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Key questions defining research program:

- Impact of nitrite to mediate fatigability, aerobic function, and strength (with focus on central physiology and skeletal muscle) in older patients with heart failure (HF_rEF and HF_pEF).
- To clarify the best exercise regimen to modify symptoms and improve physical function in older heart failure patients (aerobic, strength, inspiratory muscle training in relation to gene expression and functional attributes).
- The mechanisms (central, peripheral, muscle transcription, and mitochondrial bioenergetics) by which exercise brings about therapeutic benefit in older heart failure patients.
- Impact of different a multidimensional cardiac rehab program (exercise, behavior, diet) on outcomes in frail elderly CVD patients.
- How to assess frailty as part of cardiac rehabilitation and CVD management.

Key words describing research program:

- Aging—Frailty
- Physical function (VO₂, fatigability, muscle strength)
- Heart failure/Cardiac disease
- Translational
- Nitrite

Titles for shovel-ready research projects:

- Impact of nitrite therapy in HF
- Impact of frailty management of older CVD patients eligible for Cardiac Rehabilitation
- Comparison of home-based cardiac rehabilitation to site-based cardiac rehabilitation. Relative benefits and process of hybrid cardiac rehabilitation strategies
- Transitions of care between hospital-based to home-based CVD management in older frail adults (safety, adherence, efficacy)

Data sources for shovel-ready research projects:

- Research study: Utility of Oral Nitrate Therapy to Improve Skeletal Muscle Bioenergetics and Physical Capacity in Old HF Patients
- Cardiac Rehabilitation outcomes data at VA Pittsburgh Healthcare System
- Prehabilitation for CVD patients