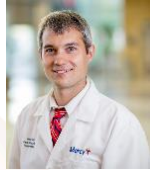


Bi-Directional Immunization Data Transmission



Mercy Clinic East Communities

Kevin King, MD

Mercy Clinic Family Medicine Kirkwood
Adult Primary Quality, Safety, Value Committee Co-Chair

National Adult and Influenza Immunization Summit (NAIS)
Atlanta, Georgia | May 14, 2019 | 12:00pm EST



East Community

Hospitals & Ambulatory Sites

As of January 2018

- 5 acute care hospitals
- 1 heart hospital
- 1 rehab hospital
- 1 children's hospital
- 1 virtual care command center
- 340 physician practices
- 112 clinic locations
- 4 outpatient surgery centers
- 15 urgent care sites
- 4 convenient care centers

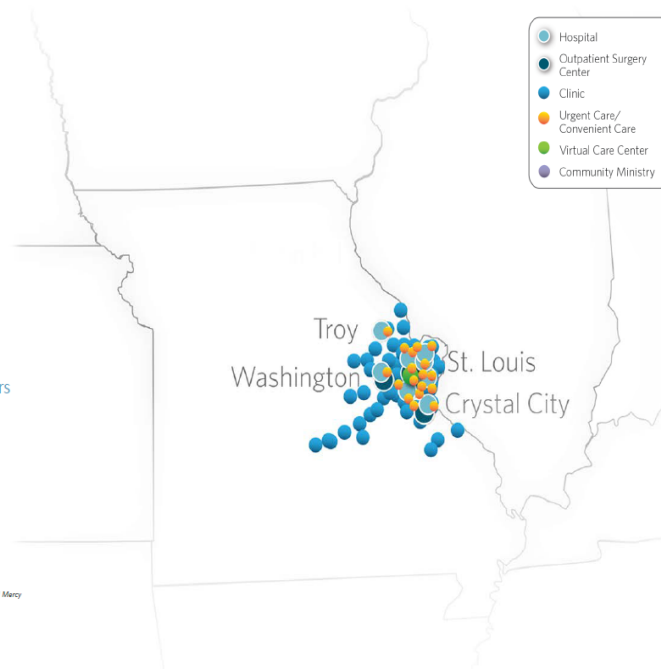
Medical Staff & Co-workers

- 20,000 co-workers including
- 800 integrated physicians

Utilization FY17

- 1,390 staffed beds
- 10,134 births
- 52,131 surgeries
- 59,679 inpatient discharges
- 3,812,183 outpatient/office visits
- 182,321 ED visits

Note: Utilization includes June 2017 data for St. Anthony's | Mercy



Learning Objectives

- Mercy's EMR Journey
- Establishing a Bi-Directional Immunization Data Interface
- Regulatory Compliance
- Successes, Challenges, and Ongoing Work
- Clinic Provider and Co-Worker Experience
- Immunization Rates at Mercy
- Key Learning and Replicability

Our EMR Journey

- EMR was implemented in the clinic in 2003, and at the hospitals in 2009. This has helped to hardwire quality improvement processes.
 - Hospital “Best Practice Alerts” for both pneumococcal vaccines.
 - Bi-directional feed between EMR and State Registries in 2012.
 - Up-to-date immunization records in “Health Maintenance” and the “Daily Visit Planner” in 2013.
 - Improved functionality to identify and close gaps using the “Encounter guide” in 2018.



Establishing a Bi-Directional Immunization Data Interface



Regulatory Compliance

- Meaningful Use
 - American Reinvestment and Recovery Act 2009
 - Incentives
 - Stage 1: to test and establish a connection between one's EHR and local ISS
 - Stage 2: requires ongoing data submission
- Immunization Information Services (ISS)
 - Confidential, population-based, computerized databases that record all immunization doses administered by participating providers
 - Point of Clinical Care and Population Level
 - Consolidates Records
 - Privacy and Confidentiality
 - Timely immunizations
 - Clinical Decision Support
 - Data Exchange

<https://www.cdc.gov/vaccines/programs/iis/meaningful-use/index.html>
<https://www.cdc.gov/vaccines/programs/iis/about.html>



Bi-Directional Data Transmission

- Initial build started in 2012
- Mercy is currently connected to 7 state registries:
 - Arkansas, California, Kansas, Louisiana, Nevada, Indiana and Missouri
- We've also assisted in setting up interfaces to:
 - Maryland, Virginia, West Virginia
- Oklahoma stopped connectivity back in 2014, to upgrade systems, and has recently asked that we go thru the process of re-establishing connectivity

Bi-Directional Data Transmission

- Mercy administers and sends on average 2,400 vaccines a day.
- Unable to determine how many vaccines we receive from outside sources.
- Successes
 - Real time data, point of clinical care
 - Population Health
 - Vaccines for Children Program (VFC)
- Ongoing work
 - Enhancing interfaces; working with local pharmacies and county health department
 - Engaging specialty office vaccine administration
 - Leveraging EMR (e.g. targeting at risk and high risk pneumonia)

Challenges

- Initially there was a learning curve with Engine connectivity to the registries.
- Now it's keeping up with the security concerns, and the everchanging Meaningful Use requirements as registries update.
- Each state's requirements are different.
- Not all immunizations are reported
 - Only clinics registered within the state, for patients that live within the state.
- Co-workers must manually click a button to “pull-in” and reconcile outside immunizations in our EMR.
- Adding new facilities/clinics to a state registries can be an arduous process.

Pearls of Wisdom

- One centralized registry would be a positive step – that acts as a repository for all states, all vaccines, and from all reporters.... regardless of where the patient lives.
- Current state does not give a complete picture of a person's vaccines.

Clinic Provider & Co-Worker Experience



Immunization Registry

Immunizations/Injections ⁵

 **New immunizations from outside sources are available for reconciliation ⁵**

DTaP Hep B IPV Combined Vaccine IM 9/24/2013

DTaP Hib IPV Combined Vaccine IM 11/26/2014, 8/8/2014, 5/27/2014

[DTaP Vaccine < 7 YO IM 7/19/2017, 11/26/2014, 8/8/2014, ...](#)

Hepatitis A Vaccine 8/8/2016, 7/1/2015

Hepatitis A Vaccine Ped Adol IM 2 Dose 4/19/2017, 8/18/2016

Hepatitis B Vaccine 8/8/2014, 5/27/2014, 9/24/2013, ...

Hepatitis B Vaccine Ped Adol IM 3 Dose 8/8/2014, 5/27/2014, 5/10/2013

Hib PRP-OMP Vaccine IM 3 Dose 9/24/2013

Hib Vaccine 11/26/2014, 8/8/2014, 5/27/2014, ...

IPV/OPV 7/19/2017

Influenza Vaccine Quad Split 6 Mos+ Im 11/1/2017

MMR Vaccine SQ 7/19/2017, 8/8/2014

PREVNAR (PCV13) pneumococcal 13-valent conjugate Vaccine 11/26/2014, 8/8/2014, 5/27/2014

Pneumococcal 13-valent Conjugate Vaccine 8/18/2016, 11/26/2014, 8/8/2014, ...

Poliovirus IPV 11/26/2014, 8/8/2014, 5/27/2014, ...

Varicella Vaccine Live SQ 7/19/2017, 8/8/2014



Immunization Registry

Reconcile Outside Info

Outside of Local Medical Record

Immunization Reconciliation History

Administered On

New Immunizations

Fluarix Quadrivalent Prefilled Syringe (6+ months) New 11/1/2017

Add as: Influenza Vaccine Quad Split 6 Mos+ Im

Date	Received	To be saved as	Dose	Manufacturer	Lot #	Source
11/1/2017	Fluarix Quadrivalent Prefilled Syringe (6+ months)	Influenza Vaccine Quad Split 6 Mos+ Im	5 mL	GlaxoSmithKline	CX775	CVS Health & MinuteClinic

Current Immunizations in Local Medical Record

Immunization	Administered On
DTaP Hep B IPV Combined Vaccine IM	9/24/2013
DTaP Hib IPV Combined Vaccine IM	11/26/2014, 8/8/2014, 5/27/2014
DTaP Vaccine < 7 YO IM	7/19/2017, 11/26/2014, 8/8/2014, 5/27/2014, 9/24/2013
Hepatitis A Vaccine	8/8/2016, 7/1/2015
Hepatitis A Vaccine Ped Adol IM 2 Dose	4/19/2017, 8/18/2016
Hepatitis B Vaccine	8/8/2014, 5/27/2014, 9/24/2013, 5/9/2013
Hepatitis B Vaccine Ped Adol IM 3 Dose	8/8/2014, 5/27/2014, 5/10/2013

Note: Outside medications are available for reconciliation.

Next Accept Cancel

13 | Mercy+

Immunization Registry

Reconcile Outside Info

SHINGRIX, PF, 50 mcg/0.5 mL Suspension for Reconstitution On 8/22/2018 Local Medical Record

Dispense Date: 1/17/2019

Dispense Date	Outside Name	Pharmacy	Quantity	Refills remaining
1/17/2019	SHINGRIX 50MCG/0.5ML (MISSED) VL19PK	Walgreens Drug Store 6078 - FENTON, MO - 701 GRAVOIS BLUFFS BLVD AT HWY 141 & GRAVOIS BLUFFS	1.00	Unspecified 0

Days supply: 1 Slip: ADM 9 SML IM UTD Authorized by: RICHARDS, DAVID

Note: Outside immunizations are available for reconciliation.

Next Accept Cancel

Medications

New medications from outside sources are available for reconciliation

- ramipril (ALTACE) 5 mg capsule
- rocuronium (ROSTOR) 10 mg tablet
- benzocaine (ITESSA) 200 mg capsule
- SHINGRIX, PF, 50 mcg/0.5 mL Suspension for Reconstitution
- ibuprofen acetone (KENDALOS) 0.1 % Ointment
- aspirin (ECOTRIN EQ) 81 mg Tablet, Delayed Release (E.C.)
- ERGOCALCIFEROL, VITAMIN D2 (VITAMIN D ORAL)
- Omega-3 fatty acids-vitamin E (FISH OIL) 1,000 mg Capsule

Opioid Risk Low 0-3, Mod 4-7, High 8 or greater from encounters over the past 365 days

No data recorded

Problem List

Complex Diagnosis

Hypertension

14 | Mercy+

Immunization Registry

Daily Visit Planner

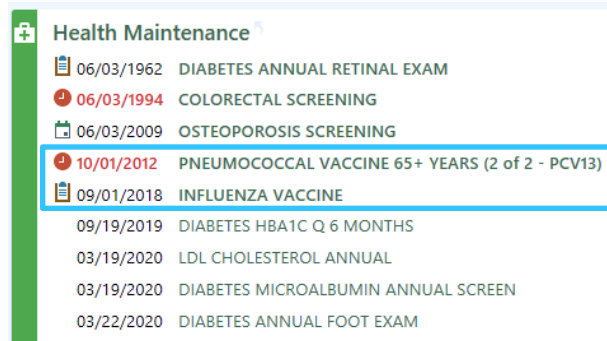
- Identifies gaps in care
- Utilized by the medical assistant during rooming
- Sources of data:
 - EMR
 - Integrated databases
 - State immunization registry
 - Insurance claims
 - Medicare claims
 - Lab
 - Mercy legacy EMR

Measure	Result	Date	Freq	Src
Last Visit	--	4/3/19	--	E
Medications Reviewed	--	4/3/19	Visit	E
Flu Vaccine	--	10/27/18	1 Yr	M
Pneumonia Vaccine	PREVNAR	12/18/15	Lifetime	E
Tobacco Assessment	Quit	4/3/19	2 Yrs	E

Measure	Result	Date	Freq	Src
Last Visit	--	4/15/19	--	E
Medications Reviewed	--	4/15/19	Visit	E
Flu Vaccine	--	10/9/17*	1 Yr	E
Pneumonia Vaccine	--	DUE	Lifetime	--
Tobacco Assessment	Never	4/15/19	2 Yrs	E

Health Maintenance

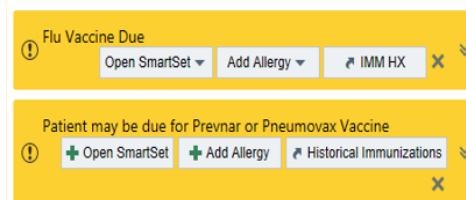
- Epic registry pulls data
 - Many times requires manual entry of data
 - Unable to pull some data for reporting



A screenshot of the Epic Health Maintenance list. The list contains several items with dates and descriptions. The item '10/01/2012 PNEUMOCOCCAL VACCINE 65+ YEARS (2 of 2 - PCV13)' is highlighted with a blue box. Other items include '06/03/1962 DIABETES ANNUAL RETINAL EXAM', '06/03/1994 COLORECTAL SCREENING', '06/03/2009 OSTEOPOROSIS SCREENING', '09/01/2018 INFLUENZA VACCINE', '09/19/2019 DIABETES HBA1C Q 6 MONTHS', '03/19/2020 LDL CHOLESTEROL ANNUAL', '03/19/2020 DIABETES MICROALBUMIN ANNUAL SCREEN', and '03/22/2020 DIABETES ANNUAL FOOT EXAM'.

Encounter Guide

- Launched in 2018. Improved functionality to identify and close gaps in care.
- 2 immunizations included on the adult encounter guide
 - Influenza
 - Pneumococcal
- 13 immunizations included on the pediatric encounter guide
 - Meningococcal
 - Tdap
 - Dtap
 - Hep A
 - Hep B
 - HIB
 - MMR
 - Rotavirus
 - IPV
 - Zostavax
 - Influenza
 - PCV 13
 - HPV

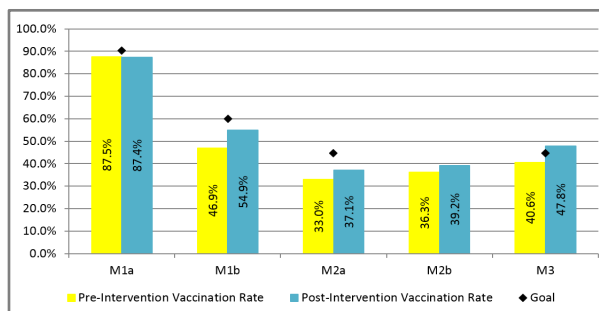


Two screenshots of Epic encounter guide pop-ups. The top one is titled 'Flu Vaccine Due' and contains buttons for 'Open SmartSet', 'Add Allergy', and 'IMM HX'. The bottom one is titled 'Patient may be due for Prevnar or Pneumovax Vaccine' and contains buttons for 'Open SmartSet', 'Add Allergy', and 'Historical Immunizations'.

How Has All of This Improved Immunization Rates at Mercy?



Mercy Clinic Adult AI Collaborative Pre-Intervention vs. Post-Intervention Rates



Pre-Intervention Reporting Period:
 Pneumococcal Vaccines: 1/1/16-12/31/16
 Influenza Vaccine: 7/1/15-6/30/16

Post-Intervention Reporting Period:
 Pneumococcal Vaccines: 1/1/18-3/31/18
 Influenza Vaccine: 4/1/18-6/30/18

- M1a:** Patients 65+ who have received ONE pneumococcal vaccination
- M1b:** Patients 65+ who have received BOTH pneumococcal vaccinations
- M2a:** High-Risk Patients 19-64 who have received a pneumococcal vaccination
- M2b:** At-Risk patients 19-64 who have received a pneumococcal vaccination
- M3:** Patients 18+ who have received an influenza vaccination



Key Learning & Replicability

- Leveraging technology is key to improving healthcare.
- It can be arduous work to establish new interfaces, and keep up with security concerns and everchanging Meaningful Use requirements for multiple state registries.

21 | 

Questions?

Thank you all very much





