




## ORIGINAL ARTICLE

# Geriatric screening in the emergency department increases consultations to geriatric medicine and physical and occupational therapy: A pre/post cohort study

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## Abstract

**Background:** The Geriatric Emergency Department (ED) Guidelines recommend screening older patients for need for evaluation by geriatric medicine, physical therapy (PT), and occupational therapy (OT), but explicit evidence that geriatric screening changes care compared to physician gestalt is lacking. We assessed changes in multidisciplinary consultation after implementation of standardized geriatric screening in the ED.

**Methods:** Retrospective single-site observational cohort of older adult ED patients from 2019 to 2023 with three time periods: (1) preimplementation, (2) implementation of geriatric screening, and (3) postimplementation. Geriatric, PT, and OT consultations/referrals were available during all time periods. Descriptive analysis was stratified by disposition: discharged, observation and discharged, observation and hospital admission, and hospital admission. The independent variable was completion of three geriatric screening tools by ED nurses. The dependent variable was consultation and/or referral to geriatrics, PT, and OT. Secondary outcomes were disposition, ED revisits, and 30-day rehospitalizations.

**Results:** There were 57,775 qualifying ED visits of patients age  $\geq 65$  years during the time periods: implementation increased geriatric screening from 0.5% to 63.2%; postimplementation, discharge patients who received screening had more consultations/referrals to geriatrics (1.5% vs. 0.4%), PT (7.9% vs. 1.9%), and OT (6.5% vs. 1.2%) compared to unscreened patients. Patients observed and then discharged had more consultations/referrals to geriatrics (15.1% vs. 11.3%), PT (74.1% vs. 64.5%), and OT (65.7% vs. 56.5%). Admitted patients had no change in consultation rates. Geriatric screening was not associated with a change in 7-day ED revisits for discharged patients but was associated with decreased revisits for patients discharged from observation (11.6% vs. 42.9%,  $p < 0.001$ ).

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**Conclusion:** Geriatric screening was associated with increased consultations/referrals to geriatrics, PT, and OT in the ED and ED observation unit. This suggests that geriatric screening changes ED care for older adults.

## INTRODUCTION

A geriatric emergency department (ED) is a complex intervention involving screening for geriatric syndromes and obtaining appropriate consultation to multidisciplinary consultants (geriatric medicine, physical therapy [PT], and occupational therapy [OT]) for patients who screen at risk.<sup>1</sup> In research studies, geriatric screening improves the identification of delirium, fall risk, and transition of care needs, but we do not know whether screening and resulting care is better than the current clinical care of trained emergency medicine physicians.<sup>2–4</sup> Geriatric screening could assist physicians in identifying and managing geriatric syndromes, as many report not feeling comfortable with managing fall risk, delirium, and other geriatric syndromes.<sup>5,6</sup> However geriatric screening requires nursing time and additional equipment so it is important to know if this additional time and care changes management. Prior studies of geriatric screening have implemented the bundle of screening and multidisciplinary assessment availability at the same time, so it is unclear if the availability of multidisciplinary teams was the essential factor or whether the screening tools helped physicians identify those in need of multidisciplinary assessment.<sup>2,3,7,8</sup> It is possible that just the introduction of the availability of multidisciplinary teams improves care and that clinical gestalt is sufficient to identify the older patients most likely to benefit from multidisciplinary care without formal screening.

Physician gestalt may be sufficient to recognize some geriatric syndromes, such as hyperactive delirium, but physicians and nurses are less accurate at identifying hypoactive delirium.<sup>9</sup> Similarly, ED physicians and nurses feel confident in consulting therapists for evaluation when the patient needs placement in skilled nursing facilities, but are less sure about when to consult them if a patient is likely to go home.<sup>10</sup> Geriatric screening tools may help physicians make these decisions, but it is also possible that emergency physician gestalt is sufficient to identify the need for multidisciplinary consultation and that the addition of screening tools does not change care. Any additional screening tools added into ED care should have important impacts on patient care and safety.

We introduced ED and ED observation unit–based consultations to geriatric medicine, PT, and OT for older adults with frailty, traumatic injuries, and fall risk in 2015.<sup>11,12</sup> Three years later, geriatric screening for delirium, fall risk, and transitions of care needs was rolled out in the ED observation unit patients (2018) and then to all ED patients (2021).<sup>13</sup> The screening includes the brief delirium triage screen, the 4-Stage Balance Test for fall risk, and the identification of seniors at risk score.<sup>14–16</sup> The geriatric screening tools take less than 3 min for ED nurses to perform and can be pulled into the physician note for review.<sup>17</sup> Therefore, we had a time frame where multidisciplinary consultation was available based on physician gestalt only

and then other time frames where geriatric screening guidance was available to direct multidisciplinary consultation.

The primary objective of this study was to assess the impact of standardized geriatric screening on multidisciplinary consultation rates. Our hypothesis was that screening for delirium, fall risk, and transitions of care needs is associated with an increase in the rate of geriatric and therapy consultations for ED patients. The null hypothesis is that clinical gestalt is sufficient, as evidenced by no difference in consultations between those patients who received screening and those who did not. Secondary outcomes are the impact of screening on disposition, ED revisits, and 30-day rehospitalizations.

## METHODS

### Setting

The study took place at a Level 1 geriatric ED in a large academic health system in the midwestern United States. The hospital is also a Level I trauma center, burn center, and stroke center. Geriatric EDs are programs accredited by the American College of Emergency Physicians as having specific geriatric protocols and policies in place. A Level 3 program has one protocol, a Level 2 program has 10, and a Level 1 program has 20 or more.<sup>18</sup> The study site was accredited in 2018 and has protocols for geriatric screening and multidisciplinary consultation, among others.<sup>18</sup> The ED cares for 82,000 patient visits a year and 20% are adults ≥65 years old. The Strengthening the Reporting of Observational Studies in Epidemiology guidelines were followed.<sup>19</sup>

### Study population

Adult patients age ≥ 65 years with an ED encounter in the 4-year period of March 1, 2019, to February 28, 2023, were included. Patients who left against medical advice or left the ED without being seen were excluded. This is a quality improvement dataset utilized for tracking of screening and outcome reporting for geriatric ED accreditation. As these data were collected for quality improvement purposes, institutional review board approval was not required. The data were approved for publication by the hospital's data quality release committee on October 27, 2023.

### Intervention

The geriatric ED program has been previously described.<sup>1</sup> In brief, the program consists of a two-step intervention. The first step is a

screening bundle of the Brief Delirium Triage Screen, the 4-Stage Balance Test, and the Identifying Seniors at Risk score (ISAR).<sup>14-17</sup> To be considered completed, all three assessments had to be documented by the ED nurse. If the nurse marks why a patient could not be screened (exclusion criteria) this still counts as a complete screen. For example, a patient could be screened with the Brief Delirium Triage Screen and the ISAR, but the nurse documented a medical exclusion to standing them up for balance testing as they were hypotensive. This instance would still count as completed screening. The implementation strategies and measures used to improve uptake of geriatric screening were described in detail previously.<sup>13</sup>

The second step of the intervention bundle is physician team review and determination of need for geriatric, PT, or OT consultation. All physicians received education via emails and resident didactic lessons on when to consult these services. The physician team can pull the screening information into the medical decision-making portion of their note or review the screening in the nurse rounding notes. The physician team then must decide whether to place consultations for geriatric medicine, PT, or OT. The choice to consult a multidisciplinary team and the disposition decision for the patient are made by the ED physician team. For patients who meet medical criteria for discharge, the physician team chooses whether they require urgent evaluation during the ED or ED observation unit visit or are stable for outpatient referral to these teams. Referrals to geriatrics may take 2–3 weeks for an appointment but PT and OT have rapid follow-up clinics for evaluation within 48h of referral. Either assessment in the ED or hospital or referral to these clinics was considered a consultation for the purposes of this analysis. Of note, the ED pharmacy team can also be consulted for assistance with medication reconciliation or medication questions. However, this is usually completed by protocol and without a formal consult order being placed and therefore was not able to be abstracted reliably from our data set. Similarly, case managers and social workers are available for consultation, but these team member consultations were not included in the quality database and so were unavailable for this analysis. Therefore, this analysis focuses on the multidisciplinary team members of geriatrics, PT, and OT.

### Data time periods

A priori three time periods were chosen for separate examination: March 1, 2019–February 28, 2021 (24 months); March 1, 2021–September 30, 2021 (Period 2: implementation, 7 months); and October 1, 2021, to February 28, 2023 (Period 3: postimplementation and stabilization of screening rates, 18 months).

### Data variables

Patients were considered “screened” if all three geriatric screens were performed or the exclusion criteria were documented. Missing variables were considered absent or not done. Other data variables

included were age, arrival by EMS, and disposition from the ED and/or ED observation unit if the patient stayed there. For patients who were hospitalized, the data set included 30-day hospital readmissions. For patients who were discharged, 72-h and 7-day ED revisits are included. Revisits and rehospitalizations to other area health systems are not captured in our quality data. Finally, consultation or referral to geriatrics, PT, and OT are noted. For hospitalized patients, the consultation or referral could occur at any time in their ED or hospital stay. For discharged patients, the consultation or referral occurred in the ED or ED observation unit.

### Data analysis

No sample size calculation was done as our observations consist of the entire cohort of qualifying ED visits. All data are presented as all qualifying older adult ED encounters, stratified by ED disposition and whether all geriatric screens were performed. The population of older adults is described by age categories (65–74, 75–84, and ≥85 years), EMS arrival, and disposition using frequency and percentages. The number and proportion of patients who experienced each of six outcomes is presented. The electronic order of a consult or referral to geriatrics, PT, and OT are reported for all patients. Proportions between groups were compared with chi-square tests. A sensitivity analysis was done to assess for time trends affected by the COVID-19 pandemic. Due to the large numbers of patients in the data set, small changes that are clinically insignificant are still statistically significant. Differences that the authors felt were also clinically significant are noted in the results and the discussion.

## RESULTS

### Participant profile and temporal trends

Patient characteristics and disposition rates for the 57,775 qualifying ED encounters are presented in [Table 1](#). The proportion of older adults in different age groups (65–74, 75–84, and ≥85 years) remained consistent over the four time periods ([Table 1](#)). Admission rates trended from 68.9%, 68.8%, and 66.1%, which was statistically significant. However in the sensitivity analysis (see [Supplemental Data](#)), there was no admission difference between the pre-COVID and postimplementation time frames. Additionally, this admission trend was similar to admission proportions for younger ED patients, which also increased due to the COVID-19 pandemic and then came back down over this time frame.

### Rates of geriatric screening

The proportion of older patients receiving the geriatric screening increased over the time periods from 1.3% to 63.2% overall ([Table 1](#)). In the observation unit, screening was high in both Period 3 and

**TABLE 1** Characteristics of older adults presenting to a Level I accredited geriatric ED during each time period.

	Before implementation, Mar 1, 2019–Feb 28, 2021				Ramp up, Mar 1, 2021–Sep 30, 2021				After implementation, Oct 1, 2021–Feb 28, 2023			
	All, n = 31,681	Screened, n = 407 (1.3%)	Not screened, n = 31,274 (98.7%)		All n = 9110	Screened, n = 3524 (38.7%)	Not screened, n = 5586 (61.3%)		All, n = 21,155	Screened, n = 13,379 (63.2%)	Not screened, n = 7776 (36.8%)	
Age (years)												
65–74	18,634 (58.8)	203 (49.9)	18,431 (58.9)		5129 (56.3)	1889 (53.6)	3240 (58.0)		12,093 (57.2)	7339 (54.9)	4754 (61.1)	
75–84	9484 (29.9)	155 (38.1)	9329 (29.8)		2850 (31.3)	1163 (33.0)	1687 (30.2)		6562 (31.0)	4374 (32.7)	2188 (28.1)	
≥85	3563 (11.3)	49 (12.0)	3514 (11.2)		1131 (12.4)	472 (13.4)	659 (11.8)		2500 (11.8)	1666 (12.5)	834 (10.7)	
EMS arrival												
Yes	16,240 (51.3)	176 (43.2)	16,064 (51.4)		4681 (51.4)	1571 (44.6)	2710 (48.5)		10,563 (49.9)	6920 (51.7)	3643 (46.9)	
No	14,949 (47.2)	230 (56.5)	14,719 (47.1)		4281 (47.0)	1925 (54.6)	2756 (49.3)		10,266 (48.5)	6343 (47.4)	3923 (50.5)	
Missing	492 (1.6)	1 (0.3)	491 (1.6)		148 (1.6)	28 (0.8)	120 (2.2)		326 (1.5)	116 (0.9)	210 (2.7)	
Disposition												
Admitted	21,822 (68.9)	98 (24.1)	21,724 (69.5)*		6271 (68.8)	2399 (68.1)	3872 (69.3)*		13,973 (66.1)	9349 (69.9)	4624 (59.5)*	
Discharged	7278 (23.0)	44 (10.8)	7234 (23.1)*		2080 (22.8)	512 (14.5)	1568 (28.1)*		5358 (25.3)	2450 (18.3)	2908 (37.4)*	
ED observation then admit	732 (2.3)	73 (17.9)	659 (2.1)*		225 (2.5)	181 (5.1)	44 (0.8)*		525 (2.5)	463 (3.5)	62 (0.8)*	
ED observation then discharge	1849 (5.8)	192 (47.2)	1657 (5.3)*		534 (5.9)	432 (12.3)	102 (1.8)*		1299 (6.1)	1117 (8.4)	182 (2.3)*	

Note: All data are presented as n (%) and stratified by whether the patient received geriatric screening for fall risk, delirium, and home transition needs.

\*Denotes  $p < 0.001$  comparing proportions of screened and not screened patients with that disposition and within that time frame.

Period 4 (80.8% and 86.6%, respectively; [Supplemental Data tables](#)). As previously reported, the observation unit had the highest compliance with the geriatrics intervention.<sup>13</sup>

## Geriatrics consultation

Screening was associated with an increased geriatric consult rate in every period for patients discharged from the ED or ED observation unit ([Table 2](#)). In the postimplementation period, screening more than tripled the geriatrics consultation rate for patients only cared for by ED teams, such as those discharged from the ED (1.5% vs. 0.4%, screened vs. unscreened,  $p < 0.001$ ) and the ED observation unit (9.0% vs. 2.2%,  $p < 0.001$ , [Table 3](#)). Screening did not increase the consultation rates for admitted patients (7.2% vs. 7.2%,  $p = 0.90$ ) and or those observed and then admitted (15.1% vs. 11.3%,  $p = 0.42$ ). The screening was associated with increased geriatric consultation for those cared for by the ED team only but not with a change in management of hospitalized patients.

## PT consultation

Overall consultations to PT varied across the time periods (55.2%, 76.5%, and 51.2%, respectively). For patients evaluated only in the ED or ED observation unit (discharged or ED observation and then discharge), screening was associated with an increased the physical consult rate ([Table 3](#)). In the postimplementation period, screening was associated with a quadrupled the rate of PT consults or referrals for patients discharged from the ED (7.9% vs. 1.9%,  $p < 0.001$ , screened vs. unscreened) and doubled rate from the ED observation unit (41.5% vs. 19.2%,  $p < 0.001$ ). Screening was not associated with an increased consultation rate for hospitalized patients.

## OT consultation

Overall consultation to OT varied across the time periods (52.2%, 72.9%, and 48.8%, respectively). Similar to the geriatrics and PT, geriatric screening was associated with an increased OT consultation rate in almost every period for patients discharged from the ED ([Table 3](#)). In the postimplementation period, screening was associated with triple the rate of OT consults or referrals for patients discharged from the ED (6.5% vs. 1.2%, screened vs. unscreened,  $p < 0.001$ ) and double the rate from the ED observation unit (20.2% vs. 8.8%,  $p < 0.001$ ). Screening was not associated with a change in OT consultation in those admitted from the ED or ED observation unit ([Table 3](#)).

## ED revisits

ED revisits are reported as a quality measure only for patients discharged from the ED or ED observation unit. ED revisits overall

**TABLE 2** Repeat ED visits, 30-day readmissions, and services consultation by patient disposition and implementation period in a Level I accredited geriatric ED.

	Before implementation, Mar 1, 2019–Feb 28, 2021 (n = 31,681)	Ramp up, Mar 1, 2021–Sep 30, 2021 (n = 9110)	After implementation, Oct 1, 2021–Feb 28, 2023 (n = 21,155)	Chi-square p-value
All patients				
Geriatrics	1395 (4.4)	696 (6.3)	1239 (5.9)	<0.001
PT	17,404 (55.0)	7977 (76.5)	10,839 (51.2)	<0.001
OT	16,553 (52.2)	7601 (72.9)	10,323 (48.8)	<0.001
Admitted				
30-day readmission	5539 (25.4)	2445 (39.0)	5236 (37.5)	<0.001
Geriatrics	1305 (6.0)	453 (7.2)	1009 (7.2)	<0.001
PT	16,144 (74.0)	4075 (65.0)	9707 (69.5)	<0.001
OT	15,743 (72.1)	3988 (63.6)	9547 (68.3)	<0.001
Discharged				
72-h ED revisit	450 (6.2)	128 (6.2)	351 (6.6)	0.667
7-day ED revisit	715 (9.8)	203 (9.8)	522 (9.7)	0.988
Geriatrics	13 (0.2)	13 (0.6)	48 (0.9)	<0.001
PT	174 (2.4)	81 (3.9)	250 (4.7)	<0.001
OT	114 (1.6)	55 (2.6)	195 (3.6)	<0.001
ED observation then admit				
30-day readmission	139 (19.0)	44 (19.6)	114 (21.7)	0.483
Geriatrics	37 (5.1)	50 (22.2)	77 (14.7)	<0.001
PT	505 (69.0)	171 (76.0)	383 (73.0)	0.081
OT	466 (63.7)	159 (70.7)	339 (64.6)	0.150
ED observation then discharge				
72-h ED revisit	124 (6.7)	45 (8.4)	178 (13.7)	<0.001
7-day ED revisit	163 (8.8)	56 (10.5)	207 (15.9)	<0.001
Geriatrics	40 (2.2)	29 (5.4)	105 (8.1)	<0.001
PT	581 (31.4)	235 (44.0)	499 (38.4)	<0.001
OT	230 (12.4)	132 (24.7)	242 (18.6)	<0.001

Note: All data presented are n (%). Geriatrics, PT, and OT evaluations were conducted either in the ED, ED observation unit, hospital, or upon referral in the outpatient setting after ED or hospital discharge.

Abbreviations: OT, occupational therapy; PT, physical therapy.

were not statistically different over the time periods (Table 2). In the postimplementation time frame, 72-h and 7-day ED revisits were similar for screened or unscreened patients discharged from the ED (Table 3) but screening was associated with decreased 72-h (9.6% vs. 39.0%,  $p < 0.001$ ) and 7-day ED revisits (11.6% vs. 42.9%,  $p < 0.001$ ) for those in ED observation.

### Thirty-day rehospitalizations

Thirty-day rehospitalizations are reported for patients admitted to the hospital or admitted from observation to the hospital. Overall 30-day rehospitalization rates increased over time (25.4%, 39.0%, and 37.5%, Table 2). In the postimplementation period, 30-day

rehospitalizations were higher for screened patients (40.2% vs. 32%,  $p < 0.001$ , Table 3). In all time frames, patients admitted from observation had lower rehospitalization rates than direct admissions, which corresponds to the lower medical acuity required to meet observation criteria initially from the ED.

### DISCUSSION

This retrospective cohort analysis of a geriatric screening program in a large academic ED found that screening was associated with an increase in multidisciplinary consultations for older adults in the ED or the ED observation unit, but not for admitted patients. This suggests that the intervention changed practice in the ED by increasing

**TABLE 3** Repeat ED visits, 30-day readmissions, and multidisciplinary consultations stratified by disposition and screening status in a Level I accredited geriatric ED with NIA-funded implementation strategy.

	Before implementation,			Ramp up,		After implementation,		
	Mar 1, 2019–Feb 28, 2021 (n = 31,681)			Mar 1, 2021–Sep 30, 2021 (n = 9110)		Oct 1, 2021–Feb 28, 2023 (n = 21,155)		
	Screened, n = 407 (1.3%)	Not screened, n = 31,274 (98.7%)	p-value	Screened, n = 3524 (38.7%)	Not screened, n = 5586 (61.3%)	Screened, n = 13,379 (63.2%)	Not screened, n = 7776 (36.8%)	p-value
Admitted	n = 98	n = 21,724		n = 2399	n = 3872	n = 9349	n = 4624	
30-day readmission	27 (27.6)	5512 (25.4)	0.621	840 (35.0)	1605 (41.5)	3758 (40.2)	1478 (32.0)	<0.001
Geriatrics	7 (7.1)	1298 (6.0)	0.627	224 (9.3)	229 (5.9)	677 (7.2)	332 (7.2)	0.895
PT	69 (70.4)	16,075 (74.0)	0.419	1665 (69.4)	2410 (62.2)	6502 (69.6)	3205 (69.3)	0.776
OT	65 (66.3)	15,678 (72.2)	0.198	1631 (68.0)	2357 (60.9)	6365 (68.1)	3182 (68.8)	0.381
Discharged	n = 44	n = 7234		n = 512	n = 1568	n = 2450	n = 2908	
72-hour ED revisit	4 (9.1)	446 (6.2)	0.422	32 (6.3)	96 (6.1)	160 (6.5)	191 (6.6)	0.956
7-day ED revisit	6 (13.6)	709 (9.8)	0.394	50 (9.8)	153 (9.8)	241 (9.8)	281 (9.7)	0.831
Geriatrics	1 (2.3)	12 (0.2)	0.001	6 (1.2)	7 (0.5)	36 (1.5)	12 (0.4)	<0.001
PT	3 (6.8)	171 (2.4)	0.054	37 (7.2)	44 (2.8)	194 (7.9)	56 (1.9)	<0.001
OT	3 (6.8)	111 (1.5)	0.005	25 (4.9)	30 (1.9)	159 (6.5)	36 (1.2)	<0.001
ED observation then admit	n = 73	n = 659		n = 181	n = 44	n = 463	n = 62	
30-day readmission	15 (20.6)	124 (18.8)	0.720	36 (19.9)	8 (18.2)	102 (22.0)	12 (19.4)	0.631
Geriatrics	5 (6.9)	32 (4.9)	0.461	44 (24.3)	6 (13.6)	70 (15.1)	7 (11.3)	0.424
PT	54 (74.0)	451 (68.4)	0.332	140 (77.4)	31 (70.5)	343 (74.1)	40 (64.5)	0.111
OT	50 (68.5)	416 (63.1)	0.366	130 (71.8)	29 (65.9)	304 (65.7)	35 (56.5)	0.155
ED observation then discharge	n = 192	n = 1657		n = 432	n = 102	n = 1117	n = 182	
72-hour ED revisit	14 (7.3)	110 (6.6)	0.732	38 (8.8)	7 (6.9)	107 (9.6)	71 (39.0)	<0.001
7-day ED revisit	15 (7.8)	148 (8.9)	0.605	47 (10.9)	9 (8.8)	129 (11.6)	78 (42.9)	<0.001
Geriatrics	7 (3.7)	33 (2.0)	0.136	28 (6.5)	1 (1.0)	101 (9.04)	4 (2.2)	0.002
PT	90 (46.9)	491 (29.6)	<0.001	194 (44.9)	41 (40.2)	464 (41.5)	35 (19.2)	<0.001
OT	35 (18.2)	195 (11.8)	0.010	106 (24.5)	26 (25.5)	226 (20.2)	16 (8.8)	<0.001

Note: Geriatrics, PT, and OT consultations were conducted either in the ED, ED observation unit, hospital, or upon referral in the outpatient setting after ED or hospital discharge. All data presented are n (%). Chi-square comparisons between the screened and not screened cohorts in each time frame are shown.

Abbreviations: OT, occupational therapy; PT, physical therapy.



consultations but did not penetrate to change practice for admitted patients. As we do not know the results of the consultations, we cannot say at this time that the increased multidisciplinary consultations rates were a definitive improvement in ED care. However, the ED area with the highest compliance rate (the ED observation unit) had both the biggest increase in consultations and the largest decrease in ED revisits, suggesting improved care. We suspect that screening either identified issues unrecognized by the physicians that they then acted on or the screening reminded/prompted them to consult appropriate multidisciplinary team members for assistance in patient care.

A counterargument is that this analysis could reflect bias in whom the ED nurses chose to screen. They could have selectively screened those who they felt were most likely to have needs. However, the effects are most pronounced in the ED observation unit, where screening rates had >80% compliance. The geriatric screening tool is built into the admission history and physical examination note for the ED observation unit and compliance with reviewing the screening results and ordering consultations is very high. In the preimplementation time period, 98% of observation unit patients did not get screened, and their PT consultation rate was 27%. When that was reversed and the majority were screened (86.6%), their PT consultation was 41.5%. So either the patient population changed significantly and needed significantly more therapy consultation or the screening is identifying needs that were not identified without screening. It is also possible that both occurred, and more frail patients were placed in observation and as more needs were identified.

Internal audits of the program have found that physician review of the geriatric screening was 18%, which may explain the reduced impact in the non-observation unit areas.<sup>20</sup> Anecdotally, some ED providers felt that for patients who need admission, it should be the inpatient physician's choice to consult these team members and so the ED team deferred placement of consultation orders. Additionally, the hospitalist teams were not educated on the program and, due to different EHR views, did not have easy ways to see the ED screening results. Other factors, such as built in PT and OT orders in hospital admission order sets, may also play a role in the lack of change seen in therapy consultations for admitted patients. Further work into integrating geriatric ED programs with inpatient care is needed.

We also found an association with increased 30-day rehospitalizations for patients who had screening done and were hospitalized. Without a change in consultation between those who did and did not have screening done it is hard to interpret this association. It could be that patients who were boarding in the ED (which is associated with poorer quality of care) were more likely to get screened because they were in the ED longer (and seen by more ED nurses). The confounder of boarding also increases geriatric complications and mortality. Another potential confounder is the waiver by Centers for Medicare & Medicaid Services of the three-midnight rule for skilled nursing facility placement. This was done to ease the hospital burden and transfer of patients to facilities. This could have decreased the admission rate for lower risk patients who could then be cared for in observation instead.

## LIMITATIONS

Another limitation of evaluating data from hospitalized patients is that we do not know whether the geriatrics consultation was placed from the ED or later in the hospital stay, only that it was done at some point during the hospitalization. It is possible that even though the geriatric ED program did not change rates of consultation, it did change the timing of consultation and may have "front loaded" these consults. Early PT and geriatrics consultation rates are associated with reduced lengths of stay for older patients in the hospital and possibly improved mortality.<sup>21-25</sup> Future studies of the impact of geriatric ED programs on hospitalized patients could consider evaluating the impact on the timing of consultation and any effects on hospital length of stay.<sup>13,26</sup>

In other studies, consultations from the ED to geriatric teams have ranged from 5.7% to 15.8% depending on the program.<sup>3,27,28</sup> Our program postimplementation had an overall consultation rate of 5.9%, which is similar to that in the other American studies. This is encouraging as our program did not include additional staff added to the consultation teams or the ED to support the screening and consultation program. The program has since expanded with the addition of a geriatric nurse practitioner to prioritize consultations in the ED, and an evaluation of the impact of that program is pending. While all hospitals have PT and OT for inpatient care, we could not find estimates of consultation rates for older adults and so cannot say how our rates of use compare to other health systems.

Additional limitations of this study include the retrospective nature of the data. We can only note association, not causation, and cannot capture ED revisits or rehospitalizations to other health systems. Our ED is a city with two other large health systems in the metro area. A second major limitation is the high potential for confounding. We do not know why some patients were screened and some not. We found during our implementation analysis that as crowding in the ED increases, geriatric screening decreased.<sup>13</sup> The association with increased ED revisits for observation unit patients who did not get screened could be confounded by overall lower quality care from crowding or other factors. Time factors could have contributed, as it is possible that screening was less likely to be done on weekends when consultants were less available. However, PT and OT are available on Saturdays so that should only limit geriatric consults. Another limitation is that while we do not know whether the geriatric screening was done or not, this data set did not capture if the physician team reviewed that information. It is possible that many physicians were still using clinical gestalt and not reviewing the screening. Nurses are supposed to alert the physicians about any concerning screening results but that may not be happening. Further work examining how physicians interpret and evaluate the screening results could add context to this study. An order for a consultation does not mean that the consultation was completed. The consultation completion rate may be lower if staff availability or patient factors meant the consult could not be completed. We were unable to abstract consultation completion rates for this analysis but are evaluating this for the parent study.<sup>29</sup> Finally, interpreting

trends in admissions and dispositions is complicated by the COVID pandemic. We attempted to account for time changes by including a pre-COVID and a COVID preimplementation time frames, but no study can account for all the effects of the past 3 years. Finally this was a single-site study at an academic ED and should be replicated in different settings.

## CONCLUSIONS

In this single-center study, geriatric screening was associated with increased consultation to geriatrics, physical therapy, and occupational therapy for patients discharged from the ED or ED observation unit. For patients placed in observation and then discharged, geriatric screening was also associated with fewer ED revisits. Geriatric screening changes clinical care in the ED and may reduce ED revisits for higher risk observation patients.

## AUTHOR CONTRIBUTIONS

Study concept and design were Katherine M. Hunold and Lauren T. Southerland. Lauren T. Southerland acquired the data. Katherine M. Hunold and Jeffrey M. Caterino performed the analysis. Lauren T. Southerland drafted the manuscript. All authors participated in the discussion and the manuscript preparation.

## CONFLICT OF INTEREST STATEMENT

KMH and CRC are/were board members for the ACEP Geriatric Emergency Department Accreditation Program. LTS and CRC have received honorariums for developing education for the Geriatric Emergency Department Collaborative. No authors report consulting for commercial interests.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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