ABSTRACT

In this case report, we demonstrate the application of a stepwise approach for the evaluation of older adults with complex care needs who present to the emergency department. We emphasize the pressing need for the development of a standardized protocol tailored to emergency physicians, addressing the unique needs of complex older adults, and overcoming the system barriers in emergency care.

BACKGROUND

Due to demographic shifts and increased life expectancy, the biggest challenge in geriatrics medicine is providing optimal care for older patients with complex care needs. Comprehensive Geriatric assessment (CGA) in the setting of evidence-based medicine (EBM) and patient-centered care (PCC) are the crucial components in addressing the unique healthcare needs of complex older adults, particularly in emergency settings. These patients are at risk of multiple emergency department (ED) visits and high utilization of acute care. To provide effective management of complex older adults in the ED, we need a better understanding of patients’ therapeutic goals, medical history, and associated environmental, social, and healthcare factors.

OBJECTIVE

This case report proposes a stepwise patient centered strategy along with its implementation for the assessment and management of complex older adults, for emergency physicians.

CASE PRESENTATION

The following is a case demonstration of the implementation of stepwise approach for CGA in the ED. Figure-1.1-9

Step 1 & 2

A 79-year-old Hispanic woman presented to the ED after a fall, with a history of multiple falls over the last 3 months. She was accompanied by her son. She has a history of multiple ED visits and a high utilization of acute care services. She was enrolled in a traditional Medicare plan. The patient was triaged as high priority, given her presentation of a fall with progressive weakness and difficulty ambulating. She also had recent worsening of hoarding behaviors and intermittent episodes of considerable agitation with sundowning and restlessness in the evenings.
**Step 3 & 4**

She had been living with her son. She had a decline in her functional status over the period of one year. She used a rollator for ambulation at home and needed a wheelchair for outside. She was limited in her instrumental activities of daily living (IADLs). Her son was concerned for her safety and ability to be functional at home. However, the patient's goal was to ambulate with a walker so she could volunteer at church. She further stated, "I have no quality of life and I want to have a few pain-free days in my life". Her ambulation became even more impaired with intermittent flares of chronic back pain. She has experienced gradual memory loss over the last 4–5 years, as evidenced by medication nonadherence and forgetting things to do. Her son reported that she had a more significant cognitive decline with mood changes in the past 6 months.

**Step 5**

Patient had multi-morbidities; cognitive decline with behavioral disturbances due to Alzheimer's Dementia, diabetic neuropathy, chronic kidney disease stage III-a, heart failure with preserved ejection fraction, COPD Gold stage III with emphysematous changes, constipation, chronic insomnia, major depression, post-traumatic stress disorder, hoarder syndrome, schizophrenia, generalized anxiety disorder, chronic pain in her lower back and hip, osteoarthritis of multiple joints (both hips, both knees - s/p left total knee replacement in 2016), cervical spondylosis with myelopathy s/p posterior decompression with fusion at C2-T1(2010), anterior cervical fusion surgery C4-C6 (2015), urinary retention, ataxia and chronic dizziness and functional decline secondary to Alzheimer's dementia and other comorbidities as above.

**ED Labs and Current Medical Data:**

- **Vital signs in the ED:** BP: sitting 119/66, standing 130/65; Pulse: sitting 74/min, standing 68/min; O2 saturation: 98% on room air; Temp: 97.8F; BMI: 29.81 kg/m².
- **Physical Exam:** Significant for oriented to person only with poor concentration. Decreased range of motion at hips. Hyperreflexia noted on bilateral lower extremities. Decreased sensation to fine touch in both feet and lower legs. Difficulty in standing up. Unable to perform 4-stage balance test and time up and go test.
- **PHQ-9** (9 months ago): 6
- **GAD-7** (9 months ago): 7
- **MOCA** (6 months ago): MOCA 22/30
- **AD8 Functional status** (6 months ago): 5 positives
- **Caregiver burden scale** (6 months ago): 43 – severe
- **Basic metabolic panel:** Creatine, 1.9 mg/dL; GFR: 35 ml/min/1.73m2; glucose: 160 mg/dL.
- **HbA1c:** 8.8%
- **Urinalysis:** Positive for urinary tract infection. Urine culture grows E. Coli
- **CT head:** mild volume loss and moderate low-density white matter changes
- **MRI cervical spine (1 year ago):** Multilevel degenerative changes in the cervical and posterior decompression and fusion in the cervical spine.
- **MRI lumbar spine (1 year ago):** Severe scoliosis and multilevel spondylosis with mild compression of exiting left L5 foraminal nerve root in the foramen.
- **MRI brain without contrast (6 months ago):** Chronic microvascular changes and moderate loss of cerebral volume. Small lipoma in the quadrigeminal plate cistern.
Current Medications/Treatments:

<table>
<thead>
<tr>
<th>SCHEDULED MEDS</th>
<th>PRN MEDS</th>
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<tbody>
<tr>
<td>1. Aspirin 81 mg PO QD</td>
<td>12. Linagliptin 5 mg PO QD</td>
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<tr>
<td>2. Atorvastatin 40 mg PO QD</td>
<td>13. Mirtazapine 15 mg PO HS</td>
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<tr>
<td>3. Lisinopril 40 mg PO QD</td>
<td>14. Buspirone 30 mg PO QD</td>
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<tr>
<td>4. Amlodipine 10 mg PO QD</td>
<td>15. Citrapram 40 mg PO QD</td>
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<tr>
<td>5. Hydrochlorothiazide 25mg PO QD</td>
<td>16. Olanzapine, 5 mg PO HS</td>
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<tr>
<td>6. Metoprolol succinate 50 mg PO QD</td>
<td>17. Prazosin 10 mg PO HS</td>
</tr>
<tr>
<td>7. VitaminD3 2000 IU 1 cap PO QD</td>
<td>18. Fluticasone/salmeterol inhaler</td>
</tr>
<tr>
<td>8. Donepezil 10 mg PO QD</td>
<td>19. Tiotropium bromide inhaler</td>
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<tr>
<td>9. Pregabalin 75 mg 1 tab PO BID</td>
<td>20. Polyethylene glycol 1-2 cap daily</td>
</tr>
<tr>
<td>10. CyclBenzaprin10 mg 1 tabHS</td>
<td>21. Hydrocodone/Acetaminophen 5-325 mg TID for pain</td>
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<tr>
<td>11. Insulin glargine 40 U AM</td>
<td>22. Oxybutynin 10 mg PO HS</td>
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Step 6

Lab results showed that patient was having urinary tract infection (UTI). UTI, and decreased ambulation from worsening back pain were the contributing factors of patient’s frequent falls and ongoing mixed delirium. An interdisciplinary team was involved including a geriatrician, a geriatric nurse practitioner, nursing staff, a pharmacist, physical therapist, social worker, and case management. She was evaluated for frailty, repeated falls, serious functional decline, elder abuse/self-neglect, polypharmacy, cognitive impairment, and frequent unplanned use of health care services. On medication review, polypharmacy was identified. Potentially inappropriate medications (PIMs) per the Beers List were identified in patient’s medication list. However, no potential prescribing cascades were noted. There were concerns of drug interactions potentially contributing to falls, frailty, and worsening cognition. Poor medication adherence due to increasing forgetfulness was also apparent. The patient also had transportation difficulties making it very difficult for her to follow up with physical therapy and clinic visits in an out-patient setting. She has had multiple no-shows.

Step 7

Prognosis was discussed with the patient and her son. Given her age and multimorbidity, risk of 5-year mortality was 69% (per Schonberg Index)10 and 84% (per Alex Lee Comprehensive Prognostic Tool for Mortality and Disability for Adults >70 years)11 in the setting of ongoing cognitive decline, increasing frailty, and a progressive functional status decline. This helped the patient and her son better understand the current condition and to developed informed decisions with realistic goals. It also led to an open and patient centered treatment plan.

Step 8-10A

The patient was re-evaluated and re-examined at regular intervals after starting the treatment. Being a high risk multimorbid patient, a care plan was developed to decrease multiple emergency department visits and to improve frailty, and polypharmacy. The interdisciplinary team continued to manage and optimize the most essential pharmacological and nonpharmacological therapies. They re-evaluated the therapeutic interventions to reduce the medication burden and decrease fall risk and pain. They communicated the clinical decisions and recommendations to the patient and the family to ensure their understanding and agreement. The patient was later admitted to the hospital within 12 hours after presenting to the ED for further treatment in accordance with the above-mentioned goals.
Step 10B

The patient was discharged to a skilled nursing facility after 5 days of hospitalization. Discharge required an appropriate care transition, a close follow-up visit with a geriatrician, a geriatric pharmacist, and a geropsychiatrist. A home social work referral was placed to ensure home safety and to help improve the patient’s psychosocial condition.

Figure 1: A Stepwise Framework for the Assessment and Management of an Older Patient who Presents to Emergency Department with Complex Care Needs

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
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<tbody>
<tr>
<td>1st</td>
<td>• Early triage and prioritizing older patient’s care.</td>
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<td>• Ensuring the safety of the patient.</td>
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<td>2nd</td>
<td>• Discuss patient’s primary concern with it’s time course. Obtain collateral history from family caregiver or nursing home, if applicable.</td>
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<td>3rd</td>
<td>• Determine the baseline functional status, and current illness impact on it. Consider patient preferences. Evaluate for atypical presentation of underlying chronic illness.</td>
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<tr>
<td>4th</td>
<td>• Evaluate for new geriatric syndromes such as delirium screening, cognitive decline evaluation and elder abuse or neglect.</td>
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<td>5th</td>
<td>• Perform well directed physical examination with balance and gait assessment.</td>
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<tr>
<td>6th</td>
<td>• Evaluate for worsening of underlying multiple medical conditions and iatrogenic complications. Involve interdisciplinary team, geriatric pharmacist and physical therapist early in the course of emergency.</td>
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<tr>
<td>7th</td>
<td>• Consider overall prognosis and determine if palliative care principles are appropriate.</td>
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<tr>
<td>8th</td>
<td>• Reassess and reexamine at intervals. Evaluate patient’s responds to the initial treatment and communicate with the family.</td>
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<tr>
<td>9th</td>
<td>• Develop a care plan for high-risk patients. Communicate the care plan with the patient and family. Evaluate for non-pharmacologic treatment modalities.</td>
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<tr>
<td>10th A</td>
<td>• Early evaluation for in-patient service admission, if required.</td>
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<tr>
<td>10th B</td>
<td>• Develop a safe hospital discharge care plan with appropriate transitions of care based on 4-Ms model which involve Medication, mentation, mobility and what matters most to the patient.</td>
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DISCUSSION

Multiple chronic conditions along with decline functional status and geriatric syndromes strongly impact quality of life and health in older adults with complex medical needs (Figure 2).

According to Wirnsberger et al., a complex patient can be defined as someone for whom clinical decision-making or requiring care cannot be anticipated in a routine or standard procedure and has intricate relationships between medical and non-medical aspects. These patients can present with multi-morbidities and decreased functional capacity. There are several models care have been presented in the literature for the care of complex patients in the ED such as the Geriatric Emergency Department Intervention (GEDI) and Comprehensive Aged Residents Emergency and Partners in Assessment, Care and Treatment (CARE-PACT) etc. However, there is no stepwise approach available to discuss a tailored therapeutic intervention, and the inter-disciplinary medical management in the ED for the complex older adults.

The above case report illustrates the implementation of stepwise principles in the ED (Figure 1). In this case report, we introduce an early involvement of interdisciplinary team for the evaluation and management of complex older adults in the ED. In this report, it shows that complex older adults will need additional resources in ED to reduce ED length of stay, early hospital admission and if admitted, reduce hospital length of stay and cost. However, there are several challenges present (mentioned in Table 1) in implementation of guiding principles in the clinical setting. These are frequently faced by clinicians at various levels of clinical decision making while taking care of older adults with complex care needs. Many of these barriers may be beyond a clinician’s control and may require the development of a standardized protocol for the physician caring for older adults.

Additional important point in the stepwise approach is an early prognostic evaluation for the early utilization of palliative care consultation. An early involvement of interdisciplinary team would help us to calculate prognosis of complex older adults. This encourages physicians to avoid usual pattern of delaying palliative care consult. It also provides the necessary support and resources to manage symptoms and to alleviate foreseeing suffering from complex older adults at the same time reduce the hospital length of stay and cost.

Figure 2: Factors Affecting the Management of Older Patient with Complex Care Needs

- Patient wishes and readiness for a change
- Health literacy
- Social factors: Religion, culture, education, occupation
- Environmental factors such as food accessibility, housing accessibility, Socio-economic deprivation
- Complex multimorbidity
- Current geriatric syndromes
- Functional status
- Substance use history
- Comprehensive geriatric assessment
- Evidence based medicine
- Patient centered care
- Comparative effectiveness research
- Approaches in clinical practice
We also identified various challenges, especially patient factors in this case report, in the implementation of stepwise approach for the management of complex older patients. This patient has multiple overlapping geriatric syndrome such as cognitive impairment with behavior disturbances and functional decline, complex medical history, polypharmacy, low healthy literacy, communication barrier which may lead health care disparities. By implementing this approach, we try to develop a collaborative interdisciplinary approach with an early palliative care utilization in order to minimize other two factors i.e provider and system factors. It may lead to improve quality of life and reduce hospital length of stay.\textsuperscript{12-17}

**CONCLUSION**

In conclusion, this case report intends to guide clinicians through the intricate process of managing complex older adults, potentially leading to better patient outcomes. It also emphasizes the need of early involvement of interdisciplinary team and early prognostic evaluation in the ED which may reduce ED length of stay, alleviate suffering, improve quality of life and reduce hospital length of stay. This case report also highlights the need for the development of standardized protocols tailored to emergency physicians, for the growing older population.

**KEYWORDS**

Geriatric Emergency Department, comprehensive geriatric assessment, complex patient, co-morbidity, case report

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CONFLICTS OF INTEREST
Authors have no conflicts to report.

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REFERENCES
11. ePrognosis - Comprehensive Prognostic Tool for Adults ≥ 70 (ucsf.edu) Alex Lee Comprehensive Prognostic Tool.