A Community- Academic Partnership to Understand Correlates of Successful Aging in Place

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OBJECTIVE:

The Rockefeller University Center for Clinical and Translational Science/Clinical Directors Network (RU-CCTS/CDN) community-academic partnership engaged with Carter Burden Network (CBN), a multi- site senior community services organization serving East Harlem, NY, to develop a joint pilot-funded research project aligned around the need to identify a simple validated surrogate measure of overall health status in this population. Many seniors served by CBN are racial/ethnic minorities, live in poverty, suffer from multiple chronic conditions, depression, and food insecurity; there is no simple measure routinely used to characterize the health/health risks of program participants. Multiple biological, musculoskeletal, psychosocial and nutritional factors collectively contribute to a frailty construct that is variously defined, and has been used as a surrogate or predictor for health outcomes.

AIMS:

- **Aim 1:** We will engage seniors, CBN leadership, New York City Department of Aging (DFTA), city agencies, staff and other stakeholders in research priority-setting, joint protocol writing, research conduct, analysis and dissemination to cultivate a population of elder stakeholders interested in designing and participating in this and future research.

- **Aim 2:** We will characterize the health status of the residential (Site 1) and senior center (Site 2) populations by collecting data across three sessions, including validated cardiometabolic, musculoskeletal, chronic condition prevalence, quality of life, psychosocial and nutritional assessments.

OUTCOMES:

- **Primary outcome:** Frailty as measured by the validated walk/balance test, Short Physical Performance Battery (SPPB)

- **Secondary outcomes:** Rates of participation/retention in engagement and assessments, themes from qualitative research, placement of aims on the T0¬T4 spectrum, partnership assessment; characterization of health status of participants; relationship between health variables and services utilization; REDCap database that can be used for evaluation, tracking, and research purposes by all partners

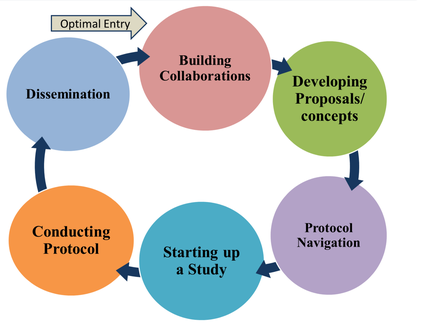
SIGNIFICANCE:

- By 2050, Americans aged 65 or older will number 84 million[1]; many will have complex health needs, loss of mobility and independence, and experience depression, reduced quality of life and increased healthcare costs all intensified by low income.

- Using a simple-to-implement validated surrogate measure of frailty is critical in order to standardize and streamline community-based translational research in this population and to study the impact of CBN's services, including senior centers, social, arts and culture, meals and wellness programs, on health outcomes.

METHODS:

Aim 1: Community Engaged Research Navigation[2]



Method- Aim 2:

- Demographic and clinical variables were summarized using percentage for categorical variables and mean +/- standard deviation for continuous variables.
- Comparisons by site were made using the chi-squared or Fisher's exact test for categorical variables and t-test for continuous variables.
- Multivariable logistic regression was performed with SPPB[3] frailty status as a binary outcome variable (Moderate/Severe vs. Minimal/Mild). Asian race was combined with Other race due to sparse counts for the logistic regression.

RESULTS:

Table 1. Characteristics of enrolled participants at Site 1 and 2 (N= 218)

Characteristic	Site 1 (n = 98)	Site 2 (n = 120)	Overall (n = 218)	P-value
Age (Years), Mean ± SD	63 ± 12	72 ± 8	68 ± 11	<0.0001
Gender (Female)	53%	67%	61%	0.04
Race				0.003
Asian	3%	0%	1%	
Black	39%	28%	33%	
Multiple Race	14%	5%	9%	
Other	16%	19%	18%	
White	13%	28%	22%	
Unknown	14%	20%	17%	
Hispanic Ethnicity (Yes)	45%	68%	58%	0.0005
Annual Income (Dollars)				<0.0001
Less than $20,000	83%	55%	67%	
$20,000 - $34,999	3%	13%	9%	
$35,000 +	1%	16%	9%	
Unknown	13%	16%	15%	
Education				0.04
Less than high school	29%	22%	25%	
Some high school	21%	11%	16%	
High school graduate	19%	29%	25%	
At least some college	18%	21%	20%	
College graduate	10%	18%	14%	
Unknown	2%	0%	1%	
Currently Employed (Yes)	3%	4%	4%	0.73
Marital Status				0.04
Married or member of a couple	15%	22%	19%	
Divorced, Separated or Widowed	47%	54%	51%	
Never married	35%	18%	26%	
Unknown	3%	6%	5%	
BMI*				0.35
Underweight/Normal	16%	18%	17%	
Overweight	36%	43%	40%	
Obese	48%	38%	43%	
Single Item Literacy Screener				0.006
Never needs help	29%	48%	39%	
Rarely needs help	21%	21%	21%	
Sometimes, often or always needs help	50%	31%	39%	

*Underweight and normal weight were combined; underweight subjects were <1% overall

Figure 1. Distribution of Short Physical Performance Battery[3] Scores

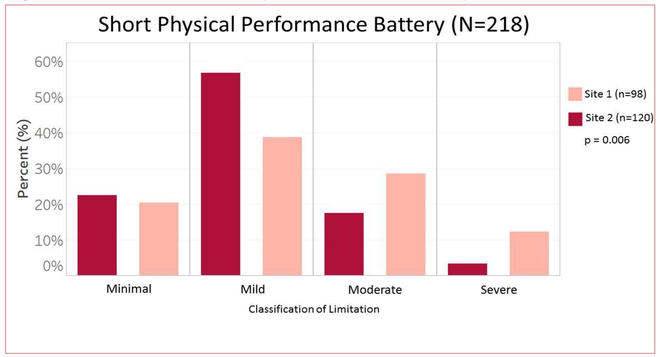


Figure 2. Distribution of Systolic and Diastolic Blood Pressures

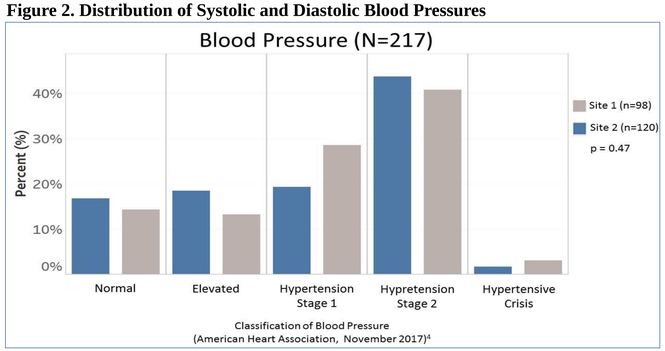


Table 2. Multivariable logistic regression model for SPPB frailty status, moderate/severe vs. minimal/mild* (N=218)

Variable	Odds Ratio	95% CI	P-value
Age (Years)	1.08	1.04 - 1.13	0.0002
Hispanic Ethnicity (No = ref)			0.05
Yes	3.08	1.01 - 9.43	
Marital Status (Never married = ref)			0.01
Married or member of a couple	0.15	0.04 - 0.52	
Divorced, Separated, or Widowed	0.50	0.21 - 1.19	
Unknown	2.01	0.32 - 12.50	
Site (Site 2 = ref)			<0.0001
Site 1	8.63	3.28 - 22.72	

*Model has been adjusted for gender, race, annual income, education, employment, BMI, and Single Item Literacy Screen result. These variables were not significant at the p<0.05 level.

References:

1. US Census: https://www.census.gov/prod/2010pubs/p25-1138.pdf
2. Kost, R.G., Leinberger-Jabari, A., Evering, T.H., et. al. Helping Basic Scientists Engage with Community Partners to Enrich and Accelerate Translational Research. *Acad Med*. 2017; 92(3): 374.
3. Puthoff, M. Outcome Measures in Cardiopulmonary Physical Therapy: Short Physical Performance Battery. *Cardiopulm Phys Ther J*. 2008; 19(1): 17-22.
4. American Heart Association: http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/KnowYourNumbers/Understanding-Blood-Pressure-Readings_UCM_301764_Article.jsp#.WmCzAa5KuCg

FINDINGS:

- The proportion of participants from Site 2 as compared to Site 1 are more likely to be:
  - female (67% vs. 53%)
  - Latino/a (68% vs. 45%)
  - have income >$20,000 (29% vs. 4%)
  - have graduated from high school or college (68% vs. 47%)
  - have ever married (76% vs. 62%)
- There are twice as many moderate/severely frail participants in Site 1 when compared to Site 2
- Site 1 participants have 8.6 times greater odds of being moderately or severely frail as compared to Site 2 participants
- Poorly controlled blood pressure is very common in both populations ($\bar{x}$: 137/76 ± SD: 19/12)

CONCLUSIONS:

- Through engagement of CBN, academic and lay stakeholders we were able to incorporate their priorities into the design and conduct of this study
- We were able to rapidly recruit, assess and characterize the two senior populations who are high-need, vulnerable, and affected by multiple health disparities
- The assessments revealed significant differences between the two populations, with frailer higher-need participants in Site 1 as compared to Site 2
- The frailty measure we used (SPPB) represents a practical easy-to-implement approach that distinguishes between populations

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