Who is High Risk Elderly Patient?

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Abstract

The acute and post-acute care of the elderly is a process fraught with problems. Elderly patients at high risk are individuals who have to be admitted more frequently to a hospital due to developed complications, who are faced with a constant risk of hospitalization, and who have increased risks of functional decline, nursing home admittance, and death. These adverse outcomes cause discrepancies and problems in the implementation and regulation of treatment and coordination between health entities. Factors increasing these risks vary among these individuals, but existing chronic diseases and geriatric syndromes are the most important underlying causes. The identification of elderly patients at high risk for complications is difficult because of the complex syndromes, chronic diseases, care and socioeconomic problems. Also, these patients are at risk for unplanned hospital admissions. One of every 4 or 5 elderly patients discharged at high risk is re-admitted to a hospital within the first month. In these patients, early diagnosis, followed by a multi-disciplinary team, enhanced discharge planning, medication reconciliation and out of hospital care could contribute to improving the quality of care and more efficient use of the resources. In Turkey there is a need for patient-centered programs on this issue.

Keywords: Aged, patient safety, risk management, patient readmission

Sample Case 1

A 77-year-old male patient was brought to emergency services because he had fallen. It was learned from his history that he had been examined by cardiologists and orthopedists many times, and he had consulted a neurologist for gait difficulty approximately one month earlier. He had also fallen four times in the preceding month. He had comorbidities of coronary artery disease, type 2 diabetes mellitus, and lumbar disc herniation. He had undergone total right hip prosthesis replacement 3 years earlier. He was retired and lived with his wife. He had been having difficulty performing his activities of daily living due to gait difficulty for 6 months. The patient and his wife stated that he took 16 different medications. His physical examination revealed his arterial blood pressure while standing to be 86/62 mmHg, and his other vitals were normal. The movements of his right shoulder were restricted after he had fallen. Serious pain and restricted movement (probable effusion), accompanied by mild warmth and tenderness in the left knee, restricted left hip movements, and mild weakness in the left leg were detected. Apart from these, there were no other important findings. Detailed geriatric assessment revealed multiple factors that could lead to falls. These factors were evaluated to be postural hypotension, polypharmacy, degenerative joint disease in the left hip and knee, and spinal stenosis-induced neuropathy.

Sample Case 2

A 92-year-old female patient was brought to the hospital by her family because she had lost her appetite for 3 days. She had comorbidities of hypertension, congestive heart failure, urinary incontinence (overactive bladder), and depression. She used a walker. It was learned from her history that she had fallen because she had stepped on her urine in the restroom, broke her hip, and become dependent while walking. As a result of examination and analyses, she was hospitalized after having been diagnosed with malnutrition, dehydration, and a urinary tract infection. Because improvement was observed after treatment, the patient was discharged from the hospital on the fifth day of hospitalization. However, she was readmitted due to recurring urinary tract infection one week after being discharged.

Introduction

As in developed and developing countries, the proportion of the elderly population is increasing in Turkey, which is in a period of demographic change. According to the 2015

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population census, 8.2% of our population is comprised of elderly people (approximately 6.5 million) (1). In the near future, the proportion of the total population represented by the elderly is expected to reach 10.2% in 2023, 20.8% in 2050, and 27.7% in 2075 (2). Another striking point is that the most rapid increase is seen in the proportion of elderly people over 75 years old, who have the highest risk of hospitalization of all age groups in the population (2). The possibility of cognitive impairment, dependency in activities of daily living, functional impairment, and undesired outcomes (disability, hospitalization, staying in a nursing center, and death) is higher in this age group (3).

In parallel with a rapid and dramatic increase in the elderly population around the world, acute and post-acute health care concerns are also appearing daily (4, 5). These problems are particularly encountered in elderly individuals, who have a high risk of developing complications more frequently because the process of hospitalization and return to society is a complicated and troubled period. It is well known that hospitalization causes serious complications and high costs as well as doing physical and psychological harm to patients and families (4).

Patient safety
Increasing the quality of patient care is an issue that should be targeted and accomplished for the management of chronic diseases, particularly in the elderly, who often visit the hospital. The goal of qualified care can be reached only by providing for patients' medical safety. That is to say, patient safety is one of the essential components of high-quality care. Therefore, the issue of patient safety has an important place in the health policies of many developed countries (6).

Patient safety is defined as avoiding undesired events or complications during health care, taking precautions against them, and trying to remedy them (7). Pre-existing diseases are known to have an important role in the occurrence of undesired outcomes in patient safety (8). It is accepted that these undesired outcomes can be life-threatening during care, but their frequency can be reduced if measures are taken (7). Undesired health events can be side effects of drugs that are frequently given to outpatients, prescription of too many drugs, prescription of the wrong medication, misdiagnoses, and missed points (9-11). The most common adverse events in hospital are nasocomial infections, medical errors, polypharmacy and related drug side effects, drug-drug interactions, adverse drug reactions, delirium, falls, loss of function, pressure sores, malnutrition, and venous thromboembolism (12). In addition to these, coordination and communication problems during transfers of elderly people from acute care facilities to their homes or nursing homes are another source of undesired health results (13).

Elderly individuals are at risk in terms of undesired outcomes that threaten patient safety. Even in hospitals offering the best health care in our country, complications that increase the risk of morbidity and mortality in elderly patients are seen. These negative events can develop in one of every five hospitalized patients (14). Although annual costs of these complications place a serious financial burden on the national economy, it is reported that approximately half of them can be prevented with good care planning (15). Advanced age, chronic diseases, cognitive impairment, psychological problems, fragility, sarcopenia, malnutrition, and economic difficulties set the stage for the development of undesired results. Polypharmacy, difficulties in care plans, errors in the implementation of treatment, dealing with more than one health problem, and low social support, which appear during treatment, are also contributing factors to the occurrence of these events. Elderly patients attend different hospitals more frequently, and they are confronted with the risk of hospitalization due to the development of undesired outcomes (4, 5). Thus, inconsistencies and problems among health institutions occur in the regulation and implementation of treatments and coordinating health care (4).

High-risk patients
In recent years, "unplanned hospitalizations" have been accepted as quality indicators of care provided by the health system (6). Many of these hospitalizations are performed for individuals who are re-hospitalized a short time after being discharged (16, 17). The risk of this type of hospitalization increases with advancing age.

High-risk patients are individuals who can apply to the emergency unit or hospital in an unplanned way, frequently have probable undesirable conditions, and are at risk of functional impairment, staying in a nursing home, and death (18). The reasons for applying to health institutions include a newly developed condition, recurring exacerbation of a known chronic disorder, drug interactions or side effects, injuries, and early discharge despite the need for hospital care (18).

These individuals need collaborative care with a multidisciplinary approach (19). This care should be given not only in hospitals but also in long-term nursing care centers and at home (19). Regarding health care, frequent admissions and hospitalizations lead to unnecessary consumption of health staff labor force, waste of equipment and materials in health institutions, and unnecessary use of beds. This impairs the quality of a given health service and poses problems for both patients and families.

Families of high-risk patients are under a serious psycho-social and physical burden. Frequent admissions and hospitalizations can lead to social and financial exhaustion in families. In time, the physical and mental conditions of these patients are so impaired that they need support and guidance in their activities of daily living such as eating, dressing, bathing, walking, and going to the restroom. The help of a caregiver can be needed to provide self-care in these stages. In addition, family members should be informed about the clinical course, realistic expectations should be created, and points of concern should be addressed.

In addition to quality of care in this patient group, another important point is the economic burden on the health system, because hospital admission rates are very high in high-risk patients, increasing health expenses greatly. In an analysis by Jencks et al. (17) on patients with health insurance, the rate of re-hospitalization after discharge was 19.6% within 30 days and 34.0% within

90 days for these patients. In the same patient group, the rate of re-hospitalization within one year was 67.1% for those hospitalized for internal diseases and 51.5% for those hospitalized for surgical reasons (17). It was determined that the total cost of hospital admissions was as much as $17.4 billion for these patients (17).

Risk factors
Many factors are known to increase the rates of admission to hospital, morbidity, and mortality in elderly patients. Although the factors that increase these risks in the elderly can vary depending on the individual, existing chronic diseases and geriatric syndromes are the most important underlying causes. Risk factors known to be associated with the development of undesired conditions in elderly patients are given below:

- Insufficient social support (16, 20),
- Low socio-economic level (20),
- Lack of education (21),
- Reduced physical performance and muscle strength, fragility (16, 22),
- Malnutrition and low body mass index (23),
- Previous unplanned hospitalizations (16, 20),
- Treatment errors (10),
- Cognitive impairment (16, 24),
- Chronic diseases (congestive heart failure, diabetes mellitus, chronic obstructive pulmonary disease, chronic renal failure, cancer, depression… etc.) (16, 25),
- Drug-related factors:
  - Polypharmacy (16),
  - Inappropriate drug use (26),
  - Other drugs: first-generation antihistaminics, antithrombotics, warfarin, anticoagulants, digoxin, NSAIDs, diltiazem, verapamil, nifedipine, alpha blockers, pioglitazone, rosiglitazone, insulin, sulfonylureas, benzodiazepines, non-benzodiazepines, corticosteroids, anticonvulsants, pseudoephedrine, theophylline, metoklopamid,… etc. (27),
  - Drugs with strong anticholinergic effects (Amitriptyiline, chlorpheniramine, darifenacin, diphenhydramine, fesoterodine, hydroxyzine, olanzapine, oxybutynin, paroxetine, quetiapine, solifenacin, tolterodine, trospiyum) (28), and
  - Drug side effects and drug-drug interactions (10).
- Medical intervention-related complications (10),
- Nasocomial infections, pressure sores and falls (10), and
- Discharge and subsequent factors:
  - Early discharge (10),
  - Insufficient medical support after discharge (29), and
  - Difficulties in follow-up after discharge (29).

How can high-risk patients be detected?
More efficient use of economic resources can enable the enhancement and development of health services. To this end, early detection of high-risk patients and the development of a proper care plan for them will contribute greatly to reducing hospitalization and savings in health expenses.

It is difficult to determine high-risk patients because complicated syndromes, chronic diseases, care-related problems, and socio-economic problems of elderly people can cause difficulties in establishing a diagnosis. The approach in this stage should be to gather various risk factors, which have been proven with evidence-based methods, around a model and to try to implement it. To date, many risk models have been developed for defining high-risk patients, but there are a few methods with proven validity (30). Moreover, many models focus on high-risk patients; they cannot detect preventable hospitalizations, and it is difficult to apply them in daily practice (31).

Donze et al. (32) created a risk model (HOSPITAL scoring) that predicts re-hospitalizations within 30 days by using clinical data before discharge. In this study examining 10.731 discharges, the risk factors were found to be low hemoglobin at discharge (<12 g/dL), discharge from the oncology unit, low sodium level (<135 mEq/L), hospital procedures (receiving cancer therapy, biopsy, blood transfusion, gastrointestinal system endoscopy, etc.), unplanned hospitalization, the number of admissions in the previous year (0, 1–5, >5 times) and length of hospital stay (≥5 days) (32). The authors state that this scoring system identifies risk status before patient discharge and becomes a guideline for essential interventions during transfers between sites of care (32). Recently, the validity of the HOSPITAL scoring system was confirmed with a multi-centered study investigating 117.065 discharges and C-statistics, as the differential power was found to be 0.72 (95% CI, 0.72–0.72) (33).

This group of patients does not receive enough attention in our country. However, steps should be taken to avoid this problem in the future. The "Türkiye STAR (Safe Transitions for at Risk Patients) program," which is under development, draws attention as a new and promising clinical approach (13). This program focuses on individuals above 75 years old, whose hospitalization risk is high and whose re-hospitalization can be prevented. The criteria used in the determination of high-risk patients are re-hospitalization within 30 days or being kept under observation in hospital, at least two hospitalizations in the last 180 days, polypharmacy, cognitive impairment, falling, and exacerbation of acute renal failure, chronic heart failure, or chronic obstructive pulmonary disease (13).

In another study evaluating 4812 patients prospectively, deaths and unplanned hospitalizations within 30 days after discharge were examined (34). Length of hospital stay, acute patient admissions, Charlson Comorbidity Index Score, and emergency unit admissions in the last 6 months were found to be risk factors, and a scoring system called the LACE index was designed. The differential power of the LACE index was revealed to be quite good in the study (C-statistics=0.684) (34).

What is "unplanned re-hospitalization"?
Re-hospitalization of an elderly patient due to a medical or functional disorder a short time after being discharged from emergency, surgical, or internal medicine services is accepted as "unplanned re-hospitalization." Elderly people and particularly high-risk patients are at risk of "unplanned re-hospitalizations." One out of every four or five elderly patients is re-hospitalized within the first month after being discharged (35). "Unplanned re-hospitalizations" are accepted as an indicator of quality of health care in developed countries.

In the USA, the annual cost of these hospitalizations to the health system is estimated to be $26 billion (36). Arrangements have recently been made in the health sector to improve the quality of care and to decrease the cost of re-hospitalization in the USA, and reducing re-hospitalizations within 30 days has become a

health policy target across the country (36). In 2012, the health insurance system put the 30-day concept into practice, and in hospitals where the rate of re-hospitalizations was high, it became obligatory to use programs to decrease them. Moreover, when avoidable and unnecessary hospitalizations were detected, the health insurance system began to bar certain patients from those hospitals.

Can hospitalization be prevented in these patients?
In recent years, some studies have suggested that special care programs can be partially effective in reducing re-hospitalizations (37-39). The striking issue in these studies is that an organization that is applicable to elderly care-related situations, specific to patients with a high risk of complications, does not exist. In addition, the causes of avoidable re-hospitalizations in high-risk patients result from many factors, and therefore, a multi-directional approach is required. A recommended care plan for these patients is presented in Figure 1 (5, 13).

The STEP (Safe Transitions for Elderly People) program is a project in which 1220 patients older than 75 years were evaluated and attempts were made to identify the characteristics related to re-hospitalizations within 30 days (40). This program was designed as a basic care intervention plan. After patients were discharged from hospital, they were followed up by phone, and clinical assessments were performed with the help of an educated home care nurse in the houses of individuals who had given consent. While the rate of re-hospitalization was found to be lower in patients visited at their homes, it was higher in patients who had not given consent and those who could not be contacted (40). Moreover, the results indicate that re-hospitalization is associated with previous re-hospitalization, low social support, depression, poor drug compliance, and late visit from the family physician (41, 42).
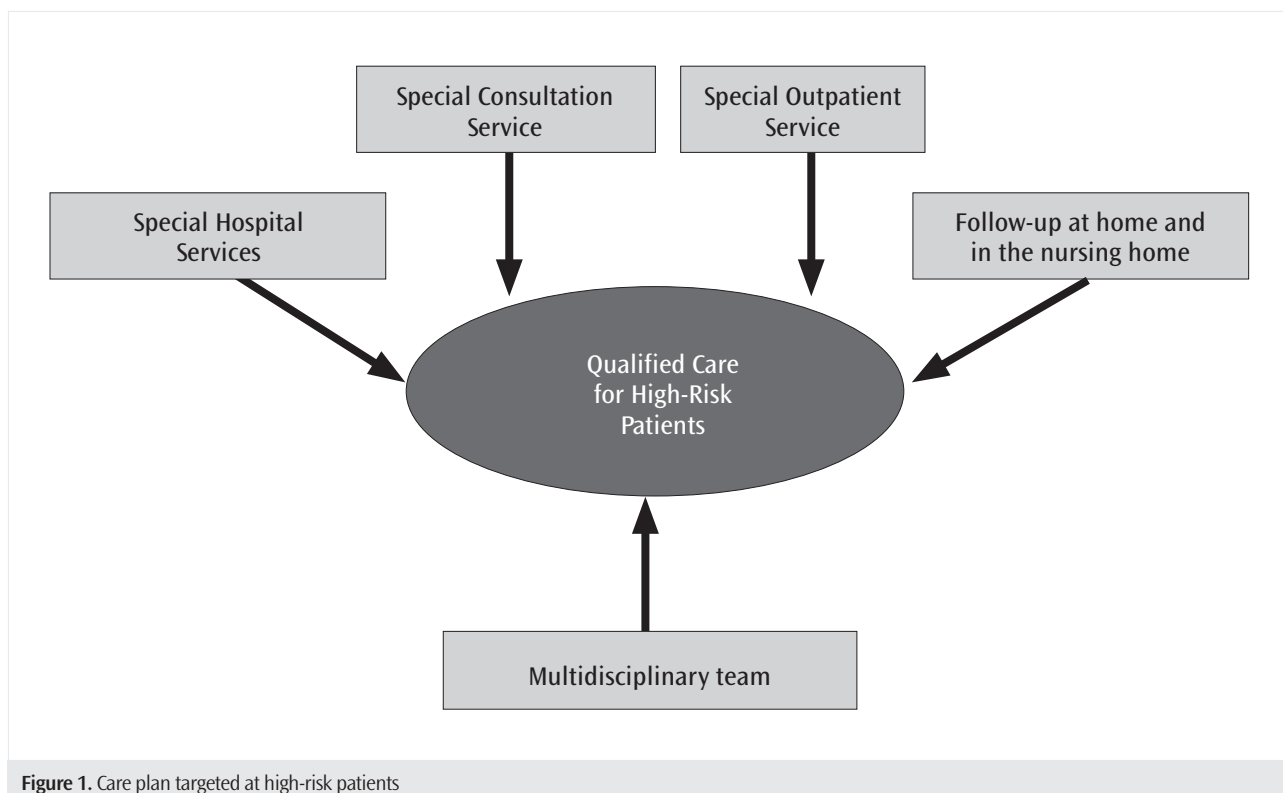
Elderly care practices in our country
In the last decade in Turkey, various actions have been taken in accordance with general health policies in elderly health, and some progress has been made. After some methods on advanced care planning were brought up for discussion by the Ministry of Health, implementation of the Family Medicine Model was begun in 2010 (43). However, the care of the elderly people is still not at the desired level in our country, and it will face us as a larger problem the coming years. Patient-centered interventions are needed instead of general measures. These can only be performed with the development of patient-centered programs.

The Turkish STAR program, which targets meeting the care needs of high-risk elderly patients in the future, is based on the systematic implementation of current geriatric treatment guidelines by the staff providing services in hospital and after discharge (Figure 1) (5, 13).. This program was prepared considering the needs of the health system in Turkey. It can contribute to reducing possible complications in hospital and probable re-hospitalizations, increasing the quality of elderly care in Turkey, and saving health care expenses. Testing is planned for this patient-centered program in the near future.

Conclusion

High-risk elderly individuals are at risk regarding undesired events or complications that threaten patient safety. Early detection, follow-up by a multidisciplinary team, an advanced discharge plan, controlled use of medications, and care out of hospital are needed for these patients. Putting them into practice will provide a decrease in the complications that may develop in high-risk elderly patients and in probable re-hospitalizations and thus, the problems that can be encountered on this issue in the future can be lessened.

Figure 1. Care plan targeted at high-risk patients

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