

Outcomes Associated With an Age-Friendly Emergency Department Intervention

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Study objectives: To assess whether an emergency department (ED) modified comprehensive geriatric assessment (mCGA) designed to address the unique needs of older adults was associated with lower hospital admissions without negative unintended consequences.

Methods: We conducted a quasi-experimental study of older adults presenting to an academic medical center ED May 1, 2021, to April 30, 2024. Patients were eligible if they were aged 65+ years, had an Emergency Severity Index between 2 and 5, and were present in the ED during mCGA service hours. Our intervention group was eligible patients who received the mCGA and the control group was those who met all inclusion criteria but did not receive the mCGA. We defined 4 outcome variables—hospital admissions, ED length of stay, ED revisits within 72 hours of discharge, and ED revisits within 30 days of discharge—and assessed their relationship to the primary mCGA intervention using propensity-score weighted regression models.

Results: A total of 1,119 ED visits received the mCGA and 1,612 served as controls. Those who received the mCGA had an 11.6% (95% confidence interval [CI]: −16.4 to −6.8) lower likelihood of inpatient admission. We did not find a significant association between the mCGA and ED length of stay (−1.5 hours; 95% CI −3.4 to 0.3) or ED revisits within 72 hours (1.7%; 95% CI −1.2 to 4.6) or 30 days of discharge (−1.9%; 95% CI −5.8 to 2.0).

Conclusion: The mCGA intervention was associated with significantly lower inpatient admissions from the ED for older adults with no significant negative unintended consequences in the form of longer ED length of stay or ED revisits. [Ann Emerg Med. 2025;■:1-12.]

Please see page XX for the Editor's Capsule Summary of this article.

Keywords: Age-friendly health system, Geriatric emergency department, Hospital admissions, Older adults, Interdisciplinary care.

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INTRODUCTION

The emergency department (ED) is a key setting for interventions designed to address the specific needs of older adults.^{1,2} Those aged 65+ years account for an estimated 19% of ED visits in the United States and often present with more complications and greater diagnostic uncertainty, leading to longer time in the ED and higher rates of hospital admission.³ In response, the landscape of emergency care for older adults in the United States has begun to transform with the establishment and evolution of geriatric emergency departments (GEDs). The American College of Emergency Physicians (ACEP) started accrediting GEDs in 2018—spanning from level 3 basic capabilities (eg, 1 nurse and 1 physician champion) to level 1 advanced capabilities (eg, routine assessments, use of interprofessional care teams, >56 h/wk of geriatric health

professional assessment). To date, over 500 EDs have received GED designation.⁴

Given the breadth of options for how age-friendly ED care may be approached within a given level, there is a critical need for evidence on specific models and their relationship to outcomes. Early work following the establishment of ACEP GED accreditation suggested minimal benefits with a nationwide comparison of ED visits in 2021 to GEDs and non-GEDs finding similar discharge rates in both groups.⁵ However, more recent single institution studies of nursing-based GED interventions in the ED suggest a more consistent picture of benefits, specifically lowering hospital admissions for older adults.⁶⁻⁸ Although avoiding hospital admissions is an important outcome, potential negative unintended consequences also need to be examined. If GED

Editor's Capsule Summary*What is already known on this topic*

Emergency department (ED) patients aged 65 years and older have high rates of hospital admission and are at risk for hospital-associated disability.

What question this study addressed

Among older ED patients, what is the impact of a modified comprehensive geriatric assessment (mCGA) by a nurse practitioner?

What this study adds to our knowledge

Using a quasi-experimental design, patients who received the mCGA (n=1,119) had lower rates of hospital admission compared with those who did not (n=1,612). ED length of stay and ED revisit rates were similar between the groups.

How this is relevant to clinical practice

ED-based mCGA may help to reduce admission rates. More details regarding clinical outcomes of this approach are needed.

interventions avoid hospitalizations inappropriately, this could result in higher levels of return visits to the ED. In addition, the intervention itself could extend the time older adults spend in the ED. A second important evidence gap relates to whether certain subgroups of older adults disproportionately benefit from GED interventions. For example, the oldest-old (age 85+ years) are more vulnerable to aging-related conditions (such as impaired cognition, social isolation, and falls) and are more likely to be admitted to the hospital from the ED; they may therefore be more likely to benefit from GED interventions.^{5,9,10} In contrast, older adults experiencing racial discrimination have more health care needs and are at greater risk of adverse outcomes, making it important to also assess differences in outcomes by race.^{11,12} Lastly, prior work has not examined the relationships between different components of GED interventions and outcomes, which limits an understanding of how specific professional roles and activities may contribute to improved outcomes.

We sought to improve care for older adults in our ED and also address these evidence gaps by implementing and evaluating a modified comprehensive geriatric assessment (mCGA) in a level 1 GED. A traditional comprehensive geriatric assessment (CGA) is a “multidimensional interdisciplinary diagnostic process focused on determining an older person’s medical and psychological status and

functional capability in order to develop a coordinated and integrated plan for treatment and long-term follow up.”¹³

The level 1 GED accreditation criteria involve administering a CGA, which is what motivated our focus on this as the basis for the intervention. To adapt to the ED setting, we developed an mCGA that is briefer and focuses on medical, cognitive, and functional capacities and potential deficits that, when understood and addressed, may lead to discharge planning that results in appropriate and safe discharge from the ED.¹⁴ As an example, for an older adult in the ED for hypoglycemia, a cognitive and functional assessment could reveal difficulty with the related aspects of injecting insulin, which would then be addressed as part of the discharge plan. As another modification to accommodate the complexity of the older adult population seen in our ED, while most level 1 GEDs are staffed by emergency nurses, our mCGA intervention consists of screening and evaluation care practices completed by nurse practitioners with prior experience in outpatient care and geriatrics.

METHODS**Study Design**

We conducted a quasi-experimental study of eligible adults aged 65+ years presenting to an academic medical center ED (University of California, San Francisco Health - UCSF Health). We defined an intervention group who received the mCGA (primary intervention) with the potential addition of 2 secondary interventions (augmented mCGA) and a control group that met all inclusion criteria but did not receive any intervention components.

This study underwent expedited review and was approved by the University of California, San Francisco Institutional Review Board (#24-41745).

Setting

The ED has 35 beds and 10 observation beds, serving over 40,000 patient visits per year with ~35% older adults and a high admissions rate among this population (more than 65%). The ED operated prior to accreditation and became an accredited ACEP Level 1 Geriatric Emergency in September 2021. The study period (May 1, 2021, to April 30, 2024) spans 3 full years beginning with the start of the intervention after a brief ramp-up period. The intervention was referred to as the age-friendly ED with its primary and secondary components described below; the nurse practitioners (NPs) who led the primary intervention were called age-friendly ED NPs along with age-friendly ED social worker and age-friendly ED pharmacists who delivered secondary intervention components; and the order for the intervention and

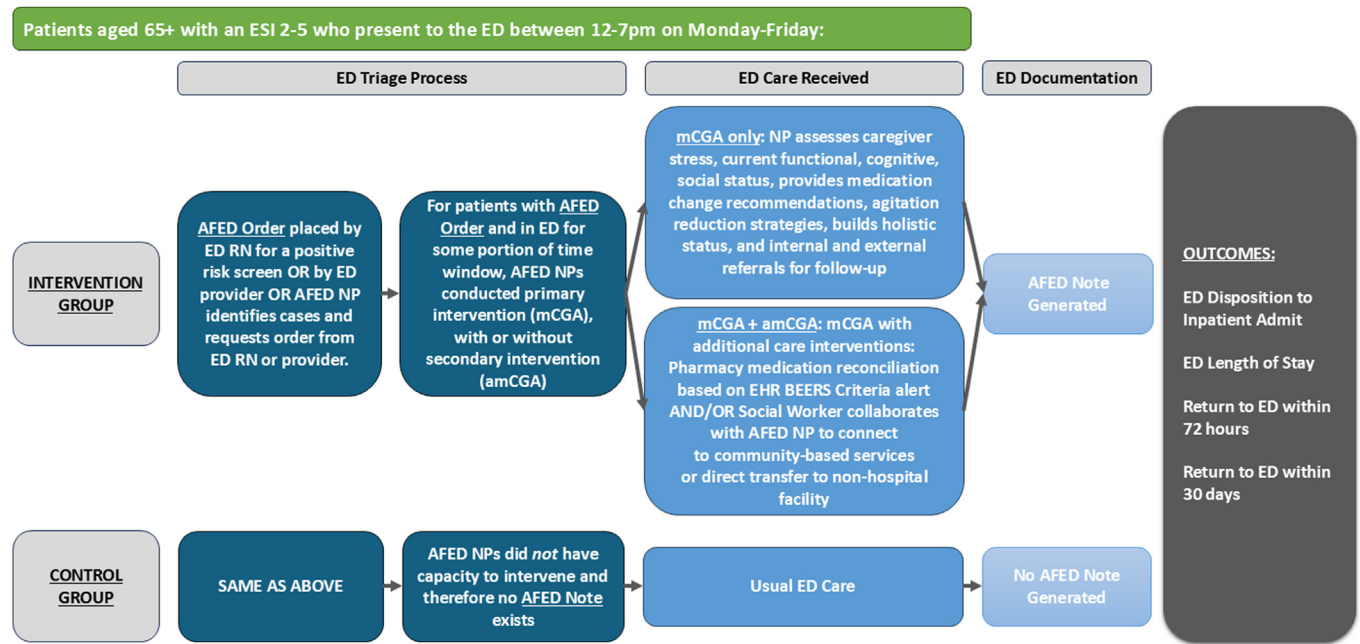


Figure 1. Overview of intervention and evaluation design. *AFED*, Age-friendly emergency department; *amCGA*, augmented modified comprehensive geriatric assessment; *EHR*, electronic health record; *NP*, Nurse Practitioner; *RN*, Registered Nurse.

subsequent documentation that the intervention occurred were referred to, respectively, as the age-friendly ED order and the age-friendly ED note (Figure 1).

Population

Intervention and control encounter criteria. Our study group included all encounters during the study period for individuals aged 65+ years with an Emergency Severity Index (ESI) of 2 to 5 and who received an age-friendly ED order (but not necessarily the intervention) during their ED stay. We also limited the study sample to patients who were roomed in the ED between 12 pm and 7 pm on weekdays to ensure that they were present during the age-friendly ED NP shifts and able to be triaged for the mCGA. Although age-friendly ED NP shifts were 12 pm to 8 pm every weekday, we limited them to 1 hour before their shift ended to ensure there was time to deliver the intervention. We further excluded patients with an ED disposition of “never arrived,” “against medical advice,” “eloped,” “left without being seen,” or “died” as well as those who decompensated (admitted to an ICU or code documentation occurred) during their time in the ED (and would have received an ESI of 1 had it been recalculated following initial triage). Additionally, patients who were on Clinical Decision Unit observation at any point during their ED stay were excluded from our primary sample.

From the pool of encounters remaining after these criteria were applied, those classified as receiving the

primary (mCGA) intervention were encounters with a signed age-friendly ED note that was written by one of the age-friendly ED NPs. We excluded any age-friendly ED notes used to document that the patient declined the age-friendly ED NP evaluation and thus did not receive the intervention. From within the sample of mCGA encounters, those classified as additionally receiving the amCGA were those with (1) a signed clinical note written by the age-friendly ED social worker and/or (2) a signed clinical note written by one of the age-friendly ED pharmacists.

To classify control encounters, we selected those that did not meet the criteria for the primary intervention and also excluded (1) any encounters with a qualifying note (even if it was excluded from the final set, eg, the patient had a qualifying note but the patient declined the intervention so they were excluded from the treatment group); and (2) any encounter that received either or both secondary intervention (amCGA) components but had not received the primary (mCGA) intervention. Criterion (1) removed 6 encounters and criterion (2) removed 567 encounters.

Lastly, we included only the first ED visit for all patients in the sample during the study period—whether they received the intervention or did not during that encounter—to avoid noise or bias that may be introduced by multiple mCGA encounters or an mCGA encounter followed by a control encounter that had access to the original mCGA documentation. Figure E1 (available at

<http://www.annemergmed.com>) presents sample selection via a CONSORT-style diagram.

Intervention

Primary intervention: mCGA. When an older adult (age 65+ years) comes to the ED, they are first evaluated by an ED triage nurse who determines the ESI, and for those with an ESI from 2 to 5, the ED primary nurse administers the age-friendly ED pathway screening tools (ISAR, Nu-DESC, AWOLi).¹⁵⁻¹⁷ For those with a positive risk score (≥ 2) on one or more screenings, the ED primary nurse enters an age-friendly ED order that triggers consideration for the mCGA. Additional pathways to receive an age-friendly ED order include entry by an ED provider based on their assessment of need or age-friendly ED NP screening of ED census and outreach to an ED primary nurse or provider to enter an order (Figure 1). Age-friendly ED orders populate a consult list which age-friendly ED NPs review to triage patients to determine the order in which patients receive the mCGA. Typically, the consult list volume exceeds age-friendly ED NPs' capacity to deliver the intervention. Age-friendly ED NPs therefore prioritize those who display greater risk of potential or existing geriatric syndromes and would thus benefit the most from the mCGA.

Once an age-friendly ED order had been placed and list triaged by the age-friendly ED NPs, the intervention itself involves completing the mCGA including (1) screening tools for cognitive, functional, and social connectedness needs; (2) medical chart review; (3) bedside evaluation; and (4) outreach to the patient's family, surrogate, or primary care provider (PCP) for collateral information and details. Interpreters are used based on the patient's preferred language unless the NP is bilingual. The age-friendly ED NP then synthesizes recommendations and any information that may be relevant to the PCP or future inpatient providers in the age-friendly ED note. Salient findings are also communicated verbally to the ED providers and staff. Salient findings may include the identification and evaluation of the supports in the home (eg, presence of caregivers, presence of pre-existing services, chronicity of functional or cognitive status, and abuse risks), which may increase the confidence of ED providers regarding discharge to home. Examples of common recommendations include review of identified geriatric syndromes, referrals to agencies to support the patient and caregivers in the community, and referrals to health system resources, as appropriate. The communication and documentation do not include a disposition recommendation and instead offer the ED provider/

physician additional information to use in their decision. The PCP (if listed or identified) is sent the age-friendly ED consult note.

Secondary interventions: amCGA. In addition to the NP primary intervention, a social worker and pharmacists may complete additional assessments and interventions. The social worker collaborates with the age-friendly ED NP and possibly the ED case manager to select patients from the age-friendly ED consult list. Those selected are considered most likely to benefit from specific resources for health-related social needs. The social worker conducts a thorough, templated, and open-ended assessment with the patient or surrogate to identify risks at home, gaps in needed services, insurance challenges, or reportable health-related social needs and generates referrals to community-based agencies and legal services.

Selection for the pharmacy intervention occurs via a separate process triggered by the multisource verification of current medication history by a pharmacy technician completed for all ED patients. A clinical pharmacist then reviews the medication history and selects patients to receive a geriatric pharmacy consult if they meet the following criteria: (1) age ≥ 65 years, (2) no admission order at the time of review, and (3) presence of an electronic health record American Geriatrics Society Beers Criteria for Potentially Inappropriate Medications for Older Adults alert.¹⁸ Among those who meet these criteria, there is a further prioritization placed on those likely to be admitted to the hospital to meet a state-level requirement mandating medication reconciliation for high-risk patients (which includes older adults).¹⁹ The pharmacy intervention involves a best possible medication reconciliation with a specific focus on high-risk medication prescribing, omitted medications, duplications, and difficulty managing medications. References to medical literature that support pharmacist recommendations are included in the note. In addition, the pharmacy documentation and recommendations are routed to retail pharmacies and PCPs.

Data Collection

All study data were extracted from Epic's Clarity reporting database.

Outcomes

Our primary outcome is admission to the hospital from the ED (measured as encounters with an ED discharge disposition status as "admit to inpatient"). We also defined 3 secondary outcomes: (1) ED length of stay, in hours, (2) if there was an ED revisit to our health system within 72 hours of discharge (ED discharge or inpatient discharge, if patient was hospitalized), and (3) if there was an ED revisit to our health system within 30 days of discharge.

Table. Characteristics of study participants (unweighted).

Characteristic	Control, N=1,612	Intervention, N=1,119
Index ED visit characteristics		
Year of index ED visit		
2021 (May to December)	103 (6.4%)	38 (3.4%)
2022	437 (27.1%)	448 (40.0%)
2023	778 (48.3%)	472 (42.2%)
2024 (January to April)	294 (18.2%)	161 (14.4%)
ESI level during index ED visit		
2	761 (47.2%)	448 (40.0%)
3+	851 (52.8%)	671 (60.0%)
Age group (y) at time of index ED visit		
65-74	591 (36.7%)	285 (25.5%)
75-84	579 (35.9%)	400 (35.7%)
85+	442 (27.4%)	434 (38.8%)
Biological sex: Women	776 (48.1%)	643 (57.5%)
Limited English proficiency	385 (23.9%)	340 (30.4%)
Race or ethnicity*		
Asian	455 (28.2%)	350 (31.3%)
Black	162 (10.0%)	109 (9.7%)
Latinx	128 (7.9%)	126 (11.3%)
American Indian or Alaska Native	2 (0.1%)	3 (0.3%)
Native Hawaiian or Pacific Islander	9 (0.6%)	7 (0.6%)
Other	116 (7.2%)	86 (7.7%)
Southwest Asian and North African	19 (1.2%)	12 (1.1%)
White	721 (44.7%)	426 (38.1%)
Patients with Medicaid at time of index ED visit	52 (3.2%)	52 (4.6%)
Index ED visit outcome characteristics		
Patient was admitted to hospital from ED during index ED visit, n (%)	1,206 (74.8%)	762 (68.1%)
ED length of stay (h) during index ED visit, mean (SD)	22.1 (14.8)	26.3 (19.2)
ED revisit within 72 h of discharge from index ED visit, n (%)	48 (3.0%)	44 (3.9%)
ED revisit within 30 d of discharge from index ED visit, n (%)	286 (17.7%)	185 (16.5%)

ED, Emergency department.

*2020 Census data for the Bay Area (defined as Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara counties): 31% Asian, 6% Black or African American, 23% Latinx, 4% multirace or ethnicity, <1% Native American or Alaska Native, less than 1% Native Hawaiian or Pacific Islander, 7% Other, and 36% White.

Data Management

After extraction, all study data were stored and analyzed within the UCSF secure research computing environment.

Statistical Analyses

We developed a propensity-score weight using the 19 measures listed in [Table E1](#) (available at <http://www.annemergmed.com>) that captured a breadth of factors including patient severity, social complexity, and demographic characteristics that may be linked both to the likelihood of receiving the intervention and our outcomes. Specifically, we estimated the conditional probability of an

encounter receiving the mCGA intervention (whether or not they received either or both components of the amCGA) as compared with the control encounters. [Table E1](#) reports the weighted balance between the 2 groups. The full set of results from the model used to estimate propensity weights is in [Table E2](#) (available at <http://www.annemergmed.com>).

We selected 5 measures for stratified analyses: age at time of ED visit (65 to 74 years, 75 to 84 years, 85+ years), biological sex (man or woman), verbal English proficiency (fluent English speaker or limited English speaker), whether the patient had Medicaid as their

insurance, and an 8-category race and ethnicity variable based on self-reported data.

We used an inverse probability weighted regression modeling approach to assess the relationship between the primary and secondary intervention(s) and our outcomes. Each model had 3 binary predictors: receipt of the primary intervention (mCGA), receipt of the secondary social work intervention, and receipt of the secondary clinical pharmacist intervention. For hospital admission (our primary outcome) and the 2 ED revisit outcomes, we used a standard linear regression; the ED length of stay outcome used a standard Poisson regression. Our primary results are reported as the average marginal effect of receiving the mCGA—overall and for each subgroup. We then separately report the average marginal effects from all potential combinations of primary and secondary interventions: none, mCGA only, mCGA and amCGA (pharmacist only), mCGA and amCGA (social work only), or all 3 interventions. Stratified analyses were performed using interaction terms in the model.

As a sensitivity analysis, we added back in all encounters excluded due to Clinical Decision Unit use (~ 470), recalculated the propensity weights, and then re-ran the models, including Clinical Decision Unit use as an additional predictor. We excluded encounters that involved a Clinical Decision Unit observation stay in our main results as Clinical Decision Unit use has a complex relationship with mCGA receipt and outcomes. As an example of the former, in some cases patients who come to the ED outside of age-friendly ED NP staffed hours may be placed on Clinical Decision Unit if a provider perceives they are a good mCGA candidate. As an example of the latter, if the mCGA identifies that a patient needs urgent placement, but the facility cannot take them that day, the patient is usually placed in the Clinical Decision Unit until they can be transferred.

All data were analyzed using Stata MP version 18.0 (StataCorp, College Station, Texas).

Sample Size

Our final sample included 2,731 encounters: 1,119 who received the mCGA intervention and 1,612 in our control group.

RESULTS

Sample Characteristics

Clinical and demographic characteristics of the final sample of 2,731 encounters are reported in the Table, with additional sample characteristics reported in Table E3 (available at <http://www.annemergmed.com>). Within the mCGA group, 616 visits (55% of the mCGA group; 23% of total sample) received the mCGA only, 146 visits

(13.0%; 5.4%) received the mCGA + amCGA (social work only), 293 (26.2%; 10.7%) received the mCGA + amCGA (pharmacy only), and 64 (5.7%; 2.3%) received the mCGA + amCGA (pharmacy and social work).

Regression Results: mCGA

Inpatient admissions. Patients who received the mCGA (adjusting for receipt of any secondary interventions) had 11.6% (95% confidence interval [CI]: -16.4 , -6.8) lower levels of inpatient admission (Figure 2). This association was consistent across age, biological sex, and verbal English proficiency (Figure 2). Although the magnitude of reductions was similar for those with Medicaid insurance versus not, only the non-Medicaid population had statistically significantly lower admissions associated with the mCGA: -11.7 (95% CI -16.6 to -6.8) versus -9.3 (95% CI -28.4 to 9.8). Results by race and ethnicity varied, and with large CIs overlapping zero for some small groups. However, no group had higher admissions associated with the intervention (Figure 2).

ED length of stay. We did not find a statistically significant association between ED length of stay and the mCGA (-1.5 hours; 95% CI -3.4 to 0.3) (Figure 3). This finding was consistent across age, biological sex, fluent English speakers, Medicaid insurance, and race and ethnicity, with no significant differences in ED length of stay by subgroup. The only exceptions were for (1) those with limited English proficiency and (2) Black individuals; both groups had a shorter length of stay associated with the intervention (-3.2 and -5.5 hours, respectively) (Figure 3).

ED revisits: 72 hours and 30 days. We did not find a significant association between ED revisits within 72 hours of discharge and the mCGA (1.7%; 95% CI -1.2 to 4.6) (Figure 4). This finding was consistent across age, biological sex, and verbal English proficiency. Similarly, we found no association between ED revisits within 30 days of discharge and the mCGA (-1.9 %; 95% CI -5.8 to 2.0) (Figure 4). This finding was consistent across age, verbal English proficiency, Medicaid insurance, and race and ethnicity. The only exception was for female patients who had statistically significant reductions in 30-day ED revisits associated with the intervention (-4.4 %; 95% CI -8.7 to -0.1).

A comparison of unweighted and weighted results is included in Table E4 (available at <http://www.annemergmed.com>). When Clinical Decision Unit observations were included in the sample, results were consistent with our primary findings, with only small differences in magnitudes (Table E5, available at <http://www.annemergmed.com>).

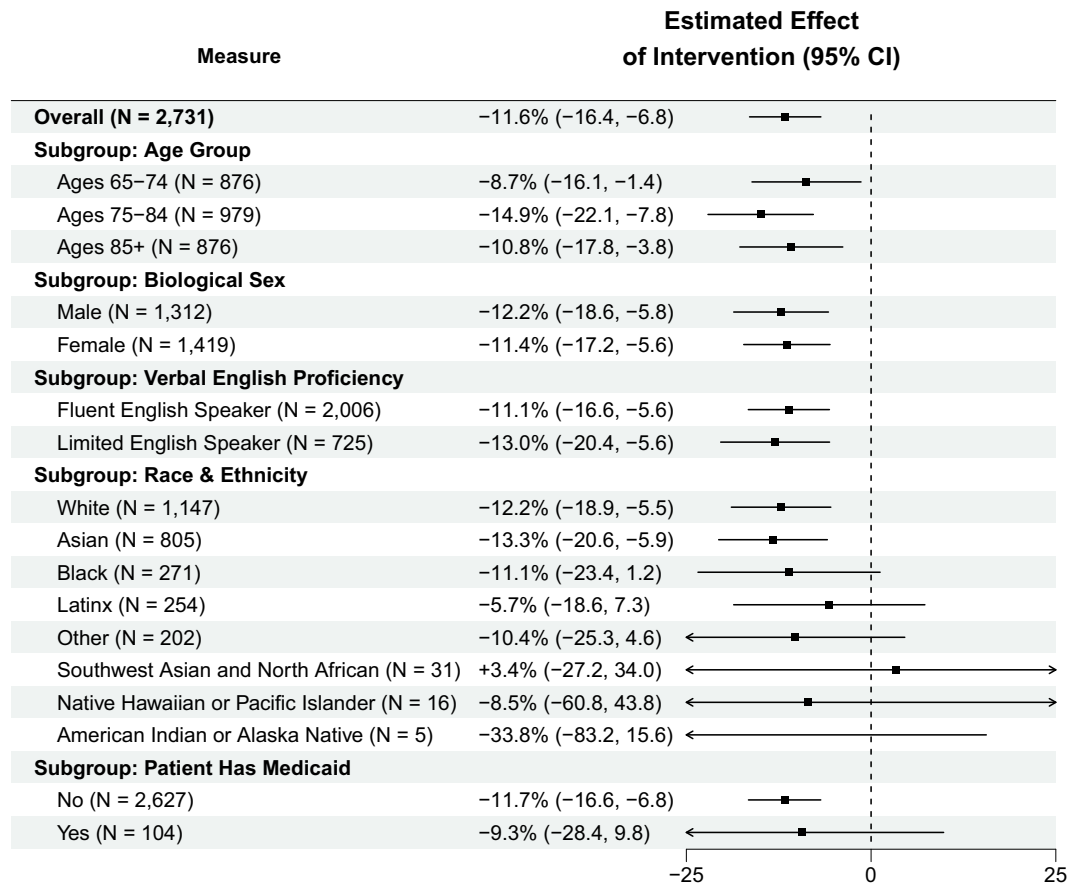


Figure 2. Estimated change in frequency of admissions to the hospital from the ED as a result of the primary intervention, compared to the control population, using a propensity weighted sample.

Regression Results: mCGA + amCGA

Inpatient admissions. Compared with encounters that received no primary or secondary interventions, those receiving only the primary intervention (mCGA) and those receiving the mCGA + amCGA (social work only) had lower levels of hospital admission. Specifically, the former was associated with an 11.6% reduction (95% CI -19.3 to -3.9) and the latter with a 25.0% reduction (95% CI -37.0 to -13.0) (Figure E1). In contrast, those who received the mCGA + amCGA (pharmacy only) were 12.3% (95% CI 5.0 to 19.5) more likely to be admitted to the hospital, whereas patients who received the mCGA + amCGA (pharmacy and social work) were neither more nor less likely to be admitted (-1.1%; 95% CI -13.9 to 11.6) than those who received no interventions.

ED length of stay. There was no significant difference in ED length of stay for visits that received the mCGA and the mCGA + amCGA (social work only) when compared with the control group that received neither (Figure E1). Those who received the mCGA + amCGA (pharmacy only) as well as those who received the mCGA + amCGA

(pharmacy and social work) had a longer ED length of stay, with the former visits lasting 12.0 hours longer (95% CI 7.9 to 16.2) and the latter lasting 12.4 hours longer (95% CI 6.0 to 18.7) compared with those who received no interventions.

ED revisits: 72 hours and 30 days. We did not find a significant difference in ED revisits within 72 hours or 30 days of discharge from the ED for those who received the mCGA along with any other amCGA intervention in comparison to those who received no interventions (Figure E1).

LIMITATIONS

The primary limitation of our study is the potential bias introduced by age-friendly ED NP selection of who should receive the mCGA. As a result, a major focus of our study design approach was how best to address selection bias. After creating a sample of control visits meeting intervention inclusion criteria, our propensity-score weighting approach featured a diverse set of 19 variables (far more than have been included in prior GED studies), which captured both medical

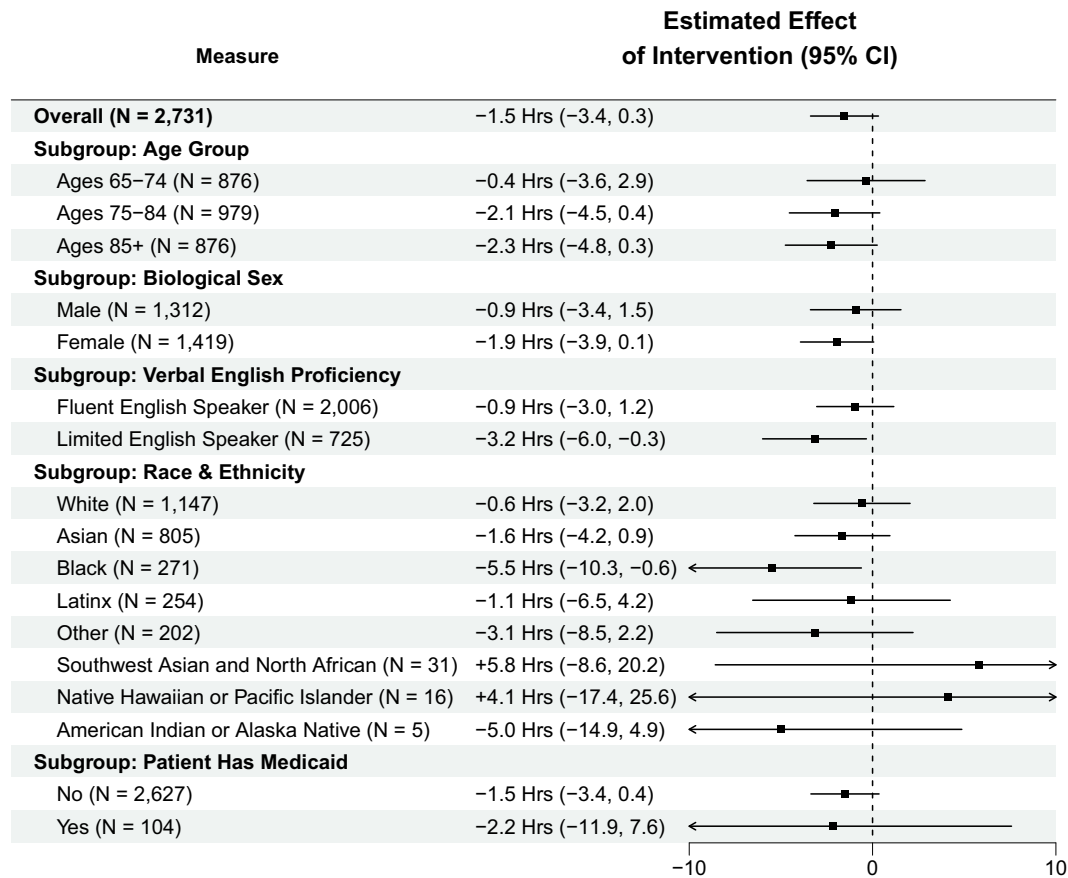


Figure 3. Estimated change in hours spent in the ED as a result of the primary intervention, compared to the control population, using a propensity weighted sample.

and social complexity.^{6,8} In addition, any unmeasured confounder should conceptually operate in the same direction on all our outcomes. That is, if age-friendly ED NPs are systematically selecting relatively healthier patients, we would expect lower levels of hospital admits as well as shorter time in ED and lower levels of readmits. Conversely if they are selecting relatively sicker or more complex patients, we would expect higher levels of admissions as well as longer time in ED and higher levels of readmits. Given that we find neither pattern, this lends some confidence that we do not have substantial unmeasured confounders driving our results. Other important limitations include that our study was limited to a single academic medical center ED with a Level 1 ACEP Accreditation designation and with experienced NPs administering the primary intervention, which may not reflect the opportunity or ability of other EDs to provide m/amCGAs. Lastly, we did not include Clinical Decision Unit use as an outcome, which has been examined in other studies, given the complex relationship between Clinical Decision Unit use and receipt of the intervention described above.

DISCUSSION

Our results reveal a significant and large-magnitude reduction in inpatient admissions from the ED for older adults who received the primary mCGA intervention. Notably, all subgroups examined appeared to be realizing similar levels of benefit. Given that hospitalizations of older adults are associated with significant morbidity and functional decline, their avoidance across all subgroups is particularly important.²⁰ Also notable is that we found no evidence of negative unintended consequences that could result from the intervention—longer time in the ED or higher levels of ED revisits. In the broader context of evidence supporting GED interventions, our study adds to the growing set of results that have found reductions in inpatient admissions from the ED.

We suspect that the mechanism through which our intervention reduced inpatient admissions is interprofessional collaboration in an acute, undifferentiated, and complex care delivery setting. Specifically, the mCGA creates a holistic picture of the clinical scenario in the ED and its relationship

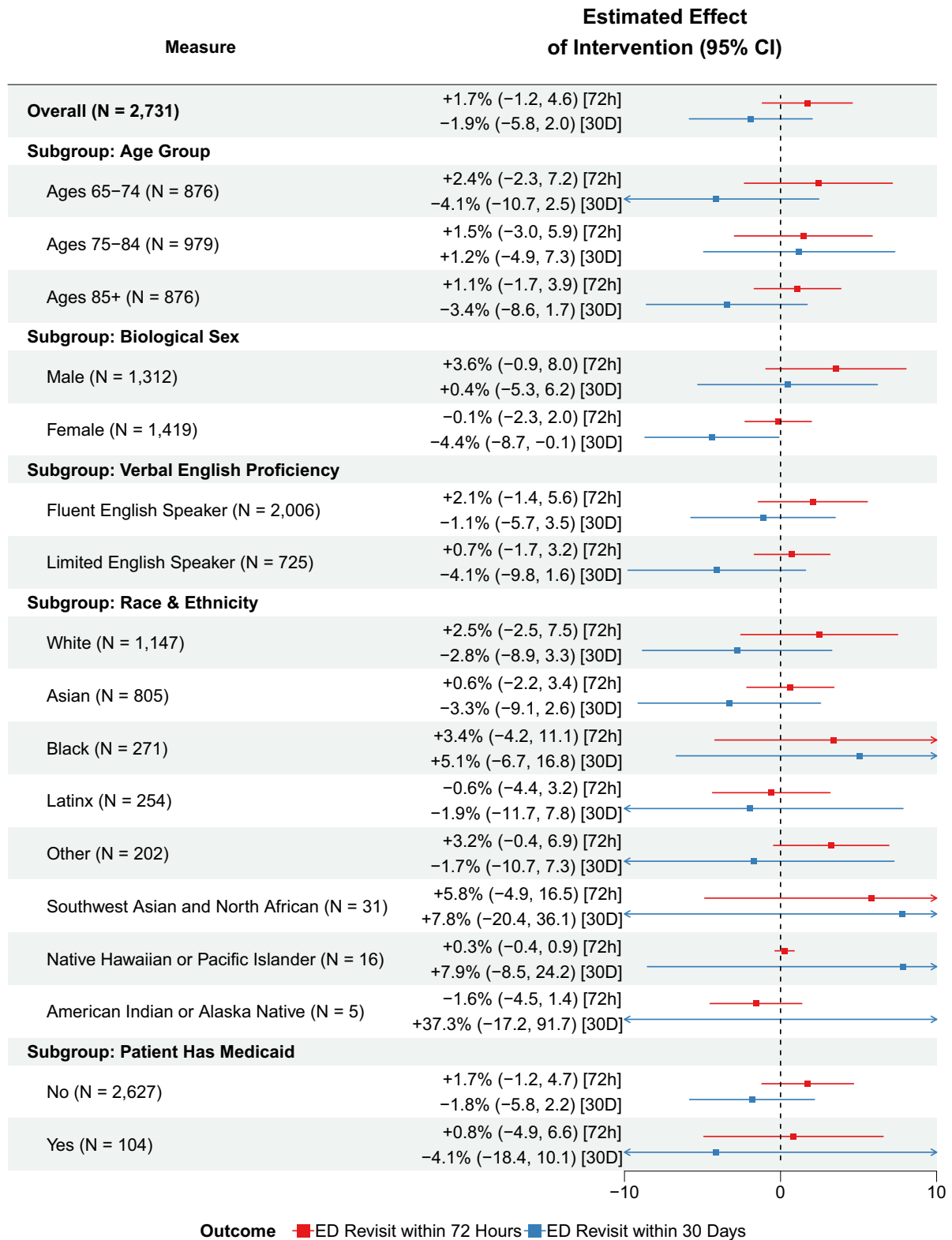


Figure 4. Estimated change in frequency of ED revisits at 72 hours and 30 days, as a result of the primary intervention, compared with the control population, using a propensity weighted sample.

to the functional abilities, geriatric syndromes, and supports for the patient when in the community. The age-friendly ED NP's expertise in geriatrics combined with familiarity with local community-based resources and outpatient care experience leads to an understanding of when ED discharge is likely to be successful. Although mCGAs have been developed and tested in various clinical settings (eg, GRACE Team Care, The Guided Care® Model, Acute Care for Elders programs, and Geriatric Surgery Verification programs) and have led to improvements in various metrics (eg, health system cost savings, reduced acute care costs, reduced inpatient length of stay), it is not a given that these benefits would translate to the ED.²¹⁻²⁵ Our findings suggest that, in the ED, the elucidation of physical, functional, social, psychological, and medication status aligned with patient preferences creates an mCGA that specifically informs ED disposition in way that allows older adults to avoid hospital admission safely.

Our results are consistent with previous single-site studies of GED interventions. A 2022 evaluation of a level 2 GED in Michigan found that patients were more likely to be discharged from the ED.⁷ A 2023 evaluation of a level 1 GED at UCSD Health involving consultations by geriatric emergency nurse initiative experts found lower levels of hospital admissions during the index admission as well as 30 and 90 days postdischarge.⁶ A 2024 evaluation of a level 1 GED at Yale New Haven Health involving assessments by geriatrics-trained advanced practice providers also found lower levels of hospital admissions.⁸ A 2024 paper from Canada reported on an interprofessional intervention focused on decreasing admissions of older adults in the ED. They decreased hospital admissions by 10.0% to 13.5% but the effort was associated with subsequent early hospitalizations.²⁶ Our findings bolster existing evidence that an interprofessional GED intervention can help reduce inpatient admissions for older adults.

Our study extends the prior literature by isolating and examining the primary and secondary intervention components. Patients who received the social work intervention in addition to the primary intervention had a greater reduction in inpatient admissions relative to those who received the primary intervention alone. We suspect this is because social workers have intimate familiarity with, and facilitate access to, local community-based agencies that support successful discharge to community or to facilities.²⁷ Those who received the pharmacist component of the amCGA had significantly higher rates of admission to the hospital and longer lengths of stay in the ED. Although this was not what we hypothesized, it is likely due to the pharmacists choosing to consult on patients with a complex medication history and medication risks who are also more

likely to be admitted to the hospital. These mixed results point to challenges aligning selection processes and efforts across disciplines that focus on different dimensions of geriatrics risk.

Our results are also unique in the assessment of outcomes by patient demographics. Although prior GED evaluations have not examined differences by subgroups, the broader literature on emergency care suggests that racial and ethnic minority groups experience longer ED length of stay and are less likely to be admitted to the hospital for the same diagnoses as White patients.²⁸⁻³⁰ Interestingly, our findings indicated shorter ED length of stay for the Black subpopulation (as well as those with limited English proficiency) and no differences in hospital admission rates. The differences between our findings and the broader literature may be explained by the fact that our ED serves a diverse population and has invested in specific supports for equitable care. For example, interpreters may be more readily available and the age-friendly ED NPs were ethnically diverse and second language proficient to be concordant with ED patient demographics. Specifically, the 6 age-friendly ED NPs collectively speak 6 languages (English, Spanish, Mandarin, Russian, Ukrainian, and Tigrigna) and represent White, Asian, and Black racial identities.

Understanding the return-on-investment from an intervention such as ours is also important to make the case to health systems for investment. The staff costs were the most substantial (consisting of 1.4 full-time equivalent NPs, 1.0 social worker and less than 0.5 pharmacist) and need to be compared with the savings from reduced admissions. In general, the age-friendly ED NPs spend 75 to 120 minutes on the mCGA. To further strengthen the return-on-investment, our consult service allowed the NPs to bill for services under inpatient and outpatient consultation billing codes depending on the patient's disposition from the ED as well as Cognitive Assessment and Care Planning Services billing per Centers for Medicare and Medicaid Services guidelines.

In conclusion, our intervention, consisting of a mCGA and the potential addition of social work and pharmacy assessments, was associated with a meaningfully lower level of hospital admissions without evidence of negative unintended consequences—overall and within varied patient subgroups. These findings add to the growing evidence demonstrating that GEDs can deliver important benefits equitably for older adults as a growing demographic presenting to ED services. The ED therefore represents a valuable setting in which to invest in interventions seeking to improve care for this population.

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