

# Harrison, C. Dainty, P. Prevalence and level of frailty in a Medical Assessment Unit

## Introduction

Frailty is a complex, multifactorial process and is associated with higher levels of morbidity and mortality<sup>1</sup>. With an ageing population, frailty and complexity of care are only set to increase<sup>2</sup>, as such understanding frailty is essential in clinical practice. **As a result the prevalence and level of frailty was assessed in a Medical Assessment Unit (MAU) at New Cross Hospital, Wolverhampton to help identify the elderly inpatients who needed specialist frailty care.**

## Aims

- **Develop a proforma to assess whether a patient is frail, and the level of frailty, based on a validated screening tool**
- **Assess the prevalence and degree of frailty within older adults (over 80) in MAU**
- **Follow up patients in study to allow comparison between level of frailty and number of hospitalisations, admission to long term care and mortality rates.**

## Literature review

From a clinical perspective, frailty is a syndrome of *“increased vulnerability to stressors due to impairments in multiple, inter-related systems that lead to a decline in homeostatic reserve and resilience”*.<sup>4</sup> There is evidence that the *provision of care for frail patients is poor within the NHS* highlighted by the Care Quality Commission finding only 45% of hospitals met defined standards.<sup>5</sup>

The British Geriatrics Society attributes low standards to a *“...systematic failure to provide healthcare staff with appropriate skills and training and in sufficient numbers to meet the increasing complexity of frail older people in hospitals”*<sup>6</sup> The *degree and prevalence of frailty within Medical Assessment Units (MAU) is often not assessed, making it difficult to determine implications for resource allocation and patient care*<sup>7</sup>. Further, understanding frailty guides whether treatments are safe and effective and patient prognosis<sup>8</sup>. *Specialist discharge management is also needed. A follow up study found that 50% of patients discharged from MAU within 72 hours were readmitted and 33% died within one year*<sup>9</sup>.

**Comprehensive geriatric assessment and care pathways for frail patients greatly improve patient outcomes**<sup>7</sup>. A recent systematic review identified limited research, (with many studies being insufficiently robust) pertaining to assessment and management of frailty in MAU. It also highlighted a lack of assessment and care pathways for frail patients<sup>7</sup>. **Within MAU at New Cross Hospital clinicians are keen to implement a care bundle to address the complex needs of frail patients. Thus understanding the level and degree of frailty will be of great benefit in the development of this care bundle and making it population specific.**

Therefore it is clear that **research needs to be undertaken to understand the level of frailty and its prevalence within MAU so that appropriate measures can be taken to improve patient outcomes** including geriatric assessment and care pathways.

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## Methods

- **Prospective clinical observation study of 60 patients utilising quantitative analysis.**
- Data was collected using a proforma based on a **pre-validated screening tool for frailty: The “easy prognostic score for frailty outcomes in the aged” (EPFS)**
- EPFS required collection of **nine predictors of frailty, which have been validated using multivariate analysis (p<0.001)**<sup>13</sup>. **which used to score the level of frailty in this inpatient group.**
- Data was collected **from 60 consecutive patients admitted to MAU (over the age of 80) that consented to the process.** Age 80 was selected as an arbitrary cut-off as frailty tends to be highest in this age group at 20%<sup>12</sup>.
- Ethical approval was not needed as data collected was routine information gathered on the unit and no interventions were carried out.

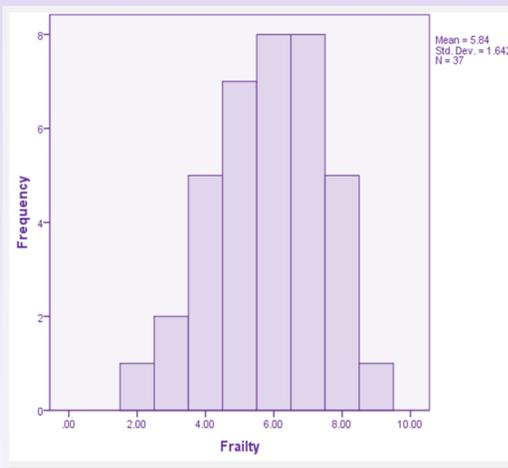
## EPFS Tool (9 parameters of frailty)

- **Over 80**
- **Male gender**
- **Comorbidities – 2 ≤ EPFS comorbidities or 3 ≤ drugs**
- **Low physical activity – ≥ 4 hours moderate activity/week**
- **Sensory deficit - Blind / Deaf**
- **Calf Circumference <31cm**
- **Tinetti gait and balance scale (Nursing assessment of falls risk used as method of assessing falls on MAU)**
- **Pessimism about health**
- **IADL dependence - Difficulty with: using the telephone, taking medicine, travelling or managing money**

## Data analysis

- SPSS software was used **to generate a mean, standard deviation and a distribution of frailty scores.**
- 23 patients were unable to be fully assessed (due to comorbidities i.e. dementia, stroke.) Instead an **adjusted frailty score was calculated based on the patient score out of the available parameters** for all 60 patients and a mean was generated to account for “missing” data.
- **The accuracy of data collection and data inputting was verified by an independent assessor** to minimise error and researcher bias in data collection and analysis.

## Results



- **95% of inpatients had a frailty score of 4 out of 9 or above** indicating significant frailty resulting in **statistically significant increased mortality and morbidity (p<0.0001).**
- Within the group that were fully assessed (37 patients) the **mean frailty score was 5.84 (s.d. 1.642)**
- The **adjusted frailty score, which assessed all 60 participants, was higher at 6.18 (2DP)**, reflecting the higher levels of comorbidity in this group resulting in an **average EPFS score of 6.**
- The data shows a **normal distribution of frailty score with a positive skew**, reflecting the high levels of frailty in the inpatient population.
- Overall, **frailty is a key issue within elderly inpatients and needs to be considered and addressed by clinicians to reduce associated mortality and morbidity.**

## Limitations

- Relatively **small sample size** was used reducing generalizability
- **Researcher carried out the proforma and data analysis which could introduce researcher bias.**
- Several **patients were lost to study as they were discharged** and the study excluded patients under 80. This may result in the tool either over- or under-estimating the level of frailty.
- The tool used was based on an **Italian community population and although practical to implement, will affect the accuracy of frailty score in terms of adverse outcomes.**

## Conclusion

- **95% of inpatients had significant level of frailty (above 4) and the average degree of frailty was high at 6 out of 9.**
- **The average 4 year mortality risk of inpatients was 65.3%**
- **There was a statistically significant increased risk of fracture, hospital admission, worsening and incident disability.**
- **As a result a care bundle is being implemented to ensure the needs of this group met to reduce adverse outcomes.**

## Discussion

Within New Cross MAU there is a **high prevalence and level of frailty with 95% of inpatients over 80 having significant frailty (over 4) and a mean EPFS score of 6 out of 9.** The EPFS score is a validated study based on a large cohort of 1007 Italian patients over 65<sup>13</sup>. Using multivariate analysis, the study demonstrated statistically significant increases in mortality and morbidity in patients with high EPFS scores<sup>13</sup>. As illustrated below **a score of 6 out of 9 is equivalent to a 65.3% four year mortality risk (p<0.001, HR 17.5).**

Prognostic score	Subjects		Death		HR (95% CI)	P-value
	No.	No.	(%)			
0-2	628	32	5.1	1		
3	159	19	11.9	2.37 (1.34-4.19)	0.003	
4	83	18	21.7	4.49 (2.52-8.01)	<0.001	
5	61	25	41.0	8.97 (5.31-15.1)	<0.001	
6	49	32	65.3	17.5 (10.73-28.70)	<0.001	
≥7	27	21	77.8	30.6 (17.57-53.3)	<0.001	

Hazard ratios (HR) and relative 95% confidence intervals (CI) are for a total of 1,007 participants with 147 cases of death.

Outcome	Score	Subjects		Cases		OR (95% CI)	P-value
		No.	No. (%)				
Fractures	0-2	524	29 (5.5)	1			
	3	122	8 (6.6)	1.20 (0.53-2.69)	0.662		
	≥ 4	103	13 (12.6)	2.47 (1.23-4.92)	0.011		
Hospital admission	0-2	494	50 (10.1)	1			
	3	115	25 (21.7)	2.47 (1.45-4.19)	0.001		
	≥ 4	97	27 (27.8)	3.42 (2.01-5.83)	<0.001		
Worsening disability	0-2	522	109 (20.9)	1			
	3	121	51 (42.1)	2.76 (1.82-4.19)	<0.001		
	≥ 4	104	62 (59.6)	5.59 (3.59-8.73)	<0.001		
Incident disability	0-2	440	101 (23.0)	1			
	3	93	41 (44.1)	2.65 (1.66-4.22)	<0.001		
	≥ 4	51	32 (62.7)	5.65 (3.07-10.4)	<0.001		

The high EPFS score in the inpatient group also results in a **statistically significant increase in fractures, hospital admissions, worsening disability and incident disability in frail patients** (above) The implications of our findings are that in this group identifying frailty was **essential and that measures should be put in place to identify and reduce the effect of frailty on this group.** Frailty is already a key issue the department is addressing by assessing frailty and implementing an elderly care bundle.

**The findings of the study can be generalised to the department as patient selection was random, included all patients over 80 admitted to the unit in a working week and the screening method was validated by an independent assessor.** However, this may be a week where the level of frailty was higher or lower than usual.

Generalizability to other departments and hospitals is lower as the inpatient population may differ. However it is clear that the use of frailty score could help identify patients in need of specialist care and discharge management. The study found **much higher levels of frailty than in the EPFS study.** This is due to a number of factors including that the study is: based on a wider age range, a community cohort and an Italian population.

**To validate the tool in the population the outcome of patients in the study will be followed up in 6 months (hospital admissions, mortality and other adverse outcomes).** This will allow the findings to be compared and see if having a high frailty score has the same implications for this patient group. **The level and prevalence of frailty in the unit is now known and the specific findings have been used to develop a care bundle to reduce the implications of frailty on the inpatient population.**

## Recommendations

- **Assessment frailty scores should be implemented to identify frail patients.**
- **Frail patients should receive specialist multi-disciplinary team care and discharge management to reduce adverse outcomes.**
- **The implementation of care bundles would help to ensure all patients who are frail receive equal standards of care.**
- **Further research into the assessment of frailty and its implications for mortality and morbidity in inpatients is needed.**