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CONCEPTS

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ED-DEL: Development of a change package and toolkit for delirium in the emergency department

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Abstract

Delirium is a common and deadly problem in the emergency department affecting up to 30% of older adult patients. The 2013 Geriatric Emergency Department guidelines were developed to address the unique needs of the growing older population and identified delirium as a high priority area. The emergency department (ED) environment presents unique challenges for the identification and management of delirium, including patient crowding, time pressures, competing priorities, variable patient acuity, and limitations in available patient information. Accordingly, protocols developed for inpatient units may not be appropriate for use in the ED setting. We created a Delirium Change Package and Toolkit in the Emergency Department (ED-DEL) to provide protocols and guidance for implementing a delirium program in the ED setting. This article describes the multistep process by which the ED-DEL program was created and the key components of the program. Our ultimate goal is to create a resource that can be disseminated widely and used to improve delirium identification, prevention, and management in older adults in the ED.

KEYWORDS

aging, delirium, emergency department, geriatrics, organizational innovation, quality improvement, quality assurance

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1 | INTRODUCTION

Delirium, a state of acute brain failure, is a serious, costly, and deadly syndrome estimated to affect 10%–30% of older adults presenting to the emergency department.[1] Specifically, 8%–17% of older adults from the community and 40% from long-term care who go to the emergency department (ED) have delirium.[2] Moreover, given that delirium is not measured in most EDs, these rates are likely to be underestimates considering the higher rates of delirium in older adults admitted to the hospital from the ED, ranging from 18% to 35%.[2–4] Despite this high prevalence, delirium is diagnosed accurately by physicians in only 24%–35% of patients.[1] Delirium leads to adverse outcomes, including greater functional and cognitive decline at 6 months after discharge compared to those without delirium.[5] Unidentified delirium is associated with a substantially increased risk of death,[6] and among patients discharged from the ED, diagnosed delirium is associated with a nearly 5-fold increase in 30-day mortality.[7] Delirium is costly, with over $8 billion in annual Medicare expenditures for hospital costs and over $150 billion post-hospital costs attributable to delirium.[8]

The ED plays a critical role in delirium detection and management, serving as the entry point of care for the majority of persons with delirium. Although approximately one third of cases are preventable,[9,10] proven inpatient programs are not logistically feasible in the ED, and thus, new approaches are needed urgently. The 2013 Geriatric Emergency Department guidelines, endorsed by the American College of Emergency Physicians, Society for Academic Emergency Medicine, Emergency Nurses Association, and the American Geriatrics Society, outline the geriatric ED model of care and identified delirium as a priority area.[11,12] Given its frequency, underrecognition, adverse outcomes, and costs, delirium is a highly relevant target for quality improvement in EDs. There are many assessments and protocols that have been developed in the inpatient setting, intensive care units, and postoperative settings,[13–16] but these have not been adapted for or evaluated in the ED setting. The ED setting poses unique challenges, including patient crowding, time pressures, competing priorities, and variable patient acuity.[17] For example, the duration of the average triage assessment is typically 2 minutes or less.[18] Protocols developed for inpatient units, where healthcare professionals care for patients over a period of days, may not be appropriate for use in the ED setting. Accordingly, ED-specific protocols addressing delirium identification, prevention, and management are essential. The Change Package and Toolkit for Delirium in the Emergency Department (ED-DEL) was created in direct response to the unique needs of implementing a delirium program in the ED. The goal of the present project was to provide EDs a roadmap or plan for how to implement more systematic delirium screening and management systems in their EDs without having to perform their own separate literature reviews to justify the program and without having to design their own change management approach. The ED-DEL Change Package and Toolkit were developed using a previously established and effective approach from the Institute for Healthcare Improvement (IHI) for implementing change in clinical settings.[19] Following the IHI framework, we gathered the evidence based on a literature review and semistructured interviews with interprofessional staff members and experts, then used the IHI approach to create the ED-DEL Change Package and Toolkit to help EDs assess and manage delirium in the ED. It is important to note that the ED-DEL is not a screening tool, guideline, or clinical decision rule; however, it does provide information on a variety of screening tools, prediction rules, and guidelines related to delirium.

1.1 | ED-DEL development approach

In developing the ED-DEL initiative, our team of expert researchers and clinicians at the Marcus Institute for Aging Research in Boston, MA, and West Health Institute in San Diego, CA, used a similar approach to that of the Mobility Action Group (MACT), in which Dr. Sharon Inouye and colleagues successfully created a step-by-step toolkit and guide for implementing an early mobility program in the hospital.[20] For MACT and the ED-DEL initiative, we adapted an innovative IHI approach, which provides a change package and toolkit, change tactics, and a framework for implementation that emphasizes engaging leaders and other key stakeholders to create systemwide, sustainable change.[21]

Our approach for development of ED-DEL followed 5 general steps: (1) literature review and creation of the ED-DEL delirium bibliography; (2) semistructured interviews with diverse health professional staff to identify priorities and challenges for the initiative; (3) development of the draft ED-DEL Change Package and Toolkit; (4) expert work group input for feedback and revision; and (5) finalization of the ED-DEL Change Package and Toolkit for future feasibility testing.

1.2 | Literature review and the ED-DEL delirium bibliography

We conducted multiple rounds of literature reviews to provide background and bibliographic references for the ED-DEL Change Package and Toolkit. The delirium bibliography is a curated review of the literature on delirium designed for emergency physicians, nurses, and staff implementing a delirium quality improvement program in their ED. The ED-DEL delirium bibliography is categorized into 10 targeted priority areas for the ED: (1) change management, (2) background references on delirium, (3) selected delirium guidelines, (4) outcomes associated with delirium in the ED, (5) screening and diagnosis of delirium, (6) determining risk for delirium and prediction models, (7) prevention of delirium, (8) treatment of delirium, (9) transitions of care in delirious ED patients, and (10) medications and delirium.

The preliminary literature review was conducted in late 2018–early 2019. This search of CINAHL, PubMed, and EMBASE yielded 620 citations, screened by 2 team members, which provided 76 total references used for general background to inform more targeted literature reviews. These references included original studies, review articles, and guidelines on delirium in the ED and inpatient settings. A concerted effort was made to include ED literature in the bibliography; however,

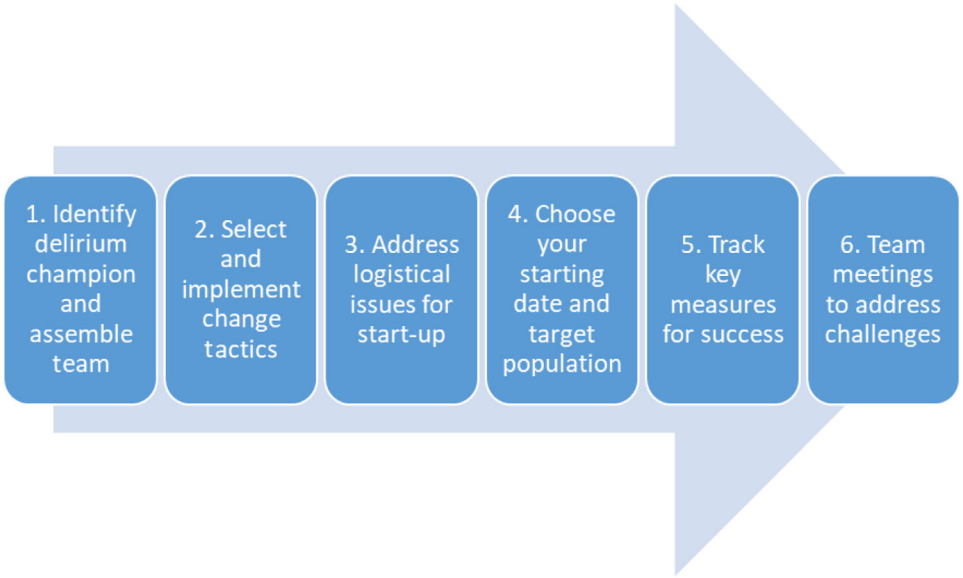

FIGURE 1 Delirium in the ED Roadmap

most ED-based research studies on delirium are observational studies to identify risk factors for and outcomes associated with ED delirium or prospective studies of screening tools to diagnose delirium in the ED setting.[17] When ED-specific literature was not available, relevant articles from the inpatient setting were included. The literature review was not intended as a comprehensive systematic review; instead, this review was intended as a purposeful selection of a limited number of key articles—≈5 per category—to provide background information for ED clinicians to help justify their programs to hospital administration and to assist with implementation of an ED-based delirium quality improvement initiative.

Our team of 5 trained research associates, master's-level project managers, and physicians conducted targeted literature reviews to create the delirium bibliography, drawing upon information gleaned from the initial literature review and completing multiple rounds of additional purposeful searches to find articles specific to the ED where possible. Team meetings involving 4–5 team members were held weekly to adjudicate articles from literature reviews for inclusion, using abstract listings along with full text key articles for selection (Figure S1). Final selection of articles was based on clinical relevance for a general audience of ED healthcare professionals. The final ED-DEL delirium bibliography included 50 references across the 10 priority areas (**Supplement 2**). The final bibliography was reviewed and approved by the ED-DEL expert workgroup.

1.3 | Semistructured interviews to identify priorities and challenges

For our next step, we conducted semistructured interviews with a broad group of healthcare professionals, who were either ED clinicians, delirium experts, or both, to identify key priorities, gaps in the field, and potential challenges for the ED-DEL initiative. A team of 4 trained interviewers, 2 of whom were physicians, conducted these semistructured interviews. Each interview involved 2 interviewers (at least 1 physician) and followed an interview guide. To create the interview guide for our semistructured interviews (Table 1), we conducted an iterative process with rounds of input and edits from the research team at the Marcus Institute for Aging Research, the West Health Institute, ED experts, and delirium experts affiliated with the American Geriatrics Society CoCare: Hospital Elder Life Program (HELP).

The interviews lasted ≈30–45 minutes and were conducted with 13 healthcare professionals (12 total interviews; 2 nurses interviewed together). The interviewees were chosen to represent diverse disciplines (eg, physician, nurse, social worker, pharmacist, etc), ED settings (eg, large/small, academic/community, urban/rural, etc), and delirium expertise. Our final interview sample included 4 emergency physicians, 1 acute care geriatrician, 5 geriatric ED nurses, 1 ED social worker, 1 ED case manager, and 1 clinical pharmacist.

Each interviewer recorded detailed notes using Google Forms. Immediately after the interview, both interviewers recorded a comprehensive summary of notes and extracted key gaps/messages from the call. Based on the gaps recorded, 2 physician members of our team held consensus conferences to identify the key gaps across all interviews. These gaps were used to identify priority areas to address in the Change Package and Toolkit.

Three key gaps were identified (Table 2). First, interviewees identified unique challenges and specific needs of the ED regarding delirium, including time pressures, knowledge and training gaps, risks associated with discharging a delirious patient, and specific concerns about the impact of the ED physical environment on older adults. Second, interviewees highlighted the importance of gaining engagement of hospital leadership and ED staff and aligning work with existing hospital initiatives and/or ED quality improvement processes. Finally, interviewees identified a need for providing education and training on delirium for

TABLE 1 Semistructured interview questions

1. How would you rate your knowledge when it comes to detection and management of delirium? (Scale from 1 to 5, 1 being "unfamiliar" and 5 being "very familiar")
2. Does your ED have a protocol or program in place for delirium (or acute mental status change)?
3. If yes, can you share generally what the protocol entails and how long this has been in place?
4. How is delirium documented within the health record? Is it structured?
5. Would you say that providers are using the protocol or not? If not, why?
6. If no, is a protocol or program planned?
7. What processes does your organization currently have in place (if applicable) regarding screening, management, and prevention of delirium (acute mental status change)?
8. Do you think these processes are effective? What would you change?
9. Where does delirium (acute mental status change) detection and management fall in the priorities for improvement initiatives in your ED?
10. What do you think are the unique and major challenges regarding delirium identification, management, and treatment in the ED?
11. Is your ED particularly concerned about missing delirium (acute mental status change) and sending patients home who may be delirious?
12. Who does the initial delirium/mental status screening in your ED?
13. If there is follow-up for positive screens, what happens next?
14. What do you see as the key issues or gaps in identification of delirium (acute mental status change) at your ED?
15. What do you see as the key issues or gaps in managing delirium (acute mental status change) at your ED?
16. What do you see as the key issues or gaps in preventing delirium (acute mental status change) at your ED?
17. What type of tools or resources would be useful to fill these gaps? Include tools related to screening, management, prevention, and other. (For each, indicate targeted towards whom: triage nurse, ED nurse, MD, pharmacist, social work, tech/aide, family member, and other.)
18. In order to facilitate development of our delirium toolkit, can you share current protocols, screening tools, order sets, clinical workflows, or any other resources with us? Do you have educational materials for nursing/MD staff, patients, family members you could share with us?
19. Please describe any additional information you can share regarding delirium (acute mental status change) in the ED that you feel is important for us to understand.
20. Do you have any questions for our team?

ED, emergency department.

ED clinicians, the interdisciplinary team, family members, and emergency medical service personnel.

1.4 | Creation of the ED-DEL Change Package and Toolkit

The ED-DEL team compiled the first draft of the Change Package and Toolkit to address priorities and gaps identified by expert input, literature review, and stakeholder interviews. The goal was to provide a structured approach, change strategies, resources, and step-by-step guidance to help EDs implement a program addressing delirium identification, prevention, and management.

The change process for this initiative is adapted from the IHI Breakthrough Series[19] and has proven effective for the implementation of prior quality improvement initiatives.[20,22,23] The Change Package provides a step-by-step process to guide staff in setting up an ED delirium program, from selecting a team to spearhead the initiative to regularly testing and refining the program for continued success. The Toolkit accompanying the Change Package was created to provide resources to assist with implementing each step of the process and can be readily adapted to meet an ED's specific needs and considerations. The resources provided were not intended to be comprehensive but rather were selected to provide a starting point to address the targeted needs identified through the literature review and semistructured interviews. The ED-DEL Change Package and Toolkit was created to be a living document that would be updated, improved, and adapted over time by individual EDs.

The ED-DEL Change Package begins with a roadmap (Figure 1) to guide users through the steps necessary to create systemwide change. The roadmap recommends 5 key steps, starting with identifying delirium champions and assembling an interdisciplinary team for the initiative; a schedule of regular team meetings is recommended. Subsequently, the team should select and implement change tactics, as described later. Practical issues for start-up—such as obtaining needed clearances, leadership support, essential equipment, information technology enhancements, and dedicated staff time—should be addressed. Together, the team should identify the starting date and target population for the initiative. Key measures to gauge success of the initiative will need to be identified and measured over time. Finally, ongoing challenges will need to be addressed in regular team meetings. Further guidance on each of these steps is provided in the Change Package.

Following IHI's Driver Diagram approach,[24] the Change Package (summarized in Table 3) includes strategies, change concepts, and change tactics to help sites organize and select areas of focus for their initiative. Strategies are the broad goals of the initiative, focused

TABLE 2 Semi-structured interview summary

Unique challenges and specific needs of the ED

1. Delirium not recognized as a serious problem by most emergency physicians, nurses, or administrators—increased education is needed to raise awareness by all healthcare professionals—including physicians, nurses, and other staff.
2. Delirium is often thought of as a symptom (confusion, altered mental status), rather than a disease process that needs to be diagnosed.
3. Currently, no consistent approach for delirium diagnosis, prevention, or management across EDs. Moreover, prevention strategies (hydration, mobility, and nutrition) often neglected in ED setting. ED can be unsafe for older adults.
4. For a delirium program to be successful, a champion from the ED needs to be in place—this can be either a physician, nurse, or case manager.
5. The ED setting poses major challenges in terms of time pressure, staff shortages and lack of training in delirium, and competing priorities. ED setting is unique—need to make sure the materials are customized and ED-specific, with input from ED healthcare professionals.
6. If screening is a priority, it is very important to have standardized order sets and protocols readily available for patients who screened positive.
7. The order sets need to be streamlined and highly usable—key to have available in the EMR, right in the same location where documentation is occurring.
8. "Assuring a safe discharge" should be a priority (since discharge w/delirium associated with 4–5 fold increased mortality), but will need buy-in from ED and hospital leadership.
9. Several delirium high-risk situations in ED.

Gaining engagement

1. Gaining buy-in from hospital leadership is key for a successful program.
2. Involve emergency physicians, nurses, and staff because their time and effort is crucial to success.
   a. Low engagement from staff when screening tools, protocols are not manageable or feasible.
3. Aligning with hospital priorities is important—successful programs have hospital-wide initiatives on delirium.
4. Important to tie delirium to Geri-ED accreditation movement.
5. Need to make the business case and/or quality improvement argument. Most initiatives that get prioritized make the case for delirium, and link to quality measures/financial penalties/reporting penalties that may impact on reimbursement (eg, suicide—JCAHO, stroke, and sepsis—CMS)
6. Emergency physicians are often contracted groups that can create challenges in terms of setting priorities, often report to contracting group and not the organization.

Education/training

1. Need more general education and awareness among emergency physicians and nurses about delirium: why it matters and what steps they can take to prevent or manage delirium?
   a. Make MDs/RNs aware that delirium is a marker of someone who should not be discharged from ED—key aspect of a triage decision is to recognize delirium as high risk for adverse outcomes/mortality.
   b. Finding out baseline mental status can be difficult in ED—needs to be prioritized and assigned to triage nurse, ED nurse, MD, then case manager/SW (family contact).
2. Involvement of an interdisciplinary team is necessary for a delirium program—building a team approach is essential, including the MD, RN (triage and floor), aides, case manager/SW, PT/OT, and pharmacy.
   a. Triage nurse—should be able to quickly identify patients at high risk for delirium, who can then enter a special management pathway.
   b. Case managers/SW—helpful to assess baseline mental status with the family, and educate family upon discharge. CM spends a lot of time with families and patients but have very little education on delirium and dementia.
   c. Pharmacy/tech—can assist with determining baseline medications, appropriate doses, minimizing use of Beers criteria medications (both baseline and newly prescribed), and discharge education for patient/family on medications. Pharmacy can also communicate with ICU and floor pharmacy.
3. Training for family members:
   a. For high-risk patients: identification of early delirium.
   b. For those with delirium: how to manage, when to call or return to ED.
4. Training and education of emergency medical services personnel.

AMS, altered mental status; CM, case manager; CMS, Centers for Medicare & Medicaid Services; ED, emergency department; EMR, electronic medical record; JCAHO, Joint Commission on Accreditation of Healthcare Organizations; OT, occupational therapist; PT, physical therapist; RN, registered nurse; SW, social worker.

TABLE 3 Abbreviated ED-DEL Change Package

Strategies	Change concepts	Change tactic examples (truncated list)
1. Create engagement in prioritizing delirium as a part of ED care.	Assess and enhance organizational readiness for change.	Use Organizational Readiness for Implementing Change Survey to assess readiness and target areas for improvement.
	Engender buy-in and accountability from administrative and clinical leaders, and frontline staff.	Educate staff and hospital leaders about the clinical, financial, and societal importance of prioritizing the issue of delirium recognition/prevention in ED.
2. Assess delirium risk to target screening and management approaches in the ED.	Evaluate delirium risk in each adult age 65 and older early in the person's ED stay, at triage, or during the primary nurse assessment and target next steps.	Risk stratify according to predictive models; target moderate- to high-risk patients for next steps.
	In high-risk patients, screen for delirium using validated tools.	Apply cognitive testing and valid delirium instrument.
3. Evaluate at-risk and screen-positive ED patients with thorough, focused medical workup, including general and specific, targeted testing.	Conduct thorough evaluation to identify underlying causes.	Perform history, physical and neurological examination, vital signs, O_2 saturation, and finger stick glucose.
	Identify and address medications posing high risk for delirium.	Evaluate prescription medication listing and determine any recent changes.
4. Implement prevention strategies for ED patients at highest risk for delirium and assure effective transitions of care.	Apply effective non-pharmacologic approaches to prevent delirium (prioritized by anticipated ED stay).	Use proven approaches to provide adequate nutrition and hydration, promote mobility and reduce tethers and alarms, maximize vision and hearing, provide orienting communication, and maintain sleep cycle.
	Optimize communication and approaches to assure effective and safe transitions of care from ED to next site of care (eg, home, inpatient, etc).	Communicate clearly to inpatient care healthcare professionals about the presence of delirium in the patient, the risk of developing delirium, and the management strategies implemented.
5. Treat delirium using multimodal and non-pharmacologic approaches, and if needed, appropriate use of medications following recommended guidelines.	Use multipronged non-pharmacologic approach to management of delirium.	Apply approaches appropriate to improve sedation of hypoactive delirium and agitation with hyperactive delirium: manage symptoms, evaluate and treat underlying causes, maintain mobility and functioning, improve physical comfort, decrease irritants, and provide orientation and stimulation: family presence, other companions.
	Reserve pharmacologic approaches for treatment of delirium symptoms as last resort, using evidence-based protocols for treatment.	Use pharmacologic approaches cautiously only for severe agitation, where patient is a threat to themselves or others—using the lowest doses possible for the shortest duration possible.

ED, emergency department.

around 5 priorities identified in the prior stages: (1) create engagement in prioritizing delirium in the ED, (2) assess delirium risk to target screening and management, (3) evaluate at-risk patients with appropriate workup, (4) implement prevention strategies, and (5) treat delirium with multimodal and non-pharmacologic approaches. Each strategic area is addressed with broad change concepts that are implemented through specific change tactics (Table 3). Sites are encouraged to set realistic goals by selecting a few change tactics to implement as a starting point, with a plan to add more over time. Thus, only a part of the Toolkit would be implemented initially with gradual expansion over time. There is no expectation that the entire Toolkit would be implemented; the large number of components is provided to serve as resources to sites.

The Toolkit (summarized in Table 4) provides practical resources, tools, and guidance for each change tactic. Each change tactic is hyperlinked to resources in the Toolkit so that users have ready access to practical tools for the approach they select. For example, if a site selected education of staff (eg, physicians, nurses, and other ED professionals) about the importance of delirium as their change tactic, multiple resources are available in the Toolkit, including brochures and guidelines relevant to staff, educational posters, and sample PowerPoint presentations for staff trainings. All the materials can be readily adapted and edited as needed by the individual site. Original articles from the bibliography are available as handouts. Educational materials for patients and family members are also included.

TABLE 4 ED-DEL Toolkit resources

I. Change management tools	Description
A. Science of improvement: testing changes (Plan-Do-Study-Act Model)	Provides background on change strategies and how to implement in practice for quality improvement.
B. Translating Research Into Practice (TriP Model)	
C. Organizational Readiness for Implementing Change (ORIC) Survey	Survey tool to assess readiness of the ED and hospital to implement the change program and barriers to address.
D. Summary table: outcome measures to track	Suggested outcome measures to consider for the change initiative.
II. Tools for setting up an ED delirium program	
A. The role of the delirium champion	Key role of champions to catalyze and lead the program; can be from multiple disciplines.
B. Business case: costs associated with delirium	Data, articles, and tools to help make the business case for addressing delirium to ED and hospital leaders.
C. Business case: infographic	
D. Business case: making the case for your program (sample PPT)	
III. Educational materials	
For clinicians, staff, and administrators	
A. Fact check: delirium in the ED	Educational materials for ED clinicians and staff.
B. Wall poster: 6 proven strategies to prevent delirium	
C. The geriatric emergency department guidelines	Background information: Geri-ED guidelines for delirium.
For families	
D. Brochure: delirium in the emergency department	Educational materials for family members and caregivers relevant to delirium in the ED and hospital.
E. Family education: what is delirium?	
F. Pocket card: navigating the ED	
G. How to be an effective advocate for aging parents	
H. Navigating a hospital stay: a guide for caregivers and patients with cognitive loss	
I. Family education: delirium care after discharge	
IV. Risk factors and stratification	
A. Identification of high-risk patients for delirium in ED	Identifying high-risk patients for delirium was considered a top priority for EDs. These tools for the ED can help.
B. Predictive models for delirium risk	
V. Assessment and evaluation	
A. Summary table of delirium instruments	Tools for delirium screening in the ED.
B. Delirium assessment approach	Widely used protocol for ED delirium screening.
C. ADEPT protocol	Full ADEPT protocol as basis for recommendation sets (order sets).
D. Protocol for delirium assessment and evaluation	Protocol and recommendation set developed based on ADEPT. Recommendation set can be implemented as standing order set.
E. Recommendation Set Part I: assessment and evaluation of delirium	
F. Beers list criteria pocket card	Resource for medications associated with delirium.
VI. Delirium prevention strategies	
A. Protocol for delirium prevention and treatment	Protocol and recommendation set developed based on ADEPT. Recommendation set can be implemented as standing order set.
B. Recommendation Set Part II: prevention of delirium	
C. Non-pharmacological interventions from the Hospital Elder Life Program (HELP)	Background on HELP program and non-pharmacological multicomponent interventions for delirium.
D. HELP: 1-page summary	

(Continues)

TABLE 4 (Continued)

I. Change management tools	Description
VII. Transitions of care	
A. Transfer checklist: ED to inpatient (for RN and MD)	Checklist to assist with transition from ED to hospital ward, with consideration of delirium risk.
B. Be prepared to go home checklist (for patients)	Transition checklist for patients going home.
VIII. Management of delirium:	
A. Agitation in the emergency department (TADA approach)	Effective non-pharmacological management of agitation.
B. Recommendation Set Part III: management of delirium	Recommendation set developed based on ADEPT. Recommendation set can be implemented as standing order set.
C. Role of the clinical pharmacist in the ED for prevention and management of delirium	Pharmacist interventions in ED—critical to minimize delirium-inducing medications.
IX. Complete recommendation set	Complete recommendation set (all sections combined) developed based on ADEPT. Recommendation set can be implemented as standing order set.

ADEPT, Assess, Diagnose, Evaluate, Prevent, and Treat; ED, emergency department; HELP, Hospital Elder Life Program; ORIC, Organizational Readiness for Implementing Change; PPT, PowerPoint; RN, registered nurse; TADA, Tolerate, Anticipate, Don't Agitate; TriP, Translating Research Into Practice.

A priority request from our ED experts was for templates that could be used to create order sets in the electronic medical record (EMR) system, customizable for each hospital. In 2019, the American College of Emergency Physicians published the Assess, Diagnose, Evaluate, Prevent, and Treat (ADEPT) tool,[25] a point-of-care tool designed to be used by ED clinicians on shift while caring for patients. The tool was developed by an expert group that included emergency physicians from academic and community EDs and includes best practices for delirium identification, prevention, and management in the ED.[25,26] ADEPT emphasizes non-pharmacologic prevention and treatment of delirium, incorporating principles of the American Geriatrics Society CoCare: HELP.[27] The HELP program is a widely disseminated and cost-effective model of delirium prevention in acute care.[8,28] As ADEPT was developed specifically for use in the ED setting, we used it as a foundation for the order set templates, titled "Recommendation Sets," for the ED-DEL Change Package and Toolkit. The Recommendation Sets include assessment and evaluation, prevention, and management recommendations for delirium in the ED. For example, the ADEPT Tool recommends that clinicians perform a thorough physical examination for older adults presenting to the ED with altered mental status or delirium, and the Recommendation Sets provide a checklist of each item that should be assessed through the physical examination, presented in a template that can be easily transferred to an EMR order set. The Recommendation Sets were created by expert physicians in an iterative process, including review by an emergency physician who helped to develop the ADEPT tool (MK).

1.5 | Expert workgroup meeting

To provide feedback and revisions to the ED-DEL Change Package and Toolkit and to directly address feasibility concerns, we convened a workgroup of experts in emergency medicine, geriatric medicine, and delirium for a full day face-to-face meeting on May 9, 2019 in Boston, MA, including the Marcus Institute for Aging Research and West Health Institute teams. The purpose of this meeting was to gain in-depth feedback on the first draft of the ED-DEL Change Package and Toolkit from experts in the field, with particular focus on the applicability and feasibility for implementation in the ED setting. Members of the expert workgroup included 3 emergency physicians, 3 ED nurses, 1 acute care geriatrician, 1 clinical pharmacist, and 1 ED social worker (**Supplement 3**). The ED clinicians were selected to represent diverse settings in terms of size, geography, academic versus non-academic, and urban versus rural. All expert workgroup members had experience and expertise in working with older adult populations. The teams from the Marcus Institute for Aging Research and West Health Institute were present at the meeting, which included internists/geriatricians, delirium experts, advanced practice nursing, masters and doctoral-level investigators, project managers, and trained research associates.

All workgroup members were provided information and materials in advance, along with instructions of sections to review before the meeting with specific feedback forms. Each attendee was assigned to review the entire Change Package, along with a specific section of the Toolkit, selected to align with their area of expertise. A minimum of 2 experts were assigned for in-depth review of every resource in the Toolkit. At the workgroup meeting, 4 breakout groups with 4–5 experts each were convened to provide intensive review of the individual tools in each Toolkit section. At least 1 Marcus Institute or West Health Institute team member participated in each breakout group. A note-taker was assigned to each breakout group, and each group selected a leader to present feedback and revision recommendations to the entire group once reconvened. In the final joint session, overall recommendations were reviewed and approved by the entire group. After the meeting, all recommended edits and comments from every workgroup participant were compiled in a master document.

1.6 | Finalization of Change Package and Toolkit

Working with the master document, final edits were made to address all recommendations and comments from the expert workgroup by the Marcus Institute for Aging Research and West Health Institute teams. Although most comments focused on clarification of terminology and language for the ED setting, major changes included the following areas: (1) creating new resources for families to help them navigate the ED and advocate for their family member, (2) making resources more applicable for the ED setting (eg, educational materials needed to be shorter and more direct), and (3) editing the Recommendation Sets to be as succinct as possible for feasibility in the busy ED environment. Careful revisions were made to address all the comments received, and every section of the Toolkit was edited as a result of this process. After changes were incorporated, the entire ED-DEL Change Package and Toolkit was reviewed by 3 ED experts (KB, UH, DM) for clarity and applicability to the ED setting.

After final edits were made, the ED Delirium Change Package and Toolkit was distributed to 4 pilot ED sites, where a feasibility study is currently under way. These sites were selected to represent a diversity of ED settings (eg, size, geography, and type) to enhance generalizability. Each site has received training on implementation and chosen the change tactics to target in their ED. After data collection at each site is complete, the Change Package and Toolkit will be refined once again through semistructured interviews with each site and additional feedback from our expert workgroup panel. After this process is finalized, the Change Package and Toolkit will be made publicly available without charge. Ultimately, it is hoped that ED sites that successfully implement the ED-DEL approach will share their customized resources with the program to continue to build and refine the Toolkit. In this way, the Toolkit can provide a dynamic and ever-improving approach for quality improvement surrounding delirium in the ED setting.

2 | LIMITATIONS

Our approach has several limitations. For practical reasons, not all specialties or ED settings were represented in the development process. Moreover, the background literature reviews were not comprehensive systematic reviews but a purposeful approach to select key articles. Thus, it is possible that important areas or articles may have been missed. Another limitation is the lack of studies specifically examining delirium management or prevention strategies in the ED setting. Although we used the ADEPT framework, developed by ED clinicians, we acknowledge that future testing and validation of the effectiveness of the ED-DEL approach across many ED sites will be important to assure its generalizability. Formal quantitative or qualitative evaluations were beyond the scope of this current concept paper and remain important areas for future research. A pilot study for preliminary evaluation of feasibility of Toolkit use is currently underway. Future clinical trials evaluating the effectiveness and cost-effectiveness of the ED-DEL Change Package and Toolkit approaches are greatly needed. Despite the limitations, we believe that our approach allowed us to create a useful and customizable framework in a timely manner that can be readily adapted to address the needs of the ED in real-world practice, where the imperative to address delirium is pressing.

3 | CONCLUSION

We have successfully created the ED-DEL Change Package and Toolkit for delirium identification, prevention, and management through a deliberate and iterative process involving background literature review, semistructured interviews with ED staff and experts, creating an initial draft of the ED-DEL Change Package and Toolkit, obtaining expert workgroup feedback, and revising the resource for future feasibility testing. Input from an interdisciplinary team of ED experts was critical to identify the key priorities and gaps to address to meet the unique needs of the ED including competing priorities, compelling time pressures, and the need to appropriately triage patients and avoid unsafe discharges. The input and review by ED experts through our expert workgroup, as well as multiple rounds of review and revision, were critical to develop a useful and feasible approach for the ED-DEL initiative. The ED Delirium Change Package and Toolkit will be further refined after feasibility testing at 4 pilot ED sites. The pilot testing involves a broad range of interdisciplinary clinicians across ED settings who would be involved in its implementation, including physicians, nurses, physician assistants, physical therapists, pharmacists, social workers, and others. Our ultimate goal is to create a resource that can be disseminated widely including through the Geriatric Emergency Department Collaborative[29] and Geriatric Emergency Department Accreditation programs[30] and be used to improve delirium identification, prevention, and management in older adults in the ED. The ED-DEL Change Package and Toolkit provides an innovative framework and guide for change that holds far-reaching implications for the ED setting. First, it offers a flexible, adaptable program that can be customized to maximize uptake and impact at local EDs to address delirium. The wealth of resources provided offers a range and choice of strategies to sites to initiate and expand their programs over time. Moreover, it provides an important approach that can be generalized to other ED change initiatives as well. Thus, this approach may provide a valuable model to catalyze change for future quality improvement initiatives in other settings.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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SUPPORTING INFORMATION

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

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