How to Cite:
Al-Jasser, S. A., Alenazi, N. S. D., Alhazmi, F. K. M., Gaddourah, A. M. I., Aleiid, A. S., & Alsayyari, A. M. (2018). Prehospital care in geriatric emergencies: EMS, health informatics, and nursing approaches to age-related conditions. *International Journal of Health Sciences*, *2*(S1), 241–259. https://doi.org/10.53730/ijhs.v2nS1.15210

Prehospital care in geriatric emergencies: EMS, health informatics, and nursing approaches to age-related conditions

Saleh AbdulLatif Al-Jasser
KSA, National Guard Health Affairs

Nawaf Subhi Dobayan Alenazi
KSA, National Guard Health Affairs

Fares Khalid Mohammed Alhazmi
KSA, National Guard Health Affairs

Ahmad Mohammed Isa Gaddourah
KSA, National Guard Health Affairs

Alaa Saud Aleiid
KSA, National Guard Health Affairs

Alaa Musaad Alsayyari
KSA, National Guard Health Affairs

***Abstract*---**Background: The aging population poses significant challenges in emergency medical services (EMS) and nursing care, particularly for patients aged 65 and older who experience geriatric emergencies. This demographic shift necessitates tailored management strategies for age-related conditions, especially regarding trauma. Aim: This study aims to explore the approaches of paramedics, EMS, health informatics, and nursing in managing geriatric emergencies, focusing on age-related physiological changes, mechanisms of injury, and effective triage strategies. Methods: A comprehensive review of current literature and clinical guidelines was conducted, analyzing factors contributing to under-triage in older patients, the impact of frailty, and the complexities introduced by medications. Results: Findings indicate that elderly patients are often under-triaged due to age-related biases and physiological changes, resulting in worse outcomes. Geriatric trauma patients frequently present with multifactorial injuries that complicate clinical assessments and necessitate specialized care protocols. The study

International Journal of Health Sciences E-ISSN 2550-696X © 2018.
Corresponding email: *akk29337@gmail.com*
Manuscript submitted: 01 Jan 2018, Manuscript revised: 09 Jan 2018, Accepted for publication: 15 Jan 2018

also highlights the increasing prevalence of traumatic brain injuries exacerbated by anticoagulant therapies. Conclusion: Enhanced training for EMS and nursing staff on the unique needs of geriatric patients, combined with evidence-based triage protocols, is crucial for improving outcomes. Developing and implementing specialized assessment tools can mitigate the risks associated with geriatric trauma and optimize care delivery.

***Keywords*---**Geriatric emergencies, EMS, nursing, trauma, under-triage, frailty, anticoagulants.

Introduction

Although various cutoff ages have been proposed, 65 years remains the most widely accepted threshold for defining an elderly or geriatric patient [1,2]. It is projected that in the coming years, individuals aged 65 and older will account for up to 20% of the global population [1,3], with nearly 39% of trauma admissions occurring among this age group by 2050 [4]. This presents a significant global challenge, particularly in developed nations with longer life expectancies. Geriatric trauma is increasingly recognized as a critical issue [1-4]. Despite a sixfold rise in articles addressing this subject over the past 25 years [3], optimal management strategies for these patients have yet to be fully established. The American Association for the Surgery of Trauma has formed a specialized Geriatric Trauma Committee to address this issue [2]. Key conclusions include geriatric trauma is a growing concern with a corresponding rise in secondary hospital admissions; older trauma patients are frequently under-triaged; and outcomes improve when these patients are treated in higher-level trauma centers [2]. Trauma patients over the age of 65 often have multiple comorbidities, increasing their risk of mortality and severe disability, even when they present with similar severity scores as younger patients [5-7]. Hospital expenses are also elevated, even in cases of low-energy trauma [1]. In our region, individuals over 65 years old comprise up to 20% of trauma patients admitted to intensive care units [8]. Therefore, specialized expertise and an evidence-based management approach are essential for this population.

Physiological Considerations and Medication Effects

Aging is associated with a gradual decline in cellular function, leading to a reduced capacity to respond to injuries [4]. The compromised adaptive and homeostatic mechanisms are linked to a decrease in physiological reserve [4], resulting in an impaired ability to manage physical insults [4,9]. Moreover, comorbidities are often accompanied by an increased reliance on medical treatments, which can further influence the body's response to injuries [1,3,4]. Specifically, the following conditions are observed [1,4,10]:

Brain: Older adults are more likely to have baseline neurological impairments such as dementia, stroke, hearing loss, visual impairment, and reduced pain perception [1,4]. These factors contribute to gait instability, making them more susceptible to low-energy or ground-level falls. Additionally, certain medications,

including antipsychotics and antidopaminergics, can mask symptoms and precipitate falls [1].

Cardiovascular: Hypertension, cardiovascular disease, and decreased sensitivity to catecholamines are common in the elderly. Furthermore, chronic medication use can influence heart rate and blood pressure [1,3,4], reducing the body's ability to respond to injuries in patients with hemodynamic instability [1].

Respiratory: Several mechanisms compromise respiratory function in elderly patients, such as reduced functional residual capacity, impaired mucociliary clearance, diminished cough reflex, and decreased lung compliance [1,4]. These factors elevate the risk of respiratory failure, the need for mechanical ventilation, ventilator-associated pneumonia, and prolonged ICU stays [4,11]. Steroids, often administered to patients with chronic obstructive pulmonary disease, can impede wound healing, induce adrenal impairment, and exacerbate outcomes in patients with traumatic brain injury [1,12].

Kidney: A decline in glomerular filtration rate and renal tubular function in the elderly reduces the tolerance for large-volume fluid resuscitation [4]. Additionally, individuals with low glomerular filtration rates are at a heightened risk of developing contrast-induced nephropathy [10].

Skeletal: Elderly patients frequently present with osteoporosis [1]. The combination of osteoporosis and a propensity for falls significantly increases the incidence of hip fractures, the most common traumatic injury among older adults, particularly in women [4]. Aging bones fracture more easily with minor trauma [10].

Coagulation: Older adults are often on antiplatelet or anticoagulant therapies, which can significantly affect outcomes, particularly in cases of traumatic brain injury [1,3,4,7]. The increasing use of novel anticoagulants adds complexity to managing these patients and affects their prognosis [13,14].

Mechanisms of Injury: Recent research has shown a linear correlation between injury patterns, intensity, and aging [7]. As age increases, low-energy traumas, compounded by the use of antiplatelet and anticoagulant medications, become more prevalent, as well as pedestrian injuries. In contrast, high-energy traumas, such as motor vehicle collisions involving substance abuse, are less common with advancing age [7].

Falls: Falls are the most frequent cause of trauma and the leading cause of trauma-related mortality, even in low-energy cases [2,3]. Morbidity and mortality are linked to frailty [15], and while age is the strongest predictor of mortality, it is not the only factor [16]. A recent systematic review identified six recurrent risk factors for predicting falls in the elderly: previous falls, living alone, use of a walking aid, depression, cognitive deficits, and the use of more than six medications [16].

Motor Vehicle Collisions: Motor vehicle collisions account for up to 25% of geriatric trauma cases, with 26.8% occurring in the 66-75 age group and 14.4%

in those older than 75 [7]. Elderly individuals tend to suffer more severe injuries from low-speed vehicle collisions and have a mortality rate double that of younger patients [1,10].

Blunt vs. Penetrating Trauma: Elderly trauma patients are more likely to experience blunt trauma, with penetrating trauma accounting for less than 5% of cases [7,17]. Penetrating trauma in older adults is often self-inflicted, associated with chronic illness and depression.

Clinical Features

In brain-injured elderly patients, aging is strongly linked to the development of significant epidural or subdural hematomas, even when the presenting symptoms are mild [18]. In this population, the Glasgow Coma Scale (GCS) is an unreliable clinical tool for assessing brain injury severity. Repeated head computed tomography (CT) scans are often necessary to rule out increased intracranial pressure [19]. When patients are on anticoagulant therapy, there should be a low threshold for repeating brain imaging, even in the absence of neurologic changes [1,19]. In particular, elderly patients with traumatic brain injury (TBI) taking warfarin have a markedly higher risk of fatal intracranial hemorrhage, warranting rapid correction of coagulopathy [19]. Older adults are also at a significantly higher risk of sustaining high cervical spinal cord injuries (C1-C2) due to degenerative changes and stiffness in the lower cervical spine [20]. Early spinal evaluation and proper immobilization are critical to prevent secondary, severe injuries.

Chest Trauma

Blunt chest trauma, often due to motor vehicle accidents, is common in elderly patients and carries a high risk of morbidity, even in those with isolated rib fractures [21]. Mortality following rib fractures correlates with the number of fractured ribs, and these fractures can serve as a predictor of trauma severity and complications [22]. Pneumonia and pulmonary contusions are the most frequent complications [21]. Pneumonia, in particular, can be a serious complication in elderly patients with reduced respiratory function. Effective management of rib fractures, including optimized analgesia, epidural anesthesia, and in some cases, rib fixation, is crucial to control pain and improve outcomes [23].

Abdominal Trauma

Abdominal trauma in elderly patients shares similarities with that of younger patients, but its management is more controversial in older populations. Non-operative management is often employed more frequently in elderly patients [24]. However, the risks of conservative management must be carefully weighed, as mortality following laparotomy increases with both age and elevated lactate levels [25]. Recently, a geriatric emergency surgery score has been developed using five clinical variables to predict 1-year mortality and assist with preoperative counseling [26]. Nonetheless, this score still requires validation specifically in elderly trauma patients.

Pelvic Fractures

Elderly patients experience higher complication and mortality rates from pelvic fractures compared to younger individuals. In this population, lateral compression fractures are more common and often result in secondary bleeding, requiring angiographic intervention for bleeding control [27]. Timely treatment is essential due to the high mortality risk associated with pelvic fractures [27]. In cases where pelvic fractures are initially stable, factors such as advanced age, injury severity, altered mental status, prolonged mechanical ventilation, and in-hospital blood product administration are predictors of increased mortality [28].

Osteoporosis and Skeletal Injuries

Osteoporosis is a significant contributor to skeletal injuries in elderly trauma patients, particularly in women. Fractures in this population are associated with increased morbidity, mortality, and a reduction in quality of life [29]. The most common fractures involve the forearm and hip [10]. Elderly patients with hip fractures face high mortality rates, making coordinated care essential. This includes early surgical repair, balanced with medical optimization and appropriate rehabilitation. Evidence suggests that a dedicated orthogeriatric team may improve functional outcomes, though its impact on mortality is still unclear [30,31].

Specific Areas of Interest and Potential Strategies to Improve Outcome
Under-triage

Elderly trauma patients are frequently under-triaged to trauma centers, with contributing factors including low-energy mechanisms of injury, unconscious age bias, unreliable vital signs, medication effects blunting the physiological response to injury, and a lack of specific triaging scores [1,2,10,32]. Given that age is a significant predictor of higher mortality in trauma patients [7], aggressive treatment in elderly patients can minimize the outcome difference compared to younger patients [33]. Studies have shown that transferring elderly patients to trauma centers with high volumes of geriatric trauma cases significantly reduces mortality [34]. A potential solution is to adopt advanced age as the sole criterion for referral to Level I trauma centers and activate trauma teams in response to injuries, as this has been associated with reduced mortality [35,36]. Under-triage of elderly patients can be considered a form of ageism given the evidence supporting more aggressive care.

Alternative parameters may improve triage, as traditional scores like the Revised Trauma Score and Injury Severity Score are less effective in this population. A modified systolic blood pressure cutoff of 110 mmHg, as well as indices such as the shock index, modified shock index, and age shock index, have demonstrated improved but still suboptimal results [37-39]. Geriatric-specific criteria could increase sensitivity for identifying patients needing trauma center care, although their impact on the number of transfers and mortality is limited [40-42]. The Geriatric Trauma Outcome Score, based on age, injury severity, and transfusion need, holds promise for estimating mortality risk but has limited use in triage [43].

Frailty

Age alone is not a reliable predictor of an elderly patient's ability to recover from injury, and traditional vital signs and severity scores often fail in this group. Frailty, defined as reduced physiological reserve across multiple organ systems, is a more accurate indicator of poor outcomes following trauma [3]. Frail patients are at a higher risk for complications and adverse outcomes [44]. The Trauma-specific Frailty Index, a modified 15-component scale, has been validated and used to guide discharge planning in elderly trauma patients [45]. In a study of patients with a median Injury Severity Score of 15 and a mean age of 77.9 years, 44% were identified as frail, and these patients experienced higher rates of in-hospital complications and adverse discharge dispositions. All patients who died were identified as frail [44]. The Trauma-specific Frailty Index outperforms traditional signs and scores and may prove useful in managing the care of elderly trauma patients [46].

Traumatic Brain Injury and Anticoagulation

There is a strong relationship between age and both mortality and poor outcomes in traumatic brain injury (TBI). A meta-analysis of 5,600 patients with severe head injuries found a 1.39 increase in odds of death and a 1.46 increase in odds of unfavorable outcomes for every 10-year increase in age [47]. In one recent report, in-hospital mortality approached 30% for elderly patients with moderate to severe brain injuries, and those with a Glasgow Coma Scale score below 9 had an 80% mortality rate, raising concerns about the futility of aggressive treatment in such cases [48]. Anticoagulant use complicates the management of elderly patients with TBI, as it increases the risk of hemorrhage progression and new hemorrhagic foci on repeat CT scans [50]. While anticoagulants, such as warfarin, are used to reduce stroke risk, their benefit must be balanced against the increased risk of falls and severe bleeding in elderly patients [13,49]. The CHADS score may help identify which patients at risk for falls may benefit from anticoagulation or antiplatelet therapy [51].

New anticoagulants, such as direct thrombin inhibitors and factor Xa inhibitors, have replaced vitamin K antagonists in many elderly patients, posing new challenges in trauma care [13]. Specific antidotes have been developed for these newer anticoagulants, such as idarucizumab for dabigatran and andexanet alfa for factor Xa inhibitors [52,53]. These agents, however, have not been extensively tested in trauma patients. Interestingly, recent studies have shown that trauma patients on newer anticoagulants have better outcomes than those on vitamin K antagonists [54,55]. This finding underscores the need for specialized screening protocols to manage coagulopathy in elderly trauma patients.

Outcome Prediction:

In 2012, the Eastern Association for the Surgery of Trauma (EAST) released guidelines emphasizing the importance of aggressive triage, correction of coagulopathy, and the limitation of care in elderly trauma patients when poor prognosis is evident [56]. This approach encourages treating patients aggressively despite their limited physiological reserve and uncertain outcomes. Several

predictive tools have since been developed to guide decision-making by estimating morbidity and outcomes in elderly trauma patients. Min et al. [57] created a simple clinical risk normogram to predict mortality-associated geriatric complications using the National Trauma Data Bank. Their findings indicated that elderly patients often experience more complicated and unfavorable clinical courses compared to younger individuals, particularly if they develop conditions such as pneumonia, abscess, wound infection, urinary tract infection, or deep venous thrombosis, among others. A systematic review also highlighted that increasing age (especially over 74 years), higher injury severity, and low systolic blood pressure are independent predictors of mortality [58].

The Geriatric Trauma Outcome Score (GTOS) has proven useful for predicting in-hospital mortality, with particularly strong results when patients with care restrictions are excluded [43]. However, its accuracy diminishes when attempting to predict 1-year mortality [59]. For longer-term outcomes, tools like the frailty index may be more informative. Research by Joseph et al. [60] found that frail patients had significantly higher rates of in-hospital complications and adverse discharge outcomes compared to non-frail patients (frail: 33.4%, pre-frail: 17.4%, non-frail: 12%, P = 0.02). The Edmonton frail scale, though well-regarded for the general population, has not been extensively evaluated in trauma settings except for postoperative cases following hip fractures [61].

Other markers of frailty, such as **sarcopenia** (loss of muscle mass) and **osteopenia** (reduced bone density), have been linked to higher 1-year mortality in elderly trauma patients [62]. Additionally, a "dichotomy approach"—differentiating patients as responders or non-responders after 72 hours of intensive care—can help predict in-hospital mortality and guide end-of-life decisions [63]. Together, these tools and assessments provide a multifaceted approach to predicting outcomes in elderly trauma patients, allowing for more tailored interventions.

Post acute Care and Palliative Care

Despite aggressive interventions, more than 60% of elderly trauma patients who survive are discharged to various post-acute care facilities such as skilled nursing facilities, assisted living centers, or long-term rehabilitation centers [64-66]. Determining the most appropriate facility for each patient remains a challenge, and ensuring smooth transitions between care settings is critical for reducing the risk of readmission and improving outcomes [65,66]. For elderly trauma patients with a poor prognosis, particularly those aged over 74 years or those with non-responsive traumatic brain injuries, palliative care should be considered [67]. Limiting care plays a significant role in the high in-hospital mortality observed among elderly trauma patients, especially those in intensive care units (ICUs) [7]. Thus, a comprehensive care approach that prioritizes patient comfort and needs is crucial [65-67]. Future research may shift toward evaluating quality of life as an outcome measure rather than focusing solely on in-hospital mortality, especially for elderly trauma patients [67,68].

Returning to pre-injury quality of life is often difficult for elderly patients, even following relatively minor trauma [69]. Therefore, treatment decisions should involve discussions with the patient (if possible) and their family to ensure that

expectations align with realistic outcomes. Additionally, interventions aimed at reducing frailty in the community—such as exercise, nutrition, cognitive training, geriatric assessment, and prehabilitation—are essential to improve elderly patients' resilience and capacity to recover from injuries [70]. These strategies could potentially lead to better outcomes by enhancing the ability to prevent injury and support recovery.

Frailty Index:

The **Frailty Index** (FI) is a clinical tool used to measure frailty in individuals, particularly in older adults. It assesses the overall health status and biological aging of a person by quantifying various health deficits. The FI is based on the accumulation of deficits model, which posits that frailty results from a cumulative effect of various health issues rather than a single condition.

Key Features of the Frailty Index

1. **Components**: The FI typically includes a range of variables that reflect physical, cognitive, and social health, such as:
    - Medical conditions (e.g., diabetes, heart disease)
    - Functional limitations (e.g., difficulty walking, climbing stairs)
    - Cognitive impairments (e.g., dementia, confusion)
    - Nutritional status (e.g., weight loss, appetite changes)
    - Psychological factors (e.g., depression, social isolation)
2. **Scoring**: The FI is calculated by dividing the number of deficits present in an individual by the total number of deficits considered. For instance, if a frailty index includes 30 health deficits and a person has 10 of them, their FI score would be 10/30 = 0.33. The score typically ranges from 0 (no deficits) to 1 (maximum deficits).
3. **Predictive Value**: Higher scores on the FI are associated with increased risk of adverse outcomes, including:
    - Increased mortality
    - Higher rates of hospitalization
    - Greater likelihood of complications following surgery or trauma
    - Loss of independence and functional decline
4. **Clinical Utility**: The FI can help healthcare providers in:
    - Identifying individuals at higher risk for negative health outcomes
    - Tailoring treatment and intervention strategies based on a patient's frailty status
    - Improving decision-making in clinical settings, especially in geriatric medicine, trauma care, and palliative care.
5. **Variations**: While the basic concept of the FI is consistent, various versions and scales have been developed, including the **Edmonton Frail Scale** and the **Frailty Phenotype** developed by Fried et al. These variations might focus on different sets of deficits or employ different scoring systems.

Frailty syndrome:

Frailty syndrome is a clinical syndrome characterized by a decline in physiological reserves and an increased vulnerability to adverse health outcomes.

It is commonly seen in older adults and is associated with various factors that contribute to a decline in health status and functional ability.

Key Features of Frailty Syndrome

1. **Clinical Definition**:
    - Frailty is often defined as a state of increased vulnerability resulting from age-related decline in multiple physiological systems, leading to a higher risk of adverse health outcomes such as falls, disability, hospitalization, and mortality.
2. **Components**:
    - Frailty syndrome encompasses several domains, which can include:
        - **Physical frailty**: Reduced muscle strength, endurance, and physical activity. This may manifest as weakness, weight loss, exhaustion, and difficulty in performing daily activities.
        - **Cognitive frailty**: Impairments in cognitive function, which can affect decision-making, memory, and overall mental capacity.
        - **Social frailty**: Social isolation or lack of social support, which can exacerbate feelings of loneliness and negatively impact mental health.
3. **Diagnostic Criteria**:
    - The most commonly used criteria for diagnosing frailty is the **Fried Frailty Phenotype**, which identifies frailty based on five physical characteristics:
        - Unintentional weight loss
        - Exhaustion
        - Low physical activity
        - Slow walking speed
        - Weak grip strength
    - Individuals with three or more of these characteristics are considered frail, while those with one or two may be classified as pre-frail.
4. **Causes**:
    - Frailty can be influenced by a combination of intrinsic and extrinsic factors, including:
        - Aging and physiological changes
        - Chronic diseases (e.g., diabetes, heart failure)
        - Acute illnesses or injuries
        - Malnutrition and poor diet
        - Physical inactivity
        - Depression and cognitive decline
5. **Impact**:
    - Individuals with frailty are at an increased risk of:
        - Falls and fractures
        - Hospitalization
        - Disability and loss of independence
        - Longer recovery times from surgery or illness

        - Higher mortality rates
6. **Management and Interventions**:
    - Addressing frailty involves a multifaceted approach, including:
        - **Nutritional interventions**: Ensuring adequate caloric and protein intake to promote muscle health.
        - **Physical exercise**: Engaging in strength training, balance, and aerobic exercises to improve physical function and strength.
        - **Cognitive training**: Activities that stimulate cognitive function and mental acuity.
        - **Social support**: Enhancing social engagement and reducing isolation.
        - **Comprehensive geriatric assessment**: Evaluating and managing comorbidities and functional impairments.

Role of Paramedics in Prehospital Care of Geriatrics Trauma:

Paramedics play a crucial role in the prehospital care of geriatric trauma patients, serving as the first line of medical response in emergencies. Given the unique physiological and psychological needs of older adults, paramedics must possess specialized knowledge and skills to assess and manage these patients effectively. The aging population is particularly vulnerable to trauma due to age-related changes in anatomy and physiology, such as decreased bone density, reduced muscle mass, and comorbid conditions that complicate trauma care. As such, paramedics must conduct thorough assessments that consider the specific vulnerabilities of geriatric patients, including cognitive impairment and polypharmacy, which may affect their responses to trauma and treatment.

In the prehospital setting, paramedics are responsible for implementing early interventions that can significantly impact patient outcomes. Rapid identification of life-threatening conditions is essential, as older patients often present atypically compared to younger individuals. Paramedics must be adept at recognizing subtle signs of trauma, such as altered mental status or atypical pain responses, which may indicate serious underlying injuries. Additionally, they must be proficient in the use of advanced life support techniques tailored to older adults, ensuring that interventions are both effective and appropriate for this demographic. Effective communication with the elderly, who may experience hearing loss or cognitive difficulties, is also paramount, as it ensures that the patient feels respected and involved in their care.

Moreover, the integration of geriatric principles into prehospital care is increasingly recognized as vital. Paramedics are in a unique position to provide education to older adults and their caregivers about fall prevention, medication management, and the importance of regular health assessments. By employing a holistic approach that encompasses not only immediate medical care but also preventive education, paramedics can help reduce the incidence of trauma among elderly populations. Collaborative practices involving multidisciplinary teams, including geriatricians and social workers, can further enhance the quality of care provided during the prehospital phase. In conclusion, the role of paramedics in the prehospital care of geriatric trauma patients is multifaceted, requiring

specialized skills and knowledge tailored to the complexities of aging. By conducting comprehensive assessments, implementing targeted interventions, and providing education and resources, paramedics significantly contribute to improving outcomes for elderly trauma patients. As the population continues to age, the demand for trained paramedics who can effectively address the unique challenges associated with geriatric trauma will only increase, emphasizing the need for ongoing education and training in this critical area of emergency medical services.

Role of Nursing and EMS:

The management of geriatric trauma patients requires a coordinated effort between nursing staff and Emergency Medical Services (EMS), as both play critical roles in providing comprehensive care tailored to the unique needs of this vulnerable population. The integration of nursing and EMS in geriatric trauma care can significantly enhance patient outcomes by ensuring timely interventions, effective communication, and continuity of care throughout the trauma care continuum.

Role of EMS

1. Initial Assessment and Stabilization: EMS professionals are often the first responders to trauma incidents involving elderly patients. Their initial assessment is crucial for identifying life-threatening injuries and stabilizing the patient's condition. Given that geriatric patients may present atypically, EMS providers must be trained to recognize subtle signs of injury, such as changes in mental status or atypical pain responses. Quick and accurate assessment allows EMS to implement immediate interventions, such as airway management, control of bleeding, and initiation of intravenous access.

2. Communication and Coordination: Effective communication between EMS and receiving healthcare facilities is vital for ensuring that the appropriate level of care is prepared for the patient upon arrival. EMS personnel provide detailed reports to emergency department staff, including the patient's condition, mechanism of injury, and any prehospital interventions performed. This information is essential for hospital staff to prepare for the patient’s needs and develop a suitable treatment plan.

3. Education and Advocacy: EMS professionals also play a role in educating patients and their families about fall prevention and trauma risks associated with aging. By advocating for preventive measures, EMS can help reduce the incidence of trauma among elderly populations. This includes promoting awareness of safe mobility practices and the importance of regular health check-ups.

Role of Nursing

1. Comprehensive Care and Assessment: Once geriatric trauma patients arrive at the hospital, nursing staff assume responsibility for their comprehensive care. Nurses conduct thorough assessments, monitor vital signs, and evaluate the patient's physical and psychological status. Given the complexity of geriatric patients, nurses must be adept at recognizing the interplay between multiple comorbidities and trauma outcomes.

2. Pain Management and Emotional Support: Nursing staff play a crucial role in managing pain and providing emotional support to elderly trauma patients. They utilize age-appropriate pain assessment tools and strategies, considering the potential for cognitive impairments that may affect the patient's ability to communicate their pain levels effectively. Additionally, nurses provide emotional support and reassurance, which can help alleviate anxiety and enhance the overall patient experience during hospitalization.

3. Care Coordination and Multidisciplinary Collaboration: Nurses serve as advocates for geriatric patients, coordinating care among multidisciplinary teams that may include physicians, physical therapists, occupational therapists, and social workers. This collaborative approach ensures that all aspects of the patient's care, including rehabilitation, discharge planning, and community resources, are addressed. Nurses also play a pivotal role in post-acute care planning, determining the most appropriate settings for rehabilitation or long-term care based on the patient's needs and preferences.

4. Education and Discharge Planning: Education is a key component of nursing care for elderly trauma patients. Nurses provide information to patients and families about post-discharge care, medication management, and rehabilitation services. By preparing patients and their families for the transition from hospital to home or to a rehabilitation facility, nurses help reduce the likelihood of readmission and support a smoother recovery process.

Health Informatics:

In the context of **prehospital care for geriatric emergencies**, health informatics plays a critical role in supporting the management and coordination of care for age-related conditions. Here are some key ways it contributes:

1. **Electronic Health Records (EHRs) Access**: Health informatics systems enable emergency medical services (EMS) and nursing teams to access electronic health records (EHRs) of elderly patients during prehospital care. This access allows for a quick review of medical histories, current medications, allergies, and chronic conditions, which are vital in making informed decisions about treatment, especially in time-sensitive situations.
2. **Data Integration and Communication**: Health informatics facilitates seamless communication between EMS, nursing staff, and receiving healthcare facilities. By integrating patient data into a centralized system, paramedics can transmit real-time information about the patient's condition, vital signs, and treatment interventions. This ensures that hospitals are prepared to receive the patient and continue care without delays or lapses in information.
3. **Decision Support Tools**: Advanced health informatics systems often include decision support tools, such as algorithms or clinical guidelines tailored to geriatric emergencies. These tools assist EMS and nursing professionals in identifying the best course of action based on the patient's age-related conditions, such as frailty, cognitive impairments, or polypharmacy risks.
4. **Remote Monitoring and Telemedicine**: In some cases, health informatics supports telemedicine applications that allow paramedics to consult with physicians or geriatric specialists in real-time. This can be

particularly helpful when dealing with complex age-related conditions, ensuring that the patient receives appropriate prehospital care even in remote or rural locations.

5. **Outcome Tracking and Quality Improvement**: Health informatics enables the collection and analysis of data from prehospital geriatric care, which can be used to track patient outcomes and evaluate the effectiveness of EMS and nursing interventions. Over time, this data helps in refining care protocols, improving response times, and enhancing the overall quality of emergency services for elderly patients.

Conclusion

The management of geriatric emergencies within the prehospital setting requires a nuanced understanding of the physiological, psychological, and social complexities that characterize this population. As the number of older adults increases globally, the incidence of trauma among this age group will rise, emphasizing the importance of effective emergency response strategies tailored to their unique needs. Older patients often present with multiple comorbidities and altered physiological responses, leading to an increased risk of mortality and morbidity. For instance, age-related changes in the cardiovascular, respiratory, and musculoskeletal systems can hinder their ability to withstand physical insults. Additionally, cognitive impairments such as dementia can complicate assessments and interventions, making it essential for EMS and nursing professionals to be trained in recognizing these factors. Under-triage remains a significant concern in geriatric trauma care. Many older patients are not adequately assessed or referred to specialized trauma centers, resulting in poorer outcomes. It is vital to advocate for the adoption of more age-sensitive triage tools and protocols that consider the unique presentations and risks associated with geriatric patients. This could include the use of frailty assessments to inform clinical decisions and improve outcomes. The role of medication, particularly anticoagulants, cannot be overstated. While they provide essential benefits in preventing thromboembolic events, they also increase the risk of severe bleeding and complicate the management of traumatic brain injuries. Establishing clear protocols for managing patients on anticoagulation therapy in the context of trauma is imperative. Moreover, collaborative approaches involving multidisciplinary teams can enhance the quality of care provided to elderly patients. These teams should include geriatric specialists who can offer insights into optimizing prehospital and hospital care for older adults. In conclusion, by equipping EMS and nursing professionals with the knowledge and tools necessary to navigate the complexities of geriatric emergencies, we can significantly improve the quality of care for this vulnerable population. Emphasizing the need for continuous education, protocol development, and a more comprehensive understanding of the geriatric patient's needs will ultimately lead to better outcomes in prehospital care.

References

1. Bonne S, Schuerer DJ. Trauma in the older adult: epidemiology and evolving geriatric trauma principles. *Clin Geriatr Med.* 2013;29:137–150.

2. Kozar RA, Arbabi S, Stein DM, Shackford SR, Barraco RD, Biffl WL, Brasel KJ, Cooper Z, Fakhry SM, Livingston D, et al. Injury in the aged: Geriatric trauma care at the crossroads. *J Trauma Acute Care Surg.* 2015;78:1197–1209.
3. Adams SD, Holcomb JB. Geriatric trauma. *Curr Opin Crit Care.* 2015;21:520–526.
4. Banks SE, Lewis MC. Trauma in the elderly: considerations for anesthetic management. *Anesthesiol Clin.* 2013;31:127–139.
5. Keller JM, Sciadini MF, Sinclair E, O'Toole RV. Geriatric trauma: demographics, injuries, and mortality. *J Orthop Trauma.* 2012;26:e161–e165.
6. Taylor MD, Tracy JK, Meyer W, Pasquale M, Napolitano LM. Trauma in the elderly: intensive care unit resource use and outcome. *J Trauma.* 2002;53:407–414.
7. Llompart-Pou JA, Chico-Fernández M, Sánchez-Casado M, Alberdi-Odriozola F, Guerrero-López F, Mayor-García MD, González-Robledo J, Ballesteros-Sanz MÁ, Herrán-Monge R, León-López R, López-Amor L, Bueno-González A; Trauma Neurointensive Care Working Group of the Spanish Society of Intensive Care Medicine (SEMICYUC) Age-related injury patterns in Spanish trauma ICU patients. Results from the RETRAUCI. *Injury.* 2016;47 Suppl 3:S61–S65.
8. Chico-Fernández M, Llompart-Pou JA, Guerrero-López F, Sánchez-Casado M, García-Sáez I, Mayor-García MD, Egea-Guerrero J, Fernández-Ortega JF, Bueno-González A, González-Robledo J, et al. Epidemiology of severe trauma in Spain. Registry of trauma in the ICU (RETRAUCI). Pilot phase. *Med Intensiva.* 2016;40:327–347.
9. Frankenfield D, Cooney RN, Smith JS, Rowe WA. Age-related differences in the metabolic response to injury. *J Trauma.* 2000;48:49–56; discussion 56-57.
10. Reske-Nielsen C, Medzon R. Geriatric Trauma. *Emerg Med Clin North Am.* 2016;34:483–500
11. Chalfin DB. Outcome assessment in elderly patients with critical illness and respiratory failure. *Clin Chest Med.* 1993;14:583–589.
12. Edwards P, Arango M, Balica L, Cottingham R, El-Sayed H, Farrell B, Fernandes J, Gogichaisvili T, Golden N, Hartzenberg B, et al. Final results of MRC CRASH, a randomised placebo-controlled trial of intravenous corticosteroid in adults with head injury-outcomes at 6 months. *Lancet.* 2005;365:1957–1959.
13. Ho P, Brooy BL, Hayes L, Lim WK. Direct oral anticoagulants in frail older adults: a geriatric perspective. *Semin Thromb Hemost.* 2015;41:389–394.
14. Egea-Guerrero JJ, Quintana Díaz M. New oral anticoagulants in severe trauma patients: enemy at the gates? *Med Intensiva.* 2015;39:167–171.
15. Joseph B, Phelan H, Hassan A, Orouji Jokar T, O'Keeffe T, Azim A, Gries L, Kulvatunyou N, Latifi R, Rhee P. The impact of frailty on failure-to-rescue in geriatric trauma patients: A prospective study. *J Trauma Acute Care Surg.* 2016;81:1150–1155.
16. Carpenter CR, Avidan MS, Wildes T, Stark S, Fowler SA, Lo AX. Predicting geriatric falls following an episode of emergency department care: a systematic review. *Acad Emerg Med.* 2014;21:1069–1082.

17. Labib N, Nouh T, Winocour S, Deckelbaum D, Banici L, Fata P, Razek T, Khwaja K. Severely injured geriatric population: morbidity, mortality, and risk factors. *J Trauma.* 2011;71:1908–1914.
18. Rathlev NK, Medzon R, Lowery D, Pollack C, Bracken M, Barest G, Wolfson AB, Hoffman JR, Mower WR. Intracranial pathology in elders with blunt head trauma. *Acad Emerg Med.* 2006;13:302–307
19. Ivascu FA, Howells GA, Junn FS, Bair HA, Bendick PJ, Janczyk RJ. Rapid warfarin reversal in anticoagulated patients with traumatic intracranial hemorrhage reduces hemorrhage progression and mortality. *J Trauma.* 2005;59:1131–1137.
20. Touger M, Gennis P, Nathanson N, Lowery DW, Pollack CV, Hoffman JR, Mower WR. Validity of a decision rule to reduce cervical spine radiography in elderly patients with blunt trauma. *Ann Emerg Med.* 2002;40:287–293.
21. Elmistekawy EM, Hammad AA. Isolated rib fractures in geriatric patients. *Ann Thorac Med.* 2007;2:166–168.
22. Stawicki SP, Grossman MD, Hoey BA, Miller DL, Reed JF. Rib fractures in the elderly: a marker of injury severity. *J Am Geriatr Soc.* 2004;52:805–808.
23. Senekjian L, Nirula R. Rib Fracture Fixation: Indications and Outcomes. *Crit Care Clin.* 2017;33:153–165.
24. Harbrecht BG, Peitzman AB, Rivera L, Heil B, Croce M, Morris JA, Enderson BL, Kurek S, Pasquale M, Frykberg ER, et al. Contribution of age and gender to outcome of blunt splenic injury in adults: multicenter study of the eastern association for the surgery of trauma. *J Trauma.* 2001;51:887–895.
25. Joseph B, Zangbar B, Pandit V, Kulvatunyou N, Haider A, O'Keeffe T, Khalil M, Tang A, Vercruysse G, Gries L, et al. Mortality after trauma laparotomy in geriatric patients. *J Surg Res.* 2014;190:662–666.
26. Olufajo OA, Reznor G, Lipsitz SR, Cooper ZR, Haider AH, Salim A, Rangel EL. Preoperative assessment of surgical risk: creation of a scoring tool to estimate 1-year mortality after emergency abdominal surgery in the elderly patient. *Am J Surg.* 2017;213:771–777.
27. Henry SM, Pollak AN, Jones AL, Boswell S, Scalea TM. Pelvic fracture in geriatric patients: a distinct clinical entity. *J Trauma.* 2002;53:15–20.
28. Wang H, Phillips JL, Robinson RD, Duane TM, Buca S, Campbell-Furtick MB, Jennings A, Miller T, Zenarosa NR, Delaney KA. Predictors of mortality among initially stable adult pelvic trauma patients in the US: Data analysis from the National Trauma Data Bank. *Injury.* 2015;46:2113–2117.
29. Roth T, Kammerlander C, Gosch M, Luger TJ, Blauth M. Outcome in geriatric fracture patients and how it can be improved. *Osteoporos Int.* 2010;21:S615–S619.
30. Wang H, Li C, Zhang Y, Jia Y, Zhu Y, Sun R, Li W, Liu Y. The influence of inpatient comprehensive geriatric care on elderly patients with hip fractures: a meta-analysis of randomized controlled trials. *Int J Clin Exp Med.* 2015;8:19815–19830.
31. Stenqvist C, Madsen CM, Riis T, Jørgensen HL, Duus BR, Lauritzen JB, van der Mark S. Orthogeriatric Service Reduces Mortality in Patients With Hip Fracture. *Geriatr Orthop Surg Rehabil.* 2016;7:67–73.
32. Chang DC, Bass RR, Cornwell EE, Mackenzie EJ. Undertriage of elderly trauma patients to state-designated trauma centers. *Arch Surg.* 2008;143:776–781; discussion 782.

33. DeMaria EJ, Kenney PR, Merriam MA, Casanova LA, Gann DS. Aggressive trauma care benefits the elderly. *J Trauma.* 1987;27:1200–1206.
34. Zafar SN, Obirieze A, Schneider EB, Hashmi ZG, Scott VK, Greene WR, Efron DT, MacKenzie EJ, Cornwell EE, Haider AH. Outcomes of trauma care at centers treating a higher proportion of older patients: the case for geriatric trauma centers. *J Trauma Acute Care Surg.* 2015;78:852–859.
35. Hammer PM, Storey AC, Bell T, Bayt D, Hockaday MS, Zarzaur BL, Feliciano DV, Rozycki GS. Improving geriatric trauma outcomes: A small step toward a big problem. *J Trauma Acute Care Surg.* 2016;81:162–167.
36. Demetriades D, Karaiskakis M, Velmahos G, Alo K, Newton E, Murray J, Asensio J, Belzberg H, Berne T, Shoemaker W. Effect on outcome of early intensive management of geriatric trauma patients. *Br J Surg.* 2002;89:1319–1322.
37. Brown JB, Gestring ML, Forsythe RM, Stassen NA, Billiar TR, Peitzman AB, Sperry JL. Systolic blood pressure criteria in the National Trauma Triage Protocol for geriatric trauma: 110 is the new 90. *J Trauma Acute Care Surg.* 2015;78:352–359.
38. Pandit V, Rhee P, Hashmi A, Kulvatunyou N, Tang A, Khalil M, O'Keeffe T, Green D, Friese RS, Joseph B. Shock index predicts mortality in geriatric trauma patients: an analysis of the National Trauma Data Bank. *J Trauma Acute Care Surg.* 2014;76:1111–1115.
39. Kim SY, Hong KJ, Shin SD, Ro YS, Ahn KO, Kim YJ, Lee EJ. Validation of the Shock Index, Modified Shock Index, and Age Shock Index for Predicting Mortality of Geriatric Trauma Patients in Emergency Departments. *J Korean Med Sci.* 2016;31:2026–2032.
40. Ichwan B, Darbha S, Shah MN, Thompson L, Evans DC, Boulger CT, Caterino JM. Geriatric-specific triage criteria are more sensitive than standard adult criteria in identifying need for trauma center care in injured older adults. *Ann Emerg Med.* 2015;65:92–100.e3.
41. Caterino JM, Brown NV, Hamilton MW, Ichwan B, Khaliqdina S, Evans DC, Darbha S, Panchal AR, Shah MN. Effect of Geriatric-Specific Trauma Triage Criteria on Outcomes in Injured Older Adults: A Statewide Retrospective Cohort Study. *J Am Geriatr Soc.* 2016;64:1944–1951.
42. Saillant NN, Earl-Royal E, Pascual JL, Allen SR, Kim PK, Delgado MK, Carr BG, Wiebe D, Holena DN. The relationship between processes and outcomes for injured older adults: a study of a statewide trauma system. *Eur J Trauma Emerg Surg.* 2017;43:121–127.
43. Zhao FZ, Wolf SE, Nakonezny PA, Minhajuddin A, Rhodes RL, Paulk ME, Phelan HA. Estimating Geriatric Mortality after Injury Using Age, Injury Severity, and Performance of a Transfusion: The Geriatric Trauma Outcome Score. *J Palliat Med.* 2015;18:677–681.
44. Joseph B, Pandit V, Zangbar B, Kulvatunyou N, Hashmi A, Green DJ, O'Keeffe T, Tang A, Vercruysse G, Fain MJ, et al. Superiority of frailty over age in predicting outcomes among geriatric trauma patients: a prospective analysis. *JAMA Surg.* 2014;149:766–772.
45. Joseph B, Pandit V, Zangbar B, Kulvatunyou N, Tang A, O'Keeffe T, Green DJ, Vercruysse G, Fain MJ, Friese RS, et al. Validating trauma-specific frailty index for geriatric trauma patients: a prospective analysis. *J Am Coll Surg.* 2014;219:10–17.e1.

46. Joseph B, Pandit V, Rhee P, Aziz H, Sadoun M, Wynne J, Tang A, Kulvatunyou N, O'Keeffe T, Fain MJ, et al. Predicting hospital discharge disposition in geriatric trauma patients: is frailty the answer? *J Trauma Acute Care Surg.* 2014;76:196–200.
47. Hukkelhoven CW, Steyerberg EW, Rampen AJ, Farace E, Habbema JD, Marshall LF, Murray GD, Maas AI. Patient age and outcome following severe traumatic brain injury: an analysis of 5600 patients. *J Neurosurg.* 2003;99:666–673.
48. Utomo WK, Gabbe BJ, Simpson PM, Cameron PA. Predictors of in-hospital mortality and 6-month functional outcomes in older adults after moderate to severe traumatic brain injury. *Injury.* 2009;40:973–977.
49. Boltz MM, Podany AB, Hollenbeak CS, Armen SB. Injuries and outcomes associated with traumatic falls in the elderly population on oral anticoagulant therapy. *Injury.* 2015;46:1765–1771.
50. Peck KA, Calvo RY, Schechter MS, Sise CB, Kahl JE, Shackford MC, Shackford SR, Sise MJ, Blaskiewicz DJ. The impact of preinjury anticoagulants and prescription antiplatelet agents on outcomes in older patients with traumatic brain injury. *J Trauma Acute Care Surg.* 2014;76:431–436.
51. Inui TS, Parina R, Chang DC, Inui TS, Coimbra R. Mortality after ground-level fall in the elderly patient taking oral anticoagulation for atrial fibrillation/flutter: a long-term analysis of risk versus benefit. *J Trauma Acute Care Surg.* 2014;76:642–649.
52. Levi M. Management of bleeding in patients treated with direct oral anticoagulants. *Crit Care.* 2016;20:249.
53. Connolly SJ, Milling TJ, Eikelboom JW, Gibson CM, Curnutte JT, Gold A, Bronson MD, Lu G, Conley PB, Verhamme P, et al. Andexanet Alfa for Acute Major Bleeding Associated with Factor Xa Inhibitors. *N Engl J Med.* 2016;375:1131–1141.
54. Feeney JM, Santone E, DiFiori M, Kis L, Jayaraman V, Montgomery SC. Compared to warfarin, direct oral anticoagulants are associated with lower mortality in patients with blunt traumatic intracranial hemorrhage: A TQIP study. *J Trauma Acute Care Surg.* 2016;81:843–848.
55. Maung AA, Bhattacharya B, Schuster KM, Davis KA. Trauma patients on new oral anticoagulation agents have lower mortality than those on warfarin. *J Trauma Acute Care Surg.* 2016;81:652–657.
56. Calland JF, Ingraham AM, Martin N, Marshall GT, Schulman CI, Stapleton T, Barraco RD; Eastern Association for the Surgery of Trauma. Evaluation and management of geriatric trauma: an Eastern Association for the Surgery of Trauma practice management guideline. *J Trauma Acute Care Surg.* 2012;73:S345–S350.
57. Min L, Burruss S, Morley E, Mody L, Hiatt JR, Cryer H, Ha JK, Tillou A. A simple clinical risk nomogram to predict mortality-associated geriatric complications in severely injured geriatric patients. *J Trauma Acute Care Surg.* 2013;74:1125–1132.
58. Hashmi A, Ibrahim-Zada I, Rhee P, Aziz H, Fain MJ, Friese RS, Joseph B. Predictors of mortality in geriatric trauma patients: a systematic review and meta-analysis. *J Trauma Acute Care Surg.* 2014;76:894–901.

59. Ahl R, Phelan HA, Dogan S, Cao Y, Cook AC, Mohseni S. Predicting In-Hospital and 1-Year Mortality in Geriatric Trauma Patients Using Geriatric Trauma Outcome Score. *J Am Coll Surg.* 2017;224:264–269.
60. Joseph B, Orouji Jokar T, Hassan A, Azim A, Mohler MJ, Kulvatunyou N, Siddiqi S, Phelan H, Fain M, Rhee P. Redefining the association between old age and poor outcomes after trauma: The impact of frailty syndrome. *J Trauma Acute Care Surg.* 2017;82:575–581.
61. Kua J, Ramason R, Rajamoney G, Chong MS. Which frailty measure is a good predictor of early post-operative complications in elderly hip fracture patients? *Arch Orthop Trauma Surg.* 2016;136:639–647.
62. Kaplan SJ, Pham TN, Arbabi S, Gross JA, Damodarasamy M, Bentov I, Taitsman LA, Mitchell SH, Reed MJ. Association of Radiologic Indicators of Frailty With 1-Year Mortality in Older Trauma Patients: Opportunistic Screening for Sarcopenia and Osteopenia. *JAMA Surg.* 2017;152:e164604.
63. Lilley EJ, Williams KJ, Schneider EB, Hammouda K, Salim A, Haider AH, Cooper Z. Intensity of treatment, end-of-life care, and mortality for older patients with severe traumatic brain injury. *J Trauma Acute Care Surg.* 2016;80:998–1004.
64. Devore S, Parli SE, Oyler DR, Bernard A. Comprehensive Geriatric Assessment for Trauma: Operationalizing the Trauma Quality Improvement Program Directive. *J Trauma Nurs.* 2016;23:337–342.
65. Ayoung-Chee PR, Rivara FP, Weiser T, Maier RV, Arbabi S. Beyond the hospital doors: Improving long-term outcomes for elderly trauma patients. *J Trauma Acute Care Surg.* 2015;78:837–843.
66. Cooper Z, Maxwell CA, Fakhry SM, Joseph B, Lundebjberg N, Burke P, Baracco R. A position paper: The convergence of aging and injury and the need for a Geriatric Trauma Coalition (GeriTraC) *J Trauma Acute Care Surg.* 2017;82:419–422.
67. O'Connell K, Maier R. Palliative care in the trauma ICU. *Curr Opin Crit Care.* 2016;22:584–590.
68. Rangel EL. Future Directions of Geriatric Trauma Care: Function and Quality of Life Beyond Survival. *JAMA Surg.* 2017;152:e164642.
69. Moerman S, Vochteloo AJ, Tuinebreijer WE, Maier AB, Mathijssen NM, Nelissen RG. Factors associated with the course of health-related quality of life after a hip fracture. *Arch Orthop Trauma Surg.* 2016;136:935–943.
70. Puts MT, Toubasi S, Andrew MK, Ashe MC, Ploeg J, Atkinson E, Ayala AP, Roy A, Rodríguez Monforte M, Bergman H, et al. Interventions to prevent or reduce the level of frailty in community-dwelling older adults: a scoping review of the literature and international policies. *Age Ageing.* 2017 Epub ahead of print.

الرعاية قبل المستشفى في حالات الطوارئ لدى كبار السن: نهج خدمات الطوارئ الطبية، والمعلوماتية الصحية، والتمريض تجاه الحالات المرتبطة بالعمر

الملخص:

الخلفية : تمثل زيادة عدد السكان المسنين تحديات كبيرة في خدمات الطوارئ الطبية ورعاية التمريض، لا سيما بالنسبة للمرضى الذين تتجاوز أعمارهم 65 عامًا والذين يعانون من حالات الطوارئ لدى كبار السن. يتطلب هذا التحول الديموغرافي استراتيجيات إدارة مخصصة للحالات المرتبطة بالعمر، وخاصة فيما يتعلق بالإصابات.

الهدف : يهدف هذه الدراسة إلى استكشاف نهج خدمات الطوارئ الطبية، والمسعفين، والمعلومات الصحية، والتمريض في إدارة حالات الطوارئ لدى كبار السن، مع التركيز على التغيرات الفسيولوجية المرتبطة بالعمر، وآليات الإصابة، واستراتيجيات الفرز الفعالة.

الطرق : تم إجراء مراجعة شاملة للأدبيات الحالية والإرشادات السريرية، وتحليل العوامل التي تسهم في نقص الفرز في المرضى الأكبر سناً، وتأثير الضعف، والتعقيدات التي تطرحها الأدوية.

النتائج : تشير النتائج إلى أن المرضى المسنين غالبًا ما يعانون من نقص الفرز بسبب التحيزات المرتبطة بالعمر والتغيرات الفسيولوجية، مما يؤدي إلى نتائج أسوأ. كما أن المرضى الذين يعانون من إصابات ناجمة عن الصدمات غالبًا ما يظهرون إصابات متعددة العوامل تعقد التقييمات السريرية وتستدعي بروتوكولات رعاية متخصصة. تبرز الدراسة أيضًا الزيادة المتزايدة في حالات إصابات الدماغ الرضحية التي تفاقمت بفعل العلاجات المضادة للتخثر.

الخاتمة : يعد تعزيز التدريب لموظفي خدمات الطوارئ الطبية والتمريض حول الاحتياجات الفريدة للمرضى المسنين، جنبًا إلى جنب مع بروتوكولات الفرز المعتمدة على الأدلة، أمرًا حيويًا لتحسين النتائج. يمكن أن يساعد تطوير وتنفيذ أدوات تقييم متخصصة في التخفيف من المخاطر المرتبطة بإصابات كبار السن وتحسين تقديم الرعاية.

الكلمات المفتاحية : حالات الطوارئ لدى كبار السن، خدمات الطوارئ الطبية، التمريض، الإصابات، نقص الفرز، الضعف، مضادات التخثر.