

Supplementary Material

Article Title: Automated Screening to Enhance Proactive Consultation-Liaison Psychiatry Services in Acute Medicine Units: Evaluation of Service Outcomes

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DOI Number: <https://doi.org/10.4088/PCC.23m03647>

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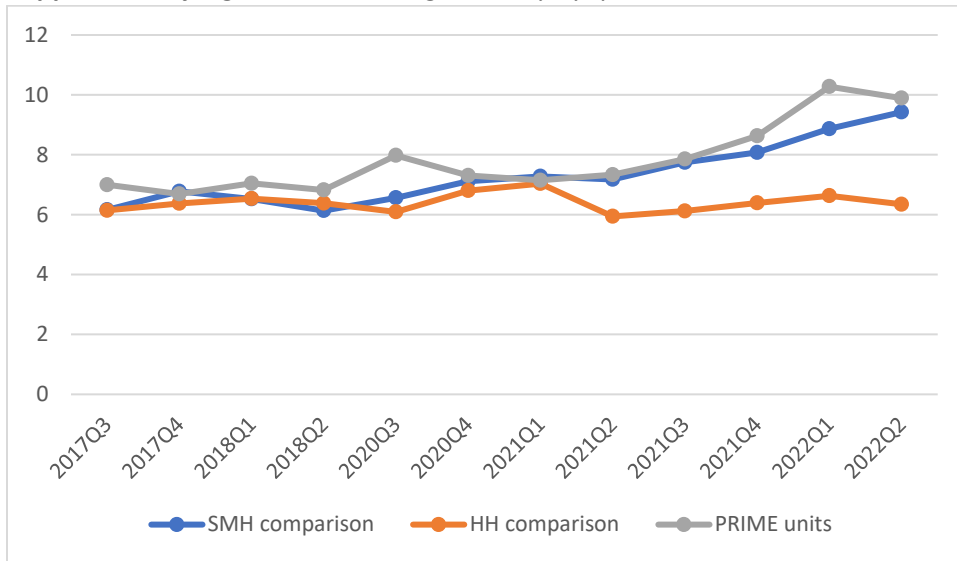
Supplement A: Description of Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)

The HCAHPS survey is a nationally administered, publicly reported survey used across the United States sent to a random sample of adult patients from 48 hours to 6 weeks after discharge.¹ It asks discharged patients 29 questions about their experiences during their recent inpatient episode of care. The sections on the survey include the following topics: care from nurses (4 items), care from doctors (3 items), hospital environment (2 items), experiences in the hospital (5 items), disposition information (3 items), overall rating of hospital (1 item), would they recommend the hospital (1 item), and understanding care on discharge (3 items). Remaining items pertain to demographics and overall health.

Hospitals subject to the Inpatient Prospective Payment System update provisions are required to collect and submit HCAHPS data. HCAHPS data also affect value-based incentive payments in the Hospital Value-Based Purchasing Program.

1. U.S. Centers for Medicare & Medicaid Services. HCAHPS: Patients' Perspectives of Care Survey. (<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/HospitalHCAHPS>).

Supplementary Figure 1: Mean length of stay by quarter



Supplementary Table 1: Items in Electronic Medical Record Screening List^a

Clinical information	Discrete data being populated
Suicidal ideation	Q1, nursing admission screen ^b
Prior suicide attempt	Q2, nursing admission screen ^b
Behavioral activation	Q3, nursing admission screen ^b (“behavioral or emotional disturbance”) Restraints order (non-violent or violent) Sitter (<i>i.e.</i> , 1:1) order (suicide or safety)
Psychiatric morbidity	≥ 3 mental health diagnoses on diagnostic value set
Psychotic disorder	Psychotic disorder diagnostic value set (includes bipolar disorders)
Antipsychotic ^c	Ordered for an antipsychotic or mood stabilizer within the antipsychotic pharmaceutical class
Psychotropics	Ordered for ≥ 3 psychotropics on value set for all medications within the pharmaceutical classes of antipsychotics, antidepressants, stimulants, hypnotics, antianxiety agents, and miscellaneous psychotherapeutics.

^aSee previous publication for details regarding development and performance: Oldham MA, Heaney B, Gleber C, Lee HB, Maeng DD. Using Discrete Form Data in the Electronic Medical Record to Predict the Likelihood of Psychiatric Consultation. *J Acad Consult Liaison Psychiatry* 2023 Oct 17.

^bThe initial nursing evaluation completed after admission asks three questions pertaining to acute risk, and responses are scored as yes or no.

^cThe antipsychotic grouper also included antiemetics with D2 antagonism as well as ondansetron.

Supplementary Table 2: Completed surveys by subgroup

Clinician	Group	Before pilot 2018 ^a	After pilot 2019 ^a	COVID	Before QI 2021	After QI 2022
Practitioners	PRIME	<i>n</i> = 20	<i>n</i> = 21		<i>n</i> = 20	<i>n</i> = 10
	Comparison	--	--		<i>n</i> = 4	<i>n</i> = 2
Nurses	PRIME	<i>n</i> = 32	<i>n</i> = 31		<i>n</i> = 29	<i>n</i> = 19
	Comparison	--	--		<i>n</i> = 37	<i>n</i> = 10

^aSee previous publication for details: Oldham MA, Walsh P, Maeng DD, et al. Integration of a proactive, multidisciplinary mental health team on hospital medicine improves provider and nursing satisfaction. *J Psychosom Res* 2020 Jul;134:110112.

Supplementary Table 3: Nurse survey, PRIME units before and after QI

Subscale	Before QI	After QI	Cohen's <i>d</i>	<i>p</i> -value
	(<i>n</i> = 29)	(<i>n</i> = 19)		
Resource adequacy (4 items) ^a	2.16 (0.80)	2.22 (0.84)	-0.08	0.671
Organizational culture				
Personal and psychological safety (2 items) ^b	2.48 (0.77)	2.61 (0.97)	-0.14	0.863
Time for improvement efforts (2 items) ^c	4.24 (0.64)	4.16 (0.69)	0.13	0.614
Burnout (2 items) ^d	4.17 (0.76)	4.21 (0.89)	-0.05	0.660
Competency survey ^e				
Assessment competency (8 items)	2.08 (0.67)	2.13 (0.91)	-0.06	0.866
Intervention competency (8 items)	2.41 (0.65)	2.50 (0.88)	-0.11	0.751
Aggregate Score (10 items) ^f	30.41 (4.74)	30.84 (7.10)	-0.07	0.891

Subscale scores are on a scale from 1 = strongly agree to 5 = strongly disagree. All subscales scored so that lower values indicate more favorable result. *p*-values shown for Mann Whitney U test.

Abbreviations: QI, quality improvement; SD, standard deviation

^aBehavioral Health Care Competency (BHCC) survey. Resource adequacy domain: 4 items, Cronbach's alpha (α) = 0.70.

^bOne item from Organizational Culture survey (psychological safety) and 1 item on personal safety, $r = 0.33$ ($p = 0.021$).

^cOrganizational Culture Survey: 2 items, $r = 0.49$ ($p < 0.001$).

^dTwo items adapted from Maslach Burnout Inventory. Missing $n_{\text{after QI}} = 1$. Emotional exhaustion item and depersonalization item, $r = 0.63$ ($p < 0.001$).

^eBHCC survey: Missing $n_{\text{after QI}} = 1$. Assessment domain, 8 items, $\alpha = 0.89$. Practice/intervention competency domain: 8 items, $\alpha = 0.89$.

^fAggregate score of 10 items (scale 10 – 50): Missing $n_{\text{after QI}} = 1$. Resource adequacy (4 items), organizational culture (4 items), and burnout items (2 items). Cronbach's alpha (α) = 0.77.

Supplementary Table 4: Nurse survey, Comparison units before and after QI

Subscale	Before QI	After QI	Cohen's <i>d</i>	<i>p</i> -value
	(<i>n</i> = 37)	(<i>n</i> = 10)		
Resource adequacy (4 items) ^a	2.48 (0.89)	2.83 (1.11)	-0.37	0.395
Organizational culture				
Personal and psychological safety (2 items) ^b	3.14 (1.11)	3.35 (0.78)	-0.20	0.655
Time for improvement efforts (2 items) ^c	4.23 (0.76)	4.50 (0.58)	-0.37	0.300
Burnout (2 items) ^d	4.22 (0.82)	4.55 (0.44)	-0.44	0.265
Competency survey ^e				
Assessment competency (8 items)	1.95 (0.52)	1.76 (0.53)	0.37	0.374
Intervention competency (8 items)	2.54 (0.74)	2.41 (0.41)	0.19	0.794
Aggregate Score (10 items) ^f	33.08 (6.41)	36.10 (5.74)	-0.48	0.316

Subscale scores are on a scale from 1 = strongly agree to 5 = strongly disagree. All subscales scored so that lower values indicate more favorable result. *p*-values shown for Mann Whitney U test.

Abbreviations: QI, quality improvement; SD, standard deviation

^aBehavioral Health Care Competency (BHCC) survey. Resource adequacy domain: 4 items, Cronbach's alpha (α) = 0.76.

^bOne item from Organizational Culture survey (psychological safety) and 1 item on personal safety, $r = 0.54$ ($p < 0.001$).

^cOrganizational Culture Survey: 2 items, $r = 0.57$ ($p < 0.001$).

^dTwo items adapted from Maslach Burnout Inventory. Emotional exhaustion item and depersonalization item, $r = 0.56$ ($p < 0.001$).

^eBHCC survey: Assessment domain, 8 items, $\alpha = 0.84$. Practice/intervention competency domain: 8 items, $\alpha = 0.78$.

^fAggregate score of 10 items (scale 10 – 50): Resource adequacy (4 items), organizational culture (4 items), and burnout items (2 items). Cronbach's alpha (α) = 0.79.