



GETTING EVERYONE ON THE SAME PAGE: DEVELOPMENT AND IMPLEMENTATION OF A MULTIDISCIPLINARY ELECTRONIC DISCHARGE READINESS TOOL

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Background

- Discharge planning often relies on one-way communication and static EHR data-entry.¹
- We developed a new EHR discharge readiness communication tool to communicate discharge status and needs in real-time to all care team providers/services.
- Systematic user-centered design is critical to success.²

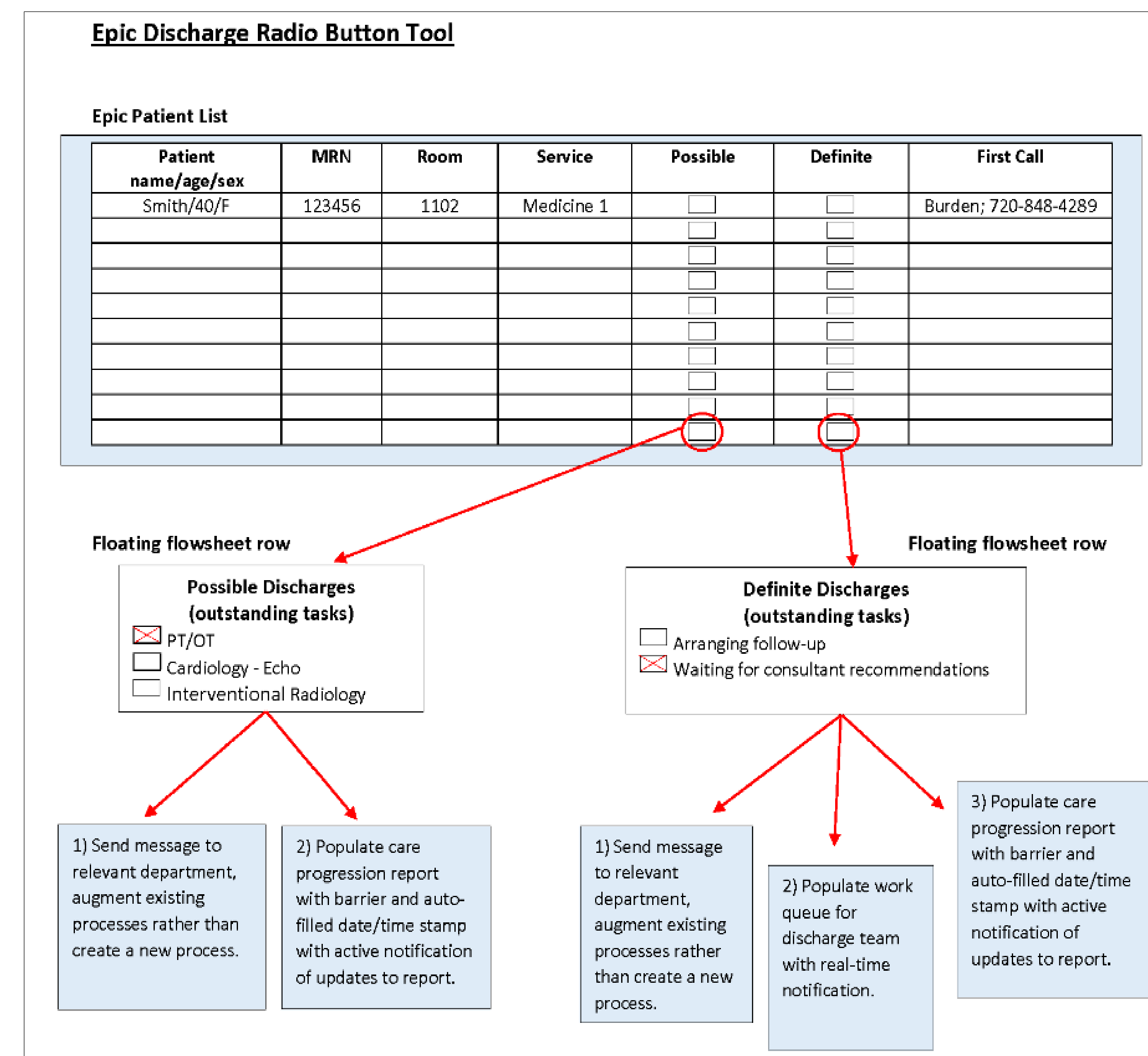
Setting/Population

- University of Colorado Hospital
- Engaging stakeholders across disciplines:
 - Care management, Nurse managers
 - Patients and caregivers, Patient Advisory Panel
 - Epic builders, D2V consultants
 - Hospitalist APPs and MDs
 - Respiratory Therapy, Interventional Radiology, Pharmacy, Glucose Management Team
 - Occupational/Physical/Speech Therapy
 - Echo, Heart & Vascular
 - Consultants including Infectious Diseases, Cardiology, Endocrinology, Hematology, Pulmonary/Critical Care, Nephrology/Dialysis
 - Medicine Clinical Directors

References

- Zoucha J, Hull M, Keniston A, et al. Barriers to Early Hospital Discharge: A Cross-Sectional Study at Five Academic Hospitals. *J Hosp Med* 2018;13:816-22.
- Chokshi SK, Mann DM. Innovating From Within: A Process Model for User-Centered Digital Development in Academic Medical Centers. *JMIR Human Factors* 2018; 5(4):e11048
- Gilmartin H, Lawrence E, Leonard C, McCreight M, Kelley L, Lippmann B, Coy A, Burke R. Brainwriting Premortem: A Novel Focus Group Method to Engage Stakeholders and Identify Preimplementation Barriers. *J Nurs Care Qual* • Vol. 0, No. 0, pp. 1–7

First Low Fidelity Prototype



Pilot Test

1. Click in "D/C Today? Primary" column of the EHR worklist

Patient Name/Age/Gender	Patient Location	Attending	Service	D/C Today? Primary
Schmo, Joe/45/M	Med/Surg Unit	Test, Doctor MD	Medicine	In 24-48 hours
Smith, Jane/60/F	Med/Surg Unit	Test, Doctor MD	Medicine	Definite
Miller, Pete/54/M	Med/Surg Unit	Test, Doctor MD	Medicine	Possible
Rodriguez, Mary/35/F	Med/Surg Unit	Test, Doctor MD	Medicine	Definite
Adams, John/71/M	Med/Surg Unit	Test, Doctor MD	Medicine	Tomorrow
Baker, Sue/48/F	Med/Surg Unit	Test, Doctor MD	Medicine	In 24-48 hours

2. Document discharge readiness and discharge needs

Patient Discharge Today?

Discharge Today? Definite Possible Tomorrow In 24-48 hours >48 hours

When will the patient be ready for DC? Before 11 AM Before 2 PM After 2 PM

What are you waiting on? GMT DME Echo IR PICC Line placement Pharmacy AT/None Co PT OT Speech Dialysis

Follow-up Appointment Placement Social Work/Care Management Transportation

Medical Improvement Test Results (Lab, Radiology) Wound Care

What consults are you waiting for? Cardiology Endocrine GI GI therapeutics Hematology ID Consult Oncology Pulmonary Renal Rheumatology Other consultant not listed

3. Disseminate discharge readiness and pending tasks throughout the EHR work space used by clinicians

D/C Today Partner View

Service	Location	D/C Today - I & J Necessary/Consultant	Single - D/C Today - What are you waiting on? - Antibody	Single - D/C Today - What are you waiting on? - Consultant	Care Progression Report
Med Oncology 2	98181	AMC AOP RAD NUCMED	9/24/2020 12:02		
Med Oncology 2	66101	AMC AP RAD MRS SCAN	9/24/2020 11:55		Social Work/Care Management
Med Oncology 2	11881	AMC MED/GYN/ONC UNIT	9/24/2020 11:55		Pharmacy
Med Oncology 2	98181	AMC MS PROG CARE U.	9/24/2020 12:02		
Med Oncology 2	02491	AMC MED HLTH SVC UNIT	9/24/2020 12:02		

Provider Identified Needs for Discharge

Discharge Today? Definite Possible Tomorrow

When will the patient be ready for DC? Before 11 AM Before 2 PM After 2 PM

What are you waiting on? DME Echo IR PICC Line placement Pharmacy AT/None Co PT OT Speech Dialysis

What consults are you waiting for? Cardiology Endocrine GI GI therapeutics Hematology ID Consult Oncology Pulmonary Renal Rheumatology Other consultant not listed

4. Alert providers that action has been taken via feedback loop mechanism embedded within EHR



Methods

- Applied a pragmatic approach.
- Utilized existing EHR functionality.
- Employed multiple user-centered design strategies:
 - Workflow analysis
 - Iterative low-fidelity prototypes
 - Multi-disciplinary stakeholder meetings
 - Brainwriting Premortem exercise³
 - Pre-production user testing
 - Cognitive task analysis

Results

- 46 modifications requested by users, 54% successfully executed.
- 87.5% providers surveyed reported that the tool either saved time or did not change the amount of time required to complete discharge workflow.
- Responses to open-ended questions offered both positive feedback and opportunities for improvement in the domains of efficiency, integration into workflow, redundancies avoided, expedited communication, and patient-centeredness.

Conclusions

- We have designed a dynamic EHR discharge readiness tool, allowing the care team to communicate the status of patient discharge readiness and patient discharge needs in real-time across hospital settings.
- Survey and EHR data suggest that this electronic discharge readiness tool has been successfully adopted by providers and clinical staff.
- Frequent stakeholder engagement and iterative user-centered design was critical to the successful implementation of this tool.