Implementation of a Standardized Scoring Tool to Promote Safe Discharge of Low-Risk Chest Pain Patients in the Emergency Department

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PURPOSE

This Quality Improvement (QI) project aimed to implement a standardized clinical pathway for Emergency Department (ED) patients with a primary complaint of chest pain and to subsequently increase provider documentation rates of the HEART Score, an ED-specific chest pain risk stratification tool.

DESIGN, SETTING, SAMPLE

Design: A before and after design was utilized based on data submitted to the Michigan Emergency Department Improvement Collaborative (MEDIC). MEDIC is a unique physician-led partnership supported by a major third-party payer aimed at improving outcomes for ED patients in Michigan.

Setting: ED visits within the sampled cohort represent eight different sites including; urban, rural, critical access, and an adult Level 1 trauma center. All sites are staffed by Physicians and Advanced Practice Professionals of Emergency Care Specialists.

Sample: Cases were abstracted for ED visits between January 2021 and December 2021. A total of 5,522 sampled cases were abstracted in accordance with the MEDIC data dictionary, and 2,595 adult ED visits met low-risk inclusion criteria.

METHODS & ANALYSIS

An interdisciplinary team including physicians and nurses collaborated to create a QI bundle to adopt a standardized pathway to evaluate ED patients presenting with a primary complaint of chest pain and to increase documentation of the HEART Score by emergency providers to promote safe patient discharge.

Donabedian's methodology was used as a framework for intervention selection. Major components of the quality improvement bundle are outlined in Table 1 and Figure 1. Excel was used to calculate an unpaired two-tailed-test without the assumption of equal variances which was applied to evaluate the pre- and post-intervention periods for statistical significance (Table 2).

Table 1.

Structure	Process	Outcomes
•Adopt standardized pathways for ED chest pain-related visits. •Build the HEART Score into the electronic health record. •Develop a roadmap to execute the QI project. •Engage physician champions, quality leads and nurse abstractors to support the QI intervention.	•Educate providers on standardized pathway and use of scoring tools. •Analyze trends for HEART Score documentation rates. •Provide individualized and site-specific feedback on HEART Score documentation and safe discharge rates. •Optimize the Electronic Health Record (EHR) to promote documentation and use of tools.	•Greater than 75% of ED patients presenting with a chest pain-related visit will have a documented HEART Score. •≥88% of Low-Risk ED chest pain presentations will be discharged home.

Figure 1.
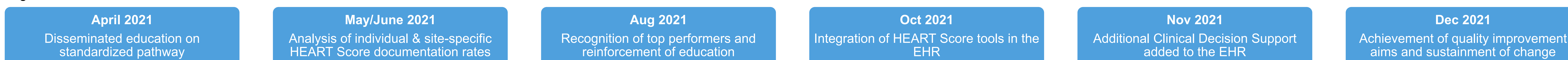
RESULTS

For the pre-intervention period (Jan-March 2021), 32.48 % of chest pain-related visits had a HEART Score documented across eight sites included in the quality improvement cohort. For the post-intervention period (Oct-Dec 2021), 72.61% of chest pain-related visits had a recorded HEART Score (Figure 2).

The unpaired two-tailed-test without the assumption of equal variances demonstrated a statistically significant change in HEART Score documentation across all sites (Table 2). Additionally, safe discharge rates of low-risk chest pain patients were at 97% in December of 2021, favorably above the ≥88% quality benchmark established by MEDIC.
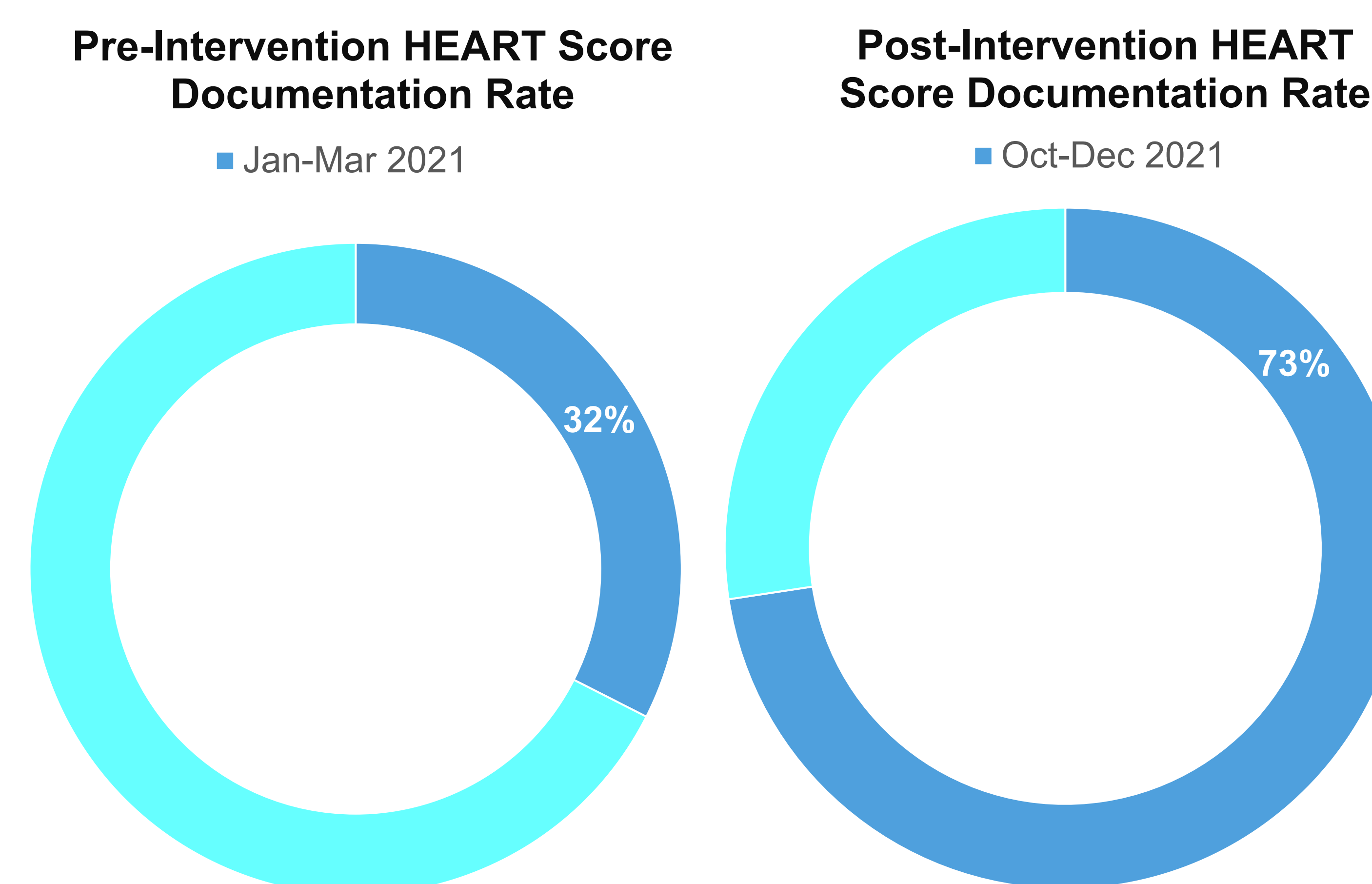
Figure 2.

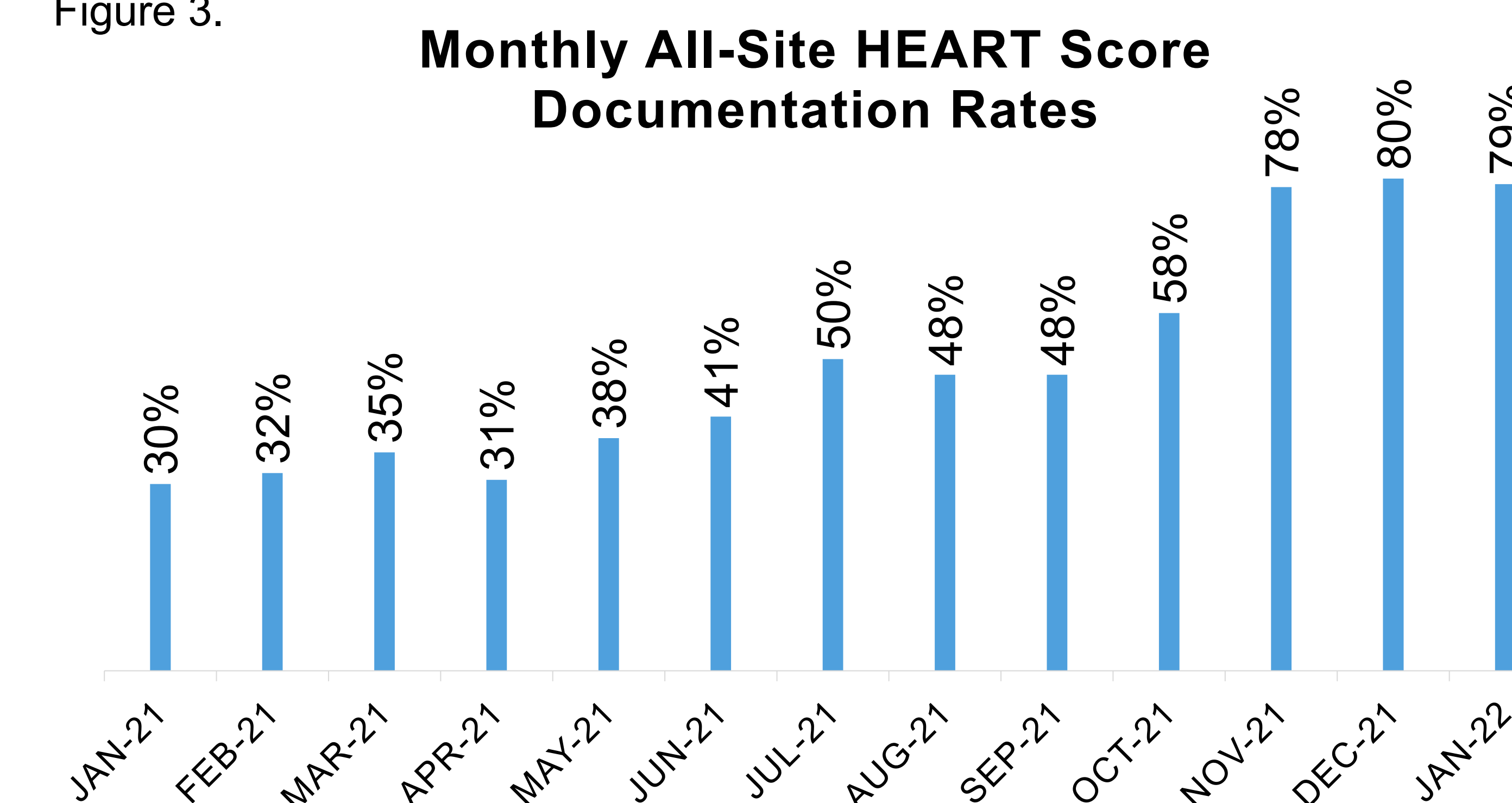**Pre-Intervention HEART Score Documentation Rate**
■ Jan-Mar 2021
32%

Post-Intervention HEART Score Documentation Rate
■ Oct-Dec 2021
73%

Table 2.
HEART Score Documentation Sites by Month

Location	Pre-Intervention	Post-Intervention	P-Value
A	27.1%	69.5%	<0.001
B	25.3%	71.6%	<0.001
C	39.3%	73.8%	<0.001
D	31.4%	70.4%	<0.001
E	40.5%	68.8%	0.003
F	33.9%	63.5%	<0.001
G	35.1%	80.7%	<0.001
H	33.7%	75.2%	<0.001

Note: Site classifications are as follows; Rural – A, D, G, H; Urban – B; Urban, Level 1 Trauma Center – C; Critical Access – E, F.

CONCLUSIONS

- Standardizing the use of an evidence-based risk stratification tool for ED patients presenting with a chest pain-related visit is feasible within a large, multi-center physician group.
- Implementation of the tool and standardized pathway effectively increased the percentage of ED patients with a chest-pain-related diagnosis with a HEART Score documented and improved performance towards the MEDIC quality measure safe discharge for adults with low-risk chest pain.
- By November of 2021, the QI goal of documenting a HEART Score on greater than 75% of patients presenting with a chest pain related diagnosis was achieved and has been subsequently sustained (Figure 3).

Figure 3.

Monthly All-Site HEART Score Documentation Rates

JAN-21	FEB-21	MAR-21	APR-21	MAY-21	JUN-21	JUL-21	AUG-21	SEP-21	OCT-21	NOV-21	DEC-21	JAN-22
30%	32%	35%	31%	38%	41%	50%	48%	48%	58%	78%	80%	79%

ACKNOWLEDGEMENTS

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April 2021	May/June 2021	Aug 2021	Oct 2021	Nov 2021	Dec 2021
Disseminated education on standardized pathway	Analysis of individual & site-specific HEART Score documentation rates	Recognition of top performers and reinforcement of education	Integration of HEART Score tools in the EHR	Additional Clinical Decision Support added to the EHR	Achievement of quality improvement aims and sustainment of change