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Key questions defining research program:
1) Applications of ultrasound imaging (echocardiography) to quantify cardiac function and mechanics in heart failure.
2) Applications of ultrasound imaging (echocardiography) to quantify cardiac function and mechanics in pulmonary hypertension.
3) Developing new applications of advanced imaging technologies including tissue Doppler, speckle tracking, 3D speckle tracking, vector flow mapping.
4) Applying computer simulations of the cardiovascular system to quantify cardiovascular physiology and pathophysiology.
5) Quantifying effects of device therapy on cardiac function and mechanics with echocardiography: Pacing therapy, left ventricular assist devices, emerging new treatment technologies.

Key words describing research program:
1) Echocardiography
2) Left ventricular assist devices
3) Cardiac resynchronization therapy
4) Novel echocardiographic technologies
5) Computer simulation – echocardiographic correlations.

Titles for shovel-ready research projects:
1) Determining clinical and echocardiographic features associated with LV recovery on left ventricular assist devices.
2) Determining clinical and echocardiographic features associated with response to cardiac resynchronization therapy.
3) Developing markers of right ventricular structure and function in patients with pulmonary hypertension predictive of outcome.
4) Determining clinical and echocardiographic markers for clinical response to new therapies for pulmonary hypertension.
5) Determining diagnostic and prognostic importance of vector flow mapping in patients with heart failure and pulmonary hypertension.

Data sources for shovel-ready research projects:
1) Clinical and echocardiographic data base
2) Clinical trial data base