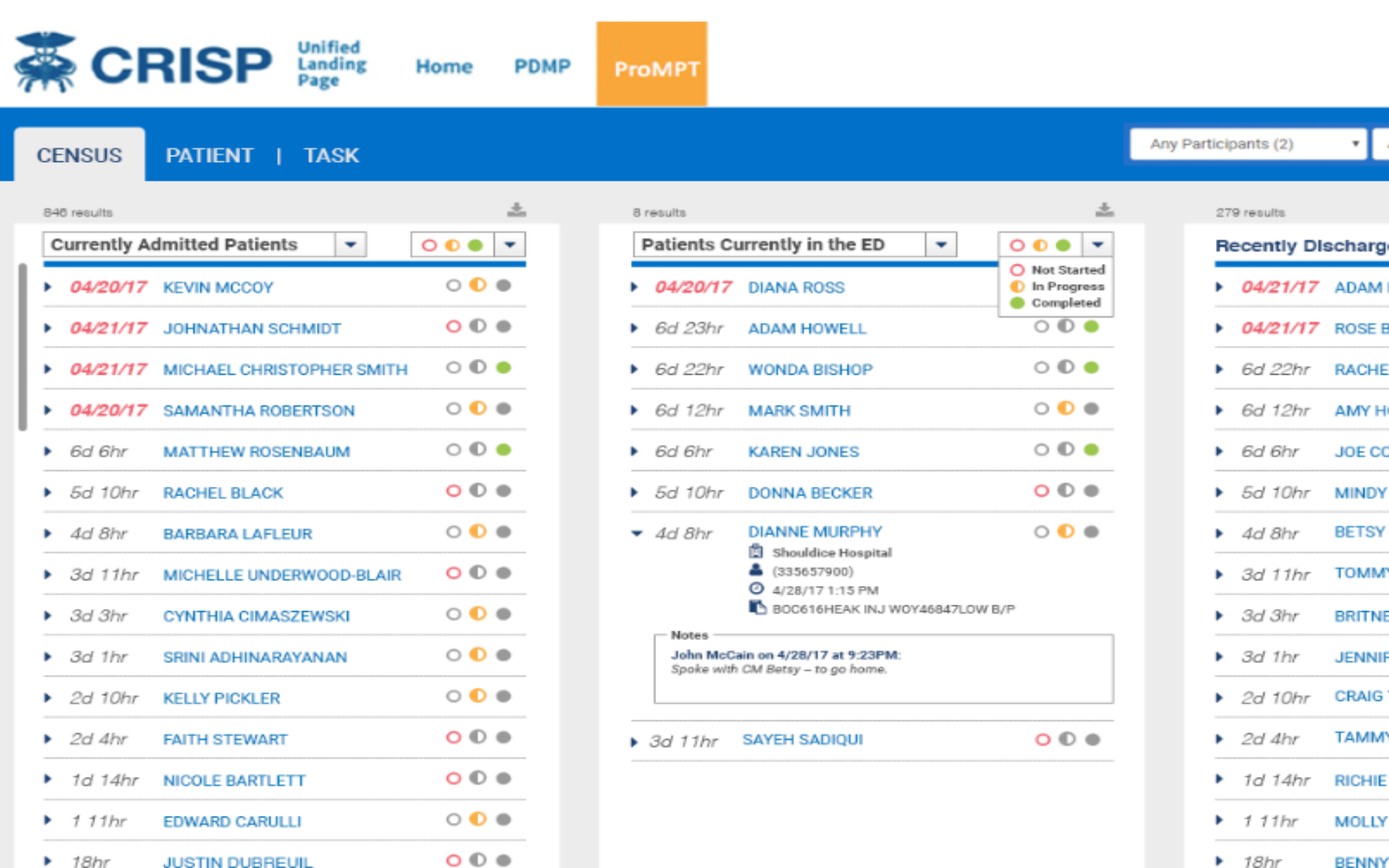


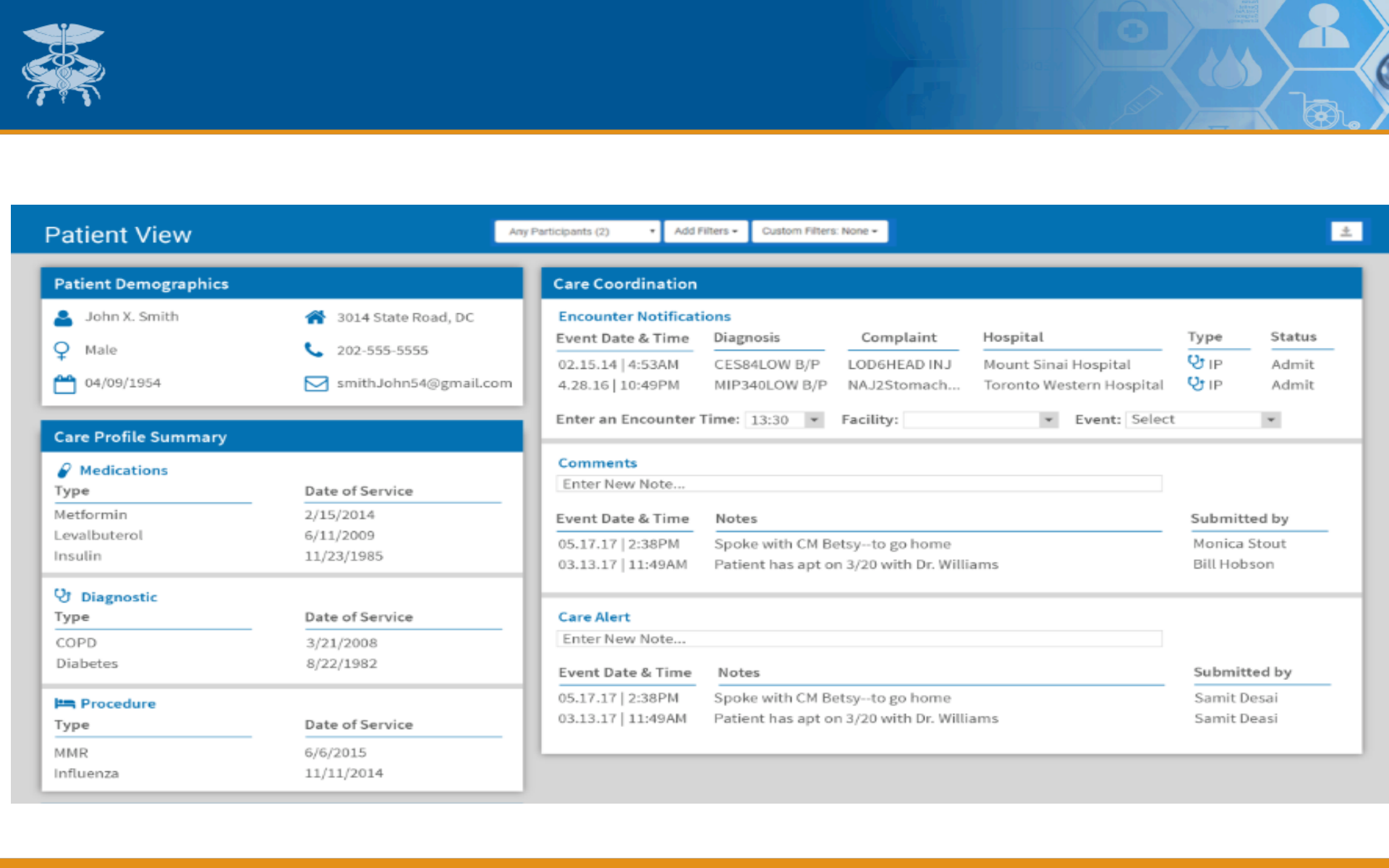
- 1,800,000/mo
- 382 Sources
- 1100+ Subscribers
- 12.4 MM Patients

Inter-HIO ADT exchange

- As notification services expand, HIOs may now exchange ADTs to allow for alerting across networks.

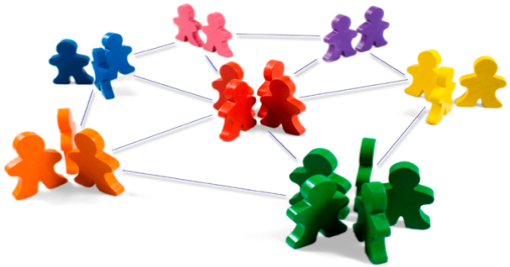
- This allows a Primary Care Physician in Delaware to be notified when her patient checks into a hospital in Philadelphia.


CRISP
Unified Landing Page
Home
PDMP
ProMPT
CENSUS
PATIENT | TASK
Any Participants (2)
846 results
Currently Admitted Patients
04/20/17 KEVIN MCCOY
04/21/17 JOHNATHAN SCHMIDT
04/21/17 MICHAEL CHRISTOPHER SMITH
04/20/17 SAMANTHA ROBERTSON
6d 6hr MATTHEW ROSENBAUM
5d 10hr RACHEL BLACK
4d 8hr BARBARA LAFLEUR
3d 11hr MICHELLE UNDERWOOD-BLAIR
3d 3hr CYNTHIA CIMASZEWSKI
3d 1hr SRINI ADHINARAYANAN
2d 10hr KELLY PICKLER
2d 4hr FAITH STEWART
1d 14hr NICOLE BARTLETT
1 11hr EDWARD CARULLI
18hr JUSTIN DUBREUIL
8 results
Patients Currently in the ED
Not Started
In Progress
Completed
04/20/17 DIANA ROSS
6d 23hr ADAM HOWELL
6d 22hr WONDA BISHOP
6d 12hr MARK SMITH
6d 6hr KAREN JONES
5d 10hr DONNA BECKER
4d 8hr DIANNE MURPHY
Shouldice Hospital
(335657900)
4/28/17 1:15 PM
BOC616HEAK INJ WOY46847LOW B/P
Notes
John McCain on 4/28/17 at 9:23PM:
Spoke with CM Betsy – to go home.
3d 11hr SAYEH SADIQUI
279 results
Recently Discharg
04/21/17 ADAM
04/21/17 ROSE B
6d 22hr RACHE
6d 12hr AMY H
6d 6hr JOE CO
5d 10hr MINDY
4d 8hr BETSY
3d 11hr TOMMY
3d 3hr BRITNE
3d 1hr JENNIF
2d 10hr CRAIG
2d 4hr TAMMY
1d 14hr RICHIE
1 11hr MOLLY
18hr BENNY


Patient View
Any Participants (2)
Add Filters
Custom Filters: None
Patient Demographics
John X. Smith
Male
04/09/1954
3014 State Road, DC
202-555-5555
smithJohn54@gmail.com
Care Profile Summary
Medications
Type
Date of Service
Metformin
2/15/2014
Levalbuterol
6/11/2009
Insulin
11/23/1985
Diagnostic
Type
Date of Service
COPD
3/21/2008
Diabetes
8/22/1982
Procedure
Type
Date of Service
MMR
6/6/2015
Influenza
11/11/2014
Care Coordination
Encounter Notifications
Event Date & Time
Diagnosis
Complaint
Hospital
Type
Status
02.15.14 | 4:53AM
CES84LOW B/P
LOD6HEAD INJ
Mount Sinai Hospital
IP
Admit
4.28.16 | 10:49PM
MIP340LOW B/P
NAJ2Stomach...
Toronto Western Hospital
IP
Admit
Enter an Encounter Time:
13:30
Facility:
Event:
Select
Comments
Enter New Note...
Event Date & Time
Notes
Submitted by
05.17.17 | 2:38PM
Spoke with CM Betsy--to go home
Monica Stout
03.13.17 | 11:49AM
Patient has apt on 3/20 with Dr. Williams
Bill Hobson
Care Alert
Enter New Note...
Event Date & Time
Notes
Submitted by
05.17.17 | 2:38PM
Spoke with CM Betsy--to go home
Samit Desai
03.13.17 | 11:49AM
Patient has apt on 3/20 with Dr. Williams
Samit Deasi

Smart Alerts → Clinical Decision Support

Events	Relationships	Patient Data	Notifications
IP Admit	I am the Patient's CareManager	If Dx is Asthma	Notify Real-Time into PROMPT



Smart Alerts

ENS Smart Alerts

22Jul2016

Current:
1. Hospital Inpatient Encounters
2. Hospital Emergency Department Encounters

Proposed:
3. Primary Care Physician Office Encounter
4. Specialist Office Encounter
5. Care Coordination Encounters
6. Home Health Encounter
7. Long Term Care Encounter
8. Diagnosis
9. Medications (Prescription Drug Monitoring Program)
10. Procedures
11. Reports (Imaging)
12. Abnormal Results (Lab)
13. Context of the visit

Also:
14. New CCD
15. New D/C summary
16. New Care Plan
17. New Patient entered data

Events →

Relationships →

Current:
1. Patient
2. Provider (Clinic X)

Proposed:
3. Insurer
4. ACO
5. Practitioner (Doctor X)
6. Provider Type (PCP, Specialist)

Also:
7. Lab result to ordering provider (or CC to)
8. Role to privilege (RBAC or ABAC)

Smart Alert Rules

Patient Data →

Problems
Medications
Allergies
Procedures
Labs
Encounters
...all clinical & claims data

Notifications →

Scenario#1
Demographics
Insurance
Encounters (past 60 days)
Medications
Immunizations
Allergies
Procedures
Diagnoses
Next of Kin

*On admission send the following subset of information for the patient and context related to this visit:

Scenario#2
Demographics
Insurance
Encounters (past 60 days)
Medications
D/C Summary

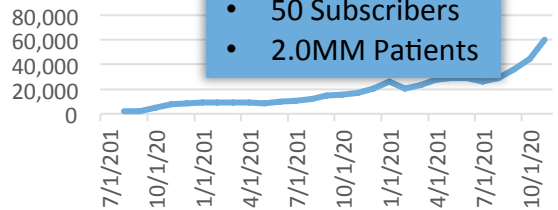
*ED Visit where diagnosis was related to the subscriber's specialty for example Cardiologist send the following subset of the clinical record:

Non-Functional or other Req'ts:
1. Performance
2. UI for building rules
3. UI for viewing subscriptions
4. UI for supporting / debugging txns

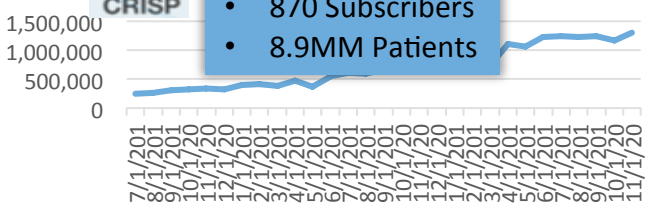
Also:
1. Distribution transport preferences (HL7, Direct, eMail, SMS, SecureText, sFTP)
2. Distribution payload preferences (HL7 2.x, CCD, HTML, PDF, DICOM, FlatFile)
3. Distribution frequency (real-time, daily, weekly, monthly)
4. Distribution target (EMR, Portal, CDR, Public health, patient portal)

ENS – Rapid Growth & Value

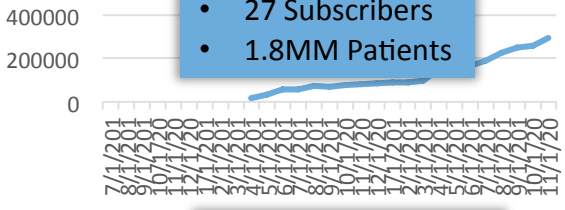
- 60,000/mo
- 21 Sources
- 50 Subscribers
- 2.0MM Patients



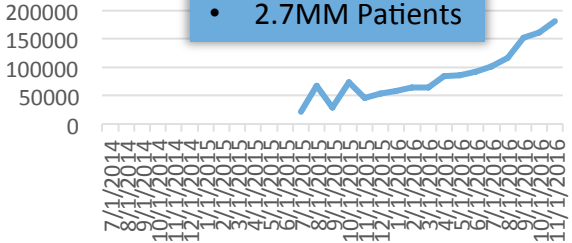
- 1,300,000/mo
- 234 Sources
- 870 Subscribers
- 8.9MM Patients



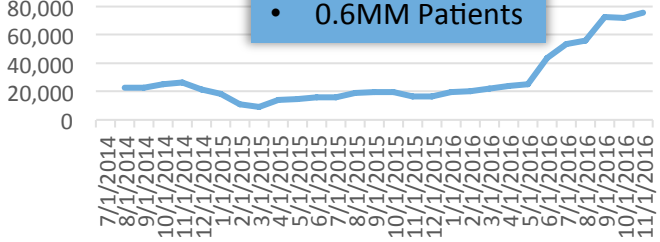
- 293,000/mo
- 204 Sources
- 27 Subscribers
- 1.8MM Patients



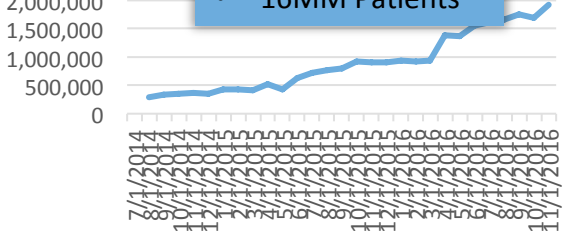
- 180,000/mo
- 35 Sources
- 122 Subscribers
- 2.7MM Patients



- 75,000/mo
- 68 Sources
- 32 Subscribers
- 0.6MM Patients



- 1,915,000/mo
- 552 Sources
- 1100 Subscribers
- 16MM Patients



Updated: 15Nov2016

ensinaction.com

Decision Support

John Lee, CMIO
Edward Hospital, Chicago, IL

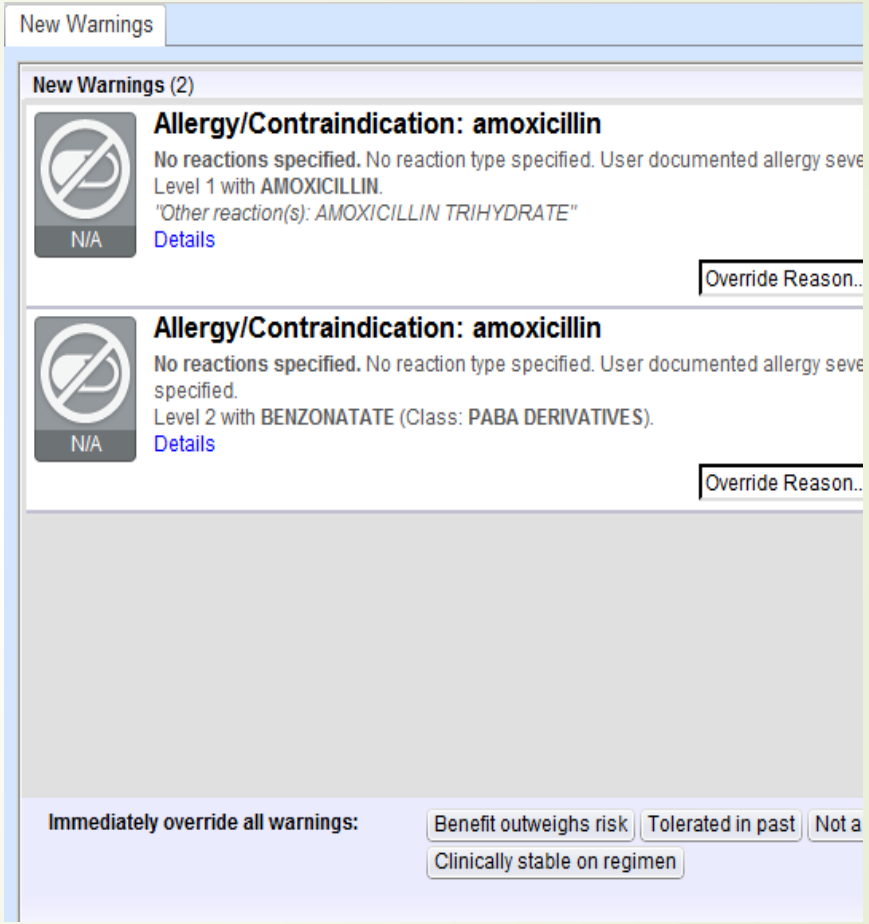
It's not all about alerts

Rights of Decision Support

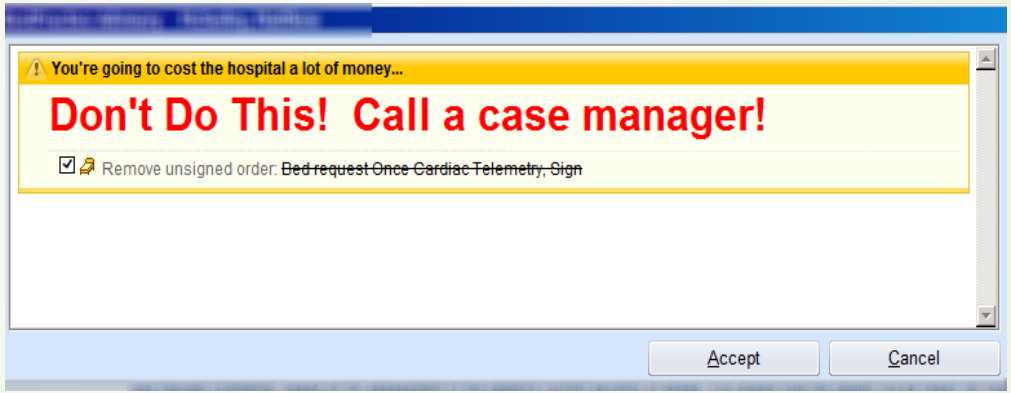
1. Right information
2. Right person
3. Right format
4. Right channel
5. Right workflow

Alerts

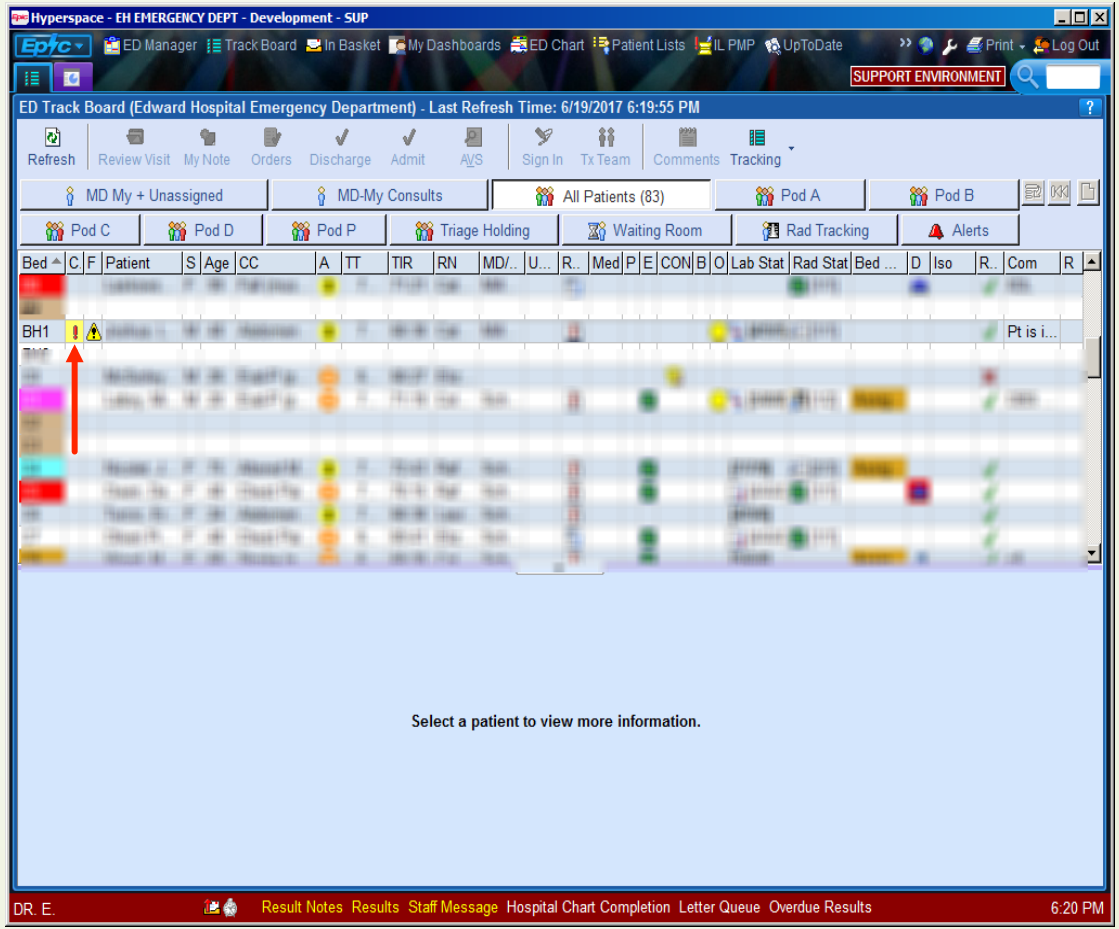
- Interruptions
- After the fact



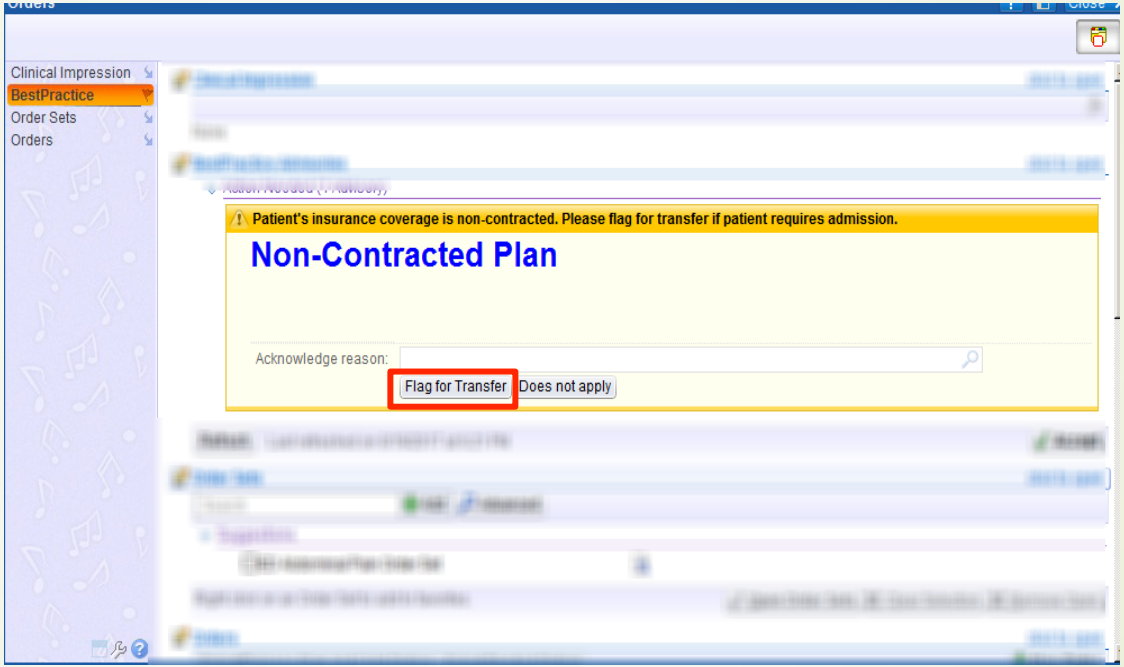
Noncontracted Plan



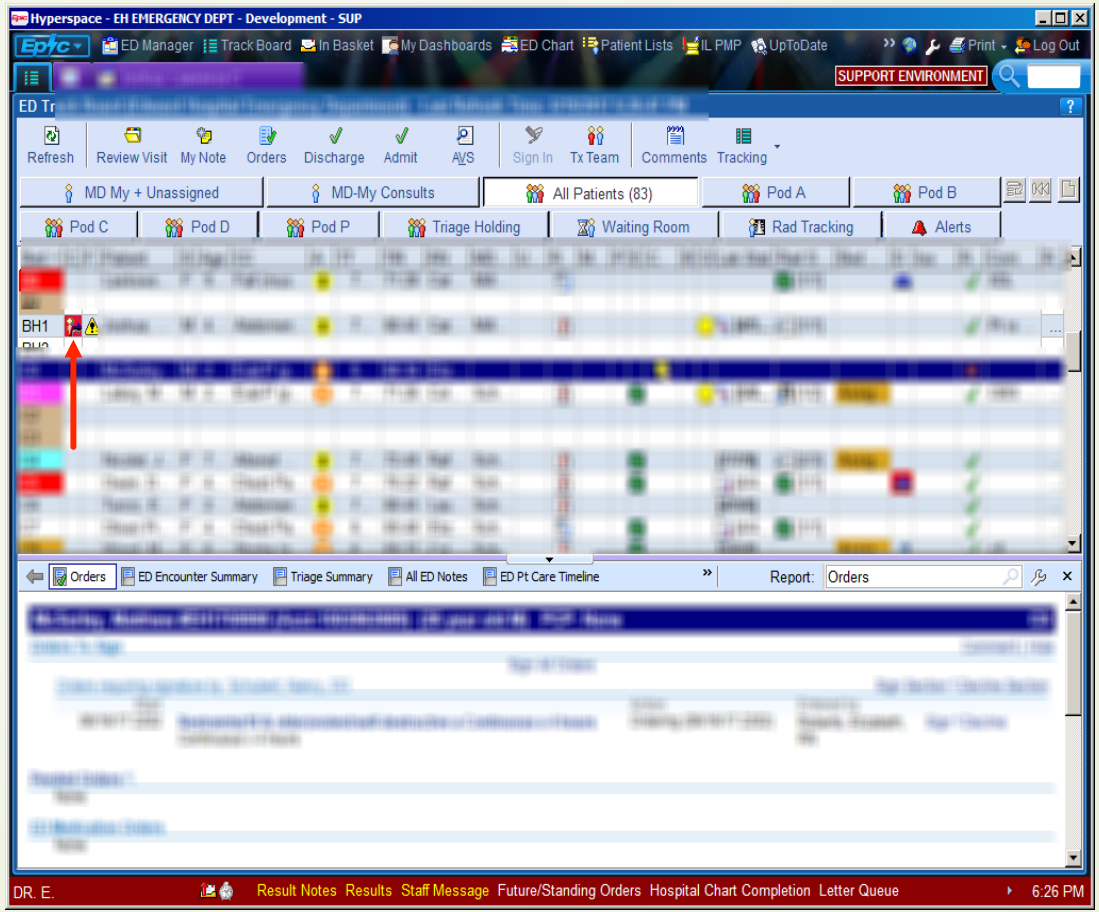
Noncontracted Plan



Noncontracted Plan



Noncontracted Plan

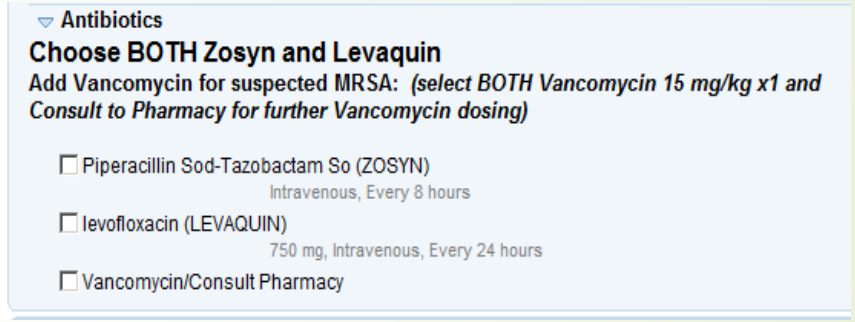


Noncontracted Plan

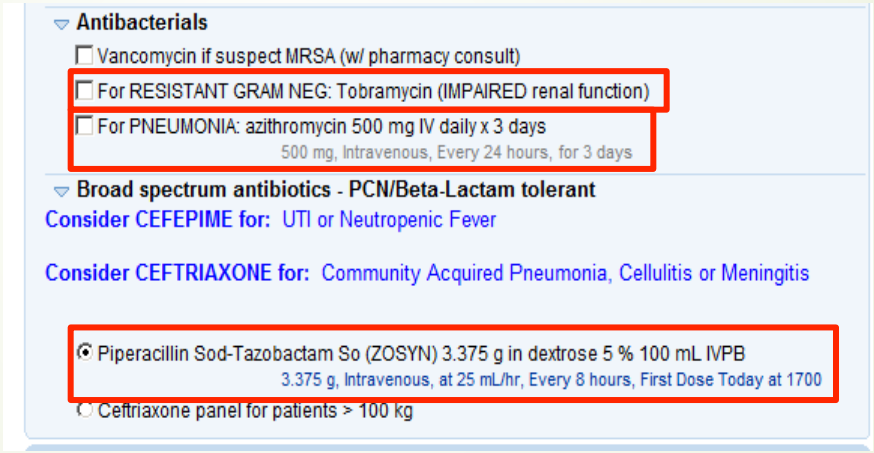
- > 90% decrease in non-contracted admissions
- ~$1.3M cost avoidance (conservative)
- High acceptance

Levaquin

- Kills everything
- Resistance
- Induction
- Reduce usage
- Maintain coverage
  - Gram negatives
  - Atypical pneumonias



Penicillin tolerant



Renal function

Antibacterials

- ☐ Vancomycin if suspect MRSA (w/ pharmacy consult)
- ☐ For RESISTANT GRAM NEG: Tobramycin (NORMAL renal function)
- ☐ For PNEUMONIA: azithromycin 500 mg IV daily x 3 days

500 mg, Intravenous, Every 24 hours, for 3 days

Antibacterials

- ☐ Vancomycin if suspect MRSA (w/ pharmacy consult)
- ☐ For RESISTANT GRAM NEG: Tobramycin (IMPAIRED renal function)
- ☐ For PNEUMONIA: azithromycin 500 mg IV daily x 3 days

500 mg, Intravenous, Every 24 hours, for 3 days

Antibacterials

- ☐ Vancomycin if suspect MRSA (w/ pharmacy consult)
- ☐ For RESISTANT GRAM NEG: Tobramycin (SEVERE renal DYSFUNCTION)
- ☐ For PNEUMONIA: azithromycin 500 mg IV daily x 3 days

500 mg, Intravenous, Every 24 hours, for 3 days

☑ For RESISTANT GRAM NEG: Tobramycin (NORMAL renal function)

Creatinine Clearance	Dose & Interval
≥ 60 mL/min	7 mg/kg x 1 dose
20 – 60 mL/min	5 mg/kg x 1 dose
< 20 mL/min	3 mg/kg x 1 dose
ESRD—HD dependent	3 mg/kg x 1 dose

☑ For RESISTANT GRAM NEG: Tobramycin (IMPAIRED renal function)

Creatinine Clearance	Dose & Interval
≥ 60 mL/min	7 mg/kg x 1 dose
20 – 60 mL/min	5 mg/kg x 1 dose
< 20 mL/min	3 mg/kg x 1 dose
ESRD—HD dependent	3 mg/kg x 1 dose

☑ tobramycin Sulfate (NEBCIN) 5 mg/kg in sodium chloride 0.9 % 100 m

5 mg/kg, Intravenous, for 60 Minutes, Once, Today a

☑ For RESISTANT GRAM NEG: Tobramycin (SEVERE renal DYSFUNCTION

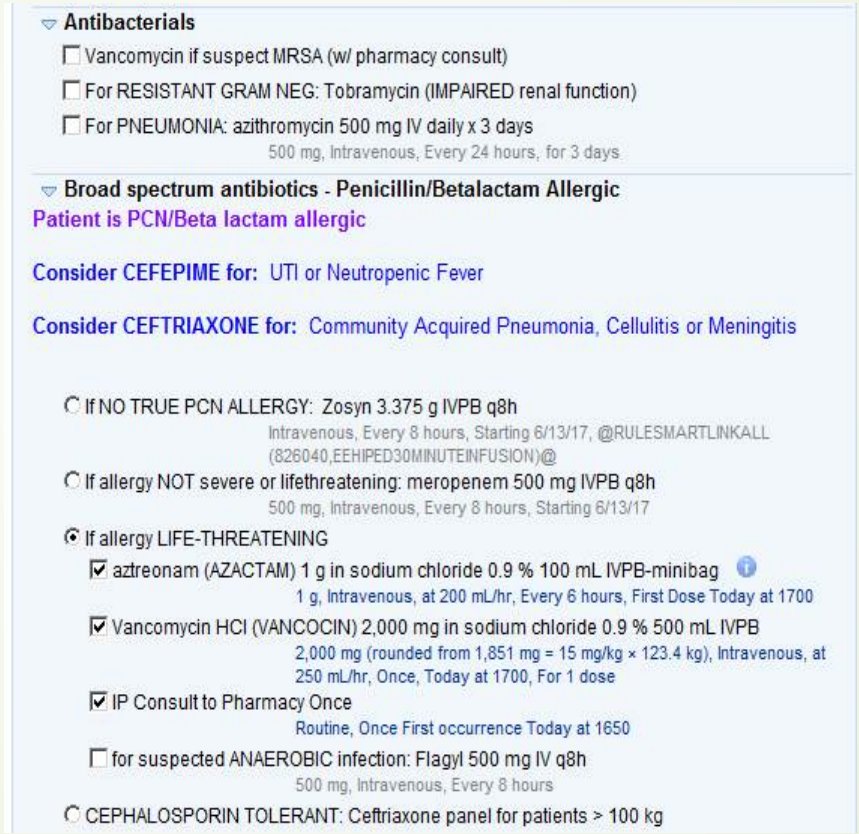
Creatinine Clearance	Dose & Interval
≥ 60 mL/min	7 mg/kg x 1 dose
20 – 60 mL/min	5 mg/kg x 1 dose
< 20 mL/min	3 mg/kg x 1 dose
ESRD—HD dependent	3 mg/kg x 1 dose

☑ tobramycin Sulfate (NEBCIN) 157 mg in sodium chloride 0.9 % 100 m

157 mg (rounded from 157.2 mg = 3 mg/kg × 52.4 kg Ic

Penicillin allergic

Really Penicillin allergic



Antibacterials

- ☐ Vancomycin if suspect MRSA (w/ pharmacy consult)
- ☐ For RESISTANT GRAM NEG: Tobramycin (IMPAIRED renal function)
- ☐ For PNEUMONIA: azithromycin 500 mg IV daily x 3 days
  500 mg, Intravenous, Every 24 hours, for 3 days

Broad spectrum antibiotics - Penicillin/Betalactam Allergic

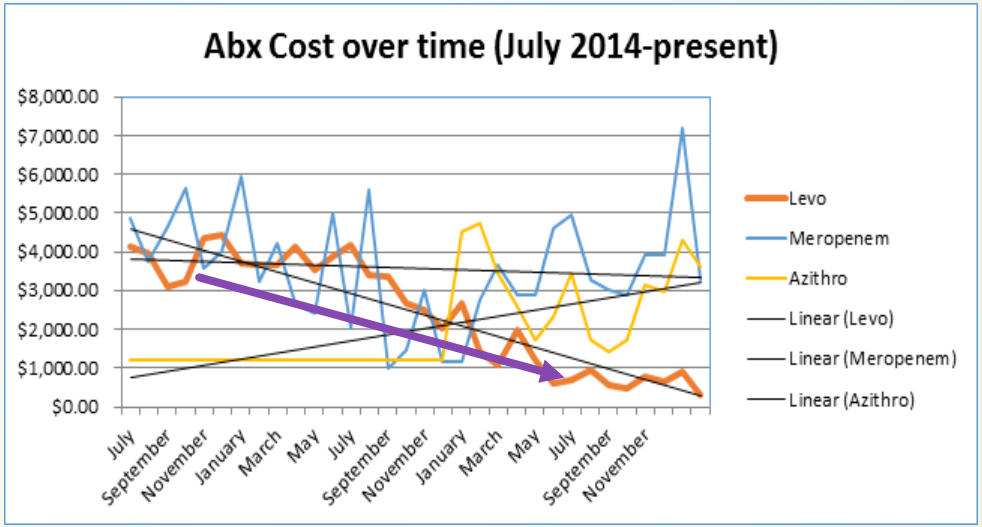
Patient is PCN/Beta lactam allergic

Consider CEFEPIME for: UTI or Neutropenic Fever

Consider CEFTRIAXONE for: Community Acquired Pneumonia, Cellulitis or Meningitis

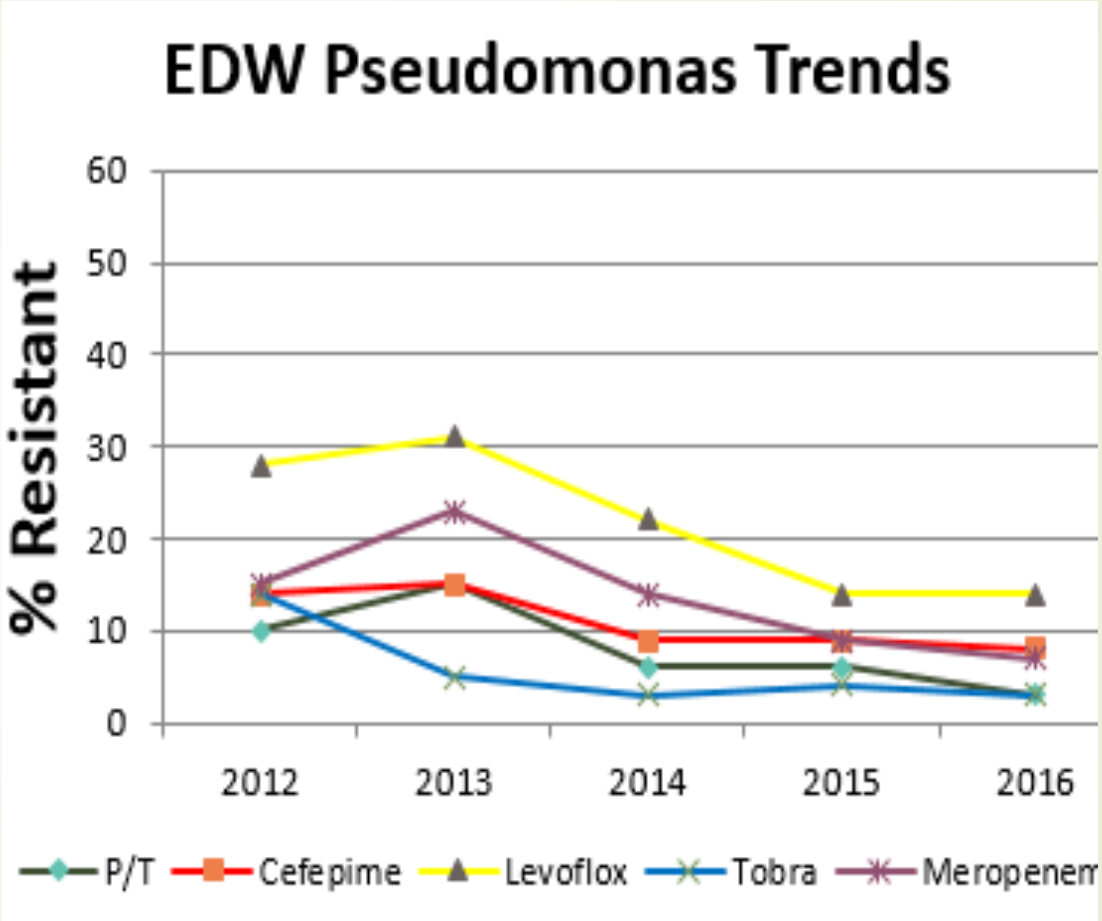
- ○ If NO TRUE PCN ALLERGY: Zosyn 3.375 g IVPB q8h
  Intravenous, Every 8 hours, Starting 6/13/17, @RULESMARTLINKALL (826040,EEHIPED30MINUTEINFUSION)@
- ○ If allergy NOT severe or lifethreatening: meropenem 500 mg IVPB q8h
  500 mg, Intravenous, Every 8 hours, Starting 6/13/17
- ◉ If allergy LIFE-THREATENING
  - ☑ aztreonam (AZACTAM) 1 g in sodium chloride 0.9 % 100 mL IVPB-minibag
    1 g, Intravenous, at 200 mL/hr, Every 6 hours, First Dose Today at 1700
  - ☑ Vancomycin HCl (VANCOCIN) 2,000 mg in sodium chloride 0.9 % 500 mL IVPB
    2,000 mg (rounded from 1,851 mg = 15 mg/kg × 123.4 kg), Intravenous, at 250 mL/hr, Once, Today at 1700, For 1 dose
  - ☑ IP Consult to Pharmacy Once
    Routine, Once First occurrence Today at 1650
  - ☐ for suspected ANAEROBIC infection: Flagyl 500 mg IV q8h
    500 mg, Intravenous, Every 8 hours
- ○ CEPHALOSPORIN TOLERANT: Ceftriaxone panel for patients > 100 kg

Usage


Abx Cost over time (July 2014-present)
$8,000.00
$7,000.00
$6,000.00
$5,000.00
$4,000.00
$3,000.00
$2,000.00
$1,000.00
$0.00
July
September
November
January
March
May
July
September
November
January
March
May
July
September
November
Levo
Meropenem
Azithro
Linear (Levo)
Linear (Meropenem)
Linear (Azithro)

Resistance

- Pseudomonas
- E. coli
- Enterococcus
- Enterobacter



Rights of Decision Support

1. Right information
2. Right person
3. Right format
4. Right channel
5. Right workflow

Goals

- Passive
- Don’t interrupt workflow
- Anticipate
- Emulate
- Easy

NOTHING ABOUT ME WITHOUT ME

A CHIO'S JOURNEY THROUGH MEDICAL IDENTITY MIX-UP

JOSEPH H SCHNEIDER, MD

"**THE FUTURE'S SO BRIGHT, I GOTTA WEAR SHADES...POWERED BY AMDIS**"

OJAI, JUNE 2017

IDENTITY MATCHING THEORY: JOURNAL AMERICAN STATISTICAL ASSOC. (1969)

A THEORY FOR RECORD LINKAGE*

IVAN P. FELLEGI AND ALAN B. SUNTER
Dominion Bureau of Statistics

A mathematical model is developed to provide a theoretical framework for a computer-oriented solution to the problem of recognizing those records in two files which represent identical persons, objects or events (said to be *matched*).

SELECTED CHALLENGES IN MATCHING

- Same EMR: Attributes change over time
  - My transgender niece was male, is now female with a new name
- Different EMRs: Systems collect different demographics
  - EMR #1 uses the insurance card name; EMR #2 uses driver's license
- Quality is often invisible
  - Matching algorithms are kept hidden – or secret
  - Performance is frequently hidden but reports of 10% mismatch occur
  - No standards for public reporting of match and non-match rates

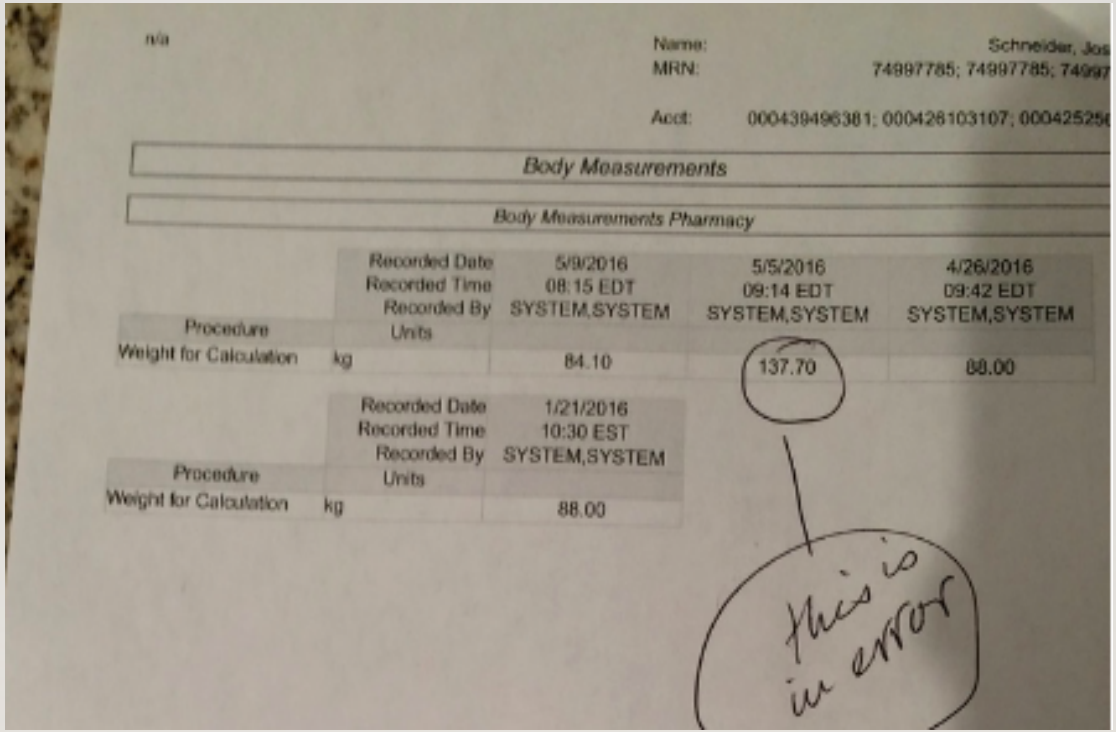
ATTENTION TO MATCHING HAS INCREASED RECENTLY

- ECRI recently issued a safety report with some best practices
- Pew Foundation has hired a Director of Patient Matching and is investigating a voluntary identifier approach, among others
- CHIME challenge finalists appear focused on biometrics
- ONC has a challenge ($75,000) to improve matching
- CMS is now allowed to assist in the development of a process for improving matching

THE IMPACT OF MISMATCHES CAN BE HUGE

- "Patients are misidentified 10% of the time, a reality that poses a serious threat to patient safety. 9% of misidentifications result in medical error" *Private communication, Imprivata*
- Both consolidating inappropriately and failure to consolidate have led to catastrophic wrong clinical decisions

WHAT HAPPENED:
MY WEIGHT CHANGED BY ~50 KG



n/a

Name: Schneider, Jos
MRN: 74997785; 74997785; 7499
Acct: 000439496381; 000426103107; 00042525

Body Measurements

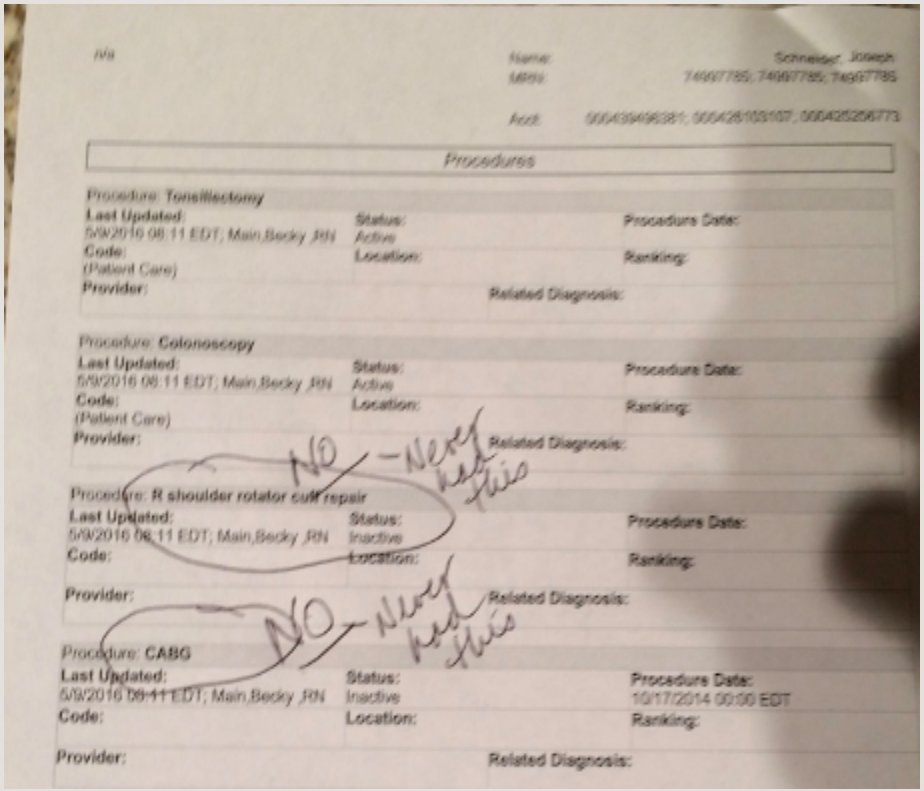
Body Measurements Pharmacy

Procedure	Units	Recorded Date / Recorded Time / Recorded By	5/9/2016 08:15 EDT SYSTEM,SYSTEM	5/5/2016 09:14 EDT SYSTEM,SYSTEM	4/26/2016 09:42 EDT SYSTEM,SYSTEM
Weight for Calculation	kg		84.10	137.70	88.00

Procedure	Units	Recorded Date / Recorded Time / Recorded By	1/21/2016 10:30 EST SYSTEM,SYSTEM
Weight for Calculation	kg		88.00

this is in error

WHAT HAPPENED:
I HAD TWO NEW SURGERIES



N/a

Name: Schneider, Joseph
MRN: 74997785; 74997785; 74997785
Acct: 000439496381; 000428103107; 000425256773

Procedures

Procedure: Tonsillectomy
Last Updated: 5/9/2016 08:11 EDT; Main,Becky ,RN
Status: Active
Procedure Date:
Code: (Patient Care)
Location:
Ranking:
Provider:
Related Diagnosis:

Procedure: Colonoscopy
Last Updated: 5/9/2016 08:11 EDT; Main,Becky ,RN
Status: Active
Procedure Date:
Code: (Patient Care)
Location:
Ranking:
Provider:
Related Diagnosis:

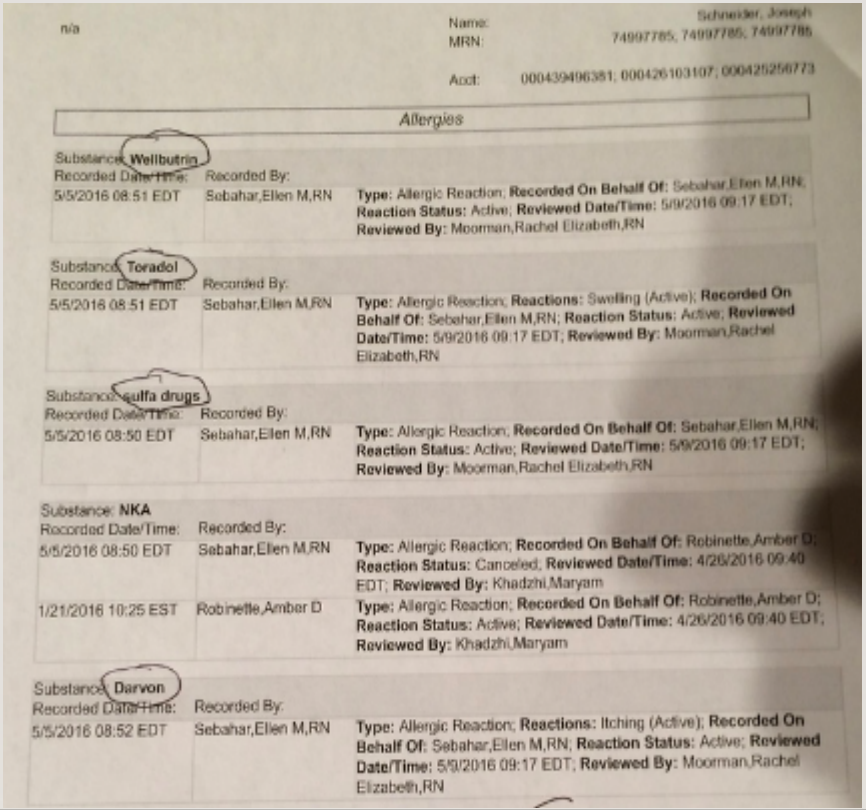
NO - Never had this

Procedure: R shoulder rotator cuff repair
Last Updated: 5/9/2016 08:11 EDT; Main,Becky ,RN
Status: Inactive
Procedure Date:
Code:
Location:
Ranking:
Provider:
Related Diagnosis:

NO - Never had this

Procedure: CABG
Last Updated: 5/9/2016 08:11 EDT; Main,Becky ,RN
Status: Inactive
Procedure Date: 10/17/2014 00:00 EDT
Code:
Location:
Ranking:
Provider:
Related Diagnosis:

WHAT HAPPENED:
I GOT FOUR NEW ALLERGIES



n/a

Name: Schneider, Joseph
MRN: 74997785; 74997785; 74997785
Acct: 000439496351; 000426103107; 000425256773

Allergies

Substance: **Wellbutrin**

Recorded Date/Time:	Recorded By:	
5/5/2016 08:51 EDT	Sebahar,Ellen M,RN	**Type:** Allergic Reaction; **Recorded On Behalf Of:** Sebahar,Ellen M,RN; **Reaction Status:** Active; **Reviewed Date/Time:** 5/9/2016 09:17 EDT; **Reviewed By:** Moorman,Rachel Elizabeth,RN

Substance: **Toradol**

Recorded Date/Time:	Recorded By:	
5/5/2016 08:51 EDT	Sebahar,Ellen M,RN	**Type:** Allergic Reaction; **Reactions:** Swelling (Active); **Recorded On Behalf Of:** Sebahar,Ellen M,RN; **Reaction Status:** Active; **Reviewed Date/Time:** 5/9/2016 09:17 EDT; **Reviewed By:** Moorman,Rachel Elizabeth,RN

Substance: **sulfa drugs**

Recorded Date/Time:	Recorded By:	
5/5/2016 08:50 EDT	Sebahar,Ellen M,RN	**Type:** Allergic Reaction; **Recorded On Behalf Of:** Sebahar,Ellen M,RN; **Reaction Status:** Active; **Reviewed Date/Time:** 5/9/2016 09:17 EDT; **Reviewed By:** Moorman,Rachel Elizabeth,RN

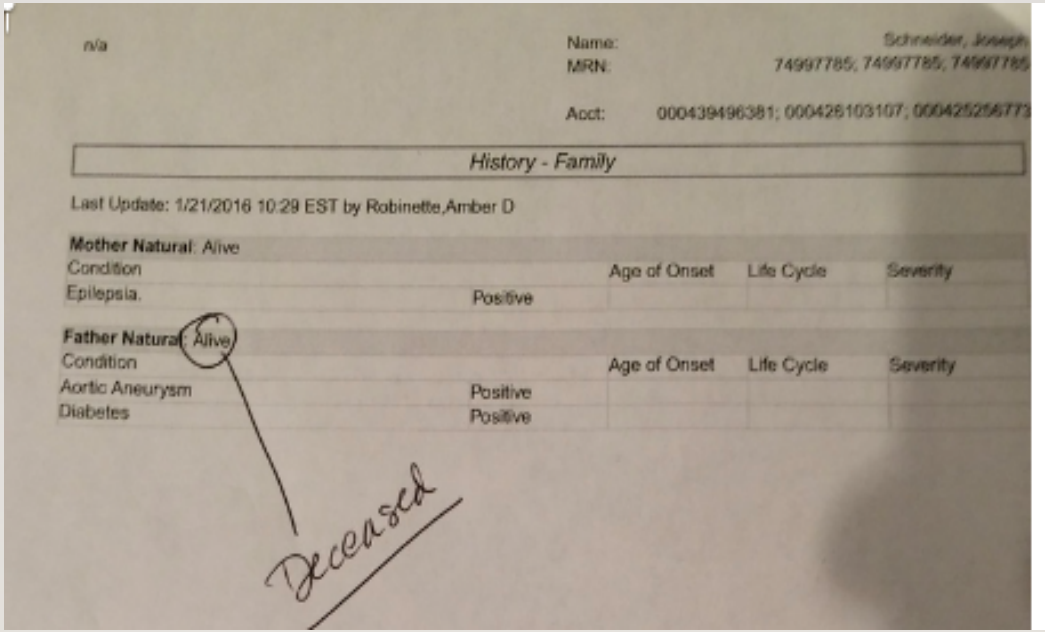
Substance: **NKA**

Recorded Date/Time:	Recorded By:	
5/5/2016 08:50 EDT	Sebahar,Ellen M,RN	**Type:** Allergic Reaction; **Recorded On Behalf Of:** Robinette,Amber D; **Reaction Status:** Canceled; **Reviewed Date/Time:** 4/26/2016 09:40 EDT; **Reviewed By:** Khadzhi,Maryam
1/21/2016 10:25 EST	Robinette,Amber D	**Type:** Allergic Reaction; **Recorded On Behalf Of:** Robinette,Amber D; **Reaction Status:** Active; **Reviewed Date/Time:** 4/26/2016 09:40 EDT; **Reviewed By:** Khadzhi,Maryam

Substance: **Darvon**

Recorded Date/Time:	Recorded By:	
5/5/2016 08:52 EDT	Sebahar,Ellen M,RN	**Type:** Allergic Reaction; **Reactions:** Itching (Active); **Recorded On Behalf Of:** Sebahar,Ellen M,RN; **Reaction Status:** Active; **Reviewed Date/Time:** 5/9/2016 09:17 EDT; **Reviewed By:** Moorman,Rachel Elizabeth,RN

WHAT HAPPENED:
MY FATHER CAME BACK FROM THE DEAD



n/a

Name: Schneider, Joseph
MRN: 74997785; 74997785; 74997785
Acct: 000439496381; 000426103107; 000425256773

History - Family

Last Update: 1/21/2016 10:29 EST by Robinette,Amber D

Mother Natural: Alive

Condition		Age of Onset	Life Cycle	Severity
Epilepsia.	Positive			

Father Natural: Alive

Condition		Age of Onset	Life Cycle	Severity
Aortic Aneurysm	Positive			
Diabetes	Positive			

Deceased

HOW WE CLEANED MY MEDICAL RECORD (HOPEFULLY)

- I had to review over 125 pages after just three visits and one simple procedure
- HIM was very cooperative (I was the CHIO), but what if I was not?
- I was lucky because my procedure was 4 days after the error occurred
- Unknowns:
  - Did data go to the local health information exchange?
  - Did we get everything?

"NOTHING ABOUT ME WITHOUT ME" & IDENTITY MATCHING – SOME QUESTIONS

"Nothing about me without me"

Valerie Billingham, *Through the Patient's Eyes,* Salzburg Seminar Session 356, 1998

- Is matching a decision-making process where patients should be asked to *actively confirm* their identity before matching can occur?
- Should I as a patient have the right to protect my identity from error?
  - Currently it is assumed that I have no rights; matching is often not in consent forms
- Should I as a patient have the right to control WHAT is consolidated?
  - A trichomonas visit 15 years ago is irrelevant to a podiatrist treating my ingrown toenail
  - How could we educate patients/families on what should/should not be merged?

POSSIBLE SOLUTIONS?

- Better matching algorithms
- Biometrics (would not have worked in my case)
  - Some more “invasive” than others,e.g., fingerprints/retinal scanning versus palm veins
- Mandatory national identifier (less likely in the next 3 - 7 years?)
- Verato’s big-data “Universal MPI”? (scary?)
- Patient-involvement solutions:
  - Bank-like ”ask me lots of personal questions” approaches
  - A voluntary identifier (e.g., Global Patient Identifiers, https://gpii.info)
  - Health record banking or person-managed personal health records (not incented the way EHRs have)

The likely answer is that there is probably no one answer

A VOLUNTARY IDENTIFIER?

- Patient controlled
- Increases responsibility
- Ensures appropriate matching
- Can be carried on your smart phone or whatever is best for you
- Allows privacy protections controlled by the individual
- Barrier: Significant culture change, but it is possible

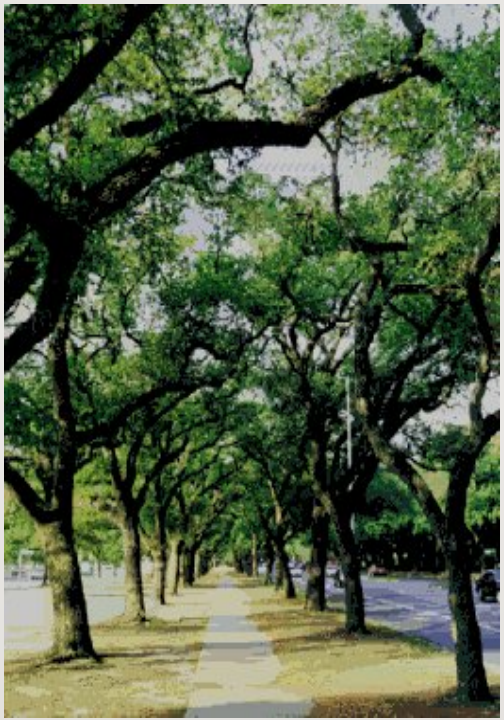
FOOD FOR THOUGHT FROM DR. WEED REGARDING PATIENT EMPOWERMENT

"…NLM leadership has also [agreed] with a point that my father was discussing the day before his death: 'Patients are sitting on a treasure trove of data about their own medical conditions' -- data that now goes largely unidentified and unexamined. Such data will never be effectively harvested until patients routinely access an informational infrastructure designed to elicit the right data linked to medical knowledge about what the data mean. Physicians are unable to collect or assess those data with sufficient detail or accuracy. In contrast, the right infrastructure would enable patients to do much of the work themselves and then seek out practitioners who agree to use the same infrastructure to complete the process jointly with their patients. In that way, patients can both improve their own care and drive systemic reform of medical practice."

Lincoln Weed, 2017

THE FUTURE'S SO BRIGHT I GOTTA WEAR SHADES POWERED BY AMDIS 

LET'S BUILD A DIFFERENT FUTURE TOGETHER



drjoes1tx@gmail.com

Geisinger
Holy Spirit

Schreiber's 10 sociotechnical steps for a successful EHR migration, or "How I learned to love all over again": A Cautionary Tale

"The Future's So Bright, I Gotta Wear Shades... Powered by AMDIS": An AMDIS POW talk

Richard Schreiber, MD, FACP
Diplomate, Clinical Informatics
Chief Medical Informatics Officer
Geisinger Holy Spirit
22 June 2017, Ojai, CA

Schreiber's 10 sociotechnical steps to a successful migration

1. Play the field.
2. Trust but verify.

G Octo Barnett, MD. Report to NIH September 26, 1966 (!)

"I am concerned with the scientific integrity of the approach that allows a broad statement that the computer can do tasks X, Y, and Z . . .

X can be done only on a limited demonstration basis in an artificial environment, . . .

Y is being seriously considered as an area to be programmed three years hence . . .

and Z looks like a challenging problem . . .

The failure to discriminate between present and future speculations has been one of the major causes of frustration and misunderstanding in the medical applications of computer science."

Schreiber's 10 sociotechnical steps to a successful migration

1. Play the field.
2. Trust but verify.
3. Construct a prenuptial agreement.
4. Keep your sense of humor.
5. Change transformation experts are essential (CMIO).
6. Treat the project as you would a patient.
7. AsPIRE (assessment, plan, implement, evaluate, reassess)
8. Ask for help. Never be afraid to seek extra resources.
9. Look for the gaps. Discover current deficiencies = opportunities for improvement.
10. There will be grieving.

Richard Schreiber, MD, FACP
rschreiber@Geisinger.edu

The future is so Bright “Shades”...AMDIS 2018

Watch out for presentation submission requests on AMDIS Listserve Spring 2018 or drop a note to:

kmcenery@mdanderson.org

For notification when “The Future is so Bright - 2018” submissions are open…