

Fellow Graduate Presentation

Kathee Liang, MD
Family Medicine
2nd Year Clinical Informatics Fellow



About Me

Education:

- Washington University in St. Louis
- UMass Chan Medical School

Post Graduate Education:

- Cleveland Clinic Family Medicine Residency,
 Chief Resident
- MetroHealth Clinical Informatics Fellowship

Job Experience:

- Epic Systems Implementation Consultant
- UMass Memorial Informatics Intern

Professional Interests:

- Leveraging data and technology for process improvement
- Value based care and population health
- Health equity

Personal Interests:

- Recreational sports
- Travel, food tours











Agenda

- Certifications and Graduate Coursework
- Academic Presentations
- Projects
- Future Direction

Certifications & Graduate Coursework

- Epic Notecraft for Physician Builders 2022 Versions
- Epic Physician Builder 2022 Versions
- Epic Physician Builder Analytics August 2023 Version
- Epic Healthy Planet Physician Builder August 2023 Version
- Case Western Reserve University Graduate Certificate in Health Informatics
 - CRSP 401: Introduction to Clinical Research
 - PQHS 499: Health Informatics: Management & Systems
 - PQHS 416: All and Computing in Biomedical Health Informatics
 - HSMC 420: Health Finance
- University of Washington Fundamentals of Implementation Science



Academic Posters & Presentations

- FMEC 2022 Utilizing Clinical Informatics Tools to Review SGLT2i and GLP1-ra Prescribing Practices at Two Academic Institutions in Northeast Ohio
- AMDIS 2023 TEDTalk "Inspiring Future Informaticists"
- FMEC 2023 Teaching Epic SlicerDicer: Self-Service Reporting Tools for Residency Quality Improvement
- NAPCRG 2023 A Comparison of Inpatient to Outpatient Social Drivers of Health (SDOH) Screening in a Public Academic Safety-Net Hospital
- OSAM 2023 Data Analysis of Hepatitis C Treatment Before and After Elimination of Sobriety Requirement (K. Kelley)
- AMIA 2023 Annual Symposium Comparing Patient Communication Methods: Patient Portal versus Traditional SMS Messaging to Recruit Patients to a Research Registry
- AMIA 2024 CIC Gender Differences in Physician Electronic Health Record Proficiency and Efficiency Behaviors
- UGM 2024 Tackling the In Basket by Reducing Normal Result Messages
- **SUBMITTED** AMIA 2024 Annual Symposium Tobacco Use in the Socioeconomically *Disadvantaged: Insights from Aggregate Electronic Health Record Data (C Jarrett)*
- **SUBMITTED** AMIA 2024 Annual Symposium *Using Aggregate Electronic Healthcare Record Data to Reproduce Large Scale Clinical Trial (A Kerandi)*



Publications

Liu BD, Udemba SC, Liang K, et al. Shorter-acting glucagon-like peptide-1 receptor agonists are associated with increased development of gastro-oesophageal reflux disease and its complications in patients with type 2 diabetes mellitus: a population-level retrospective matched cohort study. Gut Published Online First: 22 September 2023. doi: 10.1136/gutjnl-2023-329651

Gender Differences in Physician Electronic Health Record Proficiency and Efficiency Behaviors - Resubmitted to Family Medicine 05/2024

A Comparison of Inpatient and Outpatient Screening for Social Drivers of Health (SDOH) in an Academic Safety-Net Hospital – Submitted to Annals of Family Medicine as a Brief Report 03/2024



Projects

- TriNetX Study: Association between GLP1 and GERD
- SlicerDicer for Quality Improvement Curriculum for Family Medicine Residents
- Smoking Cessation SmartSet
- Inpatient SDOH Screening Pilot
- Gender Differences in EHR Use Study
- Simplified Hepatitis C Treatment Pathway
- Normal Results In Basket Workflow
- PSA Screening Care Gap
- Diabetes Continuous Glucose Monitoring
- Nonalcoholic Fatty Liver Disease (NAFLD) Clinical Practice Guidelines
- Positive HIV Screen BPA



Projects

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Smoking Cessation Updates

Storyboard, SmartSet, and Note Updates to facilitate smoking cessation counseling

(12/6/2023). View smoking status on storyboard in primary care departments, directly link to Social History

- New smoking cessation counseling note with billing information
- Updated medications with prescribing guidelines and recommended sigs for nicotine replacement therapy, bupropion, and varenicline
- Updated referrals with help text
- Updated patient education materials

Orders placed by new tools in past month





Gender Differences in EHR Use

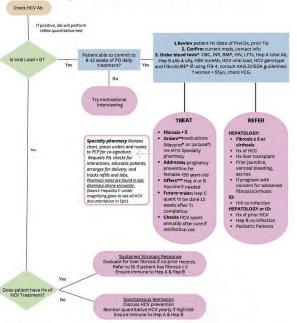
Retrospective observational study of ambulatory EHR use for adult primary care and medical subspecialty physicians at MetroHealth. Epic provided Proficiency Score (PS, 0-10), derived from customization and efficiency tool utilization. Primary outcomes were PS, time in system per day, and time in system per appointment stratified by gender. Multiple variable linear regression was used to determine if gender differences persisted with the inclusion of other factors.

- Women physicians have higher PS
- Multivariable analysis showed gender was not associated with time in EHR
- PS was associated with greater EHR time per appointment
- It important to consider if additional time in the EHR is a mark of quality care and clinical diligence

Simplified Hepatitis C Treatment Pathway

SmartSet and Note Template for Primary Care and Addiction Providers to treat Hepatitis C

MetroHealth
Simplified HCV Treatment



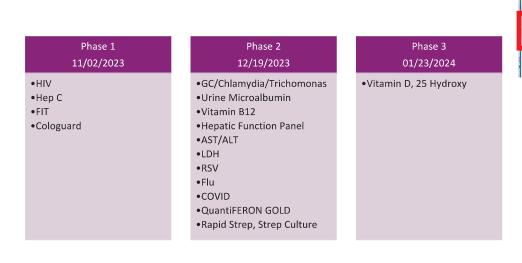
Number of Outpatient Prescriptions by Authorizing Provider Specialty

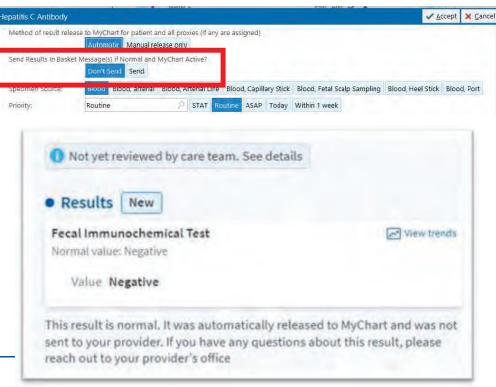
Last T year by month

	*		2023	3				«		2	024		
	Jun 12 - Jun 30	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	MTD
Authorizing Provider Specialty													
ID & GI	16	25	30	26	32	26	17	25	22	15	52	15	12
Primary Care & Addiction	4	3	6	11	9	8	8	10	6	8	14	15	5
Other	1	3	0	2	0	5	1	0	2	1	2	5	0
Total*	21	31	36	39	41	39	26	35	30	24	68	35	17

Normal Results In Basket Workflow

Results In Basket Messages for **normal** results are **not sent** by default for patients with MyChart. Normal results will continue to be automatically released to MyChart





7/17/2025

Normal Results In Basket Workflow

Normal Results Not Routed Since Go-Live (as of 6/17/24)

Lab Name	Not Routed Count	Not Routed %	Total Count
HEPATIC FUNCTION PANEL	16257	33.4%	48690
VITAMIN B12 (CYANOCOBALAMIN)	11259	47.5%	23683
GC/CHLAMYDIA/TRICHOMONAS AMPLIFICATION	10684	58.5%	18273
HIV1 HIV2 AGAB SCRN	10070	74.3%	13549
HEPATITIS C ANTIBODY	7918	71.8%	11032
VITAMIN D, 25-HYDROXY	6341	22.7%	27982
MICROALBUMIN, URINE	4771	39.2%	12178
FECAL IMMUNOCHEMICAL TEST (FIT)	4765	67.2%	7094
GC/CHLAMYDIA AMPLIFICATION	4154	64.0%	6489
CULTURE FOR BETA-HEMOLYTIC STREP	4095	57.1%	7168
RAPID STREP A W/CULTURE REFLEX	3253	50.3%	6464
COVID/INFLUENZA	2034	33.6%	6062
ALANINE AMINO TRANSFERASE	1717	49.7%	3457
QUANTIFERON-TB GOLD PLUS	1476	32.3%	4574
ASPARTATE AMINOTRANSFERASE	1137	48.4%	2351
RAPID STREP A-IN OFFICE	948	13.5%	7047
LAB COLOGUARD® COLON CANCER SCREEN	920	49.9%	1844
COVID/INFLUENZA/RSV	871	45.8%	1902
LDH	768	28.1%	2737
NOVEL CORONAVIRUS (COVID-19)	146	27.8%	525
RSV, PCR	24	18.2%	132
INFLUENZA/RSV,RAPID PCR	6	15.4%	39
TOTAL	93614	43.9%	213272



Questions?



Next Steps



Virtual Primary Care Physician

Director of Clinical Informatics and Patient Engagement



Director of Clinical Informatics in Population Health



Next Steps





MetroHealth

Kiron Nair M.D.

Clinical Informatics Fellow



Table of Contents

- Introduction
- Clinical Informatics Fellowship Training
- Selected Projects



Introduction



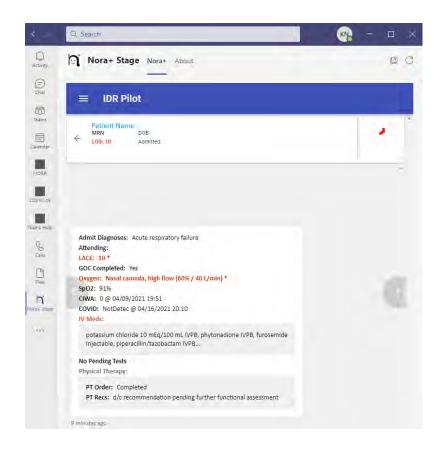








Discovering Informatics







Interdisciplinary Rounds Chatbot to Improve Usability and Workflow Efficiency

Presentations Session 5 - Plan, Analyze, Design, Test, & Refine: Applications of Usability to Improve Care

Kiron Nair M.D. Assistant Professor of Medicine Division of Hospital Medicine North Shore University Hospital Northwell Health Donald and Barbara Zucker School of Medicine at Hofstra/Northwell



Formal Education



- CRSP 401 Introduction to Clinical Research
- PQHS 499 **Health Informatics Management**
- PQHS 416 Computing in Biomedical Informatics
- HSMC 420 Healthcare Finance



- Notecraft
- Physician Builder Basics, Advanced
- Physician Builder Analytics*
- Healthy Planet*



Formal Education



Epic Inpatient Implementation Elective



Quality, Safety and Patient ExperienceElective with Chief Quality Officer



Inpatient Informatics Elective

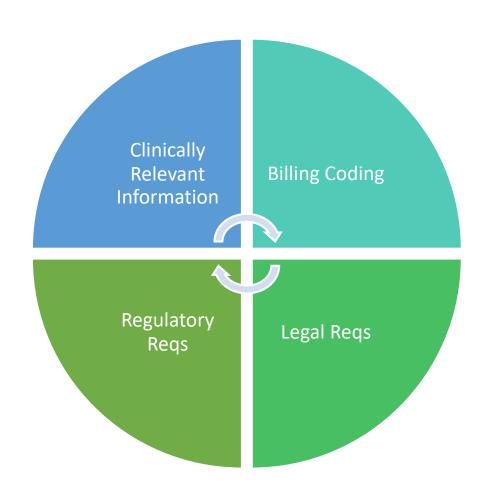


Selected Projects

- Hospital in the Home Patient Dashboard
- Improving Inpatient Documentation
 - Standardized Hospital Medicine Note Template
 - Transitions of Care Documentation
 - Discharge Medication Reconciliation Improvement
- Inpatient SDOH Screening Pilot
- Standardization & Maintenance of the On-Call Finder
- Recreating Landmark HTN Trials in COSMOS
- Food as Medicine Referrals to Food Clinic



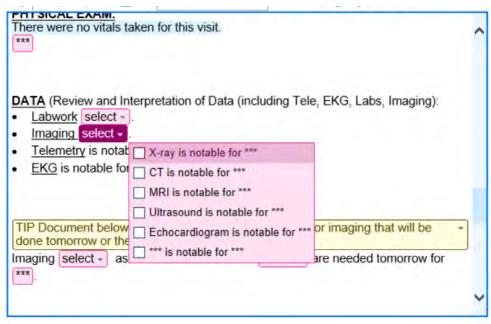
Improving Inpatient Notes



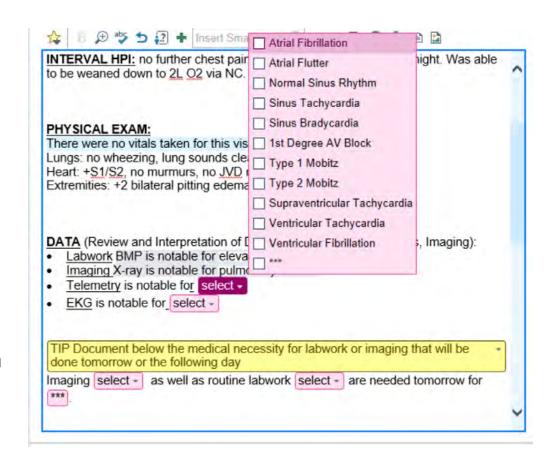
- Note Bloat
- Problem List Reconciliation
- Lack of Standardization



Standardized HM Note Template



- Removed auto-pull in of labs/imaging, focus on documenting interpretation
- Reminders for problem list reconciliation
- Improved readability and usability
- Documentation of high risk meds/communication





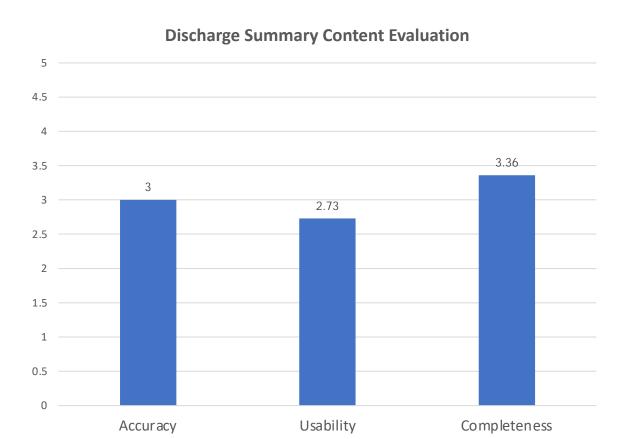
Template Use, Timeframe: 11/03/23 - 01/10/24

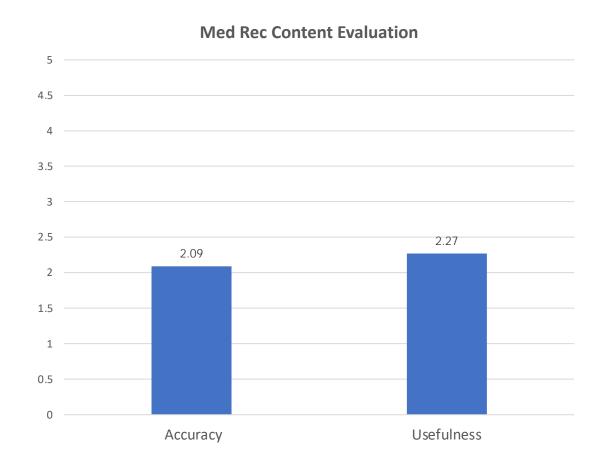
User Type	Result
Attending Physicians	11
APPS	15
Total	26

Measure	Result
Total Number of Uses	1350
Average Number of Uses per Week by any User	20
Average Number of Uses per User	52



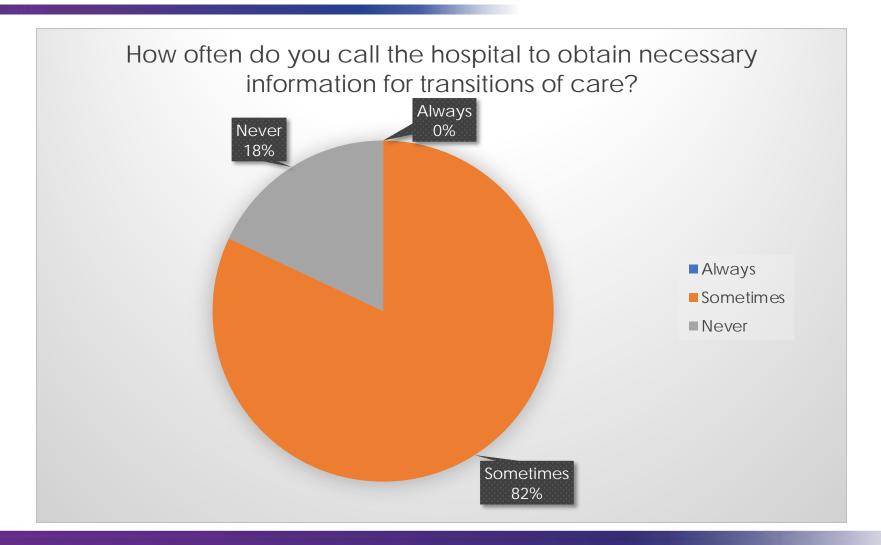
Improving Transitions of Care Documentation





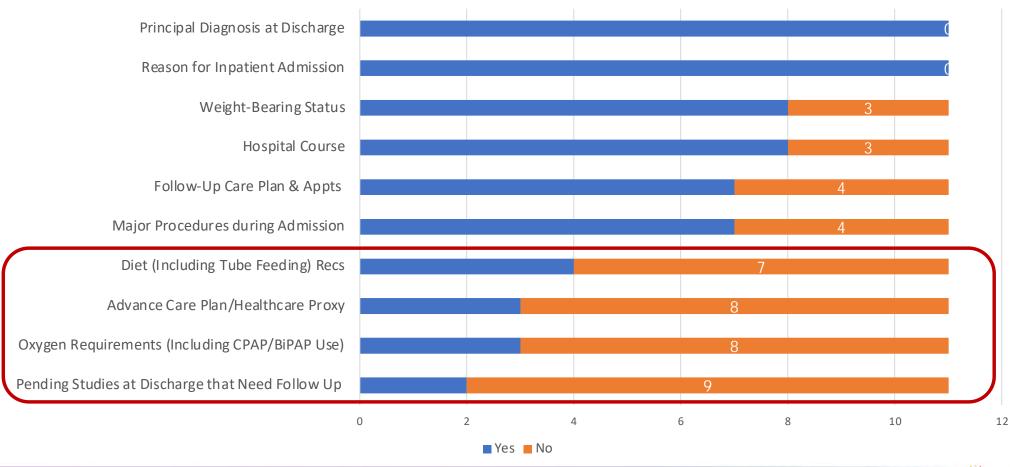


Transitions of Care Documentation



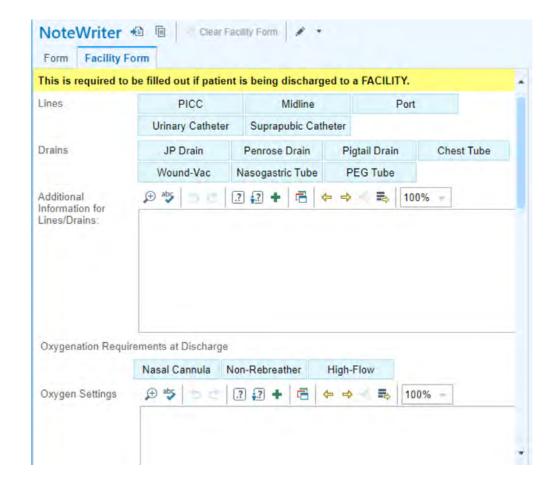
Transitions of Care Documentation

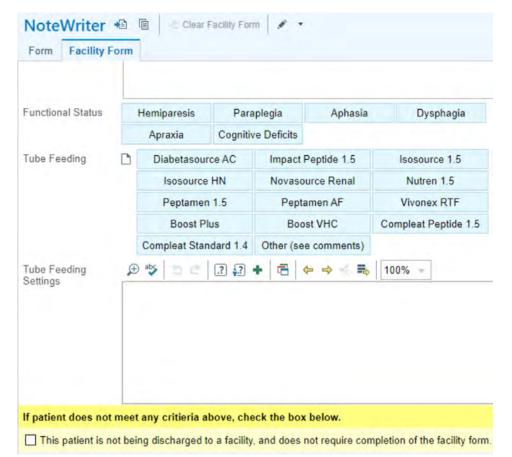
Discharge Summary Component Present





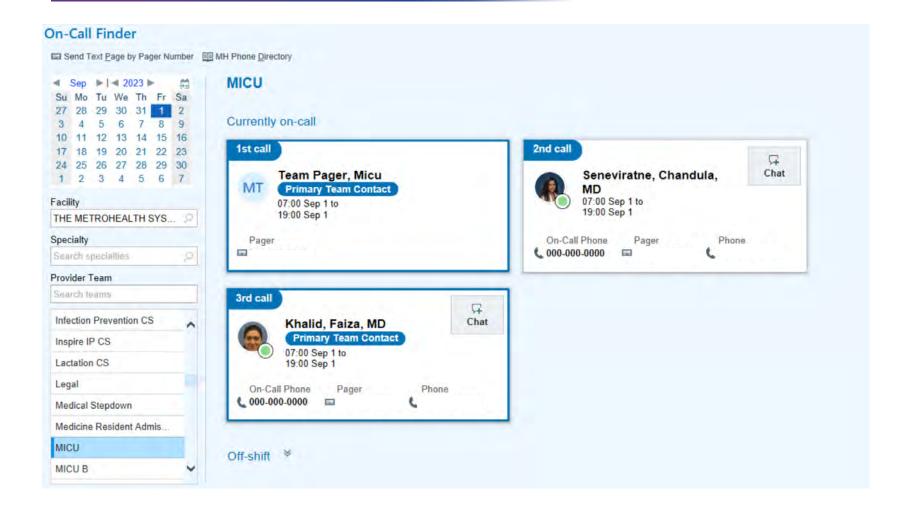
Facility Discharge Form & BPA







Standardization of Processes & Workflows – On Call Finder











Standardization of Processes & Workflows – On Call Finder

Provider
Teams
without
Assignments

Non-Standardized Team Names

Unclear Provider Team Function

Incorrect call order

Consults

	Pager	Notes
Cardiology	Click here	After hours fellow is in the first column (If link does not work, go to Miv>On call schedule>Cardiology) Use "On-Call Finder in Epic. It's usually correct. Call 3C (83731), ask for on call for respective service Overnight, call CICU (75722), ask resident for name of on-call fellow. They usually know.
Dental	207-6745	
Derm		See MIV - Dermatology
Endocrine	207-6557	"Endocrinology consult"
ENT	207-0224	
GI	207-6184	
Heme+Onc	207-3153	
ID	207-2929	"Infectious Disease"
IR		See SmartPhrase 001PHONEIMAGING
Neuro	207-5355	
Neurocritical Care	207-2227	207-6834 for NCC NPs
NeuroSurgery	207-6301	
OB	207-6886	<obstetrics< td=""></obstetrics<>
GYN	207-6806	<gynecology< td=""></gynecology<>
(GYN-ONC)	207-7822	<gyn oncology<="" td=""></gyn>
OMFS	207-1111	
Ophtho	207-3446	



Standardization of Processes & Workflows – On Call Finder

On-Call Finder Naming Convention

Revised April 2023

The Naming Convention will be derived by combining input from the column "Provider Team Name" and the input from the column "Type of Provider Team" (limited to the fields below).

- Inpatient (IP)
- Outpatient (OP)
- ED (ED)

These designations will be separated by "/".

If the Provider Team answers "Yes" to any fields in the "Consult Status" column, it is determined to be a consulting service. Therefore "CS" would have to be added to the end of the name.

**Please note that CS is NOT preceded by "/"

In the example given below, the Provider Team Name is "Orthopedics Adult/Peds", and for the responses to the Type of Provider Team column fields, they responded "Yes" to Inpatient (IP), ED (ED), and Consult (CS). Therefore the standardized name would be: Orthopedics Adult/Peds IP/ED CS

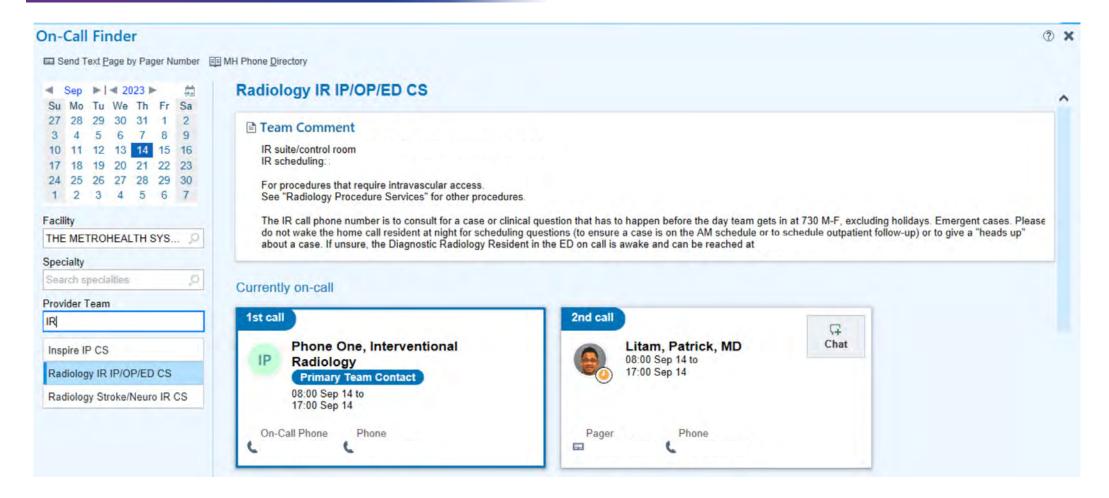
Team ID	Specialty	Provider Team Name	Type of Provider Team	Consult Status	Provider Team Comments	Administrator Responsible for OCF Information Maintenance
Team ID	Specialty name		Outpatient: Yes/No ED (sees patients in ED): Yes/No	IP Consults from Main Campus: Yes/No IP Consults from Parma: Yes/No IP Consults from CH: Yes/No OP Consults: Yes/No	Additional information useful when contacting this team, for example to help distinguish between similarly named teams.	Name of administrator, chief resident, fellow, etc. responsible for maintaining call schedule

Team ID	Specialty	Provider Team Name Type of Provider Team		Consult Status	Provider Team Comments	Administrator Responsible for OCF Information Maintenance			
127	Orthopaedics	Orthopedics Adult/Peds	Outpatient: No ED (sees patients in ED): Yes	IP Consults from Main Campus: Yes IP Consults from Parma: Yes. P Consults from CH: No OP Consults: No	Consult for injuries involving upper extremity from the shoulder to (BUT NOT INCLUDING) the wrist area. For injuries involving the wrist and hand, consult Hand (Ortho/Plastics) IP Cs.	Kevin Kucera			



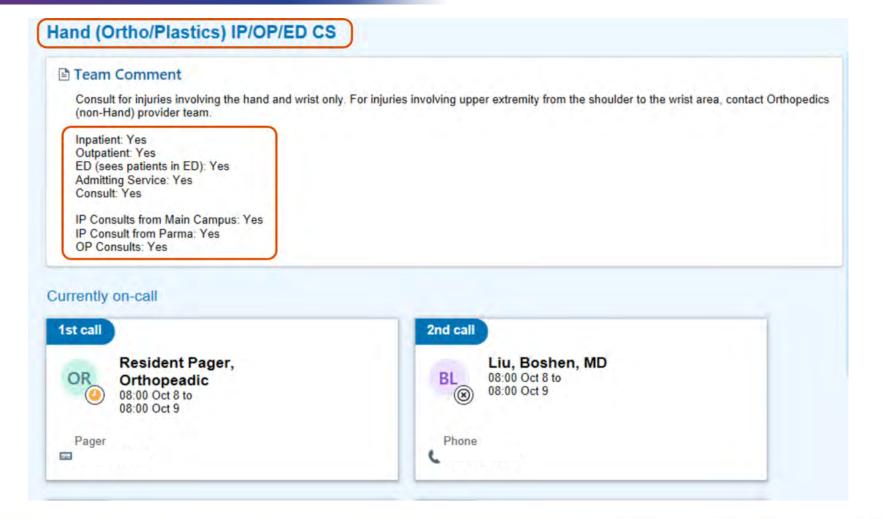
^{**}Please note that the field Admitting Service is not incorporated into the naming convention, although it is the last field in the Type of Provider Team column.

Improving Efficiency – On Call Finder





Improve User Experience - On Call Finder



Results - On Call Finder

Action	Number of Teams
Renamed as per Standardized Naming Convention	104
Team Comments Added	119
Information verified with specialty	145



OCF Maintenance System

OCF Core Team – Capacity Command

Quarterly Audits for Blank Teams

Monthly OCF Core Team Meetings

Issue Tracker & Admin Database



Inpatient SDOH Screening

CMS Mandate for Inpatient Screening

Screen all admitted adults for the 5 SDOH domains

Transportation Interpersonal Safety
Food Insecurity Housing Instability
Utilities Difficulty



2025: pay for performance

Joint Commission Requirements

- Screening for patients from a selected population
- Connect patients with resources
- Track progress in reducing disparities







Multidisciplinary Workgroup

Care Coordination

- Linda Krause, Dir. Care Coordination
- Andrea Colson, Operations Manager
- Allison Turton, Supervisor Population Health, Care Management

Clinical Informatics

- Dr. Kiron Nair, Cl Fellow (Project Leader)
- Dr. Katherine Liang, CI Fellow
- Dr. Johnbuck Creamer, Director of Clinical Informatics for Inpatient Care
- Antonella Vicario, Systems Instructor
- Barb Krakovsky, Systems Analyst
- Stacy Farnan, Sr Clinical Informatics Analyst

Patient Education

- Michelle Menke, Mgr. Pt Education
- Marilee Santiago, Dir Education/Training

Nursing

- Kimberlee Legarth, Director of Nursing Services
- Angela Marvin, RN, Nurse Manager 6E
- Ruby Jackson, RN, Nurse Manager 8E

Population Health Research Institute

Dr. Sarah Sweeney, PHRI Fellow

Institute for Hope

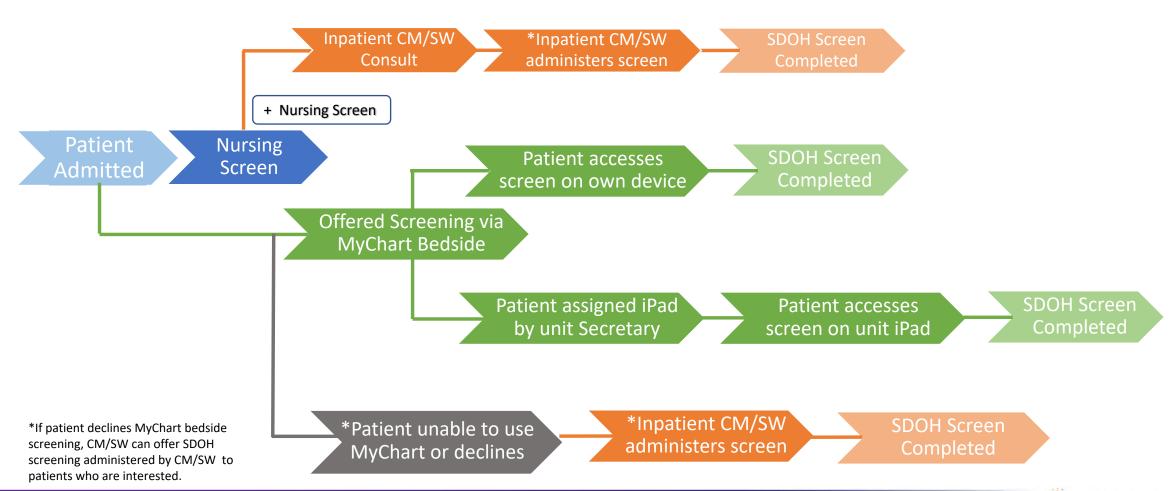
- Mark Kalina, Sr Analyst
- Ekaterina Dubovikova, Change Management Advisor
- Sarah Woernley, Nurse Manager

Information Systems (IS)

- Andrea Orosz
- Noelle Wiser



Screening Workflow - MyChart Bedside Patient Self-Screen vs CM/SW Administered Screen





Risk	Discharge Centric	Screening Method	Responsible Party During Admission	Routing Method
Digital Connectivity	Discharge Centric	MyChart Bedside	I4HOPE CHW	Automatic InBasket Routing to SDOH Request for Assistance Pool
Food Insecurity	Discharge Centric	MyChart Bedside	IP SW/CM	Patient List Notification for CM/SW AND Automatic InBasket Routing to SDOH Request for Assistance Pool
Transportation Needs	Discharge Centric	MyChart Bedside	IP SW/CM	Patient List Notification for CM/SW AND Automatic InBasket Routing to SDOH Request for Assistance Pool
Interpersonal Safety	Discharge Centric	MyChart Bedside	IP SW/CM	Patient List Notification for CM/SW AND Automatic InBasket Routing to Trauma Recovery Pool (they would like it turned off)
Housing Instability	Discharge Centric	MyChart Bedside	IP SW/CM	Patient List Notification for CM/SW AND Automatic InBasket Message to SDOH Request for Assistance Pool
Utility Difficulties	Discharge Centric	MyChart Bedside	IP SW/CIVI	Automatic Workbench Report for currently shut off - via clarity report excel, pulled out of Epic and emailed to Sarah W, CHW, Mark Kalina. Mychart request for assistance Yes and shut off goes to SDOH assistance pool, /Patient List Notification for CM/SW (!). Should go to CM/SW since CHW not available on weekends.
Food Insecurity	Discharge Centric	CM/SW Navigator	IP SW/CM	Patient List Notification for CM/SW
Transportation Needs	Discharge Centric	CM/SW Navigator	IP SW/CM	Patient List Notification for CM/SW
Interpersonal Safety	Discharge Centric	CM/SW Navigator	IP SW/CM	Patient List Notification for CM/SW
Housing Instability	Discharge Centric	CM/SW Navigator	IP SW/CM	Patient List Notification for CM/SW
Digital Connectivity	Discharge Centric	CM/SW Navigator	IP SW/CM	Patient List Notification for CM/SW
Utility Difficulties	Discharge Centric	CM/SW Navigator	IP SW/CM	Automatic Workbench Report for utilities are currently shut off - going into same excel sheet/Patient List Notification for CM/SW (!)
Physical Activity	Non-D/C Centric	MyChart Bedside	Automatic EMMI Content	Automatically Sent via MyChart
Stress	Non-D/C Centric	MyChart Bedside	Automatic EMMI Content	Automatically Sent via MyChart
Social Connections	Non-D/C Centric	MyChart Bedside	Automatic EMMI Content	Automatically Sent via MyChart
Financial Resource Strain	Non-D/C Centric	MyChart Bedside	I4HOPE CHW	Automatic InBasket Routing to SDOH Request for Assistance Pool
Housing Problems	Non-D/C Centric	MyChart Bedside	I4HOPE CHW	Automatic InBasket Routing to SDOH Request for Assistance Pool
Education	Non-D/C Centric	MyChart Bedside	I4HOPE CHW	Automatic InBasket Routing to SDOH Request for Assistance Pool
Employment	Non-D/C Centric	MyChart Bedside	I4HOPE CHW	Automatic InBasket Routing to SDOH Request for Assistance Pool
Physical Activity	Non-D/C Centric	CM/SW Navigator	Automatic EMMI Content	Automatically Sent via MyChart - both for request help, and at risk
Stress	Non-D/C Centric	CM/SW Navigator	Automatic EMMI Content	Automatically Sent via MyChart - both for request help, and at risk
Social Connections	Non-D/C Centric	CM/SW Navigator	Automatic EMMI Content	Automatically Sent via MyChart - both for request help, and at risk
Financial Resource Strain	Non-D/C Centric	CM/SW Navigator	IP SW/CM	Currently no routing method created
Housing Problems	Non-D/C Centric	CM/SW Navigator	IP SW/CM	Currently no routing method created
Education	Non-D/C Centric	CM/SW Navigator	IP SW/CM	Currently no routing method created
Employment	Non-D/C Centric	CM/SW Navigator	IP SW/CM	Currently no routing method created

Workflows To
Address SDOH
Risks and
Requests for
Assistance

Duplicative workflow involving CM/SW and I4HOPE

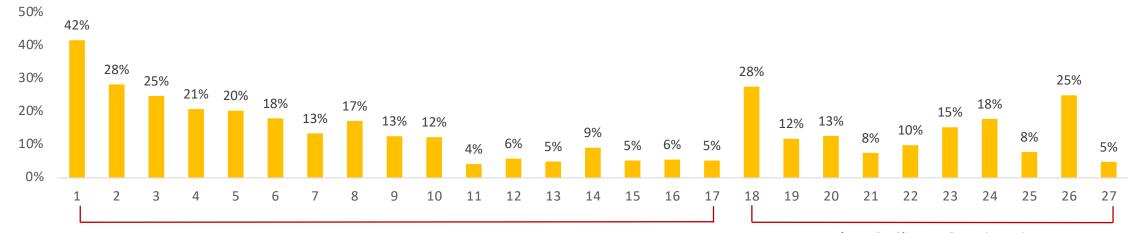
Workflow requiring CM/SW

Workflow requiring further development

MetroHealth

Data - Percentage of Patients Screened 2/11/23 - 08/19/23

Percent of Admitted Patients Screened



Phase 1: Longer Questionnaire

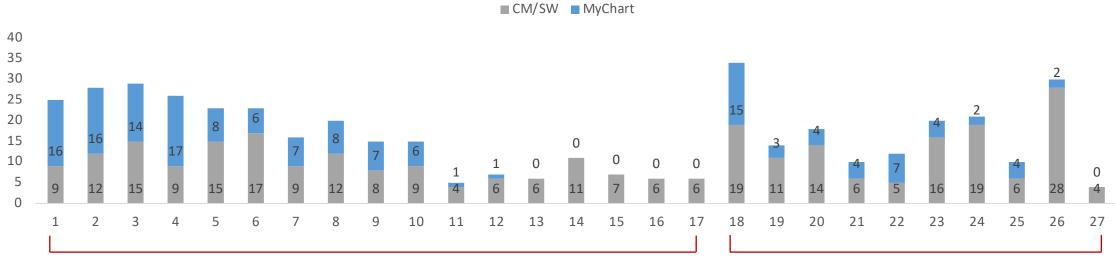
Phase 2: Shorter Questionnaire

Week Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
Overall Screened	25	28	29	26	23	23	16	20	15	15	5	7	6	11	7	6	6	34	14	18	10	12	20	21	397
MyChart	16	16	14	17	8	6	7	8	7	6	1	1	0	0	0	0	0	15	3	4	4	7	4	2	146
% Patient Screened on MyChart	64%	57%	48%	65%	35%	26%	44%	40%	47%	40%	20%	14%	0%	0%	0%	0%	0%	44%	21%	22%	40%	58%	20%	10%	37 %
Admitted Patients	60	99	117	125	113	128	119	116	119	122	121	121	122	121	133	108	114	123	118	142	132	121	131	118	2843
% Admitted Patients Screened	42%	28%	25%	21%	20%	18%	13%	17%	13%	12%	4%	6%	5%	9%	5%	6%	5%	28%	12%	13%	8%	10%	15%	18%	14%



Data – Screening Method By Numbers 2/11/23 – 08/19/23

Number of Patients Screened by Screening Method

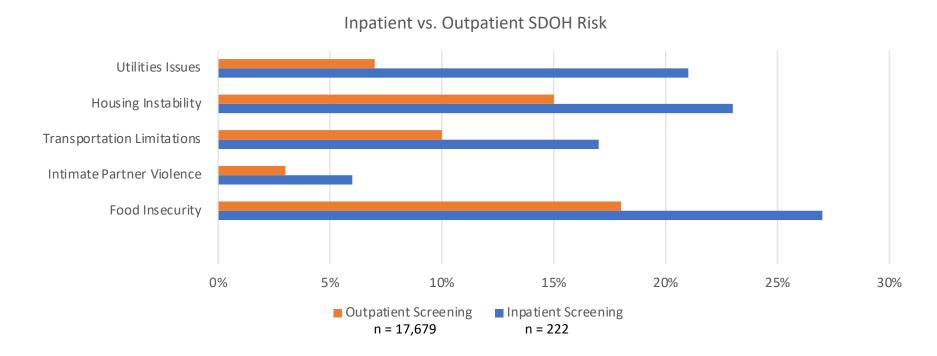


Phase 1: Longer Questionnaire

Phase 2: Shorter Questionnaire



Risk Distribution Inpatient vs. Outpatient Screening



Comparison of risk distribution during the same screening time period (02/2023 – 04/2023). Higher risk seen all 5 CMS-required domains for Inpatient Screening. These findings were statistically significant.



Committees and Scholarship

- National Committees
 - AMIA Clinical Informatics Program
 Directors Marketing Committee
 - Physicians in AMIA Job Description Working Group
- Conference Presentations
 - AMIA CIC 2023
 - Epic XGM 2023
 - AMDIS 2023 Physician-Computer Connection Symposium









After Fellowship



Medical Director for Inpatient Informatics, Hospitalist



