The Geriatric Emergency Department Collaborative
Geriatric Emergency Care Applied Research Network (GEAR)

GEAR Consensus Conference

October 25–26, 2019
Courtyard by Marriott Denver Airport
6901 Tower Road
Denver CO 80249

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ABBREVIATIONS

ADE	adverse drug event
CPOE	computer physician order entry
CTM-3	Three-item Care Transition Measure
ED	emergency department
EMR	electronic medical record
EMS	Emergency Medical Services
FROP-COM	Falls Risk for Older People-Community Setting
GEAR	Geriatric Emergency Care Applied Research Network
GEM	geriatric emergency medicine
GEMSSTAR	Grants for Early Medical/Surgical Specialists Transition to Early Aging Research
HELP	Hospital Elder Life Program for Prevention of Delirium
IRB	institutional review board
JAHF	John A. Hartford Foundation
NIA	National Institute on Aging
NIH	National Institutes of Health
NIDUS	Network for Investigation of Delirium Across the U.S.
PICO	population, intervention, comparison, outcome
PIM	potentially inappropriate medication
RCT	randomized controlled trial
SNF	skilled nursing facility
START	Screening Tool to Alert Doctor to Right Treatment
STOPP	Screening Tool of Older Patients' Prescriptions

EXECUTIVE SUMMARY

The Geriatric Emergency Care Applied Research Network (GEAR) aims to establish infrastructure to support collaborative, interdisciplinary research to improve care for older adults. Toward that end, the GEAR Task Force is developing consensus papers and an overall research map for GEAR and for geriatric emergency medicine in general. On October 25–26, 2019, the Task Force convened a conference in Denver, Colorado, to explore priority questions generated by Task Force subcommittees and to develop consensus on key research priorities and how to study them. The consensus conference, which comprised five mini-conferences focused on the domains of cognitive impairment, medication safety, elder abuse, falls, and care transitions, brought together a diverse group of stakeholders.

On October 25, GEAR Task Force subcommittees presented overviews of work leading up to the conference and the priority questions they had developed. On Saturday, October 26, conference participants broke into small groups and discussed which questions to study in each of the five areas, how best to study those questions, and which data should be collected. Conference participants then reconvened, reported on their small-group discussions, and engaged in further discussion. On the basis of these reports and discussions, subcommittee co-chairs refined their priority questions. Although all priority questions were considered important, conference participants voted to rank-order the refined questions. The subcommittees will use these questions to develop study designs, which will be pulled together in an initial observational pilot research project to begin in Summer 2020.

Cross-Cutting Themes Across the Five Domains

- Older patients are heterogeneous. Research studies therefore should define and phenotype a target population for intervention. At this conference, participants suggested identifying and focusing on high-risk populations such as cognitively impaired individuals, nursing home residents, frail older adults, and high health care utilizers.
- The GEAR Task Force should consider leveraging easily accessible data, such as EMR data or system flags, to identify highest-risk patients.
- The highest-impact patients might be those discharged from the ED back to the community, because the ED might be their only point of health care access. Studies could focus on preserving independence in this population.
- The GEAR Task Force should consider carefully the optimal outcomes of interest, as studies may not observe the anticipated effects. Outcomes to consider (in addition to the common utilization outcomes of admissions, revisits, length of stay, and mortality) include functional status, quality of life, and markers of patient care access such as primary care visits, referrals, or medication access.
- GEM researchers should consider when, how, and what outcomes should be evaluated when assessing the impact of geriatric emergency care programs or interventions. These will depend on the context of interventions, downstream effects, and timing.

Top Three Ranked Priority Questions

Cognitive Impairment

1. A prevention focus, including the development of a screening instrument/risk score that does not entail additional work for the nurse or physician.
2. Identifying high-risk patients for cognitive impairment (lumping delirium and dementia together), with unique care bundles depending on whether the patient has dementia, delirium, or delirium superimposed on dementia.
3. Testing delirium prevention strategies in the ED once high-risk individuals have been identified.

Medication Safety

1. How should those at highest risk for medication safety AEs be identified?
2. What medications should be avoided, and what are safer alternatives for targeted patients?
3. What patient-centered outcomes should be used to assess ED medication safety?

Elder Abuse

1. Can we effectively identify patients at high risk for elder abuse for whom we can then do targeted screening?
2. Does an intervention to reduce caregiver stress among ED patients with cognitive impairment improve caregiver health and also reduce elder abuse?
3. Does screening and structured interventions improve outcomes for victims of elder abuse?

Falls

1. Intervention components and effectiveness: Fall prevention intervention as a bundle or unraveling components? What should be in the bundle?
2. Determining optimal outcomes: What are the optimal outcomes and how best to track falls for measurement of outcomes outside the ED?
3. What are the stakeholder patient-prioritized outcomes (e.g., maintaining independence, reducing fear of falling, reducing stigma) and patient-targeted interventions?

Care Transitions

1. What are the optimal outcome measures for ED-to-home transition interventions (i.e., appropriate for a heterogeneous population and responsive to change)? What is the best timing, process, utilization, and patient-perspective battery of measures?
2. Who are the optimal candidates for additional support during the ED-to-home transition? Are these the same patients as those at highest risk for ED return?*
3. How can we improve information transfer/communication in bidirectional nursing home-to-ED transitions?

INTRODUCTION AND OVERVIEW OF THE MEETING

With an aging U.S. population, there is an increasing demand for optimal, interactive care for older adults across emergency departments (EDs), hospitals, and health systems. However, the amount of strong evidence resulting in improved outcomes in geriatric emergency care is limited. The need for research in geriatric emergency medicine (GEM) was acknowledged early on by Lowell Gerson, PhD, who observed the disproportionate use of emergency departments by older persons and, with others, formed the Society for Academic Emergency Medicine Geriatric Emergency Medicine Task Force. Dr. Gerson's work and mentorship has led to several developments, including the establishment of clinical guidelines and accreditation processes for geriatric emergency departments. The Geriatric Emergency Care Applied Research Network (GEAR), which aims to establish infrastructure to support collaborative, interdisciplinary research to improve care for older adults, is yet another result of that work.

The GEAR Task Force is developing consensus papers and an overall research map for GEAR and for GEM researchers in general. It began its work in Fall 2018 by generating and ranking questions focused on **P**opulations, **I**nterventions, **C**omparisons, and **O**utcomes (PICO questions). Subcommittees focused on five domains—cognitive impairment, medication safety, elder abuse, falls, and care transitions—conducted systematic reviews and synthesized the evidence for these questions, then developed priority questions based on their reviews. On October 25–26, 2019, the Task Force convened a conference in Denver, Colorado, to explore these priority questions and to develop consensus on key research priorities and how to study them. The consensus conference, which comprised five mini-conferences, brought together a diverse group of stakeholders, including emergency department physicians, geriatricians, pharmacists, nurses, medical students and fellows, social workers, educators, and caregivers.

Drs. Ula Hwang and Chris Carpenter opened the conference by honoring Dr. Gerson for his pioneering work in GEM. The subcommittees then presented overviews of their work and the priority questions they had developed. On Saturday, October 26, conference participants broke into small groups and discussed which questions to study in each of the five areas, how best to study those questions, and which data should be collected. Conference participants then reconvened, reported on their small-group discussions, and engaged in further discussion. On the basis of these reports and discussions, subcommittee co-chairs refined their priority questions. Although all priority questions were considered important, conference participants voted to rank-order the refined questions.

Not everyone was able to vote at the conference itself. Thus, the number of votes recorded in this summary will likely change as the organizers work to secure votes from all conference participants. It also should be noted that points raised during each session's general discussion could be applied across all five domains.

Although the R33 is intended overall to assess a big-picture issue that is important to the broader community, this consensus conference is intended to distill this broader picture down to questions that would be feasible to address in an initial pilot study to begin in Summer 2020. In the months following the conference, the five GEAR Task Force subcommittees will develop and/or refine consensus papers and propose research studies based on discussions and the key research priorities identified at the consensus conference. The proposed studies, which ideally

will be feasible and overlapping, will be combined into a single, observational pilot R33 research project that will begin in Summer 2020 and involve three sites, with 100 study participants per site.

At the time of the consensus conference, the approach for the first R33 pilot study was not yet clear. Depending on the goals of the GEAR Task Force subcommittees and leadership, these studies could take a wide range of approaches, from mechanistic exploratory studies to pragmatic clinical trials. Consensus conference participants were therefore asked to consider where in that continuum to start, because that will affect the formulation of research questions and the selection of research methods.

COGNITIVE IMPAIRMENT

Overview and Priority Questions

Chris Carpenter, MD, MSc, FACEP, FAAEM, Washington University School of Medicine

Delirium is multifactorial, with cognitive impairment and dementia being key risk factors. Likewise, individuals identified as experiencing delirium in emergency departments are more likely to develop dementia as older adults. Yet almost three decades of research has shown that delirium and dementia are under-recognized in emergency departments, despite a proliferation of screening tools. Under-recognition in the emergency department leads to under-recognition in inpatient services and to other consequences such as longer lengths of stay, lower patient satisfaction, accelerated cognitive declines, and increased health care costs. With a research focus on the early stages of delirium in emergency medicine, GEAR could lead the field in studying interventions.

The GEAR subcommittee on cognitive impairment initially focused on four PICO questions in dementia and delirium, then subsequently restricted its focus to two questions on delirium.

PICO Question 1

- Population: 65-year-old ED patients from any pre-ED setting.
- Intervention: Risk stratification for delirium during an ED episode of care using feasible and validated instruments.
- Comparison: Clinician gestalt for delirium.
- Outcome: Sensitivity, specificity, likelihood ratio, receiver operating characteristic, area under the curve, association of delirium identification with ED revisits and mortality, comparison of claims data delirium incidence with prospective ED study data

The subcommittee identified 1,200 articles describing instruments for delirium screening. Following removal of duplicates, abstract screening, full text review and adjudication and the addition of bibliographies or personal correspondence, 48 articles were included in the subcommittee's systematic review and evidence synthesis. The articles described 27 different instruments for delirium screening in ED settings. These instruments were used on heterogeneous ED populations, with estimates of delirium prevalence ranging from 6% to 38%. The studies used different comparators for validation.

The subcommittee noted that the studies focused only on diagnostic accuracy, the lowest level of diagnostic research evidence. The studies did not account for diagnostic biases such as incorporation bias, differential bias, partial verification bias, or imperfect gold standard bias. Despite the heterogeneity of the patient populations and of delirium itself, the studies focused only on the presence or absence of delirium without considering the various delirium subtypes, etiologies, and phenotypes. This lack of a mechanistic understanding of the pathophysiology underlying different subtypes of dementia can have serious implications for interventions. Moreover, the studies implemented these screening instruments in academic medical centers; pragmatic studies are needed in real-world EDs.

PICO Question 2

- Population: 65-year-old ED patients identified as high-risk for delirium during ED episode of care.
- Intervention: Action to reduce the recurrence (i.e., prevent), duration, or severity of prevalent or incident delirium.
- Comparison: Standard of care.
- Outcome: ED length of stay, hospital length of stay, ED returns, quality of life, mortality at 1 year.

The subcommittee identified 700 articles. Following removal of duplicates, abstract screening, and full text review and adjudication, 15 studies were included in the systematic review and evidence synthesis. These were the only studies that assessed interventions in the ED, and only one of those was a randomized controlled trial (RCT). The studies evaluated different types of interventions, and there was no consistency in standard of comparison, who assesses for delirium, the timeframe in which delirium was assessed, or the outcomes assessed.

Best Practices

Multiple screening instruments are available. EDs should choose wisely based on departmental considerations such as the similarities between their patients and the patients in which the tool was validated, whether identifying delirium is the highest priority for the department, how well the instrument fits with the department's charting system, how easy the instrument is to use, and whether use of the instrument will sustain delirium screening. With respect to interventions, seven Cochrane reviews of interventions outside of ED settings found that none were effective. However, EDs could implement some common-sense interventions, such as promoting mobility on longer-term ED patients, ensuring good sleep hygiene, and medication reviews by pharmacists, without waiting for RCT evidence.

Priority Questions

Because delirium research is still in its early stages, GEAR has the opportunity to lay the groundwork to accelerate research on delirium in the ED. On the basis of its review and evidence synthesis, the GEAR subcommittee on cognitive impairment has developed a draft manuscript and proposed the following questions:

- Phenotyping: Is every case of delirium in the ED the same in terms of pathophysiology, anticipated trajectory, expected response to interventions, and accuracy for ED delirium screening instruments?
- Implementation: A simultaneous evaluation of pragmatic reproducibility, fidelity, adaptability, and sustainability with accuracy and effectiveness is essential.
- Phenotype-targeted interventions: A paradigm shift away from a monomorphic delirium detection/intervention approach is needed whereby screening and treatment are based on biological plausibility and the pathophysiological etiology of delirium.

- Knowledge acquisition: GEAR and others can harness the momentum in the fields of dementia and cognitive impairment to build a multi-institutional data repository and research infrastructure for delirium research, similar to the Pediatric Emergency Care Applied Research Network (PECARN).

Initial Discussion Points

- The subcommittee should reconsider including PICO questions about dementia. Although there is little to no evidence for dementia screening in the ED, there is a push from the public health perspective to identify dementia early in the ED setting. Many older patients go to the ED, dementia screening can inform care transitions, and it is not yet clear whether such a screen could predict cognitive impairment. Funding opportunities supporting research on dementia in the ED have been published. For example, a request for applications published 2 days before the consensus conference is calling for research proposals on dementia screening in emergency medicine.
- Because EDs serve as the "front door" to care for many older adults, GEAR should consider questions about prevention. For example, research could explore the implementation of programs such as the Hospital Elder Life Program for Prevention of Delirium (HELP) in the ED, treatment as prevention, and screening for dementia, a risk factor for delirium.
- As GEAR narrows its focus, it should try again to connect with and leverage the resources and expertise of the Network for Investigation of Delirium across the U.S. (NIDUS, led by Sharon Inouye) and other opportunities funded by the National Institute on Aging (NIA).
- If health care providers do not know the research question, the diagnostic certainty of delirium measurement will decline.

Reports from Small-Group Discussions

Group 1 (Purple)

Group discussion focused on how to identify individuals, such as prolonged ED borders, who are at highest risk for cognitive impairment and ways to simplify such identification while the individuals are still in the ED. The group suggested incorporating dementia into this question. The group also discussed how to identify care pathways that affect and prevent delirium once high-risk patients are identified.

Specific questions or suggestions focused on:

- Risk factors for delirium.
- Creating a risk score for delirium.
- Intervening and improving the patient experience among high-risk patients.
- Screening at the beginning of an ED stay based on Epic variables.
- Using the Delirium Triage Screen to screen border patients.
- Whether high-risk patients should enter the Adept pathway.

Group 2 (Orange)

The group elected not to eliminate any of the proposed PICO questions. However, the group agreed that building a delirium-focused network would bring the highest yield. Such a network would collect cases of confirmed and suspected delirium to build a large dataset for hypothesis-testing and support future research grants on what delirium is, how to prevent it, patient outcomes, demographics, and effects on caregivers. Funding structures such as the NIA R33 infrastructure mechanism could be used to support the development of the network.

The group also proposed:

- A survey of ED nurses and physicians to describe difficult cases with respect to prevention, diagnosis, and management of delirium.
- A focus on prevention and detection instruments themselves: where to test (triage or bedside); what to assess in an RCT (the instruments, prevention, or screening in high-risk patients); and outcomes, such as length or stay or return visits within 30 days, at the screening institutions.
- Equity, for example capturing the delirium experience among minority groups or in rural settings.

Group 3 (Yellow)

As the last group reporting during this session, Group 3 noted common points across all groups, the primary one being the need for an intervention or process in place for patients who screen positive for delirium. Any information that is collected in the ED must be disseminated to the rest of health system, including the inpatient team, because others might be unaware that the patient experienced a delirium episode. The process for managing patients who screen positive for delirium also affects the health system's choice of screening instruments, which in turn affects the tools used by the ED. The use of different screening tools by different departments within the system makes the implementation process less effective.

The group also raised the following questions:

- How and when should you screen in the ED? When the patient first comes in, or later?
- Who should be screened? Should the ED use universal or targeted screening?
- What is the best method for phenotyping patients, and ow can this be tied to outcomes? At present, the most common method is based on motor activity.
- How do we implement delirium screening and make it accessible to non-academic health centers?
- What does the phenotype for occult delirium look like?

With respect to PICO Question 2, the group agreed on the need to develop reasonable treatments to improve screening and change management, which in turn would help to avoid long stays in the ED. Different treatments will be needed for various phenotypes and accounting for patient

factors. For example, the effectiveness of a treatment might be influenced by the presence or absence of dementia. Iatrogenic versus nosocomial delirium must be considered, because it is not clear how often procedures in the ED cause delirium. If it is a common occurrence, then modifiable risk factors for nosocomial delirium must be identified. The group suggested interventions for patients discharged from the hospital as low-hanging fruit for research.

The group suggested looking at geriatric EDs and assessing whether detection rates and outcomes are better in these settings. The group also suggested assessing the duration and severity of delirium, as well as the incidence. In addition, the group noted the heterogeneous and multifactorial nature of delirium and suggested a focus more on management than on treatment. To address the heterogeneity of delirium, multimodal therapies are needed. To address the multifactorial nature of delirium, researchers and clinicians should develop a bundle of interventions, then deconstruct that bundle later based on various phenotypes and which components appear to be most effective.

Group 4 (Green)

The group identified the following as pressing issues:

- Validating and implementing an existing tool, rather than inventing a new one.
- Currently, funding is focused on dementia. Because individuals with dementia are at highest risk for delirium, linking delirium with dementia would form a high-yield area for research.
- Questions about lumping versus splitting. Lumping would be better for screening and prevention, whereas splitting would be better for targeted interventions.
- Determining who is primarily responsible for screening: the nurse or the physician.
- Having a process/intervention in place for patients who screen positive, with a focus on patient-centered outcomes such as functional status, who is admitted and who is discharged, and quality of life. Clinical outcomes and mortality could also be tracked.
- Understanding the potential for harm and how to identify whether a process is harmful. Suggested outcomes of focus include adverse events, potentially inappropriate medications (PIMS), increase in anti-psychotic use, and role of outpatient care.

Discussion

Discussion focused on screening and on identifying high-risk groups that do not already have delirium. Some participants suggested that the GEAR Task Force subcommittee consider whether to have all three R33 pilot study sites focus on one specific screening instrument or to set up a comparison in which two sites use one tool while the third site uses another. Other participants suggested developing a risk score to identify patients at risk and therefore help EDs conserve limited resources.

Consensus conference participants also assessing whether screening would be better done on the patient side, as ED nurses are already tasked with asking a large number of questions. Participants suggested developing an automated, EMR-based phenotyping algorithm in which Epic identifies high-risk patients based on existing data. In this context, some noted, even a risk

score for iatrogenic delirium could be helpful. Some participants expressed concern, however, that an EMR-based method might not be the best fit for screening older adults.

The overall group noted that phenotyping will be important across topics. For example, phenotype will be an important consideration in the type of care transition each patient will have. Participants also suggested that language and non-English-speaking patients be included in research questions focused on equity.

Voting/Ranking of Revised Questions

With 38 responses, consensus meeting participants ranked the revised research priority questions:

4. A prevention focus, including the development of a screening instrument/risk score that does not entail additional work for the nurse or physician.
5. Identifying high-risk patients for cognitive impairment (lumping delirium and dementia together), with unique care bundles depending on whether the patient has dementia, delirium, or delirium superimposed on dementia.
6. Testing delirium prevention strategies in the ED once high-risk individuals have been identified.
7. Knowledge acquisition: harnessing momentum in the fields of cognitive impairment (mostly dementia) to build a multi-institutional data repository and research infrastructure for delirium research, similar to PECARN.
8. Implementation: simultaneous evaluation of pragmatic reproducibility, fidelity, adaptability, and sustainability with accuracy and effectiveness is essential in building for implementation.
9. Phenotyping: Is every case of delirium in the ED the same in terms of pathophysiology, anticipated trajectory, expected response to interventions, and accuracy for ED delirium screening instruments?
10. Phenotype-targeted interventions: shifting the paradigm away from a monomorphic approach to delirium detection and intervention to an approach where screening and treatment are based on biological plausibility and the pathophysiologic etiology of delirium.*
11. Survey of ED health care providers to define “difficult delirium cases.”

*This question actually tied with the preceding question for 6th in the rank order.

MEDICATION SAFETY

Overview and Priority Questions

Camille E. Vaughan, MD, MS, Emory University School of Medicine; Allyson Greenberg, PharmD, Northwestern Memorial Hospital; Ula Hwang, MD, MPH, FACEP, Icahn School of Medicine at Mount Sinai

The number of ED visits is growing among older adults, who accounted for more than 23 million ED visits in 2016. The majority of these patients are not admitted to the hospital. Instead, they are discharged with at least one new medication. Because ED physicians are caring for patients they do not know and are unaware of the patients' medication history, these new prescriptions increase the risk for medication errors and adverse drug events (ADEs) such as drug-drug interactions, adverse drug reactions (ADRs), and polypharmacy, which in turn increase the likelihood of adverse outcomes such as readmissions, rehospitalizations, and increased morbidity and mortality.

The John A. Hartford Foundation (JAHF) has established the Four M's Framework to define Age-Friendly Health Systems. This framework focuses on what **M**atters to patients, **M**edications, **M**entation (delirium, dementia, depression), and **M**obility. On the basis of this framework, if medication is necessary, health care providers should use age-friendly medications that do not interfere with the other three M's across various care settings. The Geriatrics ED Guidelines for Medication Management recommend that EDs establish a medication list; increase awareness of polypharmacy in patients, defined as more than 5 medications; assess for high-risk medications; and engage multidisciplinary teams for patients on high-risk medications.

Avoiding ADEs requires a comprehensive approach to avoid dangerous medications in older adults. This includes the use of criteria lists in the literature to guide prescribing. The American Geriatrics Society's Beers Criteria, which were updated within the past year, provide recommendations based on PIMs, medications to avoid with certain conditions, medications to use with caution, drug-drug interactions, and dose-adjustments based on renal function. The Screening Tool of Older Patients' Prescriptions (STOPP) focuses primarily on avoiding risky medications and is categorized based on physiologic systems. STOPP also has been combined with the Screening Tool to Alert doctors to Right Treatment (START), which focuses on potential prescribing omissions (PPOs). The Rationalization of home medication by an Adjusted STOPP in older Patients (RASP) list is based on a study showing that medication reviews by pharmacists improve clinical outcomes among older adults.

The GEAR subcommittee on medication safety focused on four PICO questions. For all four questions, the population was patients aged 65 years and older discharged from the ED. At the consensus workshop, the subcommittee reported their findings for the first two questions and preliminary findings for the third.

PICO Question 1

- Intervention: Support to clinicians to avoid PIMs.
- Comparison: Standard or routine care.
- Outcome: Pre- and post-intervention PIMs rates.

The subcommittee identified 495 studies, 15 of which met the subcommittee's inclusion criteria. Nine of the studies were observational, five were RCTs, and one was a retrospective chart review. Only three types of interventions were studied: pharmacist review of medications for PIMs and reconciliation of new and chronic prescriptions; computerized decision support; and academic detailing. With respect to pharmacist review, one RCT showed a reduction in ADEs, but the other studies found no effects on admission, length-of-stay, or institutionalization at 4 months. Computer decision support reduced the risk of inappropriate medications, improved medication dosing, and lowered ADE rates, but clinicians often declined the support's recommendations. Academic detailing was particularly effective in reducing the use of PIMs.

PICO Question 2

- Intervention: Patients with prescriptions guided by clinician support.
- Comparison: Patients receiving standard or routine care.
- Outcome: ADEs, hospitalizations, ED return visits, readmissions.

The subcommittee identified almost 3,000 papers, of which 5 met inclusion criteria. The interventions tested in these studies were pharmacist review of medications based on STOPP/START, RASP, or "high-risk medications" or ED computer physician order entry. The studies assessing pharmacist review reported high rates of inappropriate prescribing and low acceptance of recommendations. CPOE acceptance was also low, and the intervention had no effect on outcomes.

PICO Question 3

- Intervention: Patients prescribed Beers medications.
- Comparison: Patients prescribed non-Beers medications.
- Outcome: Hospitalizations, ED return visits, number of medications prescribed, patient satisfaction.

Hammouda et al., who presented a later-breaker the same weekend at the American College of Emergency Physicians Research Forum, found no differences between the Beers and non-Beers group in the number of hospital admissions or the number of ED revisits at 3 or 30 days. They also found no differences in the number of outpatient visits but cautioned that these visits are recommended from everyone. On the basis of these findings, the study authors suggested reconsidering which lists should define appropriate vs inappropriate medications.

PICO Question 4

- Intervention: Deprescribing medications via an electronic medical record (EMR) reminder, pharmacist recommendation, or patient awareness.
- Comparison: Standard care.
- Outcome: PIMs rates, ADEs, hospitalizations, ED return visits, percentage of medications stopped but resumed later.

Priority Questions

The GEAR subcommittee on medication safety has also developed a draft manuscript. On the basis of its reviews, the subcommittee proposed the following research priority questions:

- What medications should be avoided in the ED setting for older adults? What definition of unsafe or inappropriate medications should be used? Which criteria should be used when determining whether a medication is potentially inappropriate?
- Would it be better to enable the prescribing of safer alternatives vs disabling less safe medications?
- What patient-centered outcomes should be used to assess ED medication safety? Rates of hospitalization? ED revisits? ADEs? Patient adherence with medication use? Over what time frame?
- How should we screen and identify those at risk?
- Are there tools or models of care that work?

Initial Discussion Points

Studies in the literature on falls have shown that deprescribing risky medications does not prevent falls; 70% of patients who had medications stopped had to restart them after an ED visit. The evidence on the long-term impact of using screening devices and tools in the ED is not clear, but the STOPP/START trial and several RCTs, which have assessed long-term outcomes in outpatient settings, have shown positive results. Deprescribing may be difficult for ED physicians to adopt, but they should receive support to avoid initiating risky medications. The responsibility for avoiding inappropriate medications should not fall to the ED alone, but to the entire care team.

An important point to consider is the heterogeneity among older adults visiting the ED. The most appropriate medications for older adults with a urinary tract infection might differ from those for agitated older adults in a skilled nursing facility (SNF). Attempting to study such a heterogeneous population will make it difficult to get a clear answer to questions of medication safety. Restricting the study sample may be better.

Reports from Small-Group Discussions

Group 1 (Purple)

The group agreed that medication safety is a broad topic that touches all the core topics discussed at this meeting. The group therefore suggested that medication safety be considered as a baseline for the other subtopics. The group also noted the important role of the pharmacist in the ED, for example in reviewing medications, and raised questions about whether this role should be activated at admission or upon discharge. The group also discussed key issues, such as knowledge, adherence, and access, that are related to social determinants of health. The group also acknowledged that some elements of the EMR are ineffective and that an EMR-based system should provide appropriate information and actionable recommendations, rather than simply warning the prescriber. The group suggested improving an existing system, such as

EQUIPPED, and assessing the effects of these improvements on outcomes, with a focus on patients discharged from the ED.

Group 2 (Orange)

Group 2 noted that the Beers list is an extremely long list and that following these or other criteria might be difficult for smaller hospitals with fewer resources. The group suggested an EMR-based system or alternative resource, which could be used by all types of hospitals, to support prescribers.

The group also noted that some medications that are flagged as potentially inappropriate may be medically necessary. Group members also pointed out that ED physicians might deprescribe a medication, only for patients to restart that medication after visiting their primary care physician. This raises questions of who is ultimately responsible for deprescribing. The group suggested integrative approaches, such as medication reconciliation or electronic prescribing, to address these concerns. Although the group noted that pharmacists are the best equipped to conduct medication reconciliation, however, the group also noted the many other roles that pharmacists play in the ED. Rather than suggest that only pharmacists should be responsible for medication reconciliations or discharge counseling, the group suggested work to identify ways to share those responsibilities. The use of pharmacy students was one suggestion. Having a pharmacist in an outpatient internal medicine office share expertise with ED providers was another.

As with other groups, Group 2 also discussed ways to identify patients at highest risk for medication-associated adverse events. Suggestions included focusing on care transition, with an Epic template for medication safety; focusing on drug classes that could be stopped to prevent falls or delirium; and empowering patients with discharge lists and explanations.

Group 3 (Yellow)

Group 3 noted that existing lists tell clinicians what not to do but that ED physicians need a list of what *to do*, rather than being left to identify alternatives on their own. The group also noted that existing guidelines are too broad and do not account for disease, context, or phenotypic heterogeneity. The group therefore suggested developing a "Do List" for specific settings. The group noted that the current approach to medication safety makes recommendations for all medications. Group members therefore suggested a focus on medications by class: What is the current ED practice for each drug class, and where is it farthest from the ideal? By collecting information on current practice, then identifying and addressing the largest gap between current practice and the ideal, researchers could begin to construct a "Do List."

The group discussed the role of the pharmacist and how best to use it in the ED. Group members noted that pharmacists are best situated to track what happens both with medications prescribed in the ED and with long-term medications the patient is already taking, and they are better equipped to identify issues with prescribing. In addition, recommendations are more likely to be accepted if they come from pharmacists, rather than from the EMR or nonspecific guidelines. At the same time, the group noted that ED clinicians often do not know what medications patients are taking long term and that this information is impossible to collect in the ED. The group therefore suggested coordinating with other medical specialties and other experts to identify

helpful prevention strategies and identify individuals who could help the ED collect this information.

Identification of highest-risk patients was identified by the group as a cross-cutting theme across all GEAR Task Force topics. The group suggested identifying highest-risk patients or highest-risk medications and adjusting order sets such that they are tailored to each clinical scenario. The group also suggested that the subcommittee on medication safety work with other subcommittees to develop a common, unified strategy to flag high-risk patients.

The group pointed out that deprescribing tends to be ineffective because of difficulties in convincing patients not to take a medication, particularly if the primary care physician and emergency physician do not agree.

Group 4 (Green)

Group 4 reported that its discussion was similar to that of Group 1. However, Group 4 pointed out the need to consider the heterogeneity among patients. The group recommended not only attempting to reduce such heterogeneity, but also classifying it based on patient populations, drug classes, and/or outcomes. Building on discussions during the sessions on cognitive impairment, the group suggested looking at specific medications and associations with outcomes of interest. This could be done by looking at medications prescribed once in the ED and their association with delirium or dementia, or by looking at medications prescribed upon discharge and following up by phone to assess the patient's status.

Discussion

Medication safety and GEM overall are enormously complex and comprise a large number of items requiring ED clinicians' attention. In addition, many interventions are time and resource intensive. Thus, unifying principles are needed across GEAR Task Force focus areas to narrow the list of tasks and, ultimately, to improve geriatric emergency care. One unifying principle is the identification of and initial focus on a high-risk group. Regardless of outcome, the limited amount of evidence and the generally disappointing results from more inclusive clinical trials suggests the need to focus on a narrowly defined population.

As noted by one participant, simply asking where pharmacists spend most of their time may be tricky for identifying a narrower population. In general, patients who are admitted are more complex and require more teamwork, and pharmacists also work with ED borders, but pharmacists review medications for all patients. Other conference participants suggested focusing on individuals with dementia, because they are at high risk for cognitive impairment, drug-drug interactions, elder abuse, falls, and failed care transitions. Yet others suggested focusing on older patients who are discharged from the ED, because for them, the ED is "the only place to get it right."

Consensus conference participants also suggested that unifying outcomes be identified. One challenge, particularly for interventions such as pharmacy consults, is how to prove the impact of these interventions. Improvements in medication safety can help to avoid falls, medication errors, and failed transitions, but it is difficult to prove a negative. In addition, social determinants of health, such as lower socioeconomic status or minority race/ethnicity, can affect

diagnoses and the accuracy of medical records. Yet another challenge is distinguishing outcomes that fall within the ED physician's purview as opposed to that of the inpatient hospitalist. As one conference participant pointed out, if the ED does not identify a patient experiencing delirium, the hospital most likely will not. A potential outcome specific to the ED is increased awareness of ADEs, which at present are underrecognized. One conference participant noted that increased awareness could lead to improvements in deprescribing and other interventions.

Voting/Ranking of Revised Questions

With 34 responses, consensus meeting participants ranked the revised research priority questions:

4. How should those at highest risk for medication safety AEs be identified?
5. What medications should be avoided, and what are safer alternatives for targeted patients?
6. What patient-centered outcomes should be used to assess ED medication safety?
7. Are there models, such as EQUIPPED, that are currently working and can improve medication safety, and how can they be disseminated?
8. What partners could positively impact the desired patient-centered outcomes?

ELDER ABUSE

Overview and Priority Questions

Timothy Platts-Mills, MD, MSc, University of North Carolina, Chapel Hill; Nancy Morrow-Howell, MSW, PhD, Washington University in St. Louis; Anthony Rosen, MD, MPH, Weill Cornell Medicine

Elder mistreatment is defined by the Elder Justice Roadmap as "physical, sexual, or psychological abuse, as well as neglect, abandonment, and financial exploitation of an older person by another person or entity that occurs in any setting, either in a relationship where there is an expectation of trust and/or when an older person is targeted based on age or disability." At least 5% of older ED patients are victims, making elder mistreatment more prevalent than child abuse or intimate partner violence, and victims are predominantly female. Elder abuse is a major social determinant of health, associated with increased mortality, depression, and exacerbation of chronic illness. Moreover, abuse often ripples through generations, and "injustice anywhere is a threat to justice everywhere."

Because older adults come to the ED for care, emergency physicians have a unique opportunity to identify victims and intervene. However, as noted by the United States Preventive Services Task Force, there is insufficient evidence to support screening for elder mistreatment. Other barriers to screening and intervention include absence of screening and intervention protocols, lack of provider awareness, fear and distrust on the part of patients, difficulties distinguishing abuse from unintentional trauma, and some patients' refusal of treatment.

There are opportunities, however. NIA, the National Institutes of Health (NIH) overall, JAHF, and others are funding research on elder mistreatment. A screening tool developed by Dr. Tim Platts-Mills and others has been validated in a prospective, multicenter study and found to offer good sensitivity and specificity. The tool takes 90 seconds to administer for individuals who screen negative and 5 minutes for those who screen positive. The Education Development Center in Waltham, Massachusetts, with support from JAHF, has made ED screening and response a priority. The Center has added a brief, two-question pre-screen to the tool developed by Dr. Platts-Mills et al. to create the Elder Mistreatment Screening and Response Tool, which can be used to screen all older ED patients.

The GEAR subcommittee on elder abuse focused on two PICO questions.

PICO Question 1

- Population: Older ED patients
- Intervention: Universal screening.
- Comparison: Targeted screening or usual care.
- Outcomes: Number of elder abuse cases identified; accuracy of case identification; long-term safety outcomes including harms and legal, functional, and psychosocial outcomes; and health care utilization.

The subcommittee's literature review identified 194 papers, 9 of which met inclusion criteria. Five of these papers described screening in the ED, and four were systematic reviews. None of the studies compared universal screening with targeted screening or usual care. However, they

revealed promising tools that exist or are in development. In the appendix to the write-up for the consensus conference, the subcommittee described 15 tools that screen for elder abuse. Four of these tools have been developed and tested for use in the ED: the Elder Abuse Instrument, the Identification of Seniors at Risk, the Emergency Department Senior Abuse Identification, and the Emergency Department Mistreatment Assessment Tool of Social Workers. The subcommittee eliminated the Identification of Seniors at Risk tool because it was not specific. In reviewing the remaining tools, the subcommittee found variations with respect to the types of abuse, who performs the assessment, the type of data used, and the amount of time the tool takes.

The subcommittee also noted other issues to be considered with respect to screening. Mandated reporting relies on suspicion and the good-faith belief that abuse has occurred; definitive conclusions are not necessary. In addition, personnel- and evidence-based interventions are available when abuse has been identified. However, screening might make things worse for some patients.

The subcommittee concluded that there have been no published studies that assessed outcomes associated with screening and no comparisons among universal screening, targeted screening, and usual care. Thus, the PICO question remains a high priority for researchers in the field. In addition, the negative consequences of screening have been poorly documented; thus, more understanding is needed to avoid unintentional harms. More research to establish psychometric properties is needed, but there should be concurrent efforts to establish how best to implement and use screening tools. This work should also consider the roles of veracious health professionals in and surround the ED, as well as best practices to align with, but not be limited by, state-mandated reporting.

PICO Question 2

- Population: ED patients aged 60 years or older who are previously known, newly found, or suspected to be victims of elder abuse.
- Intervention: Any ED-based or ED-initiated intervention.
- Comparison: Usual care.
- Outcomes: Short- and long-term safety and health, legal, functional, and psychosocial outcomes

The subcommittee identified 210 articles, of which 6 remained after articles were excluded as irrelevant or not-original research and other articles were added based on citation/reference lists. Three of the articles described two multidisciplinary team-based interventions, one described an intervention targeting health care providers, and two described ED-based approaches to care for elder abuse, but none of these articles presented outcomes data. Moreover, none of the studies compared patient-directed interventions with usual care. Thus, the subcommittee had no articles to review for this PICO question.

It should be noted that even the characterization of usual care is limited with respect to ED response to elder abuse. Potential reasons for these limitations include limited funding for research on elder abuse and ethical challenges in designing comparative studies. In addition, the low rate of case identification may lead to perceptions that a standardized or robust response is

not needed. Thus, screening and intervention are linked. At present, the low rate of screening leads to a limited need for intervention, and limited knowledge about intervention options and the impact of response leads to little interest in screening. More robust screening could drive increased interest in interventions and therefore stimulate investments in studies of ED response, and the establishment of impactful responses could in turn increase the desire for screening tools.

The subcommittee concluded that more formal studies are needed to assess ED treatment and response, with robust, patient-oriented outcomes. Such studies should include usual care as a randomization arm or through a historical, baseline, or pre-intervention control, although studies comparing two or more interventions may also be valuable. In addition, studies have not assessed the impact of mandatory reporting to Adult Protective Services compared with that of more robust interventions. Whether interventions would be better studied in the ED versus the hospital or outpatient setting, and the criteria necessitating admission versus those for a safe discharge, also require more study. In addition, the role of pre-hospital Emergency Medical Service (EMS) colleagues and the value of multidisciplinary team approaches should be explored further.

Priority Questions

On the basis of its review, the GEAR subcommittee proposes nine priority questions spanning screening, intervention, implementation, and methods.

- Does screening improve outcomes?
- What is the best tool to use for screening for elder abuse in the ED? Who, when, and where to do this screening? What psychometric properties should the best tool have?
- Is it better to do universal screening or targeted screening? If targeted screening, how do we do this?
- Do structured, ED-based elder abuse interventions improve outcomes?
- What are the most effective methods for implementing approaches to screening and interventions for elder abuse?
- Is increasing outcomes for victims of elder abuse better achieved by implementing a screening process, implementing an intervention process, or implementing both screening and intervention simultaneously?
- What outcomes are most important for characterizing the impact of ED elder abuse screening and interventions?
- Should interventions and outcomes be specific to the type of elder abuse (physical, psychological, sexual, financial abuse, and neglect)?
- What are the guidelines for conducting ethical research in elder abuse (reporting, follow-up, control arm)? How do we define a control population and characterize elder abuse in a control population?

Reports from Small-Group Discussions

Group 1 (Purple)

Group 1 noted the lack of consensus on what constitutes abuse and suggested that research in this area start first with a hypothesis-generating project. The group also noted the rich literature on relationships among dementia, caregiver burden, and elder abuse. Group 1 suggested a study focused both on older patients presenting to the ED with cognitive impairment and on their caregivers. The study would assess an intervention to understand and address the unmet needs of caregivers, the control condition would be the absence of the intervention, and the desired outcome would be a decrease in caregiver burden or burnout or a linkage of caregivers with social services. The project could start small, with a feasibility study to show it is possible to screen for caregiver strain, then build a conceptual map of the relationship between caregiver burden and elder abuse, then perhaps link individuals to interventions. A specific question might ask about the prevalence of caregiver burden or distress seen in the ED and whether an intervention reduces that. In light of the potential ramifications of raising the issue of elder abuse in the ED, the group thought that a focus on caregiver burden, with a strengths-based approach, would be better.

Group 2 (Orange)

Although Group 2 recognized that screening could make things worse for some patients, they agreed that a focus on screening is important because the time to intervene is highly constrained. The group suggested that, at best, the ED can establish a spectrum of severity, address the most severe cases, and hand off interventions to other departments. The group also suggested that screening be used to identify recurrences of specific abuse and abuse in certain settings. The group also suggested a comparison of universal screening, targeted screening, and usual care, but felt that such a comparison might not be feasible. During the general discussion, one group member added that screening should be tailored based on the decision-making capacity of the patient. Screening and referral for patients who can make decisions should differ from that for patients who cannot.

The group also discussed outcomes and instrument. With respect to outcomes, the group suggested the need for outcomes that are easier to document. They discussed patient outcomes such as function; quality of life; emotions, fear, or anxiety; and changes in living, service, legal, or caregiving arrangements. The group discussed the need for instruments that track the extent to which these outcomes occur and the extent to which ED referrals lead to action.

Group 3 (Yellow)

Group 3 also felt that screening was important and noted the important role of EMS in screening. The group liked the idea of targeted screening based on social determinants of health, but they felt that universal screening would be better because too little is known about elder abuse. They discussed broad versus narrow phenotyping and suggested that screening should cover all types of abuse, but be tied to multiple specific interventions, which would more likely be community based than ED or referral based. The group also noted that little is known about risk factors and suggested a national case-control study to identify them. Like other groups, Group 3 expressed concern about screening without an intervention, and they discussed caregiver stress and caregiver-driven interventions.

The group suggested referring to the literature on child abuse and intimate partner violence to aid in identifying issues, barriers, and implementation strategies. In addition, the group suggested that the Task Force subcommittee begin now to think about barriers to study design.

Group 4 (Green)

Group 4 noted that screening alone was unlikely to improve outcomes; it would have to be tied to an intervention. The group also expressed concern that a universal screening program would lump too many types of abuse together. The group did not settle on whether interventions should be specific to types of abuse, but it did agree that research should address this question. The group also noted challenges in identifying a control group and designing a trial, because screening without any intervention would be unethical. However, the group suggested that a control group might not be necessary for this topic.

Group 4's idea for an R33 pilot study focused on screening to increase case-finding, then asking whether quality of life is improved in the cases identified. Because a study of universal screening would require a large number of patients, the group suggested a focus on the highest-risk patients. As was the case with discussions on cognitive impairment and medication safety, older adults with cognitive impairment was suggested as the high-risk group to focus on. However, the group noted that obtaining consent for these patients would be a challenge. The group pointed out that the ED department's reason for identifying elder abuse—to ensure the safety and wellbeing of the patient—differs from a district attorney's aim to punish the perpetrator.

Discussion

Conference participants discussed concerns about obtaining consent from cognitively impaired patients. While the R33 pilot study will have to account for individuals' capacity to consent and, if necessary, their legal representatives, the legal representative in this case might be the abuser. The approach proposed by Group 1 is one potential workaround, as the study participant would be the caregiver, rather than the individual with dementia. Dr. Hwang has also spoken with Dr. Jason Karlawish, who notes that consent may not be necessary if cognitive assessments and screening for abuse are already part of clinical care.

Conference participants suggested consulting with the IMPACT Collaboratory, led by Dr. Karlawish, for guidance. The GEAR Task Force will consult with the institutional review boards (IRBs) at the three pilot study sites as early as possible to address issues of consent in pragmatic trials. Having these IRBs cede authority to a single controlling IRB—for example the Collaboratory IRB—is another option.

Consensus conference participants agreed with using the R33 pilot study to test implementation and feasibility, but they also suggested that the GEAR Task Force consider long-term outcomes (and how to measure them) as early as possible. There was also some debate on whether to focus only on high-risk patients, such as cognitively impaired patients, patients with functional impairments, or those who have used the ED several times within the past few months. Some participants argued for focusing on this high-risk cohort because of the many touchpoints between this population and the health care system. However, others expressed concern that focusing only on the cognitively impaired population during the R33 pilot study would restrict

downstream studies. In addition, EDs do not care only for cognitively impaired patients. Conference participants suggested designing an R33 pilot study to oversample for cognitively impaired or other high-risk patients but include non-impaired patients as well.

Voting/Ranking of Revised Questions

With 31 responses, consensus meeting participants ranked the revised research priority questions:

4. Can we effectively identify patients at high risk for elder abuse for whom we can then do targeted screening?
5. Does an intervention to reduce caregiver stress among ED patients with cognitive impairment improve caregiver health and also reduce elder abuse?
6. Does screening and structured interventions improve outcomes for victims of elder abuse?
7. Can a standardized approach to EMS screening for elder abuse increase case identification?
8. Should interventions that are developed and tested to treat elder abuse in the ED be type-specific (i.e., physical, psychological, sexual, financial, neglect, or specific scenarios based on severity, perpetrator, setting, or resources)?

FALLS

Overview and Priority Questions

William Hung, MD, MPH, Icahn School of Medicine at Mount Sinai

Falls are common among older adults, and the incidence of falls is increasing as the U.S. population ages. An estimated 46 million older adults fell in 2014, and that number is expected to increase to 74 million by 2040. The incidence of fall-related deaths is also increasing, and at its current pace, it is expected to exceed motor vehicle and firearm-related deaths. Falls are the number-one cause of death due to injury among older adults. They account for $50 billion per year in health care costs.

Falls range from minor to fatal. Although some would argue that studies should focus only on injurious falls, even minor falls can cause psychological distress and fear, leading older adults to feel dependent and chained to their bedrooms. In addition, stigma is a major problem; in one Medicare analysis of approximately 45,000 patients, only 28% of older adults reported their falls.

Falling once doubles an individual's risk for falling again. Falls are preventable, but who assumes responsibility for prevention has been a topic of debate. Traditionally, emergency physicians have stated that falls prevention should occur in the primary-care setting. However, falls account for 2 million ED visits, and 10% of those are among patients aged 65 years and older. In addition, falls overlap with cognitive impairment, which is often seen in the ED. Thus, the ED might be the only setting with an opportunity to intervene and prevent falls.

The GEAR subcommittee on falls initially focused on four PICO questions. For all four questions, the population included patients aged 60 years and older, consistent with recent Cochrane reviews, in any pre-ED (including EMS) or ED setting. For the third and fourth questions, the population included patients who had already fallen. For the initial questions, the interventions and comparisons were:

- Risk stratification tools and factors vs no risk stratification (question about diagnosis).
- Risk stratification plus care plans vs no intervention.
- Falls prevention interventions vs standard of care.
- Specific risk factors vs none (question about prognosis).

For outcomes, the subcommittee focused particularly on the quality of ED care, operations (e.g., length of stay, cost), return ED visits for falls, recurrent falls, fear of falls, functional decline, homecare support, and institutionalization.

Following a vote, the subcommittee selected two PICO questions for its review.

PICO Question 1: Falls Intervention Studies

The subcommittee initially identified 3,181 studies, of which 32 met eligibility criteria and were abstracted. Twenty-three of the studies were RCTs or quasi-experimental with random assignments, 2 were prospective observational studies, 4 were retrospective chart reviews, and 3 were systematic reviews. Falls risk assessments followed by home or outpatient physical therapy were the most common types of interventions. Other intervention types included multimodal

interventions, education-focused interventions, and medical alert devices. Studies included patients both within and beyond the ED. The most common outcome assessed was the proportion of patients with recurrent falls after an ED visit. Other outcomes included frequency of falls per study participant, incremental cost-effectiveness ratios, quality-adjusted life years, functional ability, and fear of falling.

Five studies showed that physical therapy reduced the risk for future falls. Multifactorial interventions showed mixed results with respect to falls incidence. Educational interventions appeared to increase awareness of falls risk and services, but they did not reduce the incidence of falls.

PICO Question 2: Risk Stratification plus Care Plans

The subcommittee identified 2,590 studies initially. After deciding to focus on studies published in 2014 and later, the subcommittee identified 1,200 studies, of which 21 met inclusion criteria. Two were RCTs or quasi-experimental studies in patients not presenting with falls, five were RCTs in patients presenting with falls (two in the ED setting), four were systematic reviews, and three were abstracts only.

The subcommittee began with a review by Carpenter et al. as a launching point for its own review. This review assessed 10 screening tools but no head-to-head comparisons except for a two-item screening tool and the Falls Risk for Older People-Community Setting tool (FROP-COM). Both of these tools showed a limited capacity to predict risk for falls. Some screening tools appeared to be feasible in the ED, but how well they performed is not yet clear. Educational interventions increased patient awareness but had no effect on falls.

Between the two RCTs in patients not presenting with falls, one screened patients who had fallen in the past year, then used the Centers for Disease Control and Prevention's Stop Elderly Accidents, Deaths, and Injuries screen and referral protocol. The study included a home safety evaluation and showed improved outcomes. The other RCT screened all patients with the FROP-COM, provided scripted education in the ED, then followed patients using standard assessments. This study showed no differences in falls. Thus, the approach of screening all patients, identifying a high-risk group, and performing a risk assessment plus care plan does not appear to be effective.

Priority Questions

On the basis of its findings, the GEAR subcommittee on falls identified approximately 20 questions focused on:

- Screening and targeting interventions.
- How to assess falls risk.
- Intervention components and effectiveness.
- Determining optimal outcomes.
- Optimizing care transitions.

- Prehospital interventions.

Reports from Small-Group Discussions

Group 1 (Purple)

Group 1 discussed whether screening should be done for all patients or only for those who have already fallen. The group discussed whether the role of the ED is simply to treat falls or also to prevent falls. Group members expressed concern that progress in GEM will increase the number of different screens that are performed and asked whether some automated tasks could be used to aid in identifying at-risk patients.

With respect to assessments, the group discussed who should perform falls assessments and when. They noted that existing tools look at falls from the perspective of health care professionals, but they suggested that qualitative pieces are needed to account for patients' perspectives—for example, their anxiety and fears about potential loss of autonomy.

The group noted that even if the ED does well in assessing falls or falls risk, the majority of interventions occur outside of the ED. There is a wide amount of heterogeneity among patients who have fallen and the causes of their falls. There is also a wide range of interventions. The group noted that the majority of interventions are bundled.

The group pointed out that time frames for assessing outcomes could take anywhere from 30 to more than 90 days, because interventions for falls take more time. The group also noted existing tensions between falls prevention and the need to mobilize patients. Outcomes that were discussed included functional status, adherence, and recurrence.

Group 2 (Orange)

Although the group did not design a study, Group 2 raised similar points to those raised by Group 4 (see below). They suggested targeting community-dwelling older adults who are at risk for losing their independence, then asking how to maintain that independence, with a focus on functional outcomes. The group suggested an intervention to destigmatize falls from the patient perspective. They noted Laura Gitlin's Community Aging in Place, Advancing Better Living for Elders (CAPABLE), a patient-directed, team-based intervention to improve physical function and decreased nursing home utilization, and telemedicine to provide remote physical therapy assessments as possible interventions. The group cited the Prevention of Falls in Elderly Trial (PROFET) and discussed the need to make referrals within a reasonable time frame.

Group 3 (Yellow)

The group suggested focusing on higher-risk patients, such as those presenting to the ED with a fall or having experienced a fall recently. Like other groups, Group 3 suggested using a bundled intervention to achieve the maximum benefit, and they discussed community linkages in both the short and long term. The group noted the critical role physical therapists would play in this intervention, and they discussed patient-centered outcomes such as stigma. Group 3 also suggested a study looking at patients who fall and call EMS, but do not go to the ED. For this population, the intervention would involve EMS identifying safety issues within the home and

using that to make tailored recommendations. In addition, the group suggested a focus on implementation studies, such that interventions are tailored based on available resources in a particular setting.

Group 4 (Green)

Group 4 reached consensus and suggested a research study focused on older, community-dwelling adults who have come to the ED because of a fall or have experienced a fall within the past 30 days. Although the group did not identify specific details, they suggested that a bundled intervention, for example a combination of screening, outpatient referral, medication reconciliation, vision screening, and a home evaluation/safety check, would be appropriate. In this particular study, physical therapists be involved in initial ED screens, referrals, and the outpatient side. Follow-up would occur at 3, 6, and 9 months and be done via reports from the physical therapist, rather than from patient self-report. Physical function outcomes, such as changes in gait speed or recurrent falls, would be the outcomes evaluated.

Discussion

Discussion focused on the patient perspective with respect to falls. Several conference participants noted difficulties studies have reported in getting patients to agree that a fall was a problem deserving of intervention. They also noted patients' anxiety and fear of falling again. Some participants suggested a trauma-informed approach, where an intervention is offered right after a fall to prevent that fear from taking hold. Other suggested interventions included motivational interviewing, based on what matters most to patients, and interventions to destigmatize falls.

Conference participants also noted the difficulties that many studies have had in preventing future falls and suggested that functional measures might be more appropriate as outcomes. Although studies would still measure falls, they would also look at functional status, gait speed, and health-related quality-of-life measures associated with physical function.

Participants agreed with Group 3' suggestion of an EMS-driven intervention for patients who have fallen but do not go to the ED. Some even suggested empowering EMS to dispatch a handyman to install supportive devices to prevent future falls. However, they expressed concern that in these cases, the episode ends once EMS has helped the patient get up. Because EMS is not connected with anyone else, other parts of the health system do not receive notification that the fall has occurred. Participants also discussed how follow-up occurs and whether it always occurs for patients who do not go to the ED. The gold standard—mailing calendars—yields a return of only 30%. Thus other approaches, such as phone calls or wearable sensors, were also discussed.

Conference participant Elizabeth Goldberg has received a Beeson Award to follow-up on her Grant for Early Medical/Surgical Specialists Transition to Aging Research (GEMSSTAR) work. Her GEMSSTAR-supported study, a pilot clinical trial, recruited 110 patients who went to the ED for a fall and, in the opinion of the ED physician, were likely to be discharged home. The intervention included pharmacist-led medication management and physical therapy assessments of gait, mobility, and strength. Patients were followed for 6 months via home visits and phone calls. The Beeson award will support the development of an Apple Watch app to assess

functional measures and cognition and provide data on step counts and heart rate. In a feasibility study, patients will wear the watch for 30 days, then engage in qualitative interviews to discuss how they liked the app and how well it worked. Knowing that this and other such studies are in the pipeline can inform the work of the GEAR Task Force, and vice versa, in building an infrastructure that supports research on GEM.

Voting/Ranking of Revised Questions

With 23 responses, consensus meeting participants ranked the revised research priority questions:

4. Intervention components and effectiveness: Fall prevention intervention as a bundle or unraveling components? What should be in the bundle?
5. Determining optimal outcomes: What are the optimal outcomes and how best to track falls for measurement of outcomes outside the ED?
6. What are the stakeholder patient-prioritized outcomes (e.g., maintaining independence, reducing fear of falling, reducing stigma) and patient-targeted interventions?
7. What is the best assessment of fall etiology to design targeted interventions?
8. What is the optimal EMS intervention and/or assessment/information transfer to the ED regarding home safety? ED connection to existing resources?

CARE TRANSITIONS

Overview and Priority Questions

Nicole S. Hastings, MD, Duke University School of Medicine; Cameron Gettel, MD, Yale School of Medicine; Christine Binkley, MD, MPH, Rush University Medical Center

ED visits are often critical inflection points in an older adult's health trajectory. A large amount of evidence indicates that an ED visit is a period of vulnerability for older adults, especially as they transition back to the community. Thus, improving management of care transitions could improve person-centered care, increase value, and reduce health care costs. The GEAR subcommittee on care transitions defined care transitions as "the movement of patients between the ED and home or another care setting" and noted that it could be bidirectional. The transitions receiving the most votes within the subcommittee were nursing home-ED and ED-home. The subcommittee did not focus on handoffs in the ED or between the ED and other health care providers.

The subcommittee conducted its evidence synthesis as part of an Expert Panel at the National Quality Forum, which was evaluating measurement of ED transitions. Because there are few measures that directly assess the quality of care transitions, the Expert Panel developed a framework to describe ideal measurements. However, this framework did not focus specifically on older adults. The subcommittee also noted a systematic review on the effectiveness of interventions to improve transitions, which has been published since the GEAR task force began.

The subcommittee's evidence focused on two PICO questions.

PICO Question 1

- Population: Patients aged 65 and older presenting to the ED for general illness or concern (note: the evidence synthesis did not consider patients who had come to the ED because of falls).
- Intervention: Discharge planning, case management, medication management.
- Comparison: Usual or enhanced ED care.

The subcommittee identified 1,800 articles, of which 17, reporting 15 studies, met eligibility criteria. ED return visits were the most common outcomes reported, followed by other types of health care utilization. Some studies also reported quality of life, patient experiences, mortality, and functional status. Overall, ED interventions were associated with less of a decline in functional ability. Importantly, however, they had no effect on hospitalizations or repeat ED visits. Although these two outcomes are measured most frequently because measurement is easy, they also apply to the entire ED population. Because of the heterogeneity among older ED patients, it is unlikely that this outcome would move in response to interventions focused on care transitions. In addition, few of the studies reported clinical and sociodemographic characteristics, limiting the ability to assess subgroup effects. It was difficult to determine how long an intervention should last and assess changes in outcomes, and few studies had explicitly included caregivers or families.

On the basis of its evidence synthesis, the GEAR subcommittee concluded that bridge interventions or interventions with at least two touch points were more effective than those focused on a single point. However, there were no common measures. Because of the heterogeneity of this population, more research is needed to develop measures for older adults with a wide range of medical conditions. Patients, families, caregivers, and health care providers should be included in selecting outcomes of interest and describing their satisfaction with an intervention.

PICO Question 2

- Population: Patients from nursing homes and SNFs transferred to EDs.
- Intervention: Communication intervention or innovation/model of care (i.e., transfer form, checklist, health information technology).
- Comparison: Treatment as usual in RCTs and pre-intervention groups in quasi-experimental, pre- or post-intervention studies.
- Outcomes: Clinical patient-centered outcomes and health services utilization.

The subcommittee identified 746 articles, of which 19 were eligible. Eleven of those studies—nine pre/post studies and two retrospective reviews—were included in the subcommittee's review. Eight of the studies assessed documentation and found increased documentation of critical elements after an intervention. However, they were not necessarily patient centered, and they showed discordance with health services utilization. Only one of the 11 studies was assessed as good; the others were assessed as fair or poor primarily because they did not apply the intervention universally. Many of the studies had a moderate to high risk for bias. The studies often assessed dissimilar groups, intervention delivery was inconsistent in the pre/post studies, and patient-centered outcomes were lacking.

Priority Questions

The subcommittee initially considered 25 questions. Following initial voting by subcommittee members, the subcommittee proposed four priority questions:

- What are the optimal outcome measures to assess effectiveness of ED transition interventions (i.e., appropriate for a heterogeneous population and responsive to a change)?
- What are the key constructs of ED transition quality that should be assessed?
- How can we best incorporate family and caregiver perspectives in ED transitions research?
- Who are the optimal candidates for additional support during the ED transitions? Are these the same patients as those at highest risk for ED return?

Reports from Small-Group Discussions

Group 1 (Purple)

Group 1 noted that there are many more questions about ED-to-home transitions and suggested limiting the R33 pilot study to that. They also discussed whether the study should focus on the

short term (72 hours, 30 days) versus the long term. The group suggested that the study suggested follow-up with a primary care physician or other referrals as one outcome to measure. Other suggested outcomes included functional status, hospital readmissions, ED return visits, and whether patients filled their prescriptions. The group also suggested focusing on cognitive impairment and falls, which both account for frequent ED utilization and share several overlaps.

Group 2 (Orange)

Group 2 discussed vulnerable populations. One that has not been discussed throughout the conference includes homeless adults older than 50 years, for whom evidence is limited. The group also discussed nursing home residents. Clinical assessments of these individuals must include a Minimum Data Set, which could offer a baseline understanding of cognitive and functional status, pressure injuries, and other clinical data. If residents were given a QR code, as is done in Japan, the code could be scanned, and legal representatives notified, whenever the residents transitioned to the ED.

The group also discussed issues of care fragmentation and how they could be followed as a measure of complexity: for example, how many people see the patient, or how frequently does the primary care physician sees the patient, as opposed to other clinicians. The 3-item Care Transition Measure (CTM-3), which is embedded in the Hospital Consumer Assessment of Healthcare Providers and Systems required by the Centers for Medicare and Medicaid Services, can aid in assessing care fragmentation. This assessment is already done for patients who are admitted, but not necessarily for ED patients.

When and where to follow up, and who should follow-up, was also discussed. For example, an ED consult with urology involves the additional burden of getting the patient to urology. On the other hand, a Foley catheter discontinuation trial could be done among nursing home residents.

The group also discussed:

- Measures and interventions focused on the quality of communication back to clinicians and caregivers.
- Bidirectional versus unidirectional care transitions.
- The need for enhanced interoperability.
- The quality of discharge instructions.

Group 3 (Yellow)

Group 3 focused on questions around measurement and optimal candidates and looked more broadly at stakeholder perspectives as opposed to family or caregiver perspectives. With respect to measurement, the group noted that no one measure will be sufficient. For example, they discussed several cases of patients who returned to the ED, even though the transition went well. These patients are asked about how well their transitions went, but they are not asked about other outcomes. The group suggested adding process measures, perspective measures, and utilization measures. With respect to stakeholder perspectives, the group noted room for improvement in

the nursing home to ED transition, particularly with information transfer. They discussed the CTM-3 as a useful measure for the R33 pilot study.

The group also discussed the potential to link care transitions with other GEAR Task Force domains. So far, the care transition interventions that have been tested have been care coordination interventions. The group suggested that functional measures might be more effective. In addition, the group discussed the timing of care transition. They suggested a measure at 4 days to allow individuals to reflect on their experience in leaving the ED, then another at a later time point to capture problems that might arise after discharge. The group also discussed social determinants of health and vulnerability, which could raise the staked for problems with care transitions.

Group 4 (Green)

The group focused its discussion on transitions to home versus the SNF. The group noted that, of the five GEAR Task Force domains, care transitions is the most amenable to ED visits and hospitalizations as an outcome measure. The group also noted that, with more older adults coming from home, there is an opportunity to account for social determinants of health, such as socioeconomic status, literacy, and medical affordability. Other possible outcome measures included function and quality of life.

The group also discussed:

- A study assessing the effects of including a community health worker on ED revisits within the next week.
- Assessing the caregiver's ability to understand instructions.
- What brings the patient to the ED: an acute problem in an otherwise healthy patient; an acute exacerbation of a chronic problem; or a chronic problem after an acute event elsewhere.

Discussion

Conference participants cautioned against focusing solely on lower socioeconomic status or low literacy when considering social determinants of health. On the basis of work with community coaches, one participant noted that individuals of varying socioeconomic statuses simply have different issues. Whereas an individual of higher socioeconomic status might not fill an ED prescription before consulting with their primary care physician, one of lower socioeconomic status might not be able to afford the medication. The participant noted that interventions might actually increase health care utilization by recognizing an unmet need and addressing it so that individuals get the care they need.

The timing at which to attribute and evaluate outcomes was another cross-cutting theme across all five domains. With respect to care transitions, Group 1 had discussed the 7- to 10-day range as a time period to allow a care transition to take hold and attribute outcomes to the ED. Members of this group cautioned that 30 days might be too far out and that issues unrelated to the transition itself could arise in that time. On the other hand, some transitions might take longer than 30 days. Conference participants noted that timing will vary with outcome. For example,

patients might take at least a week to visit their primary care physician following discharge from the ED, whereas they might start a medication on the same day it is prescribed. Some participants suggested that evaluating follow-up should not be restricted to office visits, as some patients are followed up through phone calls, MyChart, and electronic visits. Others noted that their health systems designated staff to monitor care transitions because they could not trust the transition to proceed otherwise.

Conference participants also noted the importance of context and environment: destination matters. Discharge instructions might be the same regardless of destination, but the interpretation and execution of those instructions might differ. This is true even among SNFs; in some cases, the patient might transition first to the SNF, then to their home with a caregiver, and the distinction is important for determining expectations and an appropriate follow-up time. Patients might get appointments with specialists within 30 days, whereas linkage to community-based social support services might take longer.

Conference participants agreed on the need to look at multiple time points. They also suggested that studies assess whether ED care prevents poor outcomes and future health care utilization for the same cause, as well as effects on downstream quality of care and quality of life. Some participants noted that existing instruments for qualitative research do not appear to delve as deeply as the GEAR Task Force might like. To address this problem, the R33 pilot study should include structured interviews with key stakeholders.

Voting/Ranking of Revised Questions

With 30 responses, consensus meeting participants ranked the revised research priority questions:

4. What are the optimal outcome measures for ED-to-home transition interventions (i.e., appropriate for a heterogeneous population and responsive to change)? What is the best timing, process, utilization, and patient-perspective battery of measures?
5. Who are the optimal candidates for additional support during the ED-to-home transition? Are these the same patients as those at highest risk for ED return?*
6. How can we improve information transfer/communication in bidirectional nursing home-to-ED transitions?
7. Can we link data from the ED on social risk factors, falls risk, medication safety, and physical function to improve transition interventions rather than just care coordination?
8. How can we best incorporate stakeholder perspectives in ED transitions research?

*There is more existing research on this question.

CONCLUSION AND CROSS-CUTTING THEMES

This consensus conference involved a wide representation of stakeholders, including clinicians, researchers, caregivers, pharmacists, and administrators, from several disciplines and career stages. This is a strength and value of the GEAR Task Force.

The following themes cut across all five domains:

- Older patients are heterogeneous. Research studies therefore should define and phenotype a target population for intervention. At this conference, participants suggested identifying and focusing on high-risk populations such as cognitively impaired individuals, nursing home residents, frail older adults, and high health care utilizers.
- The GEAR Task Force should consider leveraging easily accessible data, such as EMR data or system flags, to identify highest-risk patients.
- The highest-impact patients might be those discharged from the ED back to the community, because the ED might be their only point of health care access. Studies could focus on preserving independence in this population.
- The GEAR Task Force should consider carefully the optimal outcomes of interest, as studies may not observe the anticipated effects. Outcomes to consider (in addition to the common utilization outcomes of admissions, revisits, length of stay, and mortality) include functional status, quality of life, and markers of patient care access such as primary care visits, referrals, or medication access.
- GEM researchers should consider when, how, and what outcomes should be evaluated when assessing the impact of geriatric emergency care programs or interventions. These will depend on the context of interventions, downstream effects, and timing.

Task Force members who were unable to vote, including those who were not at the conference, will be asked to complete their rankings for each of the five domains. Before the end of 2019, GEAR Task Force subcommittees will resume their standing calls to review feedback from the conference and to develop a study proposal based on the top research priorities. A GEAR Task Force call will be held in January 2020 to review proposed studies from each of the five groups.

As noted during the conference, NIA has released a request for applications to optimize emergency care for individuals with dementia. This provides an opportunity for GEM and GEAR to organize a proposal addressing this priority area. Information about this funding opportunity can be found at https://grants.nih.gov/grants/guide/rfa-files/RFA-AG-20-026.html.

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