# Measuring Cognition, Physical Function and Quality of Life after Hematopoietic Cell Transplantation in Adults ≥60 Years: A Pilot Study

Thuy Koll, MD, Daryl J Murry, PharmD, Vijaya Bhatt, MD, Kendra Schmid, PhD, Amelia Nelson-Sheese PhD

## BACKGROUND

- Hematopoietic cell transplantation (HCT) is a potential life prolonging treatment for patients with hematological malignancies (1-2).
- Cancer and cancer-treatment related cognitive changes cause distress, hinder patients from resuming normal routine and roles and decreases quality of life (3).
- The short and long-term effects of HCT on cognitive function and the extent to which cognitive changes interfere with day-to-day life in older patients are not known.

## AIMS

Describe the following before and after HCT at 100 days, 6 and 12 months post-HCT:
1) performance on nine cognitive domains
2) activities and participation in social roles
3) quality of life (QOL)
4) frequency of genetic polymorphisms in genes with potential to increase vulnerability for cognitive decline after cancer treatment.

## METHODS

**Study Design and Setting:** pilot prospective cohort study will recruit 48 adults ≥ 60 years with hematological malignancies undergoing autologous and allogeneic HCT.

**Measures before and after HCT at 100 days, 6 and 12 months:**
Cognitive Domains: A brief battery of neuropsychological tests.
Activities and Participation: Activity Card Sort-Modified
Quality of Life: European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-C30 (QLQ-30)
Demographic, disease and treatment-related factors: Chart review
Geriatric assessment (GA) factors: GA consist of validated measures of psychological, physical and social factors in older adults.
Genetics: Saliva sample.

**Data Analysis:** Descriptive statistics will be calculated for each time point for all variables. Patient raw scores for each cognitive domain will be converted to standardized scores (z-scores) using published normative data adjusted for age, education, and gender.

## RESULTS

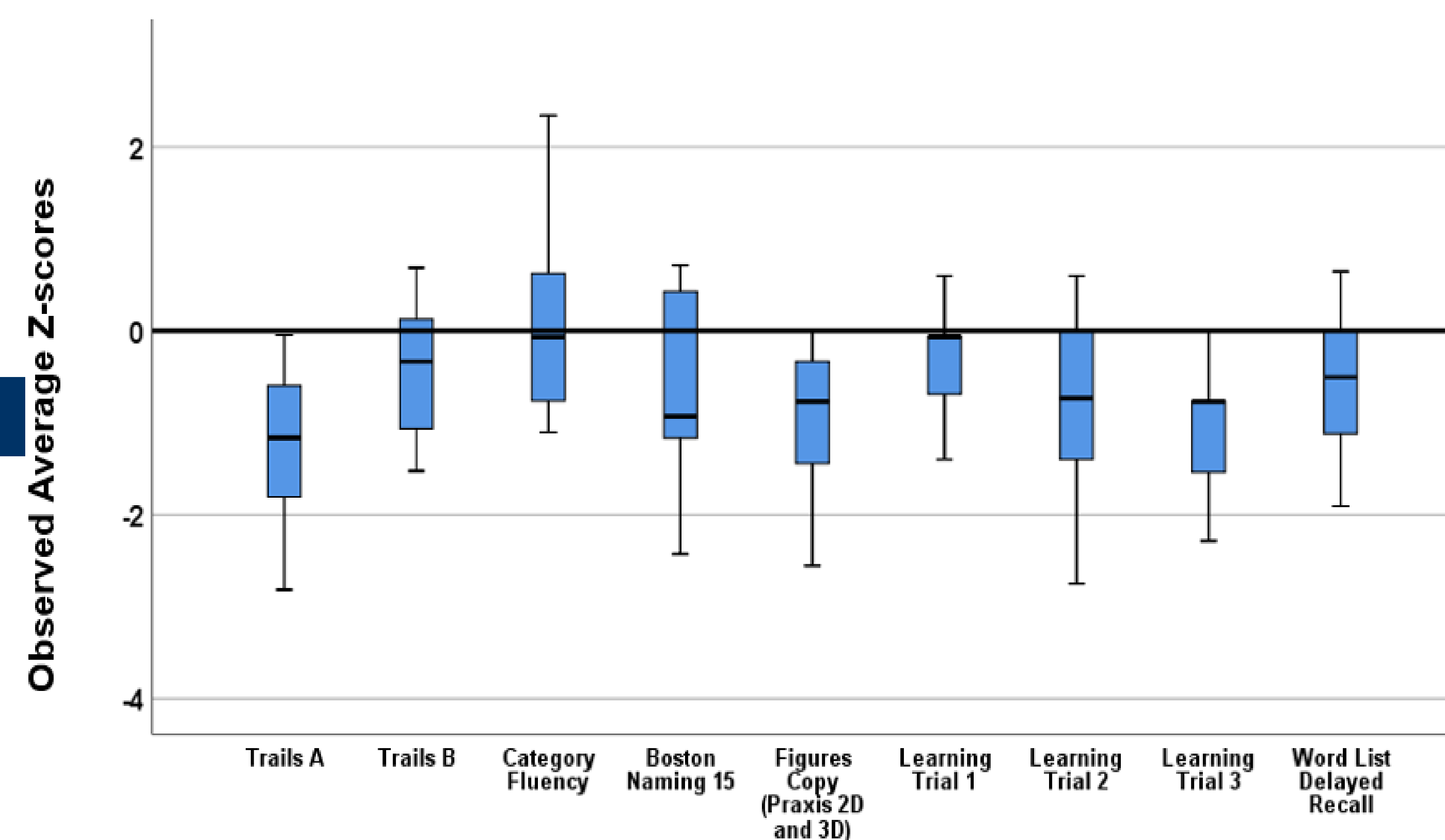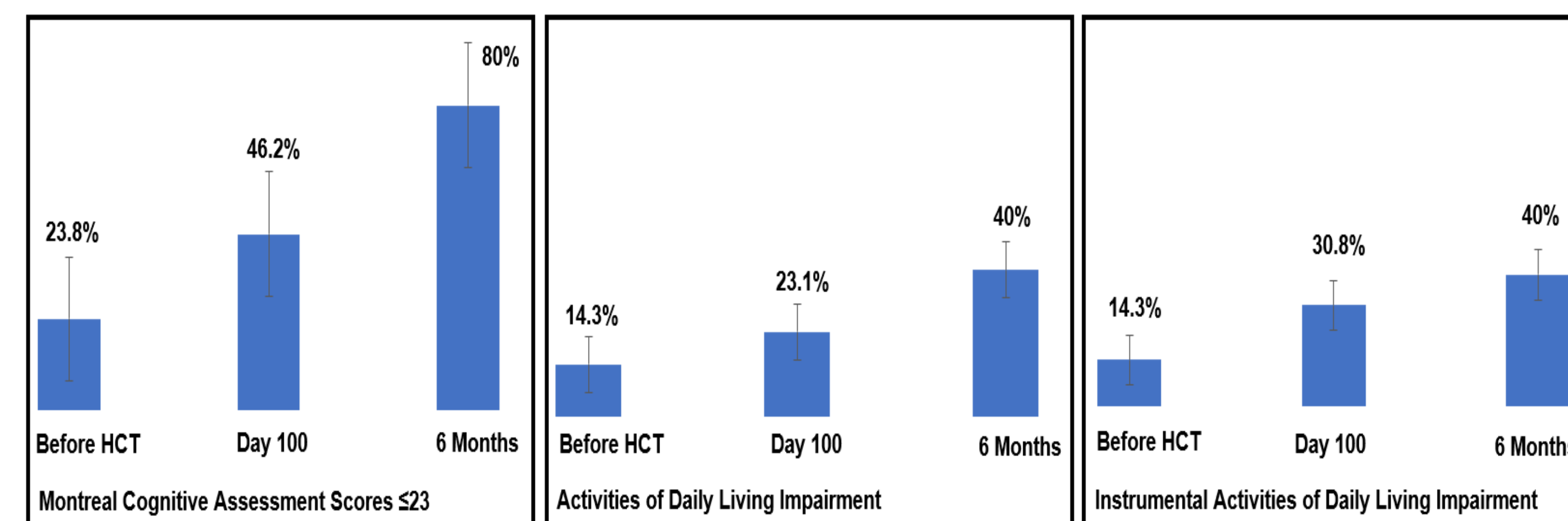**Figure 1: Median Z-scores on cognitive domains before HCT.**



**Figure 2: Cognitive and physical function before and after HCT.**



**Enrollment Feasibility and Retention:** From September 2017 to July 2018, 33 HCT patients met our eligibility criteria and of these,
- 67% (N=22) enrolled
- At Day 100 and 6 months, 93% (N=13, out of 14) and 75% (N=6, out of 8) completed assessments, respectively.
- Reasons for attrition include: declined visit due to HCT-related complications (N=2 at Day 100 and 6 months) and death (N=1 at 6 months).

## RESULTS

**Table 1. Demographics**

| | | |
|---|---|---|
| **Mean age in years (Range)** | | 67.1 (60-76) |
| **Gender** | Male | 16 |
| | Female | 6 |
| **Race** | Caucasian | 21 |
| **Marital status** | Married | 18 |
| **Education** | Graduate training | 10 |
| | <4 years of college | 6 |
| | High school | 5 |
| | <High school | 1 |
| **Transplant Type** | Autologous | 6 |
| | Allogeneic | |
| | Reduced Intensity | 16 |

## CONCLUSIONS

- Cognitive and physical functional impairment increase after HCT as measured by geriatric assessment.
- Older adults receiving HCT perform lower than expected on neuropsychological tests for multiple cognitive domains before HCT.
- Longer follow up to assess the cognitive evolution of these individuals, as proposed in this project, is warranted.

## FUTURE DIRECTIONS

**Our research will:** Serve as the foundation for a large prospective cohort study aimed at identifying factors that will predict greater risk for functional decline and poor QOL, and for future studies that will design individualized supportive care interventions for older HCT patients.

## REFERENCES

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