

## Geriatric Emergency Department Innovations: Preliminary Data for the Geriatric Nurse Liaison Model

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Older adults account for a large and growing segment of the emergency department (ED) population. They are often admitted to the hospital for nonurgent conditions such as dementia, impaired functional status, and gait instability. The aims of this geriatric ED innovations (GEDI) project were to develop GEDI nurse liaisons by training ED nurses in geriatric assessment and care coordination skills, describe characteristics of patients that these GEDI nurse liaisons see, and measure the admission rate of these patients. Four ED nurses participated in the GEDI training program, which consisted of 82 hours of clinical rotations in geriatrics and palliative medicine, 82 hours of didactics, and a pilot phase for refinement of the GEDI consultation process. Individuals were eligible for GEDI consultation if they had an Identification of Seniors At Risk (ISAR) score greater than 2 or at ED clinician request. GEDI consultation was available Monday through Friday from 9:00 a.m. to 8:00 p.m. An extensive database was set up to collect clinical outcomes data for all older adults in the ED before and after GEDI implementation. The liaisons underwent training from January through March 2013. From April through August 2013, 408 GEDI consultations were performed in 7,213 total older adults in the ED (5.7%, 95% confidence interval (CI) = 5.2–6.2%), 2,124 of whom were eligible for GEDI consultation (19.2%, 95% CI = 17.6–20.9%); 34.6% (95% CI = 30.1–39.3%) received social work consultation, 43.9% (95% CI = 39.1–48.7) received pharmacy consultation, and more than 90% received telephone follow-up. The admission rate for GEDI patients was 44.9% (95% CI = 40.1–49.7), compared with 60.0% (95% CI = 58.8–61.2) non-GEDI. ED nurses undergoing a 3-month training program can develop geriatric-specific assessment skills. Implementation of these skills in the ED

may be associated with fewer admissions of older adults. *J Am Geriatr Soc* 62:1781–1785, 2014.

**Key words:** geriatric emergency medicine; quality improvement; education

### QUESTION AND CHALLENGES MODEL IS TRYING TO ADDRESS

In 2010, almost 130 million individuals, 15% of whom were aged 65 and older, visited an emergency department (ED) in the United States.<sup>1</sup> The number of older adults who visit an ED has doubled in the last decade and continues to grow rapidly. Older adults presenting to EDs are highly likely to be admitted to the hospital, much more so than their younger counterparts.<sup>1</sup> Prevention of hospital admission saves older adults from frequently encountered adverse events, including delirium, functional status impairment, cognitive loss, and nursing home admission.<sup>2–4</sup>

It is unknown how many older adults are hospitalized for reasons other than acute medical illness, such as functional decline, polypharmacy, progressive dementia, caregiver stress, and unstable living situation. These nonurgent conditions are rarely addressed during a typical ED visit because of lack of resources, patient volume, and the need for rapid turnover of care spaces.<sup>5</sup> The predominant management strategy of emergency physicians at the Feinberg School of Medicine to handle these important but not imminently life-threatening geriatric problems is to recommend hospital admission.

The main goal of the Geriatric Emergency Department Innovations through Workforce, Informatics, and Structural Enhancements (GEDI WISE) model is to reduce preventable admissions for older adults by assessing and meeting their geriatric-specific, non-acute care needs in the ED. Comprehensive geriatrics assessments (CGAs) in the ED have previously been described at other sites.<sup>5–7</sup> The Systematic Intervention for a Geriatric Network of

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Evaluation and Treatment model identified geriatric-specific health needs and increased referrals for community linkages for older adults using a geriatric clinical nurse specialist.<sup>5</sup> Another study examined the effect of a complete geriatrics consultation service in a Montreal ED.<sup>6</sup> Neither of these programs used ED personnel or a generalizable training program and, as such, depended on external departments to provide significant resources for sustainability. Herein is presented a unique model of ED care for older adults—one that employs geriatric-specific assessments, multidisciplinary care coordination, and geriatrics-trained ED personnel. This model can be generalized to EDs around the country, because it harnesses the strengths of aging education in ED staff without altering physical space or disrupting established operations.

### SETTING OF GEDI WISE

GEDI WISE represents a three-site Health Care Innovation Award funded by the Centers for Medicare and Medicaid Services aimed at improving health, optimizing care delivery, and reducing costs for older adults in the ED. This article describes the specific innovation at one site, Northwestern Memorial Hospital (NMH), an 873-bed tertiary care academic hospital in Chicago. The NMH ED is a two-level 56-bed Level 1 trauma center that serves more than 88,000 individuals annually, 18.4% of whom are aged 65 and older. Twenty-eight board-certified emergency physicians staff the ED and supervise 50 residents while working alongside 120 nurses.

### THE GEDI NURSE LIAISON MODEL

The GEDI model at NMH centers on the development of a novel staff position, the GEDI Nurse Liaison (GNL). Four ED nurses with 98 years of collective clinical experience fill this role. The importance of extensive ED clinical experience was required for the GNL role to optimize communication; multitasking ability within a chaotic clinical environment; and familiarity with the staff, pace of care delivery, and protocols.

Over 4 months, the GNLs underwent a multidisciplinary curriculum composed of clinical, didactic, and practical arms developed by emergency medicine and geriatrics educational experts. The curriculum involved 82 hours of clinical rotations in geriatrics (inpatient primary service, inpatient consultations, outpatient clinic), palliative medicine (inpatient consultations, simulated patient encounters), skilled nursing facilities, and physical therapy.

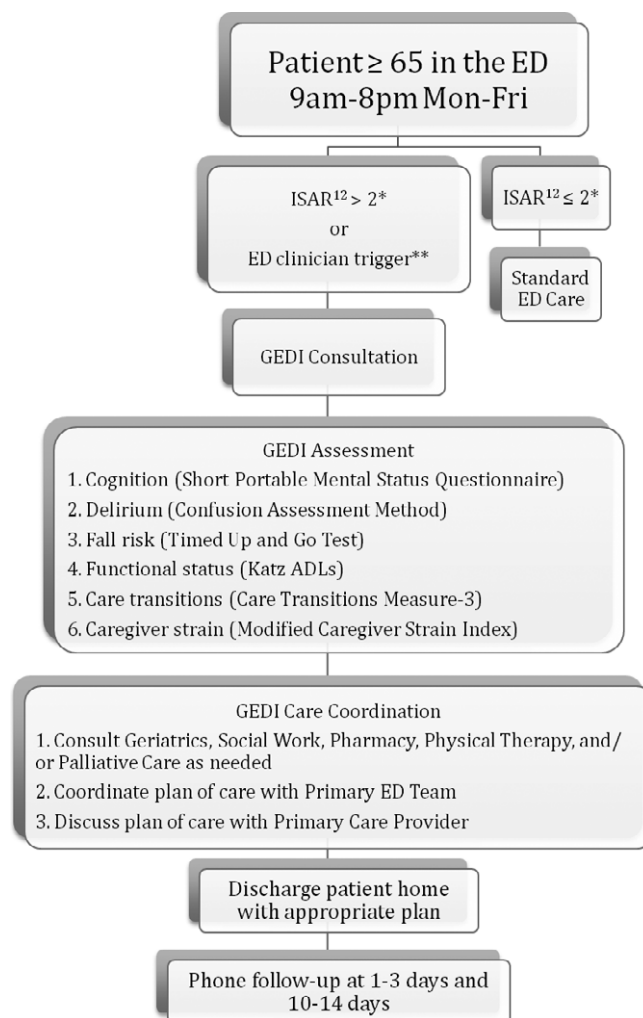
The didactic component involved 82 hours of small-group discussions led by geriatricians, emergency physicians, pharmacists, and social workers. The GNLs also watched video self-instruction lectures on the Portal of Geriatrics Online Education<sup>8</sup> and the Geriatric Emergency Medicine Section of the American College of Emergency Physicians<sup>9</sup> websites, read assigned journal articles, and conducted independent projects. They completed two national training courses (Nurses Improving Care for Healthsystem Elders<sup>10</sup> and Education in Palliative and End-of-life Care—Emergency Medicine)<sup>11</sup> and the Gerontological Resource Nurse Certification Examination, for a total

cost of approximately \$16,760 (independent of nursing salary costs).

In the final, practical phase of the curriculum the GNLs refined their skills in geriatric assessment and care coordination in the actual ED setting.

### IMPLEMENTATION OF THE GEDI WISE PROGRAM

Beginning April 1, 2013, all older adults ( $\geq 65$ ) entering the ED were screened using the Identification of Seniors at Risk (ISAR) tool,<sup>12</sup> a six-item validated tool (Figure 1)



**Figure 1.** Process map of the Geriatric Emergency Department Innovations (GEDI) consultation. ISAR, Identification of Seniors at Risk tool. \*Performed by triage or primary nurse. Six questions (1 point each): (i) Before this ED visit, did you need someone to help you regularly? (ii) In the last 24 hours, have you needed more help than usual? (iii) Have you been hospitalized in past 6 months? (iv) Do you have serious problems with your vision that cannot be corrected with glasses? (v) Do you have serious problems with your memory? (vi) Do you take >3 different medications daily? \*\*Clinician Trigger = “Uncertain” answer given by the ED physician to following question asked by the GNL: “Is the individual’s disposition very likely admission, very likely discharge, or uncertain?”

that identifies older adults at high risk for death, institutionalization, and poor functional status. An ISAR score greater than 2 or ED physician request are the two triggers for GEDI consultation. The GNLs are available Monday through Friday, 9:00 a.m. to 8:00 p.m., with two working simultaneously from 12:00 p.m. to 5:00 p.m.

The GNLs place the highest consultation priority when the decision to admit or discharge is uncertain. Individuals who do not have a clear, urgent medical indication for admission are the primary targets of the intervention.

After consultation is triggered, the GNL administers a series of validated tests, assessing for cognition (Short Portable Mental Status Questionnaire),<sup>13</sup> delirium (Confusion Assessment Method),<sup>4</sup> functional status, (Katz Activities of Daily Living),<sup>14</sup> fall risk (Timed Up and Go test),<sup>15</sup> caregiver strain (Modified Caregiver Strain Index),<sup>16</sup> and transitions (Care Transitions Measure-3).<sup>17</sup>

In the ED, the GNL is able to consult with pharmacy, social work, physical therapy, geriatrics, palliative care, and hospice services as needed. The GNL will then make recommendations to the ED team and discuss the care plan with the individual's primary care provider. Upon completion of the assessment, the GNL creates a care plan for safe discharge instead of admission. For older adults who are discharged, the GNL performs follow-up telephone calls at 1 to 3 days and 10 to 14 days. Follow-up calls assess pain, medication concerns, outpatient appointment status, home healthcare status, and unexpected visits to healthcare settings. The GNLs document all actions in the electronic medical record, which is available to other providers and is used for programmatic data analysis.

Throughout the curricular and implementation phases, the GNLs continue to work part time (≥0.2 full-time equivalent (FTE)) as ED staff nurses to maintain their clinical skills. During their GEDI shifts (≥0.6 FTE), the GNLs do not participate in primary ED nursing care and instead focus on conducting GEDI consultations.

**Data Analysis**

The Northwestern institutional review board approved this project. The primary outcome is to reduce unnecessary admissions of older adults of all acuity levels as measured according to Emergency Severity Index (ESI) score, a common risk-stratification tool that ED triage nurses use. A lower ESI score indicates a more-severe presentation (e.g., 1 for septic shock, 2 for chest pain).

Differences in proportions were calculated using the *t*-test and reported with 95% confidence intervals (CIs). Differences in length of stay data were calculated using the Wilcoxon rank-sum test and reported with 25% to 75% interquartile ranges.

**RESULTS**

From April through August 2013, 7,213 individuals aged 65 and older were seen in the ED. GNLs performed 408 consultations out of 2,124 eligible (based on ISAR or clinician trigger) individuals. Clinicians requested 125 of these (30.6%, 95% CI = 26.4–35.3), and ISAR triggered the rest (69.4%, 95% CI = 64.7–73.6). Baseline characteristics of individuals who received GEDI consultation and those

who did not are presented in Table 1. Two-thirds were women, and 89% were ESI 2 or 3. Early follow-up was completed in 90.9% of subjects and late follow-up in 86.5%. GEDI patients were more likely than non-GEDI patients to be slightly older and female, have Medicare insurance, and have been an inpatient in the 30 days before the index visit.

Table 2 indicates the primary outcome differences between GEDI patients and non-GEDI patients after implementation. GEDI was associated with 13% fewer admissions overall, including almost 16% fewer in subjects who had an ESI score of 2. This reduction in inpatient admissions was due to more discharges rather than more observation stays. The increase in discharges did not occur at the expense of a higher 3-day ED revisit rate.

**Table 1. Baseline Characteristics of the Geriatric Emergency Department Innovations (GEDI) and Non-GEDI Cohorts**

| Characteristic                        | GEDI, n = 408 | Non-GEDI, n = 6,806 | Difference (95% Confidence Interval) |
|---------------------------------------|---------------|---------------------|--------------------------------------|
| Female, %                             | 65.9          | 58.0                | 8.0 (3.1–12.5) <sup>a</sup>          |
| Inpatient in last 30 days, %          | 16.6          | 12.5                | 4.2 (0.9–8.2) <sup>a</sup>           |
| Insurance type, %                     |               |                     |                                      |
| Medicare                              | 90.2          | 78.9                | 11.3 (7.9–14.0) <sup>a</sup>         |
| Private                               | 8.3           | 11.9                | –3.6 (–6.0 to –0.4) <sup>a</sup>     |
| Self-pay                              | 0.7           | 2.9                 | –2.2 (–2.8 to –0.7) <sup>a</sup>     |
| Medicaid                              | 0.7           | 1.6                 | 0.9 (–1.5–0.6)                       |
| Race or ethnicity, %                  |               |                     |                                      |
| White                                 | 56.9          | 60.1                | –3.3 (–8.2–1.6)                      |
| Black                                 | 33.8          | 27.2                | 6.6 (2.0–11.4) <sup>a</sup>          |
| Hispanic                              | 5.6           | 7.3                 | –1.7 (–3.6–1.1)                      |
| Asian                                 | 2.0           | 3.1                 | –1.1 (–2.2–0.8)                      |
| Age                                   |               |                     |                                      |
| Mean                                  | 79.3          | 75.5                | 3.7 (2.9–4.6) <sup>a</sup>           |
| Median (interquartile range)          | 79 (73–86)    | 74 (68–82)          | ( <i>P</i> < .001) <sup>a</sup>      |
| Emergency Severity Index score        |               |                     |                                      |
| 1                                     | 0.5           | 1.0                 | –0.5 (–1.4–0.4)                      |
| 2                                     | 42.7          | 54.3                | –11.6 (–17.6 to –5.5) <sup>a</sup>   |
| 3                                     | 45.9          | 32.9                | 13.0 (7.0–19.0) <sup>a</sup>         |
| 4                                     | 10.8          | 11.0                | 0.2 (–3.6–3.9)                       |
| 5                                     | 0.0           | 0.8                 | –0.8 (–1.0 to –0.6) <sup>a</sup>     |
| Follow-up call, 1–3 days, n (%)       | 371 (90.9)    | —                   | —                                    |
| Follow-up call, 10–14 days, n (%)     | 353 (86.5)    | —                   | —                                    |
| Social work consultations, n (%)      | 141 (34.6)    | —                   | —                                    |
| Pharmacy consultations, n (%)         | 179 (43.9)    | —                   | —                                    |
| Physical therapy consultations, n (%) | 18 (4.4)      | —                   | —                                    |

<sup>a</sup>Significant difference

**Table 2. Clinical and Operational Outcomes for the Geriatric Emergency Department Innovations (GEDI) and Non-GEDI Cohorts**

| Outcome                                      | GEDI, n = 408 | Non-GEDI, n = 6,806 | Absolute Difference (95% Confidence Interval) |
|--|---------------|---------------------|---|
| Discharge, %                                 | 55.2          | 39.2                | 16.0 (11.0–20.9) <sup>a</sup>                 |
| ESI 2  | 45.4          | 19.8                | 25.7 (18.3–33.2) <sup>a</sup>                 |
| ESI 3  | 60.0          | 52.1                | 7.8 (0.3–14.9) <sup>a</sup>                   |
| ESI 4  | 72.7          | 93.4                | –20.7 (–9.5 to –35.3) <sup>a</sup>            |
| Admission—inpatient, %                       | 27.2          | 40.2                | –13.0 (–8.4 to –17.3) <sup>a</sup>            |
| ESI 2  | 37.9          | 53.6                | –15.7 (–8.1 to –22.8) <sup>a</sup>            |
| ESI 3  | 21.9          | 30.3                | –8.3 (–1.6 to –14.0) <sup>a</sup>             |
| ESI 4  | 6.8           | 3.4                 | 3.4 (–1.3–14.9)                               |
| Admission—observation, %                     | 17.7          | 20.4                | –2.8 (–6.3–1.3)                               |
| Admission—intensive care unit, %             | 3.2           | 7.9                 | –4.8 (–2.5 to –6.2) <sup>a</sup>              |
| Death, %                                     | 3.9           | 4.4                 | –0.5 (–2.1–1.9)                               |
| 30-day inpatient readmission, %              | 13.2          | 17.0                | –3.7 (–6.9–0.1)                               |
| 3-day ED revisit, %                          | 2.5           | 2.7                 | –0.2 (–1.5–1.8)                               |
| ED length of stay, hours, median (IQR)       | 6.4 (4.9–8.2) | 5.3 (3.8–7.0)       | 1.1 ( <i>P</i> < .001)                        |
| Inpatient length of stay, median hours (IQR) | 72 (44–125)   | 90 (48–159)         | –18 ( <i>P</i> = .07)                         |

ESI = Emergency Severity Index; ED = emergency department.

<sup>a</sup>Statistically significant difference.

### Limitations

Several limitations of this work require resolution. The most important of these is the question of selection bias. There is no precisely defined comparison group with which the GEDI cohort can be compared with. That observation admissions were not different between the two cohorts suggests that the two groups were similar. Table 1 shows fewer subjects with ESI scores of 2 and 3 in the GEDI cohort than in the non-GEDI cohort, but a higher discharge rate of those with ESI scores of 2 and 3 in the GEDI than in the non-GEDI cohort. Subjects with an ESI score of 4 (seen in equal numbers between the two groups) in the GEDI cohort had a higher admission rate than in the non-GEDI cohort. Combined with good follow-up mechanisms, this indicates that GEDI may be a sharper screening instrument than ESI with respect to acuity and disposition decision, although the absence of an equivalent comparison group obscures the exact effectiveness of the intervention without advanced statistical methods such as propensity score matching. A second limitation was that GEDI consultation was associated with a statistically significantly longer median ED length of stay (1.1 hours longer). This may have significant downstream effects with regard to patient flow. The full operational effect of GEDI consultations on all individuals in the ED—older and younger—will be analyzed. Nevertheless, individuals who underwent GEDI consultation and were subsequently admitted trended toward (*P* = .07) a shorter inpatient length of stay. It is difficult to tell whether GEDI consultations reduced work for inpatient teams, resulting in more-rapid discharge, or whether this was simply due to selection bias. Third, the proportion of individuals that has undergone the GEDI WISE intervention has been small relative to the overall number of older adults in the ED (5.7%) and to the number of individuals eligible for the intervention (19.2%). Despite the presence of two GNLs on weekdays,

the inability to manage more people has limited the effect on total hospital admissions. This may be related to the lack of overnight and weekend hours and to the performance of follow-up telephone calls, which can take up to 2 hours of daily GNL time. Fourth, changing admitting behaviors of ED providers has, understandably, been delayed. The GNLs are advocates for older adults and question ED providers about the anticipated disposition for eligible individuals. The project became more successful after repeated reminders were delivered to ED providers about the benefits of avoiding unnecessary hospital admission for older adults. Finally, the need for more ED social work support is evident. The social worker is involved in 34.6% of all GNL consultations but was present only from 9:00 a.m. to 5:00 p.m. during this data collection period. Fortunately, as of November 2013, the hospital granted 3 extended hours for this valuable team member, until 8:00 p.m. This change may increase the number of successful safe discharges of older adults.

### Lessons learned

GEDI WISE at Northwestern University is one of the first structured models of care identifying and providing for the needs of older adults in the ED staffed completely by ED personnel. With the GNL managing these needs, factors that once led to hospital admission are being addressed in the ED, often facilitating safe discharge.

More than 400 older adults have experienced GEDI interventions, with promising preliminary results. Older adults who presented to the ED with a high triage acuity score (ESI 2 or 3) and received the GEDI WISE intervention were more likely to be discharged from the ED than their control counterparts. Preventing hospital admission through geriatric-responsive ED management improves the care of older adults, potentially preventing significant physical and cognitive decline.

There has been an increase in hospital admissions in older adults who received the GEDI WISE intervention and had a less-severe ED presentation (ESI 4) (GEDI 7%, non-GEDI 3%). It may be that the GNLs uncovered underlying problems in older adults with lower-acuity complaints that necessitated admission. Before GEDI WISE, these would not have been identified in the ED before discharge. It may be that these admissions were of lower acuity because the conditions were caught earlier or prevented future morbidity and mortality (e.g., from falls or cognitive dysfunction) had the conditions not been identified. Lengths of stay for these hospitalizations and outcomes are currently being tracked, with results forthcoming.

From a financial policy standpoint, avoiding the costs of a hospitalization for older adults is crucial for individuals and insurers alike. The authors believe that this program will also be of interest to EDs throughout the country. With numerous options for urgent and emergency care, older adults and their families may specifically choose to visit EDs that are sensitive to their unique needs. Without changing the ED's physical structure, GEDI WISE at Northwestern University has created a geriatric-responsive ED environment potentially generalizable to other health systems. The limitations of the model will be addressed over the next few years to better care for this important growing population in the ED.

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