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Case Report

# Effectiveness of Comprehensive Geriatric Assessment-Based Intervention to Reduce Frequent Emergency Department Visits: A Report of Four Cases☆

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SUMMARY

A small number of clustered visits by emergency department frequent users (EDFUs) may over-consume emergency care resources. We report the effectiveness of comprehensive geriatric assessment (CGA)-based multidisciplinary team (MDT) care for four EDFUs, in reducing ED visits. Case 1 had visited the ED twice/month due to chest discomfort. Her ED visits were significantly reduced to 0.2 visits/month following CGA-based MDT care. Case 2 had failed back surgery syndrome and bipolar disorder. His ED visit was reduced from 2.8 visits to 0.8 visits/month following CGA-based MDT intervention. Case 3 had chronic obstructive pulmonary disease, heart failure, and urinary incontinence, with a urinary catheter in place. He made 31 ED visits (5.1 visits/month) before his lung cancer and depression were discovered by CGA. He died 2 months later. Case 4 made 27 ED visits (2.7 visits/month) due to dizziness. His problems of early dementia and neglect were identified by CGA, and he visited the ED only once following MDT intervention. In conclusion, CGA-based MDT intervention successfully reduced ED visits among these EDFUs, but further investigation is needed to evaluate the effectiveness of geriatric services in the ED.
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## 1. Introduction

Emergency medicine has always been disease- and incident-oriented; patients with clear symptoms are more likely to be admitted for further treatment. Clustered visits by emergency department frequent users (EDFUs) usually lack a definitive diagnosis or a distinct therapeutic target, so they are not hospitalized for further treatment[1]. Since they do not feel properly treated, patients may travel between homes and the emergency department (ED) extensively, which may use a considerable amount of emergency medical resources and result in overcrowding of the ED. By definition, EDFU refers to a patient who makes five or more visits to the ED during a 30-day period at any given time in 1 year[2]. Geriatric patients aged 65 years and over usually have multiple comorbidities. As a result, they tend to have cognitive, physical and mental dysfunctions, lack of social and familial support and hence, become EDFUs[3]. This study aims to implement individual intervention for this type of geriatric EDFU, hence, effectively reducing the frequency of visits and alleviating overcrowding in the ED.

Since October 2008, geriatric EDFU cases have been transferred from the ED to the department of geriatric medicine. The comprehensive geriatric assessment (CGA) and multidisciplinary teams (MDT) were implemented to provide more thorough care to geriatric patients with multiple comorbidities, cognitive impairments, and physical and mental dysfunctions. The successful intervention of CGA and MDT significantly reduced patients' frequent visits to the ED. Here, we report four EDFU cases in which the above intervention was introduced successfully. We analyzed this series of cases to investigate the incentives for frequent hospital visits and treated it as the pilot study to tackle ED frequent visit issues.

## 2. Case reports

### 2.1. Case 1

A 66-year-old woman had a medical history of hypertension, diabetes, dyslipidemia and coronary heart disease post coronary bypass surgery. Before geriatric services, the patient visited the ED

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19 times due to chest tightness, chest pain, dizziness, general malaise and fever during an 8-month period. On average, she visited the ED 2.1 times/month, with a total stay time of 739 hours (92.3 hours/month). Due to the aforementioned presenting symptoms, she was hospitalized three times and intracoronary balloon dilation with stent installation was performed in her left main coronary artery. During other visits, the patient was treated as having acute coronary syndrome and was admitted for vasodilator treatment. The patient was also admitted once with a urinary tract infection. After 8 months of frequent ED visits, she was referred to the geriatric services and was admitted to the geriatric evaluation and management unit. Two main problems, long-term family neglect and depression, were identified from the CGA. Following prescription of antidepressant drugs and the assistance of social workers, the ED visits were reduced to twice in the following 10 months (0.2 visits/month) and total stay was reduced to 141 hours (14 hours/month).

### 2.2. Case 2

A 78-year-old man had a medical history of hypertension, bipolar disorder, benign prostate hypertrophy and herniated lumbar intervertebral disc with spinal stenosis, following three surgical interventions. He was also diagnosed as having failed back surgery syndrome, due to persistent back pain. In total, 28 repeated ED visits in the past 10 months were noted due to back pain, headache, chest pain or diarrhea. The patient routinely requested overnight stays at the ED, resulting in a total stay of 1253 hours (125.3 hours/month). Despite referral to community hospitals for continuing care, the patient came back to the ED 2 days later. Therefore, he was referred to the geriatric services and the CGA identified latent problems which included: neglect by his family, polypharmacy, incontinence, anxiety about his wife's health, and the urge to stay in the ED overnight to show the severity of his illnesses to family members. After the intervention of geriatric evaluation and the management unit, his medications were reduced, his incontinence improved and he was referred to a geriatric psychologist in the outpatient department. Following the intervention, the patient's emergency visits were reduced to eight times in the following 9 months (0.8 ED visits/month), and the ED stay was reduced to 55.1 hours/month; no more overnight ED stays were requested.

### 2.3. Case 3

A 78-year-old man had a medical history of hypertension, congested heart failure, myocardial infarction post stent implantation, chronic obstructive pulmonary disease and benign prostatic hyperplasia needing occasional urinary catheterizations. In the past 6 months, the patient visited the ED repeatedly for urological problems including acute urine retention, catheter obstruction, catheter detachment, reduced urine amount or anuria, catheter leakage and urine bag rupture. Overall, he made 31 ED visits (5.1 visits/month) with a total stay of 136 hours (22.6 hours/month). In addition to management of the above-mentioned urologic problems, the patient had a rapid decline in physical functions and was referred for geriatric services. Following admission to the geriatric evaluation and management unit, the CGA showed several latent problems including lung cancer, polypharmacy, persistent pain, malnutrition and depression. The social worker contacted his only sister and arranged a reunion between them. Treatment was then shifted to palliative care following discussion between the patient, his sister and the MDT. The patient died of lung cancer 2 months later.

### 2.4. Case 4

An 80-year-old man made 27 ED visits (2.7 visits/month) because of dizziness, over a 10-month period; the total ED stay was 177 hours (17.7 hours/month). Peripheral vertigo was diagnosed and antihistamines, with or without benzodiazepines, were prescribed during the ED visits. However, the patient did not visit the outpatient department for specialty evaluation and there were several treatments, despite the appointments, during this period. Nevertheless, he visited the ED again with a new onset of symptoms of chest tightness and chest pain lasting for more than 1 week. Serial examinations were performed, including an electrocardiogram and cardiac enzymes, but only several old lacunar infarcts were identified on computed tomography of the brain. Due to persistent, non-specific symptoms, the patient was admitted to the geriatric evaluation and management unit. The CGA was performed, disclosing several latent problems: long-term neglect from his family, early dementia, urinary incontinence, and unstable gait accompanied by a risk of falling. The treatment goal was re-evaluated by the MDT and his family and the patient was regularly followed in a geriatric outpatient department. In the following 6 months, the patient visited the ED only once, staying for 3 hours.

## 3. Discussion

The ED operates 24 hours/day throughout the year, to provide convenient and speedy services for patients. Previous reports have indicated that the ED has become important for elderly patients searching for either medical or non-medical help. In recent years, overcrowding at the ED has become a challenge to the healthcare system worldwide. A few EDFUs have highly utilized the ED medical resources[1,3,4]. The definition of EDFU varies between countries, ranging from three ED visits/month to three ED visits/year[1,4–10]. In Taiwan, the suggested definition of EDFU is five or more visits/year[2,11]. Nevertheless, patients may make frequent visits within a short period of time, which has been described as CVEDFU. The suggested definition of EDFU was more than five visits within 30 days at any given time[2].

Characteristics of EDFUs were applied to the Andersen behavioral model, to deduce the increased ED utilization by older adults based on their need factors, predisposing factors and enabling factors[3]. A patient's medical history is a strong factor of an EDFU, particularly those with heart disease, diabetes and mental problems[12]. Due to underlying medical diseases, patients require repeated ED visits. Moreover, males, solitary living, or loss of a partner, have been shown to be predisposing factors of EDFUs[13]. Also, not having a family doctor or seeing multiple doctors are both enabling factors that result in repeated ED visits[9,14,15]. The four cases reported were compatible with previously described characteristics of EDFUs.

### 3.1. Chronic medical conditions with frequent relapses[8,16], where the physician is unaware of or failed to provide satisfactory treatment[12,17]

Three of the four patients had multiple comorbid conditions and were treated by several specialists; Case 4 had vertigo. The main presenting symptoms at EDs were largely related to the patients' original chronic diseases. Case 1 visited the ED because of repeated episodes of chest tightness, chest pain and high blood pressure. These were significantly controlled in the ED but not in the cardiology outpatient department. Case 2 repeatedly visited the ED due to uncontrolled back pain, which frustrated both the patient and the doctors. Case 3 repeatedly visited the ED due to recurrent urological problems, but his symptoms were not thoroughly

evaluated by the physicians and his urinary catheter was not adequately tended to.

### 3.2. Combined social and mental problems[12,13,17]

Among the four cases we reported, Case 3 lived alone, and the remaining three cases were neglected by their families. The impact of intentional and unintentional neglect may be equal to physical abuse. However, it is difficult to identify older people being abused, because they seldom voluntarily report their psychological stress, but present it with multiple somatic discomfort and non-specific complaints. Case 2 insisted on staying in the ED overnight and obtaining certificates showing his physical discomfort to present to his children. The families eventually became aware of the patients' behavior, but they all admitted to having difficulties getting along with the patients. The conditions of neglect gradually surfaced, following admission of the patients to the geriatric evaluation and management unit. Cases 1 and 3 both had depression, and the frequency of ED visits significantly declined after the use of antidepressants.

### 3.3. Poor healthcare quality during treatment[18,19] or atypical clinical manisfestations[20]

It has been reported that older people with multiple comorbidities and psychiatric conditions are likely to under-report their physical conditions, and may lack typical symptoms, such as silent myocardial infarction, afebrile pneumonia, and depression without sadness[20]. In Case 1, due to a history of coronary heart disease, discomforts were easily attributed to cardiac conditions and the patient's depression was completely overlooked. In Case 3, despite regularly seeing multiple physicians, functional decline was not appropriately assessed and the terminal lung cancer was not noticed. All of the patient's urologic problems disappeared after palliative care was properly provided.

Current emergency care systems appear not to effectively resolve the health care needs of EDFU. Although the ED is not designed to care for older patients with multiple complex care needs, it is frequently the place where these patients enter the health care system. Since the ED only treats patients with urgent conditions, it is unlikely that ED physicians will be able to identify every underlying problem and provide timely comprehensive care. Nevertheless, EDFUs may cause overcrowding of the ED and they do not obtain satisfactory care from this behavior. CGA is the core component of geriatric services, and assesses the physical, mental, social and environmental conditions of patients. After all functional assessments, geriatric MDT care may provide an all-dimensional care plan for these patients with multiple comorbid conditions and complex care needs. However, to implement this service model in the ED setting may not be appropriate, but to apply the concepts of CGA to approach the EDFUs may be of great benefit.

The four cases reported here share some common characteristics, in that they were all EDFUs for a certain period of time. Despite frequent ED visits and multiple outpatient visits, they still frequently visited the ED to seek health care. There are multiple hidden problems behind the phenomenon of frequent ED visits. EDFUs should be deemed a waste of ED resources for causing overcrowding of the ED; they mostly have undiscovered health or social problems. By provision of CGA and CGA-based MDT intervention, these patients were properly treated and the frequency of ED visits was significantly decreased, which implies a solution to the hidden health care needs. In conclusion, CGA-based MDT geriatric services may provide solutions for EDFUs to improve the quality of health care for older people with multiple complex needs and to reduce the overcrowding phenomenon in EDs.

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