Inter-Rater Reliability of the Clinical Frailty Scale by Geriatric and Intensive Care Physicians in Patients Admitted to the Intensive Care Unit

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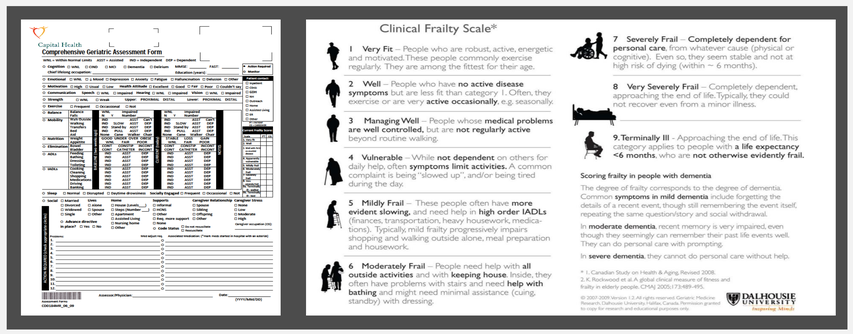
INTRODUCTION

- The Clinical Frailty Scale (CFS) was originally validated in community-dwelling seniors after an **outpatient Comprehensive Geriatric Assessment** (CGA).[1]
- It has since become the most commonly used frailty assessment tool in Canadian Critical Care settings.[2,3]
- Only three prior studies have evaluated the reliability of frailty assessment in the ICU.[4,5,6] – but none of them explicitly tested agreement with geriatricians based on CGA.
- Our objective is to **assess the inter-rater reliability (IRR) of the** CFS as a judgement-based frailty measure used by both Geriatric and Intensive Care physicians in the **critical care setting**

METHODS

- Prospective cohort study on newly admitted patients to the mixed medical/surgical ICU in Edmonton, Alberta.
- CGA by Geriatric resident and staff was operationalized with permission using the CGA Assessment Form, as used in the original CFS validation in Nova Scotia, Canada.
- Frailty was measured using the nine-point Clinical Frailty Score, with scores of 1-3 being not frail, 4 as pre-frail or vulnerable, and 5-9 as frail.
- A CFS score was assigned by **3 different raters**:
  1) The admitting Intensivist (<24hrs)
  2) Geriatrics Resident **after a CGA** (<72hrs), and
  3) A Staff Geriatrician evaluated 20 of the 158 patients to assess for reliability between geriatricians to establish a **reference standard**.
- IRR was represented using Cohen's **kappa.**
- Mortality and length of stay were captured for **predictive validity**.



RESULTS

- 158 patients were assessed and scored using the CFS by both the Geriatric Medicine resident and Intensivists. Of these, 20 were also assessed by the Geriatric Medicine specialist.
- **Relatively weak agreement between Geriatrics and Intensivists** with a kappa coefficient of **0.32** between Geriatrics Resident and ICU & **0.29** between Staff Geriatrician and ICU.
- **The two Geriatrics assessors had strong agreement with each other** with a kappa of **0.79**.

	Kappa coefficient
GR vs ICU n=158	**0.32** (95% CI: 0.17- 0.46; p<0.001)
GS vs ICU n=18	**0.29** (95% CI: -0.11-0.69; p=0.1632)
GR vs GS n=20	**0.79** (95% CI: 0.52-1.00; p=0.0004)

- **Predictive Validity of the CFS was the same regardless of rater**:
- Patients with a CFS ≥5 had **higher in-hospital mortality** when assessed by both intensivists (frail 30% v. not frail 8%; odds ratio [OR] 3.6; 95% CI 1.6-8.4; p=0.003) and geriatricians (frail 26% v. not frail 9%; OR 3.0; 95% CI 1.3-6.9; p=0.01.

RESULTS

- Reliability of the CFS appears to be **operator dependent**.
- **IRR of ~0.3** between Intensivists and Geriatric Medicine supports the idea that the two groups utilize different cues and conceptions about how frailty manifests in acutely ill patients when applying a judgement-based frailty measure.
- Despite poor IRR, our data supports the role of the CFS in **estimating prognosis**, whether by Intensivist or by Geriatrician.

CONCLUSION

Clinical Frailty Scale ratings by a Geriatric Medicine resident and specialist after CGA on critically ill patients showed **strong inter-rater reliability b**ut relatively **weak agreement** with **Intensivists.**

DISCUSSION

Inherent to any judgement-based frailty measure, applying the CFS presupposes that the assessor can recognize frailty subjectively. This can be problematic in the ICU due to **confounding factors** such as:

1) **Ascribing features of acute illness to frailty** (overestimating frailty)
2) **Need to rely on proxies** for detailed information at a time of critical illness.

Timing may partially explain the weak agreement: GR assigned a CFS score using functional status **2-weeks prior** to onset of illness. The time-frame of reference used by the intensivist was not recorded. **Future research on time-frame used to establish baseline function** could improve our understanding of frailty measurement in acute care.

The label of frailty can have an unintended negative impact and needs to be used judiciously. After a patient is told they are frail, they can modify their behaviour to result in worse outcomes.[7,8]

Proposed role of the CFS in acute care settings: The CFS can be used **for case-finding** to identify those most vulnerable or at risk of adverse outcomes. Case-finding could trigger **tailored care pathways** that include:

1) **Multidimensional Frailty Assessment or CGA** to identify the distinct domains contributing to frailty.
2) **Early mobilization and dietician assessment** to mitigate risk of hospital acquired disability.
3) **Family meetings** to inform survivorship expectations for recovery and guide decision-making about the duration and extent of ICU support.
4) **Health-system resource and funding allocation** decisions to better develop and implement tailored care pathways for this vulnerable population.

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