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### Frailty in Children and Adolescents With Acute Lymphoblastic Leukemia or Lymphoblastic Lymphoma Receiving Maintenance Chemotherapy – A Pilot Study

Thomas R. Cochran

*Children's Mercy Kansas City*

Joy M. Fulbright

*Children's Mercy Kansas City*

Samantha Butrous

*Children's Mercy Kansas City*

Brian R. Lee

*Children's Mercy Kansas City*

Keith J. August

*Children's Mercy Kansas City*

See next page for additional authors  
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**Authors**

Thomas R. Cochran, Joy M. Fulbright, Samantha Butrous, Brian R. Lee, Keith J. August, and David A. White

# Frailty in Children and Adolescents With Acute Lymphoblastic Leukemia or Lymphoblastic Lymphoma Receiving Maintenance Chemotherapy – A Pilot Study

Thomas Cochran MD, Joy Fulbright MD, Samantha Butrous LPN BS, Brian Lee PhD MPH, Keith August MD MS, David White PhD

## Children's Mercy Kansas City

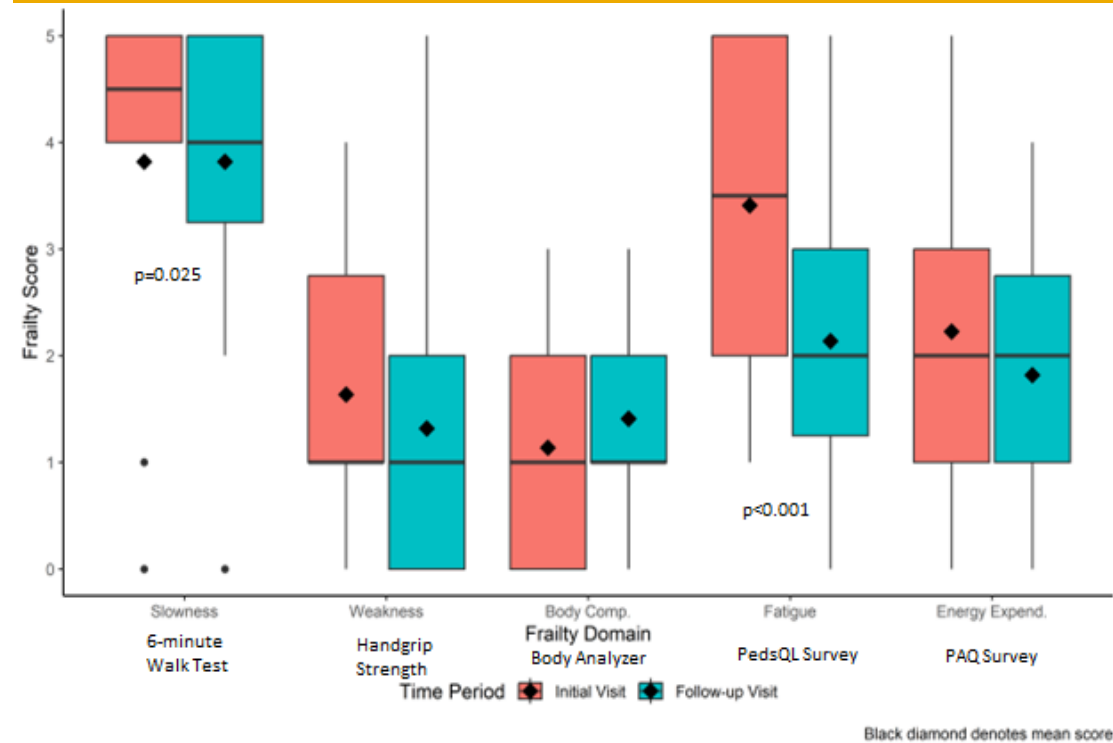
### Background

- **Increased survivorship** of childhood cancer has revealed **long-term morbidities** related to treatment.
- **Frailty** is an emerging **measure of physiologic fitness** that is correlated with **adverse health outcomes**.
- **Survivors** of childhood cancer are **more frail** compared to adults with no history of cancer.
- This pilot study explores the **frailty phenotype** in **children and adolescents** receiving maintenance chemotherapy for **acute lymphoblastic leukemia** or **acute lymphoblastic lymphoma**.

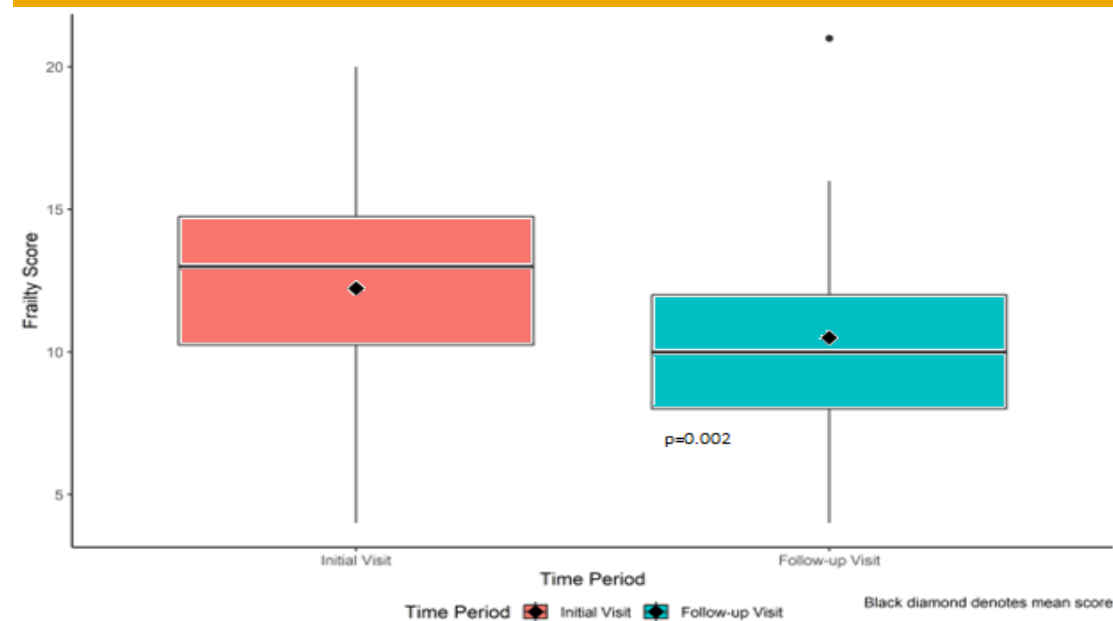
### Methods

- We recruited **children/adolescents aged 5-18 years** diagnosed with: **Precursor B-cell acute lymphoblastic leukemia**, **T-cell acute lymphoblastic leukemia**, or **acute lymphoblastic lymphoma**
- Frailty assessed in cycle 1 of maintenance chemotherapy and 6 months later.
- **Composite frailty score** compiled from 5 domains:
  - **Slowness** – 6-minute walk test
  - **Weakness** – Handgrip dynamometer
  - **Body composition** – % body fat measured by InBody 270 BIA
  - **Fatigue** – PedsQL survey
  - **Activity level** – PAQ Survey

### Initial and follow-up frailty score stratified by domain



### Initial and follow-up composite frailty scores



### Results

- **25** participants completed **baseline visit (V1)** and **22** completed **follow up visit (V2)**.
- **Median V1 z-scores and survey scores:**
  - **Slowness** z-score: **-3.11**
  - **Weakness** z-score: **-1.48**
  - **% body fat** z-score: **1.4**
  - **Fatigue** survey score: **59.7**
  - **Activity** survey score: **2.26**
- **V2** paired analysis showed significant **improvement** in **slowness** ( $p=0.025$ ), **fatigue** ( $p<0.001$ ), and **composite frailty score** ( $p=0.002$ ).
- **Weakness**, **% body fat**, and **activity score** improved but **did not meet statistical improvement**.

### Conclusion

- Children in maintenance treatment for acute lymphoblastic leukemia or acute lymphoblastic lymphoma **scored poorly in all five domains of frailty**.
- **Improvement** seen in **follow up** of frailty scores particularly in slowness, fatigue, and overall score.
- Given that frailty persists and worsens as survivors age into adulthood, **upfront screening may help identify and provide additional intervention on those most at risk**.

