



# Incidence of Older People Presenting Acutely to a Regional Spine Unit

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## Abstract

Older patients undergoing spinal surgery are at an increased risk of perioperative complications, prolonged hospitalization and mortality due to underlying co-morbidities. Our aim was to investigate the incidence of older patients (aged 70 years and over) presenting to the regional Spinal unit (catchment population of 4.5 million) over a 30 month period. Patient demographics, co-morbidities, cause of referral, treatment modality (conservative vs. surgical), length of hospital stay, discharge destination (home vs. rehabilitation) and mortality rates were collected and analyzed. A total of 677 (Male: 335, Female: 342) older patients presented to the unit. The mean age at presentation was 82.3 ( $\pm$  7.48) years. Spinal trauma was the most common reason for inpatient referrals (n=448; 66.2%). Low trauma (insufficiency) fractures contributed to more than half of the total trauma referrals (n=256). Spondylodiscitis was the least common cause of referral (n=34; 5%). 545 patients were treated conservatively (80.5%). Average length of stay was 16.7 days ( $\pm$  19.9). 81 of the discharged patients (13.5%) were transferred to rehabilitation after discharge, and the over-all 30-day mortality rate was 11.5% (n=78). An ageing population represented a significant proportion of admissions, with protracted length of stay despite a majority being managed conservatively (non-surgically).

## Background

In the UK, there were 11.8 million residents aged 70 years and over in 2016, representing 18% of the total population [1]. This number is projected to increase by a further 8.6 million by 2040. It is anticipated that the fastest increase will be seen in the age group of 85 years and over, where this population group will double by 2040 [1]. With increasing life expectancy, the likelihood of people living with multiple co-morbidities increases. The Health Survey for England reported in 2016, of those aged 60 to 64 years, 29% had two or more chronic conditions, with this number rising to 50% in those aged 75 years and over [1]. Patients with multiple comorbidities have complex medical needs and require a multi-faceted approach. Any proposed surgical intervention places them at an increased risk of perioperative complications, prolonged hospitalization and inpatient mortality. With ageing demographics and its potential impact on our health service, we explored the incidence of patients aged 70 years and over presenting to the Nottingham Regional Spinal Unit (catchment population of 4.5 million).

## Methods

A retrospective 30-month review (January 2017 to August 2019) was undertaken. Clinical records of all inpatient referrals for patients aged over 70 years and above were assessed. Data collected included; patient demographics and baseline characteristics, co-morbidities, indication for referral and treatment modality. Patient outcomes recorded included length of stay, discharge destination and mortality rates.

## Results

A total of 677 (Male: 335, Female: 342) referrals for patients aged 70 years and above were received over a 30 month period. The mean age at presentation was 82.3 ( $\pm$  7.5) years. Trauma accounted for most of the inpatient referrals (n=448; 66.2%), with low trauma (insufficiency) fractures accounting for more than half (n=256). Spondylodiscitis was the least common cause of referral (n=34; 5%). Five-hundred forty-five patients were treated conservatively (80.5%). The average length of hospital stay was 16.7 days ( $\pm$  19.9). Eighty-one of the discharged patients (13.5%) were transferred to rehabilitation after discharge, and the overall 30-day mortality rate was 11.5%

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(n=78).

## Discussion

Patients aged 70 years and over represented a large number of admissions to the regional spinal unit. One of the main challenges in looking after frail older patients is managing them comprehensively and holistically. Frailty is often associated with multi-morbidity and a range of geriatric syndromes including functional dependency, cognitive impairment, and malnutrition. These patients are at higher risk of poor outcomes. Acute exacerbations of comorbidities, systemic infection or social issues affecting discharge planning have to be managed simultaneously. Surgical interventions may not be feasible or necessary, as evidenced by the eighty percent of patients being managed conservatively (non-surgically) in our findings. The majority of patients admitted to the unit were management non-operatively, which is not too dissimilar with the data from UK Getting It Right First Time (GIRFT) report which stated that only seven percent of patients of all ages who are admitted with an emergency spinal condition have a surgical intervention [2]. It also reported that patients were not being discharged in timely fashion, with an excess of 34,000 admission episodes lasting 4 days or more [2-4]. This is consistent with our data, where average length of stay in hospital was 16.7 days, and a report on patients with vertebral fragility fracture had a median length of stay of 12 days, with the majority managed conservatively. Prolonged bed rest and immobility for frail, older patients will result in further deterioration in physical conditioning, medical complications such as infections and venous thromboembolism, and higher inpatient mortality [5,6]. Current service provision in spinal units across the UK does not involve ortho-geriatric co-management. The 2017 Cochrane review of Comprehensive geriatric assessment for older adults admitted to hospital showed older people who receive CGA rather than routine medical care after admission to hospital have better outcomes and it remains the gold standard approach for improving outcomes for older people in hospitals [7,8]. Hip fracture care in the UK now involves ortho-geriatric co-management and has been shown to reduce 30 day mortality [9,10]. Given a similar group of patients albeit spinal rather than a hip problem, whether employing a similar model of ortho-geriatric management with patients admitted with a spinal injury reduces inpatient mortality requires further evaluation.

## Conclusion

A significant proportion of patients admitted to a regional spine unit are elderly and have significant co-morbidities. These patients are associated with long lengths of stay and high inpatient mortality.

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