This is a repository copy of *A model for developing subspecialty clinical practice guidelines: the geriatric emergency department guidelines 2.0*.

White Rose Research Online URL for this paper:
https://eprints.whiterose.ac.uk/id/eprint/232866/

Version: Published Version

Article:
Gunaga, S. orcid.org/0000-0002-6507-4487, Carpenter, C.R., Kennedy, M. et al. (23 more authors) (2025) A model for developing subspecialty clinical practice guidelines: the geriatric emergency department guidelines 2.0. JACEP Open, 6 (6). 100247. ISSN: 2688-1152

https://doi.org/10.1016/j.acepjo.2025.100247

Reuse
This article is distributed under the terms of the Creative Commons Attribution (CC BY) licence. This licence allows you to distribute, remix, tweak, and build upon the work, even commercially, as long as you credit the authors for the original work. More information and the full terms of the licence here: https://creativecommons.org/licenses/

Takedown
If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

eprints@whiterose.ac.uk
https://eprints.whiterose.ac.uk/

JACEP OPEN
JOURNAL OF THE AMERICAN COLLEGE OF EMERGENCY PHYSICIANS OPEN
Open Access
A GLOBAL JOURNAL OF EMERGENCY MEDICINE
American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

CLINICAL CONCEPTS

Geriatrics

Check for updates

A Model for Developing Subspecialty Clinical Practice Guidelines: The Geriatric Emergency Department Guidelines 2.0

Satheesh Gunaga DO[1,2,3], Christopher R. Carpenter MD, MSc[4], Maura Kennedy MD, MPH[5,6], Lauren T. Southerland MD, MPH[7], Alexander X. Lo MD, PhD[8], Sangil Lee MD, MS[9], Kirby Swan DO[1,3], Fabrice Mowbray PhD, RN[10], Rachel M. Skains MD, MSPH[11], Teresita M. Hogan MD[12], Martin F. Casey MD, MPH[13], Kei Ouchi MD, MPH[6,14], Naomi R. George MD, MPH[15], Kerstin de Wit MBChB, MD, MSc[16], Cameron J. Gettel MD, MHS[17,18], Katherine Selman MD[19], Luna C. Ragsdale MD, MPH[20,21], Anita N. Chary MD, PhD[22], James D. van Oppen BMBS, PhD[23], Glenn Arendts MBBS, PhD[24], Charles L. Maddow MD[25], Katherine M. Hunold MD, MPH[7], Katren R. Tyler MD[26], Danya Khoujah MBBS, MEHP[27], Ula Hwang MD, MPH[17,28,29], Shan Liu MD, SD[5,6]

[1]*Department of Emergency Medicine, Henry Ford Health, Wyandotte Hospital, Wyandotte, Michigan, USA*
[2]*Envision Healthcare, Ann Arbor, Michigan, USA*
[3]*Department of Osteopathic Medical Specialties, Michigan State University College of Osteopathic Medicine, East Lansing, Michigan, USA*
[4]*Department of Emergency Medicine, Mayo Clinic, Rochester, Minnesota, USA*
[5]*Department of Emergency Medicine, Massachusetts General Hospital, Boston, Massachusetts, USA*
[6]*Department of Emergency Medicine, Harvard Medical School, Boston, Massachusetts, USA*
[7]*Department of Emergency Medicine, The Ohio State University, Columbus, Ohio, USA*
[8]*Department of Emergency Medicine, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA*
[9]*Department of Emergency Medicine, University of Iowa Carver College of Medicine, Iowa City, Iowa, USA*
[10]*College of Nursing & College of Human Medicine, Michigan State University, East Lansing, Michigan, USA*
[11]*Department of Emergency Medicine, University of Alabama at Birmingham, Birmingham, Alabama, USA; Geriatric Research, Education and Clinical Center, Birmingham VAMC, Birmingham, Alabama, USA*
[12]*Section of Emergency Medicine, Department of Medicine, University of Chicago Pritzker School of Medicine, Chicago, Illinois, USA*
[13]*Department of Emergency Medicine, University of North Carolina School of Medicine, Chapel Hill, North Carolina, USA*
[14]*Department of Emergency Medicine, Brigham and Women's Hospital, Boston, Massachusetts, USA*

Supervising Editor: Henry Wang, MD, MS

© 2025 The Author(s). Published by Elsevier Inc. on behalf of American College of Emergency Physicians. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

JACEP OPEN

[15]Department of Emergency Medicine, Division of Critical Care, University of New Mexico School of Medicine, Albuquerque, New Mexico, USA
[16]Department of Emergency Medicine, Queens University, Kingston, Ontario, Canada
[17]Department of Emergency Medicine, Yale University, New Haven, Connecticut, USA
[18]Center for Outcomes Research and Evaluation, Yale School of Medicine, New Haven, Connecticut, USA
[19]Department of Emergency Medicine, Cooper Medical School of Rowan University, Camden, New Jersey, USA
[20]Department of Emergency Medicine, Durham VA Health Care System, Durham, North Carolina, USA
[21]Department of Emergency Medicine, Duke University School of Medicine, Durham, North Carolina, USA
[22]Department of Emergency Medicine, Medicine-Section of Health Services Research, Baylor College of Medicine, Houston, Texas, USA
[23]Centre for Urgent and Emergency Care Research, University of Sheffield, Sheffield, United Kingdom
[24]University of Western Australia Medical School, Crawley, Western Australia, Australia
[25]Department of Emergency Medicine, University of Texas Health Science Center at Houston McGovern Medical School, Houston, Texas, USA
[26]Department of Emergency Medicine, University of California Davis School of Medicine, Sacramento, California, USA
[27]Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, Maryland, USA
[28]Geriatric Research, Education and Clinical Center, James J. Peters VAMC, Bronx, New York, USA
[29]Department of Emergency Medicine and Population Health, NYU Grossman School of Medicine, New York, USA

Correspondence

Satheesh Gunaga, DO, Henry Ford Wyandotte Hospital, Department of Emergency Medicine, 2333 Biddle Avenue, Wyandotte, MI, 48192, USA. Email: sgunaga1@hfhs.org

Presented as a lecture titled "Geriatric Emergency Department Guidelines 2.0" at the Society of Academic Emergency Medicine Conference, May 18, 2023, Austin, Texas, USA.

Received: December 29, 2024
Revised: July 17, 2025
Accepted: July 29, 2025
https://doi.org/10.1016/j.acepjo.2025.100247

Abstract

The original consensus–based Geriatric Emergency Department (GED) Guidelines, published in 2014, established a framework of core principles for delivering high-quality, age-appropriate emergency care for older adults. In response to significant advances in geriatric emergency medicine research and evolving clinical priorities, we developed the GED Guidelines 2.0 to ensure continued relevance, clinical utility, and evidence-based rigor. This concept paper describes the systematic and iterative process undertaken to update the guidelines, including the formation of multidisciplinary working groups and the application of the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) methodology. Unlike the original GED Guidelines, our approach prioritized methodological transparency, formalized evidence grading, and consensus building grounded in systematic reviews and meta-analyses. We describe the identification, recruitment, and collaboration of multidisciplinary clinical and academic experts working together to improve the care of older adults in the emergency department. Through this multidisciplinary effort, key geriatric domains were selected, priority topics identified, and systematic reviews and meta-analyses conducted to generate a robust evidence base for future guideline and policy development. The GED Guidelines 2.0 represents the first emergency medicine (EM) subspecialty guideline effort to fully adopt the GRADE framework, offering a novel blueprint for future EM guideline development.

Keywords: *emergency medicine, geriatrics, aged, evidence-based medicine, practice guidelines as topic, health services for the aged, program development*

1 BACKGROUND

1.1 A Brief History of Geriatric Emergency Medicine

Adults aged ≥65 years have the highest rates of emergency department (ED) visits and noncritical hospitalizations among all age groups in the United States (US).[1,2] The process, experience, and outcomes of emergency care for older adults are uniquely complex due to geriatric syndromes, multimorbidity, and polypharmacy, which increase the risk of hospitalization and complicate care transitions.[3–5] Older adults often present with additional challenges such as functional and cognitive impairment, social isolation, and unclear goals of care, which traditional ED workflows are not designed to address.[6,7] For example, standard ED processes prioritize medical acuity and quick diagnosis, often overlooking the need for detailed medication reconciliation or consideration of frailty in decision making.[6,8] Older adults may also require tailored discharge planning accounting for mobility limitations or cognitive decline; however, this is often not integrated into typical ED protocols.[9,10] These gaps in care are crucial because they can lead to poor patient-centered

outcomes, such as unnecessary admissions or post-ED functional decline.[3,4,6,7] Decades of research and advocacy in geriatric emergency medicine (GEM) have driven the development of specialized care models to improve both patient and system outcomes (Fig 1).[11] This momentum led to the establishment of the first self-described geriatric EDs (GEDs) in the US in 2008, and by 2013, 30 EDs had self-identified as GEDs, although care models varied significantly across institutions.[12,13]

1.2 Establishing the GED Guidelines: Origins, Scope, and Influence

Recognizing the need for standardized guidance to address the unique challenges of older adults in the ED, work on the original GED Guidelines began in 2011 and culminated in their publication in 2014.[14–16] Developed through a consensus building effort with multidisciplinary stakeholders, including the American College of Emergency Physicians (ACEP), American Geriatrics Society, Emergency Nurses Association, and the Society for Academic Emergency Medicine (SAEM), the guidelines were designed to improve care and outcomes for older adults in emergency settings.[14–17] This effort marked a significant step forward in GEM, providing clear, evidence-based recommendations to optimize ED care delivery for older adults.[12,17,18]

The original GED Guidelines comprise 42 recommendations organized into 6 key categories: staffing, transitions of care, education, quality improvement, equipment and supplies, and policies, procedures, and protocols.[14–16] Core recommendations emphasize geriatric-specific leadership roles, structured-discharge planning, integration with community resources, age-friendly ED design, and the use of evidence-based protocols for common geriatric presentations (Table 1).[14,19] ACEP accredits GEDs based on adherence to best practices outlined in the GED Guidelines, with 541 EDs now accredited.[18,20] Beyond accreditation, the guidelines have stimulated broader advancements in research, education, and care models within GEM.[21–24] For example, the guidelines have led to the development of targeted–geriatric training programs for ED staff, the implementation of protocols for delirium screening, and the creation of performance metrics to monitor outcomes like ED length of stay and 30-day readmission rates.[23–26] These innovations have fostered continuous improvement and laid the foundation for future guideline updates.

1.3 Evolving Evidence and Expectations: The Justification for the GED Guidelines 2.0

Alongside the GED Guidelines, significant GEM progress has been driven by the Geriatric Emergency care Applied Research (GEAR) Network and its successor, GEAR 2.0.[9,27–31] Like its pediatric counterpart, the Pediatric Emergency Care Applied Research Network, the GEAR initiatives have identified and

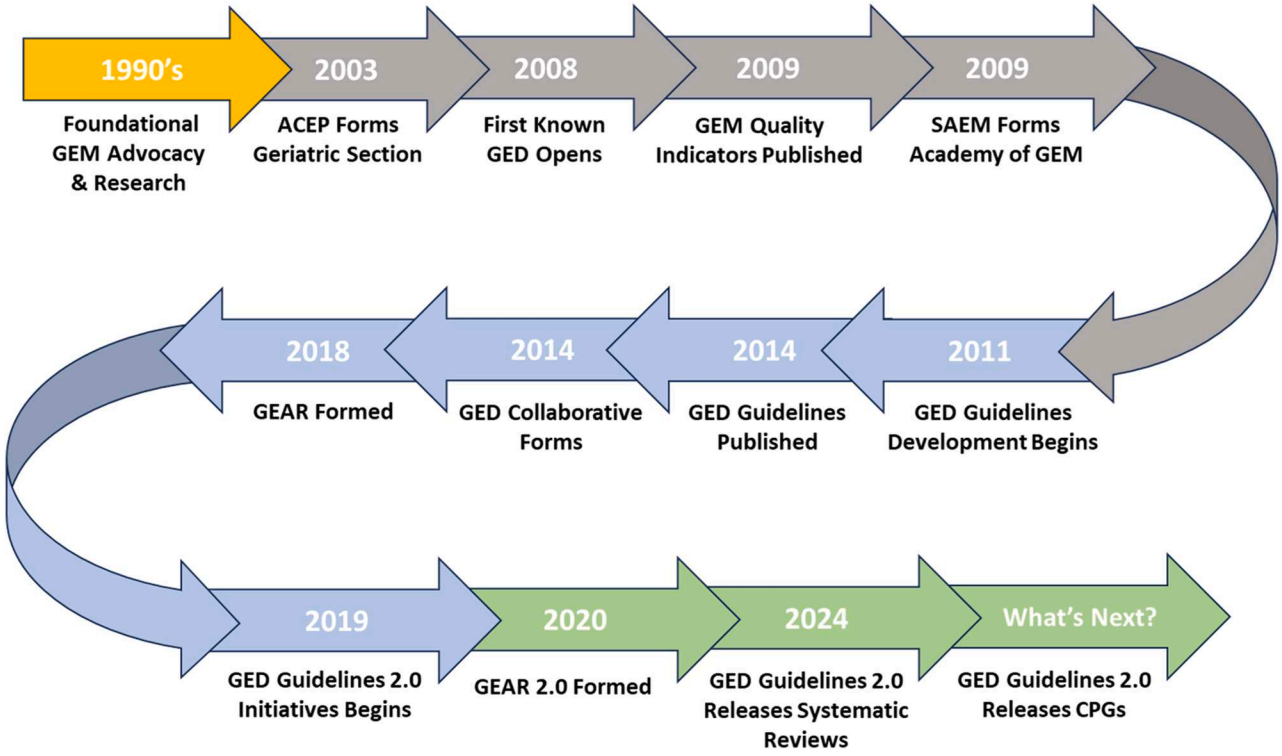

FIGURE 1. Timeline of key milestones in geriatric emergency medicine, highlighting significant advancements related to the Geriatric Emergency Department Guidelines. ACEP, American College of Emergency Physicians; CPG, clinical practice guideline; GEAR, Geriatric Emergency Care Applied Research; GED, geriatric emergency department; GEM, geriatric emergency medicine; SAEM, Society for Academic Emergency Medicine.

TABLE 1. Overview of the original geriatric emergency department Guidelines and the anticipated impact of the geriatric emergency department Guidelines 2.0.

6 general categories of recommendations	Original geriatric ED guidelines 42 specific recommendations	Geriatric ED Guidelines 2.0 7 GEM clinical practice guidelines
Staffing	Three recommendations ensure geriatric-trained physician and nursing leadership, including a GED medical director completing >8 h of geriatric CME every 2 y.	No anticipated new guidance.
Transitions of care	Four recommendations establish transition-of-care protocols for timely communication of geriatric-specific clinical information and maintaining community resource connections for seamless ED-to-outpatient transitions.	The GED Guidelines 2.0 clinical practice guidelines anticipate providing guidance on best practices around ED-to-outpatient transitions of care in older adults individualized for specific recommendations for delirium, dementia, falls, frailty, medication management, palliative care, and elder abuse which incorporate patient values and shared decision making.
Education	Three recommendations enhance continuing medical education programs to improve physician and nursing staff awareness of geriatric emergency care needs, policies, and procedures.	The GED Guidelines 2.0 anticipate supporting and building on current recommendations through a dissemination and implementation strategies that are individualized for each recommendation, cognizant of resource requirements and potential health inequities, and targeted to overcome anticipated obstacles to scaling up the intervention.
Quality improvement	Three recommendations require a geriatric quality-improvement program, overseen by the GED medical director and nurse manager.	The GED Guidelines 2.0 anticipate guiding future GED quality improvement programs by specifying numerator and denominators of target patient populations for guideline recommendations based on high certainty evidence.
Equipment and supplies	Four recommendations ensure ED physical infrastructure accommodates patients with mobility, continence, sensory, or cognitive impairments.	No anticipated new guidance.
Policies, procedures, and protocols	Geriatric ED screening (5 recommendations) Indwelling catheter (3 recommendations) Medication management (5 recommendations) Fall assessment (5 recommendations) Delirium and dementia (5 recommendations) Palliative care (2 recommendations)	7 New GRADE Level CPGs Delirium Dementia Falls Frailty Medication management Palliative care Elder abuse

CPG, clinical practice guidline; ED, emergency department; GED, geriatric emergency department; GEM, geriatric emergency medicine; GRADE, Grading of Recommendations Assessment, Development, and Evaluation.

funded critical research addressing key gaps in geriatric emergency care.[9,10,27–33] These efforts targeted areas such as transitions of care, cognitive impairment, elder abuse, falls, medication safety, and dementia. The resulting growth in evidence motivated the update to the GED Guidelines to ensure they reflect current evidence-based recommendations.

Another key reason for the update is that the original guidelines were developed without a formal assessment of the quality, quantity, reproducibility, or applicability of the supporting evidence.[34,35] Since that time, the expectations for clinical practice guidelines have evolved. Current guideline standards now require rigorous assessment of direct and indirect evidence, as well as transparent consideration of research bias, stakeholder values, health equity, anticipated costs, and clearly defined patient-centered outcomes, including the balance of anticipated benefits and potential harms.[35–38]

Although the original GED Guidelines have had a significant impact on accredited GEDs (which represent <10% of US EDs), many EDs still face substantial implementation barriers due to the absence of local champions, competing clinical

priorities, limited resources, and growing financial constraints.[39–41] For many ED teams, the guidelines represent an ideal vision of geriatric emergency care that remains difficult to achieve without institutional and interdisciplinary support.[39,42,43] Furthermore, many emergency medicine (EM) clinicians outside the GED-accredited EDs may have minimal awareness of the guidelines or their relevance to daily GEM practice, which has hindered broader dissemination and adoption.[23,44]

To address these challenges and evolving standards, the GED Guidelines 2.0 initiative launched in 2019 with 3 key objectives: (1) to update the evidence base supporting recommendations, (2) to enhance transparency and usability, and (3) to develop improved dissemination and implementation strategies. A major emphasis of the GED Guidelines 2.0 was to ensure practical usability, empowering EM clinicians to integrate evidence-based care for older adults in both accredited and non–accredited GED settings, with recommendations tailored to diverse resource levels and care environments.

As the first EM subspecialty group to adopt the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) methodology for guideline development, the GED Guidelines 2.0 initiative aims to provide a transparent and replicable framework that can serve as a model for other EM subspecialty groups (Fig 2). Still in progress, the initiative will ultimately deliver 14 systematic reviews and meta-analyses (SRMAs) and 7 new GRADE–based clinical practice guidelines. These forthcoming guidelines will build on the original GED recommendations, offering structured, evidence-based guidance for high-priority geriatric conditions that are applicable across a wide spectrum of EDs (Fig 3, Table 1).

1.4 Launching the GED Guidelines 2.0 Initiative: Integrating Multidisciplinary Collaboration and GRADE Methodology

In 2019, the GED Guidelines 2.0 initiative began with a small planning group and quickly expanded into a diverse, interdisciplinary collaboration of >60 members. Participants included EM physicians, geriatricians, nurses, and allied health professionals from 23 US states and 7 countries, each contributing valuable expertise on clinical care delivery. To ensure broad applicability, the working group actively engaged national and international EM and geriatric organizations. In addition, several patient caregivers participated in the initiative, offering essential insights into patient needs, values, and care preferences.[45]

As the initiative progressed, the group undertook a careful evaluation of guideline development methodologies. By January 2021, following extensive discussion and GRADE training sessions, the working group formally voted to follow the GRADE framework.[36,46] Recommended by methodologic experts for its rigor, transparency, and international alignment, GRADE has been widely used by organizations such as the World Health Organization and the Agency for Healthcare Research and Quality.[35–38,46–57] GRADE offers a structured process for synthesizing evidence, framing research questions, and assessing bias, helping ensure that recommendations are both scientifically sound and clearly communicated (Fig 4).[46]

Although the group valued GRADE's strengths, its resource-intensive nature was also recognized. Implementing GRADE requires trained methodologists, support from research librarians, and completion of systematic reviews and meta-analyses (SRMAs)—a considerable undertaking for a largely volunteer-driven initiative. Nevertheless, the group recognized that GRADE's rigor would support the long-term usability of the GED Guidelines 2.0.

1.5 Identifying Priority Topics and Establishing GED Guidelines 2.0 Subcommittees

To begin the update process, the GED Guidelines 2.0 group first identified which original recommendations contained critical gaps in need of revision. Foundational elements such as interdisciplinary staffing, GED equipment and supplies, and educational requirements remained current and did not require formal revision. Building on this foundation, the group identified 7 high-priority clinical domains: frailty, medication safety, dementia, fall assessment and management, delirium, palliative care, and elder abuse.[9,14–16,28–30,32,58] These areas were selected for their clinical significance, relevance to geriatric

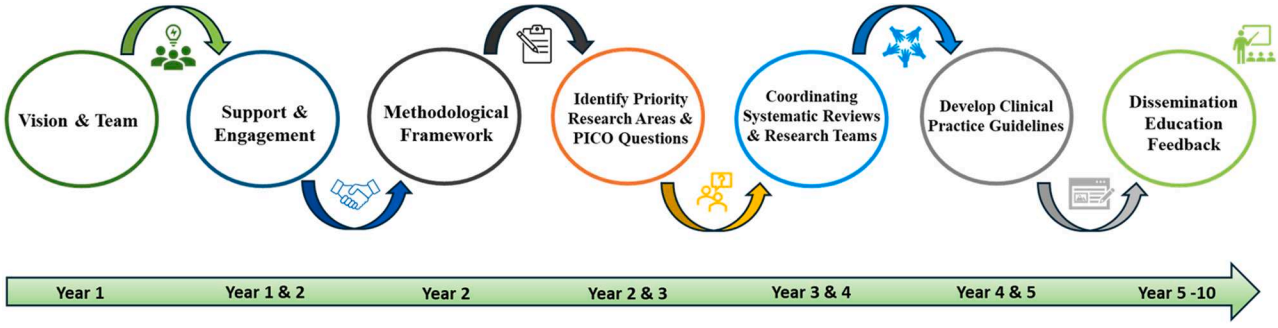

FIGURE 2. A roadmap for developing the Geriatric Emergency Department Guidelines 2.0.

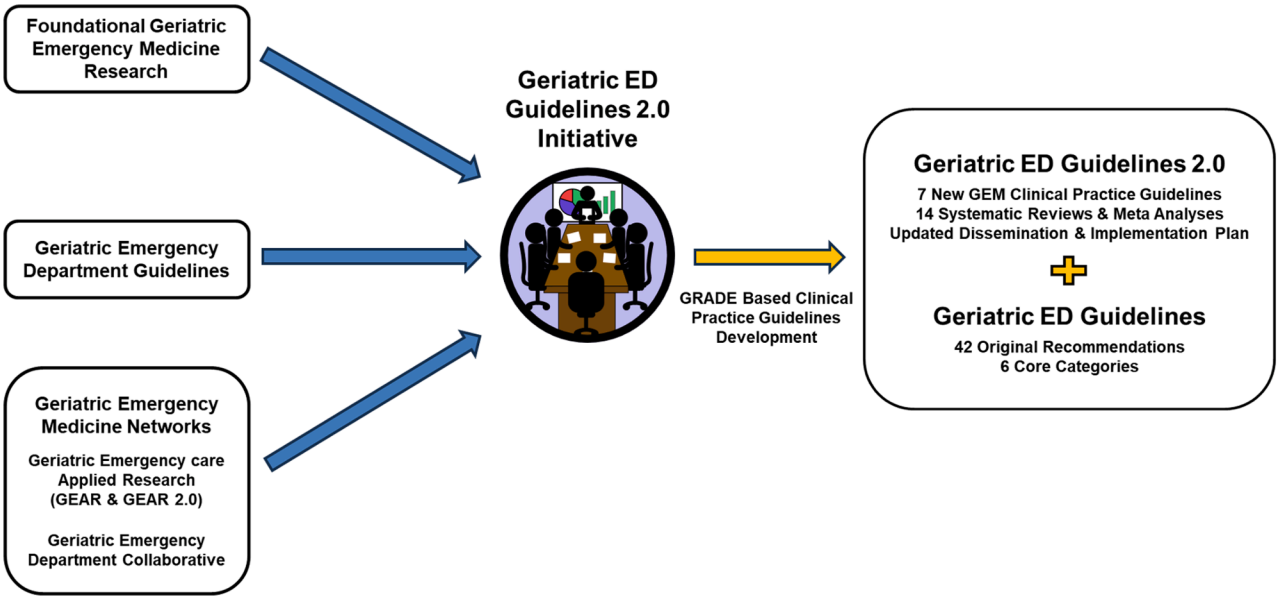

FIGURE 3. Geriatric Emergency Department Guidelines 2.0: Visual summary of input & impact. ED, emergency department; GRADE, Grading of Recommendations Assessment, Development, and Evaluation; GEM, geriatric emergency medicine.

emergency care, and growing evidence base that could support the development of actionable recommendations.

Subcommittees were established for each priority topic, and members used the Population, Intervention, Comparator, Outcomes (PICO) framework to formulate structured clinical questions, guide literature searches, and inform evidence synthesis plans.[59,60] The resulting PICO questions addressed a broad array of clinical issues, including screening protocols, diagnostic accuracy of assessment tools, imaging and laboratory evaluations, management strategies, and transitions of care. Critically, they also included outcomes aligned with current standards in clinical practice guideline development, such as functional status, quality of life, healthcare utilization, safety, and patient-centered outcomes. Table 2 summarizes the 14 finalized GED Guidelines 2.0 PICO questions, each designed to inform evidence-based recommendations that reflect the needs and priorities of older adults in emergency care settings.[61–68]

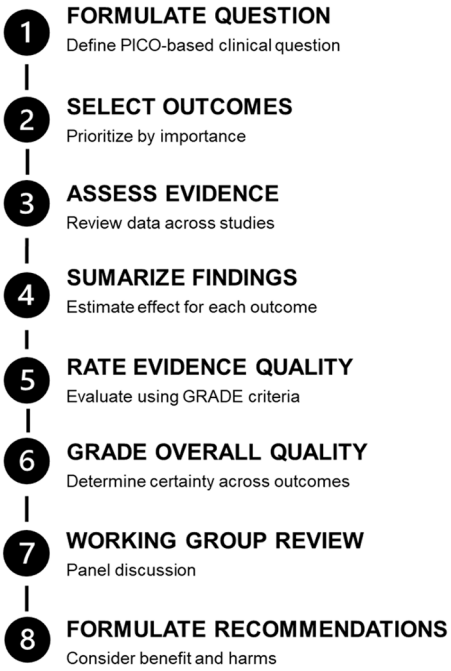

FIGURE 4. Overview of the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) methodology. PICO, Population, Intervention, Comparator, and Outcomes.[46]

1.6 Creating Systematic Reviews, Meta-Analyses, and GRADE–Based Clinical Practice Guidelines

To support the GED Guidelines 2.0, PICO-specific subcommittees conducted SRMAs following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) or PRISMA-Diagnostic Test Accuracy (PRISMA-DTA) standards to ensure transparency and methodologic rigor.[69–74] Covidence, a web–based systematic-review platform, facilitated reference management, screening, and data extraction to ensure consistency across teams.[75] Regular meetings promoted alignment in methodology, inclusion criteria, and interpretation of evidence.

These SRMAs form the evidence base for new GRADE–based clinical practice guidelines that will replace or refine specific recommendations from the original 2014 GED Guidelines. Unlike the original consensus-based recommendations, which did not assess the certainty of evidence or provide formal justification for recommendation strength, the new guidelines incorporate structured-evidence grading,

TABLE 2. Description of the Geriatric Emergency Department Guidelines 2.0 priority topics and PICO questions.

Priority topics	PICO questions
Delirium	1a. In the ED, for all older adults aged ≥65 y, does using risk stratification to determine who should be screened for delirium improve prognostic accuracy, screening efficiency, and patient-oriented outcomes compared to not using a risk stratification method?[61]
	1b. In the ED, for all older adults aged ≥65 y, does the use of a risk stratification method to identify a subset of patients at higher risk for delirium improve the understanding of delirium prevalence and the proportion of older adults needing screening compared to not applying such a method?[61]
	2. In adults aged ≥60 y evaluated in the ED, how effective are various diagnostic approaches—including history, physical examination, laboratory testing, and screening instruments—in identifying delirium compared to an acceptable criterion standard for delirium in terms of diagnostic accuracy?[62]
	3. In patients aged ≥65 y with delirium who underwent head imaging in the ED, do abnormal neurologic examinations, headache, trauma, and anticoagulation identify acute abnormalities on head imaging (MRI/CT) as a possible or likely etiology of delirium?[63,64]
Falls	1. In adults aged ≥60 y presenting to the ED for a fall, how effective is a multifactorial fall prevention intervention compared to usual care in improving functional status, enhancing outpatient fall prevention, quality of life, reducing unscheduled healthcare use, and determining the new need for skilled care at discharge?
	2. In adults aged ≥60 y evaluated in the ED, how effective is evaluation by a therapist (physical, occupational, or both) for fall prevention, fall assessment, or mitigation of fall risk factors compared to no therapist evaluation in terms of the incidence of falls and other secondary patient-centered outcomes.
Medication safety	1. In older adults aged ≥65 y presenting with acute, undifferentiated agitation in the ED or out-of-hospital settings, which sedating medications are associated with the least adverse events?[65]
	2. Among older adults aged ≥65 y in the ED, how do various ED-based geriatric medication programs compare to traditional prescribing methods in their effectiveness at decreasing the rates of potentially innapropriate medications and adverse drug events?[66]
Frailty	1. In patients aged ≥65 y presenting to the ED, how does the use of a frailty assessment tool inform clinical decision making at triage or during the ED visit to improve patient outcomes compared to standard care?[67]
Dementia	1. In older persons living with dementia who have impaired cognition, what ED interventions improve patient-centered outcomes compared to usual care?[68]
	2. In older persons living with dementia who have impaired cognition, does the use of innovative pain assessment tools, compared to usual care, lead to more accurate or improved pain assessment in the ED?[68]
Palliative care	1. In older adults (≥60 y) with serious illness who present to the ED, is ED-based, palliative care screening associated with improved patient and health system outcomes when compared to those who do not receive screening in the ED?
	2. In older adults (≥60 y) with serious illness who present to the ED, is hospice and/or palliative care consultation initiated in the ED associated with improved patient and health system outcomes when compared to those who do not have consultation initiated in the ED?
Elder abuse	1. In ED patients aged ≥60 y, does universal or targeted screening for elder abuse, compared to usual care (clinical identification based on EMS, nurse, and physician gestalt and standard practice), improve the total number of cases identified, diagnostic accuracy, and long-term safety outcomes, including potential harms, legal outcomes, functional outcomes, psychosocial outcomes, and healthcare utilization?
	2. In ED patients aged ≥60 y who are previously known, newly found, or suspected victims of elder abuse, how do ED-based or ED-initiated interventions—including adult protective services reporting—compared with usual care in improving short-and long-term safety, health, legal, functional, and psychosocial outcomes?

CT, computed tomography; ED, emergency department; EMS, emergency medical services; MRI, magnetic resonance imaging; PICO, Population, Intervention, Comparator, Outcomes.

consideration of patient values and preferences, health equity, and feasibility of implementation (Fig 4).[46,48–53] For example, the delirium guideline evaluates screening tools such as the Brief Confusion Assessment Method (bCAM) and the 4 A's Test (4AT), along with risk stratification and ED management pathways, culminating in recommendations that balance diagnostic accuracy, workflow integration, and patient safety. Other guidelines—for medication safety, falls, and dementia—address key clinical questions such as which pharmacologic agents to avoid or prefer, effective fall risk screening and mitigation strategies, and approaches for dementia recognition and care coordination in the ED.

The GED 2.0 delirium clinical practice guidelines have been completed and will be submitted for publication

following public review in 2025. Guidelines for medication safety, fall prevention, and dementia are in development, whereas the other domains are expected to be published in late 2025 or 2026.

1.7 Building Support and Dissemination Strategies

The GED Guidelines 2.0 working group is also focused on expanding broader organizational support to enhance dissemination and impact. Building on the original coalition of endorsing societies, the updated initiative seeks formal support from additional national organizations, including GEAR 2.0, the GED Collaborative, and other national multidisciplinary organizations. These partnerships help shape dissemination strategies, increase visibility, and foster adoption by aligning the guidelines with stakeholder priorities. Incorporating feedback from these groups supports knowledge sharing and plays a critical role in narrowing the research-to-practice gap in GEM.[51,76]

Seven SRMAs related to delirium, frailty, dementia, and medication safety have been published to date.[8,61–64,67,68] Preliminary findings from the GED Guidelines 2.0 initiative have also been presented at national EM meetings, offering early insights into potential changes to clinical practice recommendations.[65,66] These early presentations have highlighted evidence gaps, confirmed strong support for certain practices (eg, use of validated delirium tools), and revealed areas in which guideline updates may challenge current norms.[8,61,62] Notable findings include the effectiveness of ED-based programs in reducing potentially inappropriate medications and adverse drug events, the need for safer prescribing practices in the management of acute agitation, and the limited utility of routine head computed tomography in older adults with delirium or altered mental status unless specific risk factors are present.[63,64-66] Work in frailty and dementia has further emphasized the value of structured assessments and highlighted how targeted interventions, such as community paramedicine and dementia–informed care models, can reduce revisits and hospitalizations.[67,68] These early insights are directly informing the development of new clinical practice guidelines and help define future research and quality-improvement priorities.

The GEAR 2.0 website now serves as a central repository for GED Guidelines 2.0-related updates, enabling open access to publications, tools, and resources for clinicians, researchers, administrators, and policy makers.[31] Anticipated dissemination activities include implementation workshops, educational webinars, podcasts, and tailored content for different clinical roles and settings.[77,78] These efforts aim to improve guideline uptake across both GED-accredited and nonaccredited EDs. Social media campaigns and hospital-based outreach will further support public and institutional awareness in advance of guideline release.

1.8 GED Guidelines 2.0 Lessons Learned

The development of the GED Guidelines 2.0 has highlighted important lessons in stakeholder engagement, project management, and collaboration. Early involvement of stakeholders helped align priorities and goals, which has been valuable in securing organizational support and will be essential during the dissemination and implementation phases. Smaller, PICO-specific teams streamlined the SRMA process by distributing workloads and integrating clinical and research perspectives. This structure improved collaboration and expedited the progress across the 7 priority topic subcommittees.

The creation of GRADE–guided clinical practice guidelines requires time, patience, and sustained commitment. Although most working group members brought academic and research experience, there was variability in familiarity with systematic-review methods and GRADE-specific processes. This required ongoing education, recalibration of workflows, and in some cases, shifting roles to meet evolving project needs. These challenges highlight the value of multidisciplinary collaboration, particularly the important roles played by methodologists, medical librarians, statisticians, and content experts, in upholding methodologic rigor.

At the heart of this initiative has been a deep culture of academic volunteerism. The GED Guidelines 2.0 effort was made possible by a dedicated, mission-driven group of academic geriatric and EM clinicians who collectively volunteered thousands of hours to progress this work. This initiative has been sustained not only by academic output, but by shared purpose, collegiality, and a deep commitment to advancing care for older adults. That foundation helped carry the project through the COVID-19 pandemic and continues to drive progress today.

1.9 Guiding the Future: Anticipated Impact of the GED Guidelines 2.0

Emergency physicians place the highest value on clinical practice guidelines with actionable recommendations, explicit target populations, and explicit links between the strength of evidence to support recommendations and anticipated outcomes.[38] The updated GED Guidelines 2.0 provide these attributes while offering practical strategies that can be implemented across a wide range of ED settings and transparently weighing the anticipated benefits, potential harms, resource requirements, acceptability, feasibility, and health equity. Many successful geriatric emergency care models, especially those expanded during the COVID-19 pandemic, demonstrate that hospitals can improve care for older adults without necessarily pursuing full GED accreditation.[42,79–81] Instead, localized solutions such as dedicated geriatric champions, protocol–based care pathways, and specialized practitioner roles allow EDs to apply core GED principles in ways that reflect each institution's resources and priorities.[24,82] This flexible approach supports broader adoption of foundational practices including screening, assessment, and patient-centered care, enabling EDs of all types to enhance care pathways for older patients. These models have also been associated with reduced healthcare utilization, lower costs, and improved outcomes for older adults and their caregivers.[83–86]

The GED Guidelines 2.0 aim to build on this momentum, equipping EDs with a more transparent, introspective, and practical framework to guide decision making, foster innovation, and advance geriatric emergency care delivery nationally. A key strength of the initiative lies in its foundation of rigorous evidence synthesis. Initial SRMAs conducted by the GED Guidelines 2.0 working group have already identified opportunities to improve geriatric ED care.[61,63,64,67,68] Despite this momentum, gaps remain. The long-term effects of GED model implementation—particularly on outcomes prioritized by older adults such as functional status, mobility, and quality of life—are still not well understood.[87,88] Existing research primarily focused on administrative metrics such as ED revisits and readmissions, rather than holistic, person-centered outcomes.[87–89] Addressing this evidence gap will require ongoing investment in quality improvement, prospective studies, and randomized trials to fully assess the real-world effects of GED Guidelines 2.0 implementation.

2 CONCLUSION

Although the GED Guidelines 2.0 clinical practice guidelines and related implementation efforts are still in development, sharing the methodology, vision, and anticipated outputs is a crucial first step toward promoting widespread adoption. By building upon the original guidelines, the GED Guidelines 2.0 strives to advance geriatric emergency care through a flexible, evidence-informed framework grounded in multidisciplinary collaboration and transparency. This initiative underscores not only the importance of improving care for older adults but also the feasibility of doing so across diverse clinical environments even while awaiting higher-quality, less-biased proof-of-concept research. As we continue to finalize and release the new guidelines, we offer a roadmap for other EM subspecialties to create high-impact, GRADE–based clinical practice guidelines tailored to their unique areas of care. Through transparency, innovation, and shared purpose, the GED Guidelines 2.0 aims to strengthen the science and practice of GEM and improve outcomes for older adults across the healthcare continuum.

FUNDING AND SUPPORT

This work was funded and supported by the John A. Hartford Foundation and the West Health Institute, aimed at advancing the Geriatric Emergency Department Collaborative and the development of the Geriatric Emergency Department Guidelines 2.0.

Satheesh Gunaga, Christopher R. Carpenter, Maura Kennedy, Lauren T. Southerland, Alexander X. Lo, Sangil Lee, Fabrice Mowbray, Rachel M. Skains, Teresita M. Hogan, Martin F. Casey, Kei Ouchi, Naomi R. George, Cameron J. Gettel, Katherine Selman, Luna C. Ragsdale, Anita N. Chary, James D. van Oppen, Glenn Arendts, Charles L. Maddow, Katherine M. Hunold, Katren R. Tyler, Danya Khoujah, Ula Hwang, and Shan Liu report financial support was provided by The John A. Hartford Foundation and West Health Institute.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work, the authors used ChatGPT (OpenAI) in order to enhance grammar, improve language clarity, and support the readability of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

CONFLICT OF INTEREST

Satheesh Gunaga is a volunteer board member for Compassion and Choices, a non-profit organization. Satheesh Gunaga recieved funding as a site Sub-Investigator on an NIH-funded study (NIH Prime Award No. 1U19AG078105-01A1) during the conduct of this initiative. Christopher R. Carpenter was awarded grants from the National Institute on Aging (NIA) through R33AG058926 and R61AG069822, the John A. Hartford Foundation, and the West Health Institute. Christopher R. Carpenter held leadership positions with the Geriatric Emergency Care Applied Research (GEAR) Network, the Clinician-Scientists in Transdisciplinary Aging Research (Clin-STAR) Coordinating Center, and the ACEP Geriatric Emergency Department Accreditation Advisory. Maura Kennedy received funding from the American College of Emergency Physicians and Gillian Reny Stepping Strong for Trauma Innovation, Brigham Health. Lauren T. Southerland was awarded grant from the NIA through K23AG061284. Rachel M. Skains was awarded grants from the NIA (R33AG058926) and the West Health Institute. Cameron J. Gettel was the pepper scholar with support from the Claude D. Pepper Older Americans Independence Center at Yale School of Medicine (P30AG021342) and the NIA (R03AG073988). Ula Hwang was awarded grants from the NIA (R33AG058926, R33AG069822), the John A. Hartford Foundation, and the West Health Institute. Shan Liu was awarded grants from Gillian Reny Stepping Strong for Trauma Innovation, Brigham Health; the John A. Hartford Foundation; and the West Health Institute.

ACKNOWLEDGEMENTS

This work was funded and supported by the John A Hartford Foundation and West Health Institute, aimed at advancing the development of Guidelines for Geriatric Emergency Departments.

ORCID

Satheesh Gunaga DO https://orcid.org/0000-0002-6507-4487

REFERENCES

1. Cairns C, Ashman JJ, Kang K. Emergency department visit rates by selected characteristics: United States, 2022. *NCHS Data Brief*. 2024;(503):1-9. http://doi.org/10.15620/cdc/159284
2. Lo AX, Flood KL, Biese K, Platts-Mills TF, Donnelly JP, Carpenter CR. Factors associated with hospital admission for older adults receiving care in U.S. emergency departments. *J Gerontol A Biol Sci Med Sci*. 2017;72(8):1105-1109. http://doi.org/10.1093/gerona/glw207
3. Memedovich A, Asante B, Khan M, et al. Strategies for improving ED-related outcomes of older adults who seek care in emergency departments: a systematic review. *Int J Emerg Med*. 2024;17:16. http://doi.org/10.1186/s12245-024-00584-7
4. Conneely M, Leahy S, Dore L, et al. The effectiveness of interventions to reduce adverse outcomes among older adults following emergency department discharge: umbrella review. *BMC Geriatr*. 2022;22(1):462. http://doi.org/10.1186/s12877-022-03007-5
5. Gettel CJ, Serina PT, Uzamere I, et al. Emergency department-to-community care transition barriers: a qualitative study of older adults. *J Am Geriatr Soc*. 2022;70(11):3152-3162. http://doi.org/10.1111/jgs.17950
6. Mowbray F, Brousseau AA, Mercier E, Melady D, Émond M, Costa AP. Examining the relationship between triage acuity and frailty to inform the care of older emergency department patients: findings from a large Canadian multisite cohort study. *CJEM*. 2020;22(1):74-81. http://doi.org/10.1017/cem.2019.432
7. Carpenter CR, Platts-Mills TF. Evolving prehospital, emergency department, and "inpatient" management models for geriatric emergencies. *Clin Geriatr Med*. 2013;29(1):31-47. http://doi.org/10.1016/j.cger.2012.09.003
8. Skains RM, Koehl JL, Aldeen A, et al. Geriatric emergency medication safety recommendations (GEMS-Rx): modified Delphi development of a high-risk prescription list for older emergency department patients. *Ann Emerg Med*. 84(3):274-284. https://doi.org/10.1016/j.annemergmed.2024.01.033.
9. Hammouda N, Carpenter CR, Hung WW, et al; GEAR Network. Moving the needle on fall prevention: a Geriatric Emergency care Applied Research (GEAR) network scoping review and consensus statement. *Acad Emerg Med*. 2021;28(11):1214-1227. http://doi.org/10.1111/acem.14279
10. Gettel CJ, Falvey JR, Gifford A, et al. Emergency department care transitions for patients with cognitive impairment: a scoping review. *J Am Med Dir Assoc*. 2022;23(8):1313.e1-1313.e13. http://doi.org/10.1016/j.jamda.2022.01.076
11. Hogan TM, Gerson L, Sanders AB. The history of geriatric emergency medicine. *J Geriatr Emerg Med*. 2023;4(2):2. http://doi.org/10.17294/2694-4715.1044
12. Schumacher JG, Hirshon JM, Magidson P, Chrisman M, Hogan T. Tracking the rise of geriatric emergency departments in the United States. *J Appl Gerontol*. 2020;39(8):871-879. http://doi.org/10.1177/0733464818813030
13. Hogan TM, Olade TO, Carpenter CR. A profile of acute care in an aging America: snowball sample identification and characterization of United States geriatric emergency departments in 2013. *Acad Emerg Med*. 2014;21(3):337-346. http://doi.org/10.1111/acem.12332
14. American College of Emergency Physicians; American Geriatrics Society; Emergency Nurses Association; Society for Academic Emergency Medicine; Geriatric Emergency Department Guidelines Task Force. Geriatric Emergency Department Guidelines. *Ann Emerg Med*. 2014;63(5):e7-e25. http://doi.org/10.1016/j.annemergmed.2014.02.008
15. Carpenter CR, Bromley M, Caterino JM, et al. Optimal older adult emergency care: introducing multidisciplinary geriatric emergency department guidelines from the American College of Emergency Physicians, American Geriatrics Society, Emergency Nurses Association, and Society for Academic Emergency Medicine. *J Am Geriatr Soc*. 2014;62(7):1360-1363. http://doi.org/10.1111/jgs.12883
16. Carpenter CR, Bromley M, Caterino JM, et al. Optimal older adult emergency care: introducing multidisciplinary Geriatric Emergency Department Guidelines from the American College of Emergency Physicians, American Geriatrics Society, Emergency Nurses Association, and Society for Academic Emergency Medicine. *Acad Emerg Med*. 2014;21(7):806-809. http://doi.org/10.1111/acem.12415
17. Hwang U, Shah MN, Han JH, Carpenter CR, Siu AL, Adams JG. Transforming emergency care for older adults. *Health Aff (Millwood)*. 2013;32(12):2116-2121. http://doi.org/10.1377/hlthaff.2013.0670
18. Carpenter C, Hwang U, Biese K, et al. ACEP accredits geriatric emergency care for emergency departments. *ACEP Now*. Published April 2017. Accessed April 23, 2025. https://www.acepnow.com/article/acep-accredits-geriatric-emergency-care-emergency-departments/
19. New guidelines enhance care standards for elderly patients in the ED. *ACEP Now*. Published 2014. Accessed April 23, 2025. https://www.acepnow.com/article/new-guidelines-enhance-care-standards-elderly-patients-ed/
20. ACEP geriatric emergency department accreditation program. ACEP. Accessed April 23, 2025. https://www.acep.org/geda
21. Neto LSS, Rosa TDS, Freire MD, et al. Geriatric and gerontology research: a scientometric investigation of open access journal articles indexed in the Scopus database. *Ann Geriatr Med Res*. 2023;27(3):183-191. http://doi.org/10.4235/agmr.23.0076
22. Mueller C, Watry RAM. 40 years of research studies published in geriatric nursing. *Geriatr Nurs*. 2020;41(1):38-39. http://doi.org/10.1016/j.gerinurse.2020.01.014
23. Ringer T, Dougherty M, McQuown C, et al; Academy of Geriatric Emergency Medicine. White paper-geriatric emergency medicine education: current state, challenges, and recommendations to enhance the emergency care of older adults. *AEM Educ Train*. 2018;2(Suppl 1):S5-S16. http://doi.org/10.1002/aet2.10205
24. Southerland LT, Lo AX, Biese K, et al. Concepts in practice: geriatric emergency departments. *Ann Emerg Med*. 2020;75(2):162-170. http://doi.org/10.1016/j.annemergmed.2019.08.430
25. Burkett E, Martin-Khan MG, Gray LC. Quality indicators in the care of older persons in the emergency department: a systematic review of the literature. *Australas J Ageing*. 2017;36(4):286-298. http://doi.org/10.1111/ajag.12451
26. Akpan A, Roberts C, Bandeen-Roche K, et al. Standard set of health outcome measures for older persons. *BMC Geriatr*. 2018;18(1):36. http://doi.org/10.1186/s12877-017-0701-3
27. Gettel CJ, Voils CI, Bristol AA, et al. Care transitions and social needs: a Geriatric Emergency care Applied Research (GEAR) Network scoping review and consensus statement. *Acad Emerg Med*. 2021;28(12):1430-1439. http://doi.org/10.1111/acem.14360
28. Carpenter CR, Hammouda N, Linton EA, et al. Delirium prevention, detection, and treatment in emergency medicine settings: a Geriatric Emergency Care Applied Research (GEAR) network scoping review and consensus statement. *Acad Emerg Med*. 2021;28(1):19-35. http://doi.org/10.1111/acem.14166
29. Hwang U, Carpenter C, Dresden S, et al. The Geriatric Emergency Care Applied Research (GEAR) network approach: a protocol to advance stakeholder consensus and research priorities in geriatrics and dementia care in the emergency department. *BMJ Open*. 2022;12(4):e060974. http://doi.org/10.1136/bmjopen-2022-060974
30. Kayser J, Morrow-Howell N, Rosen TE, et al. Research priorities for elder abuse screening and intervention: a Geriatric Emergency Care Applied Research (GEAR) network scoping review and consensus statement. *J Elder Abuse Negl*. 2021;33(2):123-144. http://doi.org/10.1080/08946566.2021.1904313
31. GEAR 2.0—GEAR network. Global Emergency Medicine Evidence Network (GEAR). Accessed April 23, 2025. https://gearnetwork.org/about-gear-2/
32. Carpenter CR, Heard K, Wilber S, et al. Research priorities for high-quality geriatric emergency care: medication management, screening

and prevention and functional assessment. *Acad Emerg Med*. 2011;18(6):644-654. http://doi.org/10.1111/j.1553-2712.2011.01092.x

33. Nowroozpoor A, Dussetschleger J, Perry W, et al. Detecting cognitive impairment and dementia in the emergency department: a scoping review. *J Am Med Dir Assoc*. 2022;23(8):1314.e31-88. http://doi.org/10.1016/j.jamda.2022.03.019
34. Venkatesh AK, Savage D, Sandefur B, Bernard KR, Rothenberg C, Schuur JD. Systematic review of emergency medicine clinical practice guidelines: implications for research and policy. *PLoS One*. 2017;12(6):e0178456. http://doi.org/10.1371/journal.pone.0178456
35. Institute of Medicine (US) Committee on standards for developing trustworthy clinical practice guidelines. In: Graham R, Mancher M, Miller Wolman D, Greenfield S, Steinberg E, eds. *Clinical Practice Guidelines We Can Trust*. 2011. National Academies Press (US); 2011. Accessed April 23, 2025. http://www.ncbi.nlm.nih.gov/books/NBK209539/
36. Atkins D, Eccles M, Flottorp S, et al; GRADE Working Group. Systems for grading the quality of evidence and the strength of recommendations I: critical appraisal of existing approaches. The GRADE Working Group. *BMC Health Serv Res*. 2004;4(1):38. http://doi.org/10.1186/1472-6963-4-38
37. Lima JP, Tangamornsuksan W, Guyatt GH. Trustworthy evidence-based versus untrustworthy guidelines: detecting the difference. *Fam Med Community Health*. 2023;11(4):e002437. http://doi.org/10.1136/fmch-2023-002437
38. Aboulsoud S, Huckson S, Wyer P, Lang E. Survey of preferred guideline attributes: what helps to make guidelines more useful for emergency health practitioners? *Int J Emerg Med*. 2012;5(1):42. http://doi.org/10.1186/1865-1380-5-42
39. Shih RD, Carpenter CR, Tolia V, Binder EF, Ouslander JG. Balancing vision with pragmatism: the Geriatric Emergency Department Guidelines-realistic expectations from emergency medicine and geriatric medicine. *J Emerg Med*. 2022;62(5):585-589. http://doi.org/10.1016/j.jemermed.2021.12.017
40. Kennedy M, Lesser A, Israni J, et al. Reach and adoption of a geriatric emergency department accreditation program in the United States. *Ann Emerg Med*. 2022;79(4):367-373. http://doi.org/10.1016/j.annemergmed.2021.06.013
41. Tirrell G, Sri-on J, Lipsitz LA, Camargo CA Jr, Kabrhel C, Liu SW. Evaluation of older adult patients with falls in the emergency department: discordance with national guidelines. *Acad Emerg Med*. 2015;22(4):461-467.
42. van Oppen JD, Heeren P. Do guidelines improve geriatric emergency care? *Eur Geriatr Med*. 2024;15(5):1277-1279. http://doi.org/10.1007/s41999-024-01050-6
43. Liberman T, Roofeh R, Herod SH, Maffeo V, Biese K, Amato T. Dissemination of geriatric emergency department accreditation in a large health system. *J Am Coll Emerg Physicians Open*. 2020;1(6):1281-1287. http://doi.org/10.1002/emp2.12244
44. Schumacher JG. Geriatric emergency departments: emerging themes and directions. *Curr Geri Rep*. 2024;13(2):34-42. http://doi.org/10.1007/s13670-024-00410-1
45. Carpenter CR, Morrill DM, Sundberg E, Tartt K, Upadhye S. Nothing about me without me: GRACE-fully partnering with patients to derive clinical practice guidelines. *Acad Emerg Med*. 2023;30(5):603-605. http://doi.org/10.1111/acem.14623
46. Schünemann H, Brozek J, Guyatt G, Oxman A. GRADE handbook. October 2013. Accessed April 23, 2025. https://gdt.gradepro.org/app/handbook/handbook.html
47. SAEM. Guidelines for Reasonable and Appropriate Care in the Emergency Department (GRACE). Default. Accessed April 23, 2025. https://www.saem.org/publications/grace
48. Alonso-Coello P, Schünemann HJ, Moberg J, et al. GRADE evidence to decision (EtD) frameworks: a systematic and transparent approach to making well informed healthcare choices. 1: Introduction. *BMJ*. 2016;353:i2016. http://doi.org/10.1136/bmj.i2016
49. Guyatt GH, Oxman AD, Vist GE, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ*. 2008;336(7650):924-926. http://doi.org/10.1136/bmj.39489.470347.AD
50. Guyatt G, Oxman AD, Akl EA, et al. GRADE guidelines: 1. Introduction-GRADE evidence profiles and summary of findings tables. *J Clin Epidemiol*. 2011;64(4):383-394. http://doi.org/10.1016/j.jclinepi.2010.04.026
51. Murad MH. Clinical practice guidelines: a primer on development and dissemination. *Mayo Clin Proc*. 2017;92(3):423-433. http://doi.org/10.1016/j.mayocp.2017.01.001
52. Kumar A, Miladinovic B, Guyatt GH, Schünemann HJ, Djulbegovic B. GRADE guidelines system is reproducible when instructions are clearly operationalized even among the guidelines panel members with limited experience with GRADE. *J Clin Epidemiol*. 2016;75:115-118. http://doi.org/10.1016/j.jclinepi.2015.11.020
53. Neumann I, Santesso N, Akl EA, et al. A guide for health professionals to interpret and use recommendations in guidelines developed with the GRADE approach. *J Clin Epidemiol*. 2016;72:45-55. http://doi.org/10.1016/j.jclinepi.2015.11.017
54. Guerra-Farfan E, Garcia-Sanchez Y, Jornet-Gibert M, Nuñez JH, Balaguer-Castro M, Madden K. Clinical practice guidelines: the good, the bad, and the ugly. *Injury*. 2023;54(Suppl 3):S26-S29. http://doi.org/10.1016/j.injury.2022.01.047
55. McAlister FA, van Diepen S, Padwal RS, Johnson JA, Majumdar SR. How evidence-based are the recommendations in evidence-based guidelines? *PLoS Med*. 2007;4(8):e250. http://doi.org/10.1371/journal.pmed.0040250
56. Sniderman AD, Furberg CD. Why guideline-making requires reform. *JAMA*. 2009;301(4):429-431. http://doi.org/10.1001/jama.2009.15
57. Ransohoff DF, Pignone M, Sox HC. How to decide whether a clinical practice guideline is trustworthy. *JAMA*. 2013;309(2):139-140. http://doi.org/10.1001/jama.2012.156703
58. Aaronson EL, Wright RJ, Ritchie CS, et al. Mapping the future for research in emergency medicine palliative care: a research roadmap. *Acad Emerg Med*. 2022;29(8):963-973. http://doi.org/10.1111/acem.14496
59. Eriksen MB, Frandsen TF. The impact of patient, intervention, comparison, outcome (PICO) as a search strategy tool on literature search quality: a systematic review. *J Med Libr Assoc*. 2018;106(4):420-431. http://doi.org/10.5195/jmla.2018.345
60. Guyatt GH, Oxman AD, Kunz R, et al. GRADE guidelines: 2. Framing the question and deciding on important outcomes. *J Clin Epidemiol*. 2011;64(4):395-400. http://doi.org/10.1016/j.jclinepi.2010.09.012
61. Seidenfeld J, Lee S, Ragsdale L, Nickel CH, Liu SW, Kennedy M. Risk factors and risk stratification approaches for delirium screening: a Geriatric Emergency Department Guidelines 2.0 systematic review. *Acad Emerg Med*. 2024;31(10):969-984.
62. Carpenter CR, Lee S, Kennedy M, et al. Delirium detection in the emergency department: a diagnostic accuracy meta-analysis of history, physical examination, laboratory tests, and screening instruments. *Acad Emerg Med*. 2024;31(10):1014-1036. http://doi.org/10.1111/acem.14935
63. Lee S, Cavalier FR, Hayes JM, et al. Delirium, confusion, or altered mental status as a risk for abnormal head CT in older adults in the emergency department: a systematic review and meta-analysis. *Am J Emerg Med*. 2023;71:190-194. http://doi.org/10.1016/j.ajem.2023.06.034
64. Liu SW, Lee S, Hayes JM, et al. Head computed tomography findings in geriatric emergency department patients with delirium, altered mental status, and confusion: a systematic review. *Acad Emerg Med*. 2023;30(6):616-625. http://doi.org/10.1111/acem.14622
65. Casey M, Elder N, Fenn A, et al. 369 Geriatric Emergency Department Guidelines 2.0: systematic review on the comparative

safety of sedating medications used in the treatment of older adults with acute agitation. *Ann Emerg Med*. 2023;82(4):S163. http://doi.org/10.1016/j.annemergmed.2023.08.398

66. Hayes J, Tayes C, Toda K, et al. 132 Geriatric Emergency Department Guidelines 2.0: a systematic review of emergency department-based geriatric medication programs to reduce potentially inappropriate medications and adverse events. *Ann Emerg Med*. 2023;82(4):S57. http://doi.org/10.1016/j.annemergmed.2023.08.153
67. Wolf LA, Lo AX, Serina P, et al. Frailty assessment tools in the emergency department: a geriatric emergency department guidelines 2.0 scoping review. *J Am Coll Emerg Physicians Open*. 2024;5(1):e13084. http://doi.org/10.1002/emp2.13084
68. Lee S, Suh M, Ragsdale L, et al. A systematic review of interventions for persons living with dementia: the Geriatric ED Guidelines 2.0. *medRxiv*. Published online March 3, 2025:2025.02.28.25323113. https://doi.org/10.1101/2025.02.28.25323113
69. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. http://doi.org/10.1136/bmj.n71
70. Page MJ, Moher D, Bossuyt PM, et al. PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews. *BMJ*. 2021;372:n160. http://doi.org/10.1136/bmj.n160
71. McInnes MDF, Moher D, Thombs BD, et al. Preferred Reporting Items for a Systematic Review and Meta-analysis of diagnostic test accuracy studies: the PRISMA-DTA statement. *JAMA*. 2018;319(4):388-396. http://doi.org/10.1001/jama.2017.19163
72. Moher D, Shamseer L, Clarke M, et al. Preferred Reporting Items for Systematic Review and Meta-analysis Protocols (PRISMA-P) 2015 statement. *Syst Rev*. 2015;4(1):1. http://doi.org/10.1186/2046-4053-4-1
73. Moher D, Liberati A, Tetzlaff J, Altman DG, PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: the PRISMA statement. *PLoS Med*. 2009;6(7):e1000097. http://doi.org/10.1371/journal.pmed.1000097
74. Throgmorton KF, Festa N, Doering M, Carpenter CR, Gill TM. Enhancing the quality and reproducibility of research: how to work effectively with medical and data librarians. *J Am Geriatr Soc*. 2024;72(3):965-970. http://doi.org/10.1111/jgs.18741
75. Covidence. Covidence—better systematic review management. *Covidence*. Accessed April 23, 2025. https://www.covidence.org/
76. Neta G, Glasgow RE, Carpenter CR, et al. A framework for enhancing the value of research for dissemination and implementation. *Am J Public Health*. 2015;105(1):49-57. http://doi.org/10.2105/AJPH.2014.302206
77. Now A. Geriatric ED boot camp offers collaborative onsite educational outreach pilot. *ACEP Now*. March 19, 2015. Accessed April 23, 2025. https://www.acepnow.com/geriatric-ed-boot-camp-offers-collaborative-onsite-educational-outreach-pilot/
78. Ko K, Lesser A, Biese K, Hwang U, Carpenter C. The journey of geriatric emergency medicine: acceleration, diffusion, and collaboration as keys to continued growth. *Health Affairs Forefront*. Published online 2017. Accessed April 23, 2025. https://www.healthaffairs.org/do/10.1377/forefront.20170912.061810/full/
79. Stoltenberg M, Jacobsen J, Wilson E, et al. Emergency department-based palliative care during COVID. *J Palliat Med*. 2020;23(9):1151-1152. http://doi.org/10.1089/jpm.2020.0285
80. Aaronson EL, Daubman BR, Petrillo L, et al. Emerging palliative care innovations in the ED: a qualitative analysis of programmatic elements during the COVID-19 pandemic. *J Pain Symptom Manage*. 2021;62(1):117-124. http://doi.org/10.1016/j.jpainsymman.2020.10.035
81. Lucke JA, Mooijaart SP, Heeren P, et al. Providing care for older adults in the emergency department: expert clinical recommendations from the European Task Force on Geriatric Emergency Medicine. *Eur Geriatr Med*. 2022;13(2):309-317. http://doi.org/10.1007/s41999-021-00578-1
82. Heeren P, Islam F, Desruelles D, et al. A consensus statement on minimum operational standards for geriatric emergency care in Belgium: a modified Delphi study. *BMC Geriatr*. 2023;23(1):768. http://doi.org/10.1186/s12877-023-04474-0
83. Haynesworth A, Gilmer TP, Brennan JJ, et al. Clinical and financial outcome impacts of comprehensive geriatric assessment in a level 1 geriatric emergency department. *J Am Geriatr Soc*. 2023;71(9):2704-2714. http://doi.org/10.1111/jgs.18468
84. Southerland LT, Savage EL, Muska Duff K, et al. Hospital costs and reimbursement model for a geriatric emergency department. *Acad Emerg Med*. 2020;27(10):1051-1058. http://doi.org/10.1111/acem.13998
85. Huded JM, Lee A, Song S, et al. Association of a geriatric emergency department program with healthcare outcomes among veterans. *J Am Geriatr Soc*. 2022;70(2):601-608. http://doi.org/10.1111/jgs.17572
86. Gettel CJ, Hwang U, Janke AT, et al. An outcome comparison between geriatric and nongeriatric emergency departments. *Ann Emerg Med*. 2023;82(6):681-689. http://doi.org/10.1016/j.annemergmed.2023.05.013
87. American Geriatrics Society Expert Panel on Person-Centered Care. Person-centered care: a definition and essential elements. *J Am Geriatr Soc*. 2016;64(1):15-18. http://doi.org/10.1111/jgs.13866
88. Jennings LA, Ramirez KD, Hays RD, Wenger NS, Reuben DB. Personalized goal attainment in dementia care: measuring what persons with dementia and their caregivers want. *J Am Geriatr Soc*. 2018;66(11):2120-2127. http://doi.org/10.1111/jgs.15541
89. Berning MJ, Oliveira J E Silva L, Suarez NE, et al. Interventions to improve older adults' emergency department patient experience: a systematic review. *Am J Emerg Med*. 2020;38(6):1257-1269. http://doi.org/10.1016/j.ajem.2020.03.012

How to cite this article: Gunaga S, Carpenter CR, Kennedy M, et al. A Model for Developing Subspecialty Clinical Practice Guidelines: The Geriatric Emergency Department Guidelines 2.0. JACEP Open. 2025;6:100247.

https://doi.org/10.1016/j.acepjo.2025.100247