EMERGENCY DEPARTMENT INTERVENTIONS FOR OLDER ADULTS: A Systematic Review

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Full-length report available on ESP website:

http://www.hsrd.research.va.gov/publications/esp/reports.cfm

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VA Evidence-based Synthesis Program (ESP)

- Funded by QUERI and established in 2009, Durham is one of four VA ESP centers nationwide

- MISSION: To support policy and clinical decisions for VA stakeholders through high value evidence synthesis
  - Products are tailored to stakeholders' needs and may include rigorous systematic review, evidence brief, review of reviews, or evidence map
  - All reports include a "Future Research" section that identifies gaps in the existing literature and offers potential recommendations

- Reports are disseminated through multiple avenues and have supported numerous VA clinical and policy decisions

Background

- Older adults, those aged 75 years and over, visit the Emergency Department (ED) at nearly twice the rate of younger adults

- Within the Veterans Health Administration (VHA), older adults account for roughly 45% of the 2.4 million annual ED visits

- Care received within the ED may be compromised by a range of challenges:
  - *Individual:* Multi-morbidity, polypharmacy, atypical symptoms, impaired cognition and/or function, reduced social support
  - *Staffing:* Poor knowledge of geriatric population and/or clinical procedures
  - *Physical environment:* Rush, hurried pace of ED may be difficult for older patients to navigate

Rui et al (2014); Kelley et al (2017); Sinha et al (2011); Aminzadeh et al (2002); Keim et al (2004); Sanders et al (1993); Preston et al (2017); Schumacher (2005)

Background

- Poor and/or uncoordinated care received in the ED is associated with adverse outcomes
  - Older adults, including those aged 75 years and older, are three times as likely to be admitted to the hospital from the ED
- Prior research has evaluated the effect of various interventions on patient and utilization outcomes
  - Care delivery, case management, transitional care and discharge planning
- In recent years, there has been growing attention to systems-level changes, as demonstrated by the focus on Geriatric Emergency Departments and the 2014 Geriatric ED Guidelines

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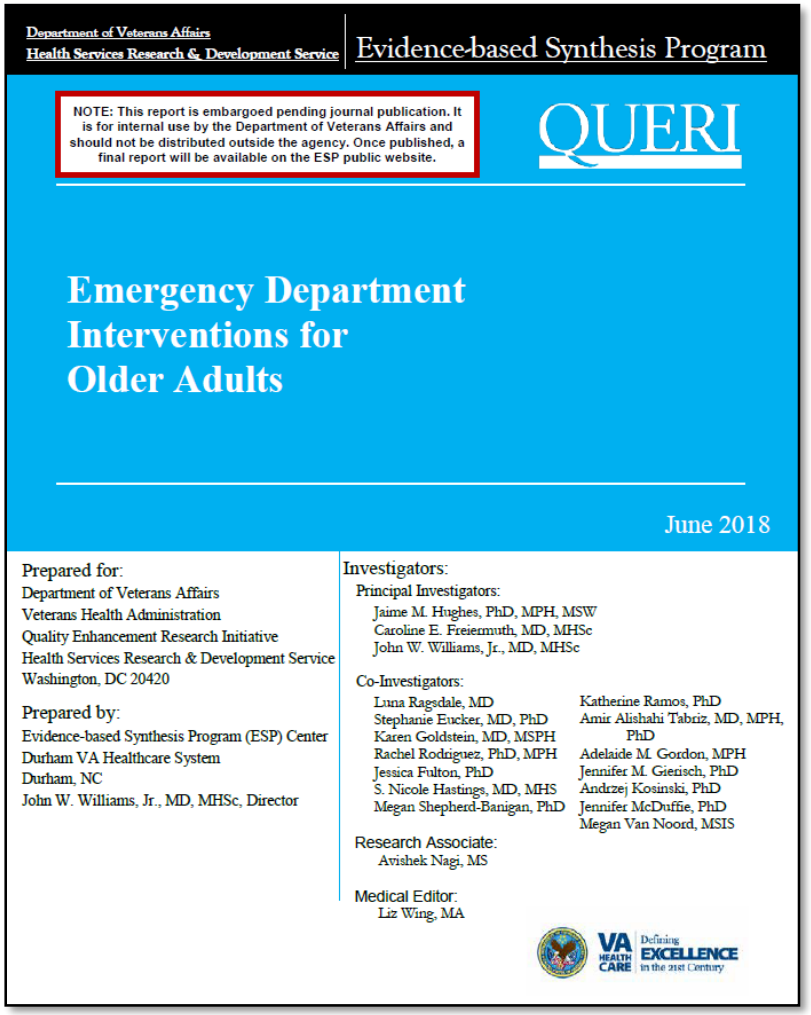
Rui et al (2014); Baum & Rubenstein (1987); Grief (2003); Kahn et al (2016); Conroy et al (2011); Carpenter et al (2014a, 2014b, 2014c)

Rationale for Review

- Commissioned by VHA Office of Emergency Medicine and Geriatrics and Extended Care Operations
- Purpose: to identify and evaluate intervention strategies that could be implemented across 141 VA Emergency Departments (EDs) and Urgent Care Centers
- Address gaps in literature:
  - Prior reviews focused on single-strategy interventions; effect of multi-strategy interventions unclear
  - No research has identified individual intervention components
  - Clinical outcomes, including functional status and quality-of-life have typically been overlooked



Department of Veterans Affairs
Health Services Research & Development Service | Evidence-based Synthesis Program

NOTE: This report is embargoed pending journal publication. It is for internal use by the Department of Veterans Affairs and should not be distributed outside the agency. Once published, a final report will be available on the ESP public website.

QUERI

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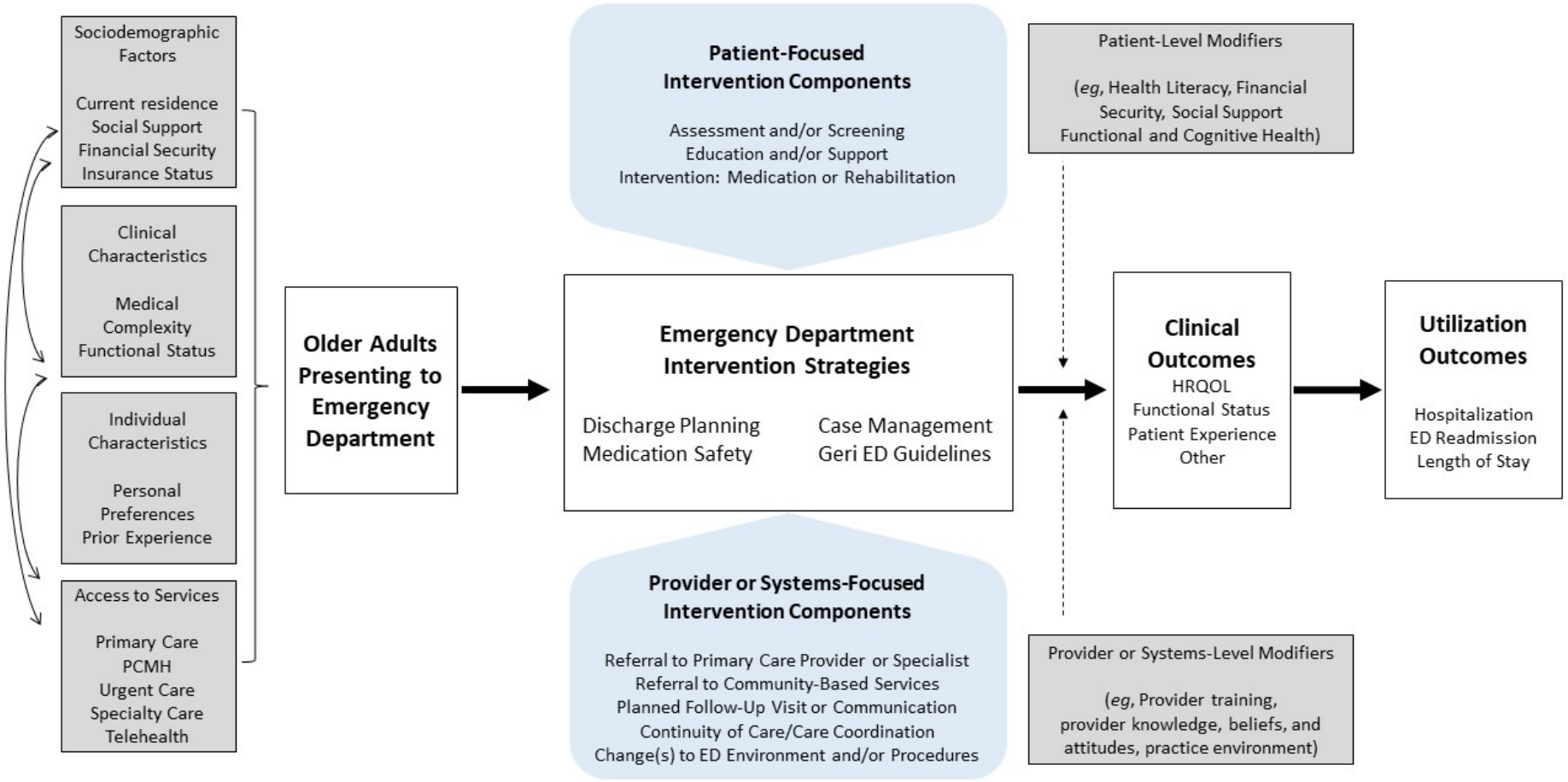
Key Question

How effective are Emergency Department health system interventions in improving clinical, patient experience, and utilization outcomes in older adults (age ≥ 65)?


Sociodemographic Factors
Current residence
Social Support
Financial Security
Insurance Status
Clinical Characteristics
Medical Complexity
Functional Status
Individual Characteristics
Personal Preferences
Prior Experience
Access to Services
Primary Care
PCMH
Urgent Care
Specialty Care
Telehealth
Older Adults Presenting to Emergency Department
Patient-Focused Intervention Components
Assessment and/or Screening
Education and/or Support
Intervention: Medication or Rehabilitation
Emergency Department Intervention Strategies
Discharge Planning
Medication Safety
Case Management
Geri ED Guidelines
Provider or Systems-Focused Intervention Components
Referral to Primary Care Provider or Specialist
Referral to Community-Based Services
Planned Follow-Up Visit or Communication
Continuity of Care/Care Coordination
Change(s) to ED Environment and/or Procedures
Patient-Level Modifiers
(eg, Health Literacy, Financial Security, Social Support Functional and Cognitive Health)
Provider or Systems-Level Modifiers
(eg, Provider training, provider knowledge, beliefs, and attitudes, practice environment)
Clinical Outcomes
HRQOL
Functional Status
Patient Experience
Other
Utilization Outcomes
Hospitalization
ED Readmission
Length of Stay

Standard Systematic Review Methods

Literature search & study selection

- Search databases: PubMed, Embase, CINAHL, Cochrane
- Pre-specified eligibility criteria, determined in collaboration with stakeholders and technical experts
- Identify eligible studies

Data abstraction & quality

- Abstracted data elements
- Rated study quality
- Data described and synthesized qualitatively
- Meta-analysis where feasible; sensitivity analyses
- Strength of evidence

Eligibility Criteria

POPULATION	Adults aged 65 or older who present to ED for acute, urgent or emergency care to address general illness or concern (condition-specific studies excluded)
COMPARATORS	Usual or enhanced ED care
TIMING	30 to 90 days
SETTING	Emergency Department
STUDY DESIGN	Randomized Controlled Trials Quasi-experimental studies
Other	English language, 1990 forwards

Intervention Strategies

Strategy	Definition
Discharge planning	Discharge planning is time-limited, taking place fully within the ED, and encompassing the process of thinking about and formalizing a plan of care prior to a patient's discharge from the ED
Case management	Case management takes place over time and across settings, initially beginning within the ED and continuing after discharge, and includes the activities that a physician or other health care professional performs to ensure coordination of medical services needed by the patient
Medication safety/ Medication management	Interventions that assist patients or caregivers in managing and monitoring drug therapy for older adults with chronic conditions
Geriatric Emergency Department	EDs designed or guided by the 2014 Geriatric ED Guidelines

MULTI-STRATEGY= studies that employed two or more intervention strategies

PATIENT-FOCUSED INTERVENTION COMPONENTS *(Information is collected from or provided to the patient or caregiver)*	
Assessment and screening	
Geriatric assessment	A multidimensional interdisciplinary evaluation to ensure that problems are identified, quantified, and managed appropriately. Common elements include assessment of medical, psychological, biopsychosocial, functional, cognitive, and environmental capacity. Results from the assessment may be used to inform other elements of discharge planning.
High-risk screening	Use of 1 or more risk-screening tool(s) to evaluate a specific risk factor, condition, or potential outcome. Risk screening tools are typically brief and shorter in nature than a comprehensive, multidimensional assessment.
Patient and/or caregiver education or support	
Patient education	Key information provided in writing or explained to patient and/or caregiver. The information provided is related to diagnosis or treatment but does not encourage specific behavior change.
Self-management	Patient-directed education or coaching that focuses on enhancing the patient's ability to self-manage care needs. This may include education or coaching around specific behavior(s) (*eg*, weight control action plan) and/or disease specific information (*eg*, congestive heart failure action plan).
Caregiver education	Education directed toward the caregiver, which may include any of the following: basic disease education, behavior management strategies, guidance on how to support the patient in self-care, or information on how to provide direct care, including information related to condition, symptoms, treatment, or medication management.
Caregiver support	Supportive counseling or guidance focused on self-care, coping skills to manage caregiver burden and expectations, tips on identifying local resources, communication skills, etc.
Shared decision-making	Decision-making around testing, treatment, and/or discharge are shared between different individuals, potentially including the patient and/or caregiver. May include use of a decision aid.[29]

Intervention	
Medication intervention	Medication reconciliation or special education aimed at improving medication understanding or adherence.[26]
Rehabilitation intervention	Patient receives occupational and/or physical therapy aimed at improving functional status.
Telemonitoring	Use of remote technology designed for the patient to transmit objective measures of health status with or without connected subjective assessment (*eg*, health buddy).[26]

PROVIDER AND/OR SYSTEM-FOCUSED INTERVENTION COMPONENTS *(related to care delivery or care process)*	
Follow-up call or visit	
Patient hotline and/or patient-initiated appointment systems	An open line for patient-initiated communication.[26] Systems that enable patients to make urgent appointments when they feel they cannot manage their condition or where something has changed unexpectedly.[29]
Follow-up visit scheduled	A follow-up visit is scheduled prior to discharge from ED and/or prior to the end of the intervention period.
Follow-up communication	ED provider or intervention staff initiate telephone follow-up communication after discharge from the ED.
Follow-up visit completed	In-person follow-up visit completed during the course of the intervention period.
Home visit	In-person visit to patient's place of residence by 1 or more intervention providers.
Referral to services	
Referral(s) to primary care	ED provider initiates and/or recommends referral to primary care.
Referral(s) to medical specialist(s)	ED provider initiatives and/or recommends referral to medical specialist(s).
Referral(s) to home or community-based services	ED provider initiates and/or recommends referral to 1 or more home or community-based services. Examples include physical/occupational therapy, meal delivery, home-based primary care, or adult day health care.
Continuity of care/care coordination	
Communication between providers ("clinician continuity")	Processes that ensure the responsibility of care is passed from 1 provider to another. This may include increased provider presence before and after ED discharge, verbal or written communication between providers, strategic follow-up with primary clinician after discharge, or the involvement of a "bridging" clinician. Increased provider presence before and after ED discharge; may include involvement of PCP in patient care or strategic follow-up with inpatient clinician after discharge or "bridging" clinician.[26]
Interdisciplinary care team meeting	Team meeting as part of discharge planning or ongoing case management.

EMERGENCY DEPARTMENT STRUCTURE AND PROCEDURES *Components designed and delivered to be in accordance with 2014 Geriatric Emergency Department Guidelines*[18]	
Staffing/administration	Presence of Geriatric Emergency Department Medical Director or Nurse Manager.
Follow-up and transition of care	Detailed procedures on how to provide age-friendly discharge planning within ED and appropriate referrals to post-ED services in the community.
Provider education	A formal, competency-based educational program designed to educate staff on the needs of older adults.
Quality improvement	Implementation of a formal quality improvement (QI) program designed to collect and monitor data related to program success.
Equipment and supplies	Structural and/or physical modifications to best support unique functional, clinical, and behavioral needs of older adults.

Key Intervention Components

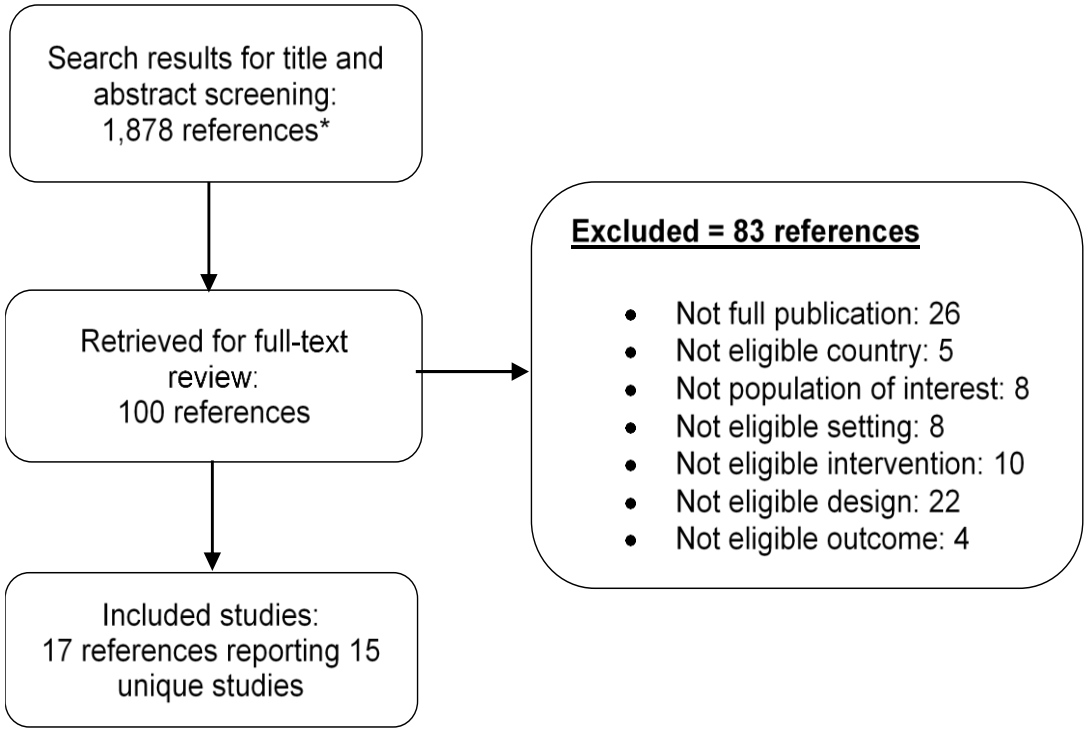
Component	Definition
Assessment	A structured assessment may include a comprehensive geriatric assessment or biopsychosocial assessment covering multiple domains (e.g., cognitive performance, functional status, social status)
Referral plus follow-up	Referral to one or more of the following: primary care provider, specialty provider, or community resource or services *plus* planned communication or visit(s) with intent of following up on referral.
Bridge	An intervention that takes place across settings, including one or more planned contacts *before* discharge from the ED *and* again *after* discharge.

COMPREHENSIVE INTERVENTIONS = studies that employed all three key intervention components

Outcomes of Interest

Clinical	Patient Experience	Utilization
• Functional status • Quality-of-life • Mortality	• Patient experience	• Hospitalization at the ED index visit • Hospitalization after ED discharge • Return/Repeat ED visit

Literature Flow



* Unique citations after combining all searches and manual bibliography review

Description of the Literature

- 15 studies (9 randomized; 6 nonrandomized)
- Studies recruited broad patient populations (n>16,000)
  - One-half of studies recruited high-risk populations, as determined either by a risk assessment tool or clinical criteria (eg, dependent in one or more ADLs)
- Intervention staff varied
  - Number of staff members ranged from 1 to 4
  - Disciplines: physician, nurses, social workers or case managers, physical therapists, occupational therapists
  - Eight studies utilized a geriatrician, geriatric nurse provider, or other provider with geriatrics training
- Gaps in the literature
  - No studies specified enrollment of Veterans
  - No studies evaluating a Geriatric Emergency Department (ED) or interventions based on the 2014 Geriatric ED Guidelines

Evidence Profile

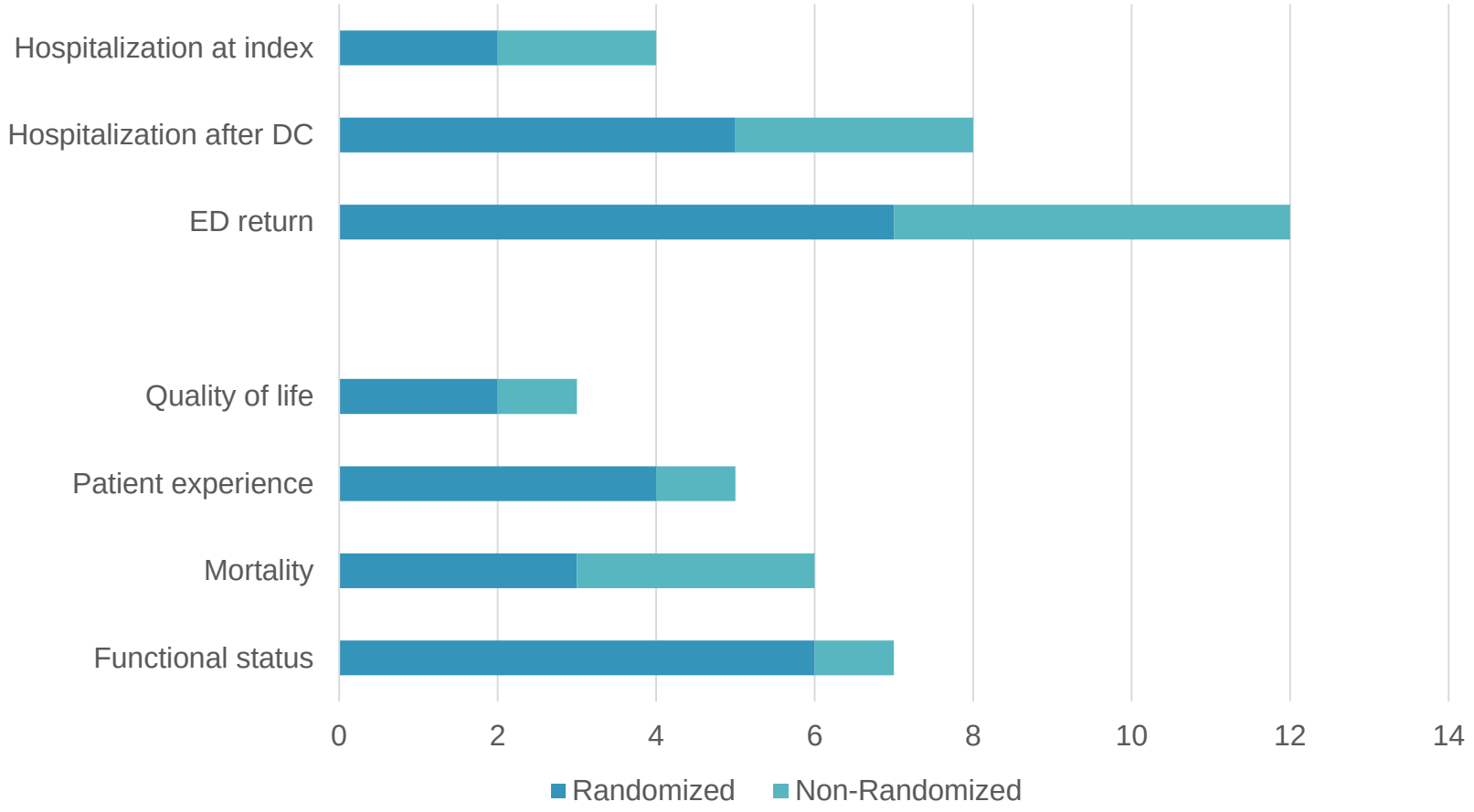
	Studies n= 15
Median patient age	79 (Range: 74-86)
Patient sex	59% women
Race	66% White *(11 studies NR)*
Patients with cognitive impairment	12.25% *(10 studies NR)*
Living status	24% living alone *(6 studies NR)*

Frequency of Intervention Strategies and Key Intervention Components

STRATEGIES		
	Randomized Studies (N=9)	Non-Randomized Studies (N=6)
Discharge planning	0	2
Case Management	4	1
Medication Safety/ Management	0	1
Geriatric Emergency Department	0	0
Multi-Strategy	5	2

KEY COMPONENTS		
	Randomized Studies (N=9)	Non-Randomized Studies (N=6)
Assessment	7	5
Referral plus follow-up	5	1
Bridge design	4	1
All three key components included	4	0

Outcomes Reported



Results: Clinical Outcomes
Functional Status

- 6 studies (5 randomized) evaluated the effect of ED interventions on functional status
  - Primary outcome in 5 studies
  - A variety of outcome measures were used; all focused on ADLs/IADLs

- Study Characteristics:
  - 3 multi-strategy interventions
  - 2 studies included all three intervention components

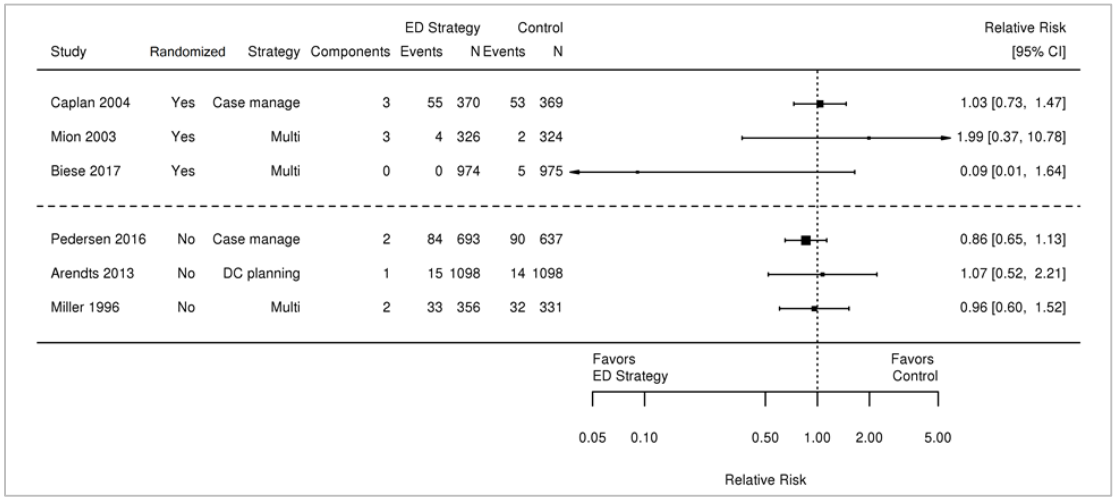
- Overall, ED interventions were associated with less decline in functional ability

Results: Clinical Outcomes
Mortality

- 6 studies (3 randomized) evaluated the effect of ED interventions on mortality
  - Primary outcome in 3 nonrandomized studies; no randomized studies included mortality as a primary outcome
  - Information collected from Electronic Health Record (EHR)

- Study Characteristics:
  - 4 studies evaluated multi-strategy interventions
  - 2 studies included all three key intervention components

- Overall, there was no effect of ED interventions on mortality. However, no studies had a large number of events (deaths).



Results: Clinical Outcomes
Quality-of-Life

- 3 studies (2 randomized) evaluated the effect of ED interventions on quality-of-life (QOL)
  - Primary outcome in 2 studies
  - Measures included SF-36 and a single item from a validated scale

- Study Characteristics:
  - 2 studies evaluated multi-strategy interventions
  - Both multi-strategy studies included all three key intervention components

- There were no statistically significant effects on physical or mental health-related QOL. However; results favored the intervention.

Results: Patient Experience

- 5 studies (4 randomized) evaluated the effect of ED interventions on patient experience
  - No studies included patient experience as a primary outcome
  - Variety of measures used, including Client Satisfaction Questionnaire and Satisfaction with Care Scale

- Study Characteristics:
  - 2 studies evaluated multi-strategy interventions
  - 1 study included all three key intervention components

- 2 of the 5 studies reported higher satisfaction with care or greater knowledge of community resources after ED discharge

Results: Utilization Outcomes
Hospitalization at ED Index Visit

- 4 studies (2 randomized) evaluated the effect of ED interventions on hospitalization at index ED visit
  - Primary outcome for 3 studies
  - Prospective report of hospitalization- yes/no

- Study Characteristics:
  - 2 studies evaluated multi-strategy interventions
  - 1 study included all three key intervention components

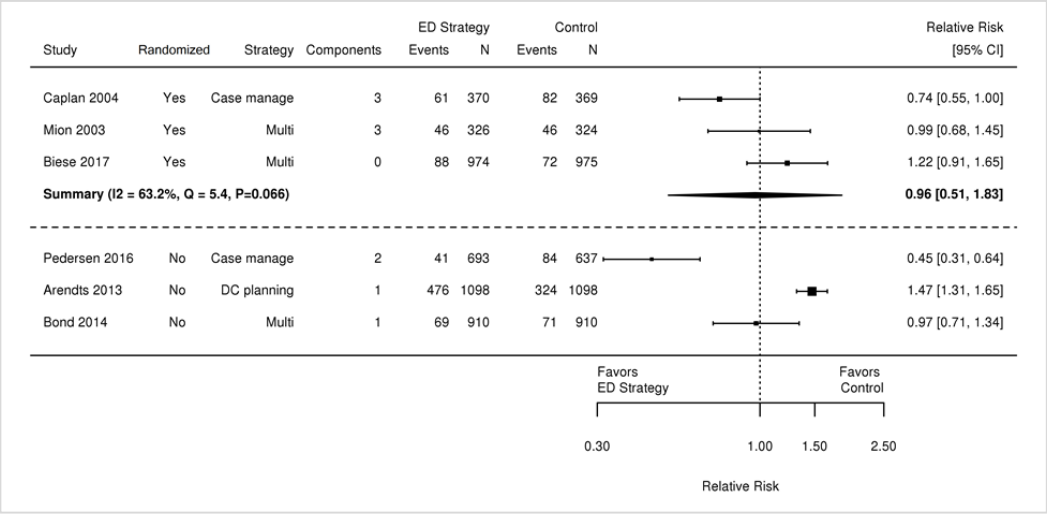
- No effect on hospitalization at the ED index visit

Results: Utilization Outcomes
Hospitalization after the ED Index Visit

- 8 studies (5 randomized) evaluated the effect of ED interventions on hospitalization after the index ED visit
  - Patient report, confirmed via electronic health record (timepoints: 30 days to 18 months)

- Study Characteristics:
  - 5 studies evaluated multi-strategy interventions
  - 3 studies (all randomized) included all three key intervention components

- Overall, no intervention effect

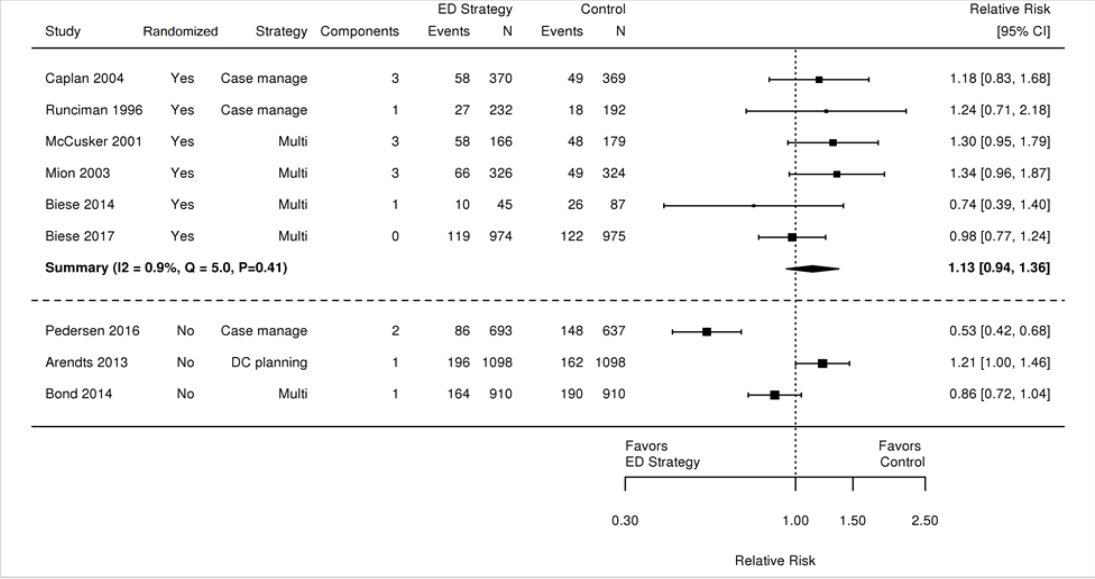


Results: Utilization Outcomes
Repeat Visit to ED

- 12 studies (7 randomized) evaluated the effect of ED interventions on repeat ED visits
  - Primary outcome in only 2 studies
  - Mix of patient reported and electronic health record data collection

- Study Characteristics:
  - 6 studies evaluated multi-strategy interventions
  - 4 (3 randomized) studies included all three key intervention components

- No overall intervention effect



Strength of Evidence

Outcome	Studies	Findings	Strength of Evidence
ED readmission	Randomized: 7	Relative risk 1.13 (0.94 to 1.36) (9 fewer to 53 more per 1,000)	High
	Nonrandomized: 5	2 of 5 showed lower readmission; beneficial interventions were multi-strategy or case management	
Hospitalization after index	Randomized:	Relative risk 0.96 (0.51 to 1.83) (59 fewer to 100 more per 1,000)	Low
	Nonrandomized: 3	No consistent effects on readmission	
Patient experience	Randomized: 4	2 of 4 showed benefit for satisfaction, helpfulness or self-esteem; beneficial interventions were multi-strategy or case management	Low
Physical function	Randomized: 5	3 of 5 showed benefit; beneficial interventions were multi-strategy	Very low
	Nonrandomized: 1	No effect	

Limitations

- Diverse literature limited our ability to conduct meta-analyses
- Small number of studies using any one intervention strategy make it difficult to draw definitive conclusions
- Few studies identified a theoretical or conceptual framework used to inform the design and/or evaluation of the intervention
- Lack of detailed information limited our ability to abstract the following information:
  - Individual intervention components
  - Participants' sociodemographic characteristics
- No studies included Veteran samples

Priority Areas and Future Directions

DOMAIN	EVIDENCE GAP
Population	Few studies reported clinical and sociodemographic characteristics, limiting our ability to examine subgroup effects
Interventions	Limited information makes it difficult to evaluate optimal dose of ED interventions Few studies included elements of caregiver education or support
Comparators	Additional research needed to identify effective intervention strategies before conducting head-to-head comparisons
Outcome	Lack of a core set of outcomes limits comparison across studies
Timing	Time to assess significant changes in outcomes is unknown
Setting	Interventions that “bridge” pre- and post-ED care may be most effective, more information around the timing and coordination of care is needed Limited information on interventions taking place in large, integrated systems similar to the VA Healthcare System

Key Take Home Points

Clinical Implications

- ED visits should be considered along the continuum of geriatric care; interventions that bridge care occurring before *and* after discharge may be associated with better outcomes

Research Implications

- Innovative intervention and experimental designs may be useful in examining effects of individual ED intervention components
- Additional research needed to identify outcome measures that apply to older adults with a range of medical conditions while also being responsive to change

Policy Implications

- Patients, caregivers, and providers should be engaged in selecting outcomes of interest and in sharing experience/satisfaction with intervention

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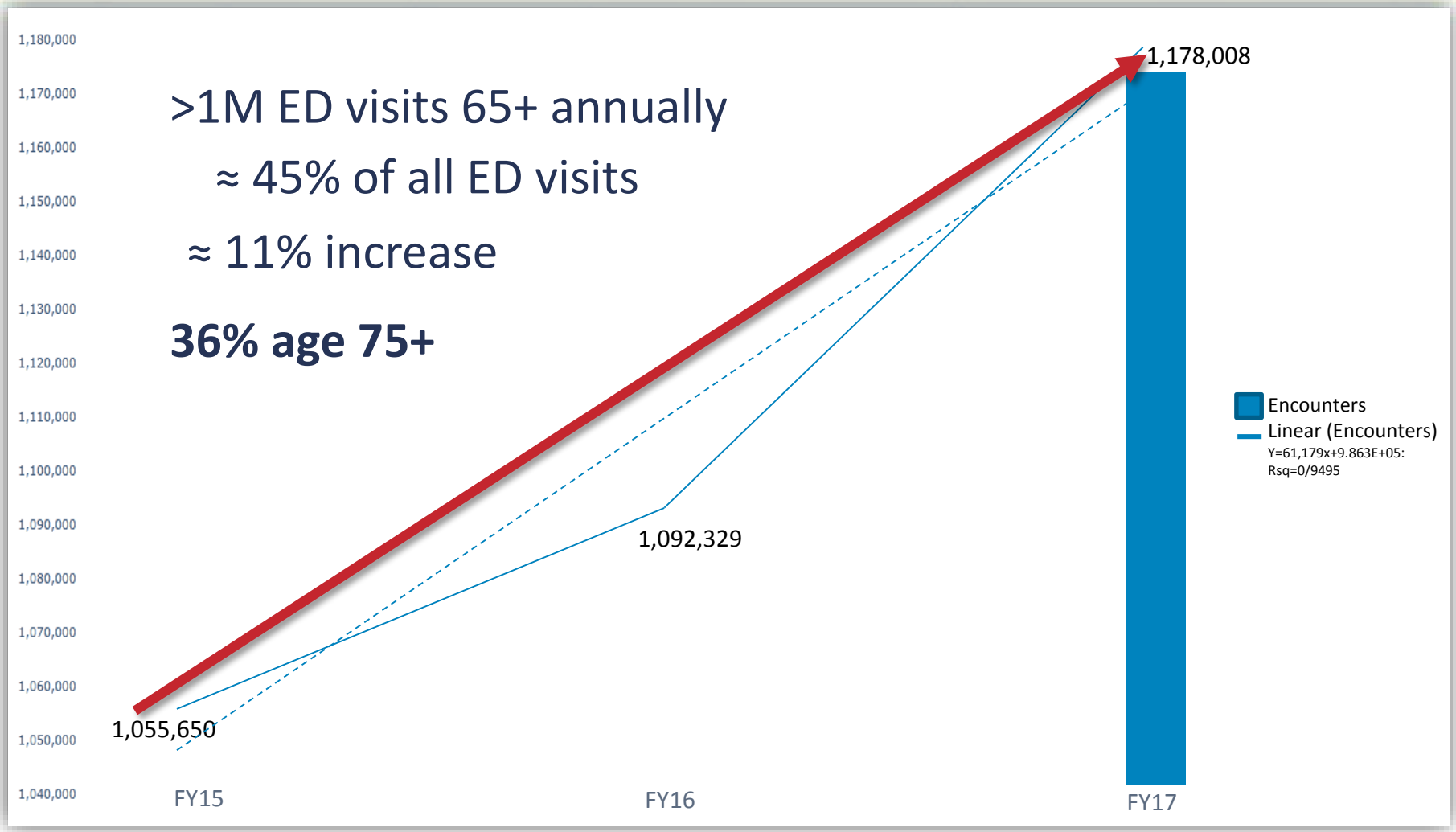
Full-length report and cyberseminar available on ESP website:
https://www.hsrd.research.va.gov/publications/esp/

Older Veterans in VHA EDs



Older Veterans in VHA EDs

- **The majority of older adults evaluated in the ED are not admitted to the hospital**
  - ~75% of older adults evaluated in VHA EDs are discharged
- **ED visits are increasingly intensive**
  - In VHA EDs, 45-65% of patients are prescribed at least one new medication
- **Communication hurdles**
  - Deficits-expected duration of sx/illness (63%), diagnosis (20%), f/u instructions (39%), return precautions (55-79%)
- **Medication safety**
  - 32% of older Veterans discharged from the ED were prescribed a high risk medication or did not have appropriate monitoring in next setting

Older Veterans in VHA EDs

- **ED returns**
  - 1 in 5 within 30 days
  - Higher risk
    - previous hospital or ED use
    - chronic conditions
    - functional disability
    - inadequate social resources
    - psychological distress
    - medication problem
    - incomplete understanding of discharge information
  - High engagement with Primary Care
    - 70% had not seen outpatient provider between ED discharge and first return

VA Geriatric Emergency Care Workgroup

- Led by VHA Offices of Emergency Medicine and Geriatrics and Extended Care

- Building Capacity for Excellence in Geriatric Acute and Emergency Care in the Veterans Health Administration Summit, February 2nd 2018
  - John A. Hartford Foundation and West Health Institute
- Geriatric Emergency Department Accreditation
  - Derived from 2014 multidisciplinary "Geriatric Emergency Department Guidelines"
  - ACEP, AGS, ENA, SAEM

Promising Practices

- **NQF ED Transitions Quality Measurement Framework**
  - ED Patient Aligned Care Team (ED-PACT) Communications Tool (Greater Los Angeles)
  - GERI-VET (Cleveland → 9 VAs)

- **VA Best Care Anywhere**

  Enhancing Quality of Provider Practices for Older Adults in the Emergency Department (EQUiPPED) (Atlanta, Durham, Nashville → 12 VAs)

- **Research ↔ Practice**

NATIONAL QUALITY FORUM

www.qualityforum.org

Building Capacity for Excellence in Geriatric Emergency Care in VA

Patients/Need

- Nearly half of all patients in VHA EDs are 65+
- Opportunities for improvement: med safety, transitions, integration with existing clinical services eg LTSS

Tools

- Robust research and data infrastructure
- Clinical prediction tools
- Promising clinical innovations

Motivation

- Veterans deserve the best care within and across all settings

Resources

- EMCHAT: Treating Geriatric Patients in the Emergency Department – live webcast TODAY 12/20 1p-2p EST
  - VA participants register here: https://www.webcaster4.com/Webcast/Page/89/27939
  - Non-VA participants register here: https://www.train.org/vha/course/1081754/live_event

- Emergency Medicine Foundation Fellow to Faculty Research Career Development Grant
  - 2 year, 200K, support for early career investigator to conduct research focused on delivery of emergency care in VA
  - Submission deadline 2/28/2019
  - More information here: https://www.emfoundation.org/globalassets/general/pdfs/va-fellow-to-faculty-career-research-development-grant.pdf

Questions?

If you have further questions, please feel free to contact:

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Examples of Clinical Innovations in VA Geriatric Emergency Care

ED Patient Aligned Care Team (ED-PACT) Communications Tool https://www.research.va.gov/research_in_action/Emergency-Department-Patient-Aligned-Care-Team-ED-PACT-Transfer-Tool.cfm
GERI-VET
https://www.youtube.com/watch?v=MDIwu5hQatw https://vaww.visn10.portal.va.gov/sites/cleveland/gerivet/SitePages/Home.aspx
Enhancing Quality of Provider Practices for Older Adults in the Emergency Department (EQUiPPED)
https://www.research.va.gov/research_in_action/Safer-prescribing-for-older-adults-after-emergency-care.cfm http://aging.emory.edu/programs/equipped/index.html

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