

# Racial and socioeconomic disparities in outcomes of peripheral arterial disease

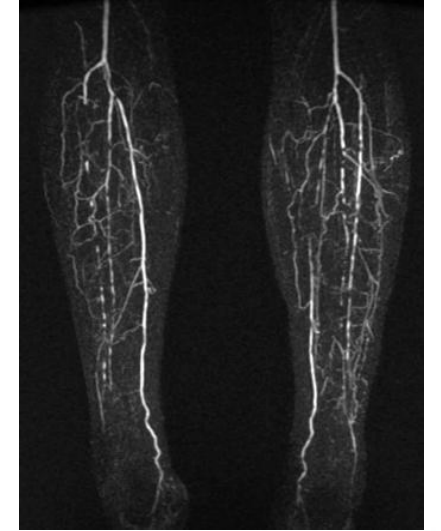
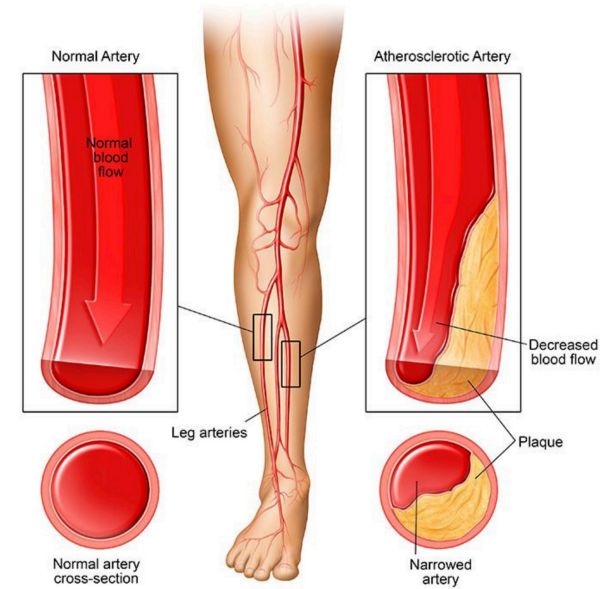
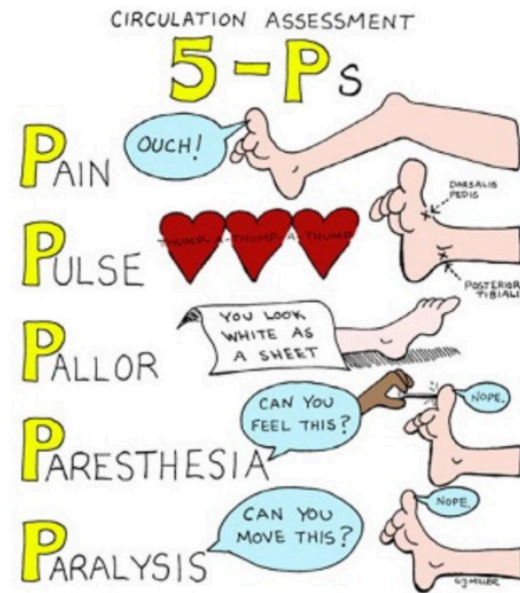
Helen Sporkin

Biomedical Engineering PhD student- Meyer Lab

# Peripheral Arterial Disease (PAD)

Atherosclerosis of lower limb arteries leading to obstruction

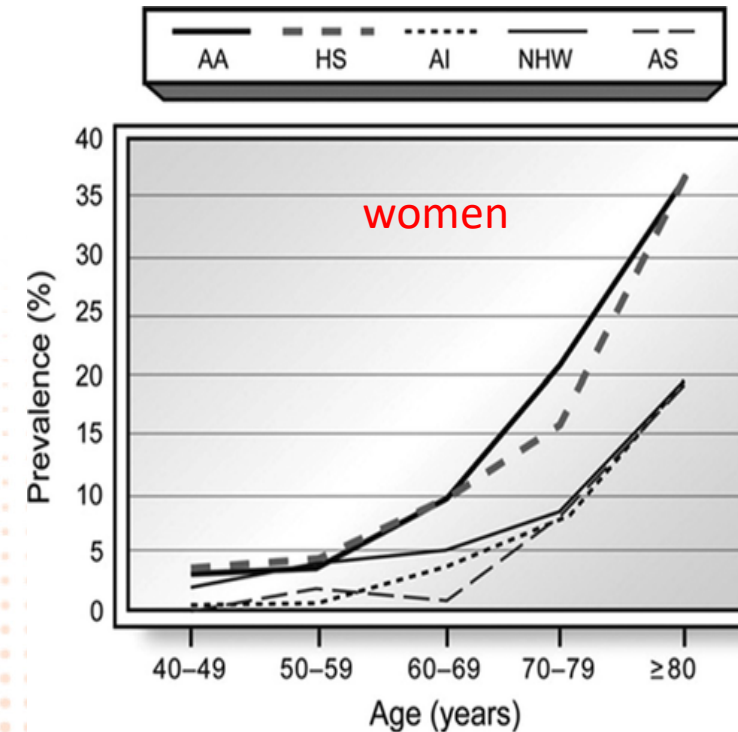
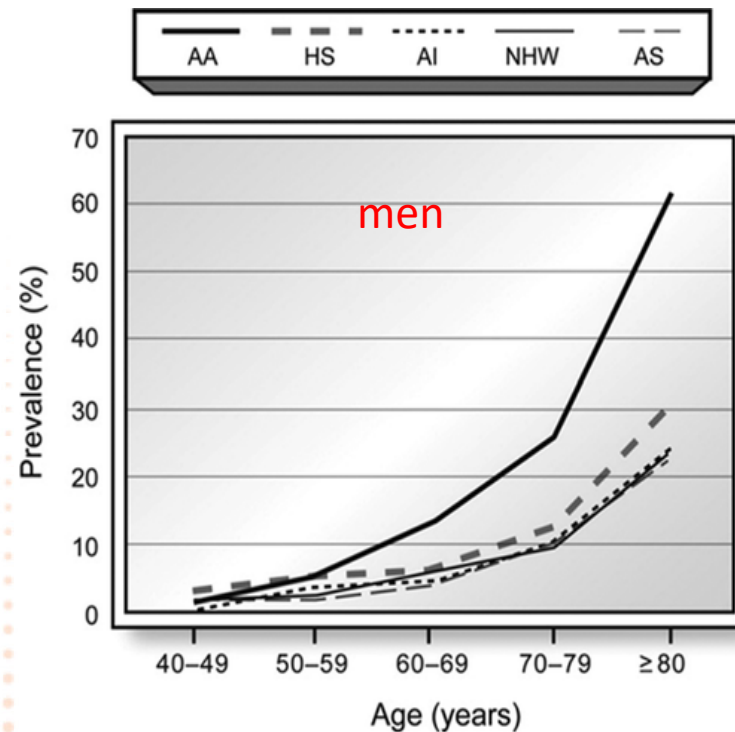
Decreased perfusion → tissue ischemia



[DG Neschis & MA Golden, UpToDate, 2018]

# Demographics

- Over 7 million people age 40 and older in the United States have PAD
- Smoking, diabetes, hyperlipidemia, obesity, sedentary lifestyle



Eddie L. Hackler. *Circulation Research*. Racial and Ethnic Disparities in Peripheral Artery Disease, Volume: 128, Issue: 12, Pages: 1913-1926, DOI: (10.1161/CIRCRESAHA.121.318243)



# ABSTRACT

## Black patients present with more severe vascular disease and a greater burden of risk factors than white patients at time of major vascular intervention

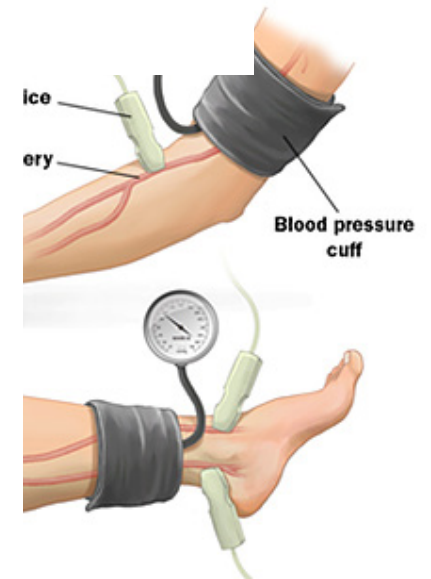
Received: Peter A Soden<sup>1</sup>, Sara L Zettervall<sup>1</sup>, Sarah E Deery<sup>1</sup>, Kakra Hughes<sup>2</sup>, Michael C Stoner<sup>3</sup>,  
out Philip P Goodney<sup>4</sup>, Ageliki G Vouyouka<sup>5</sup>, Marc L Schermerhorn<sup>6</sup>,  
Society for Vascular Surgery Vascular Quality Initiative

An ABI-specific  
severe f

An ABI c

### A systematic review of the limitations and approaches to improve detection and management of peripheral arterial disease in Hispanics

Eric B. Rosero MD<sup>a</sup>, Katherine Kane MD<sup>a</sup>, G. Patrick Clagett MD<sup>a</sup>, Carlos H. Timaran MD<sup>a, b</sup>  







Continence Nurs. 2012;39(25):S21-S29.  
Published by Lippincott Williams & Wilkins

# Disparities

- Black, Hispanic, and Native American patients are less likely to receive limb-saving PAD management
- Present with critical limb ischemia more often than Caucasians
- Success rates for revascularization are worse-particularly in Hispanics
- Amputation rates are higher and revascularization is less common in the southern US

## Non-Hispanic Black and Hispanic Patients Have Worse Outcomes Than White Patients Within Similar Stages of Peripheral Artery Disease

Corey A. Kalbaugh, PhD, MS; Brian Witrick, MPH; Laksika Banu Sivaraj, BSc ; Katharine L. McGinigle, MD, MPH; Catherine R. Lesko, PhD ; Samuel Cykert, MD ; William P. Robinson, MD 

## Racial disparities in the use of revascularization before leg amputation in Medicare patients

Kerianne H Holman <sup>1</sup>, Peter K Henke, Justin B Dimick, John D Birkmeyer

## Racial disparity in early graft failure after infrainguinal bypass

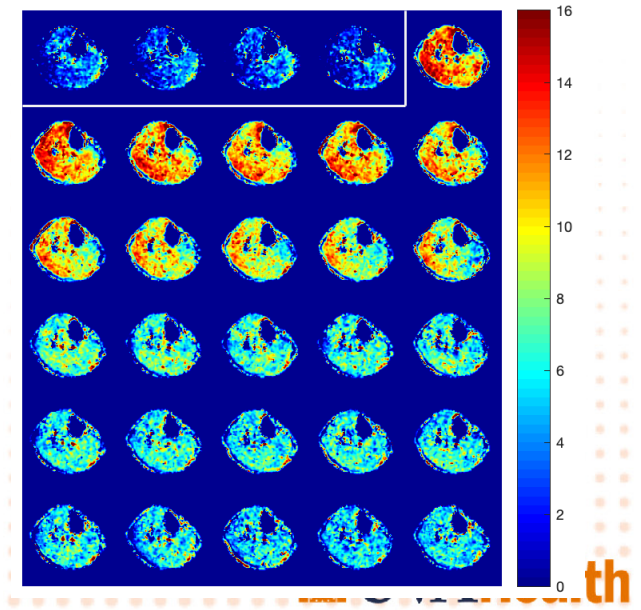
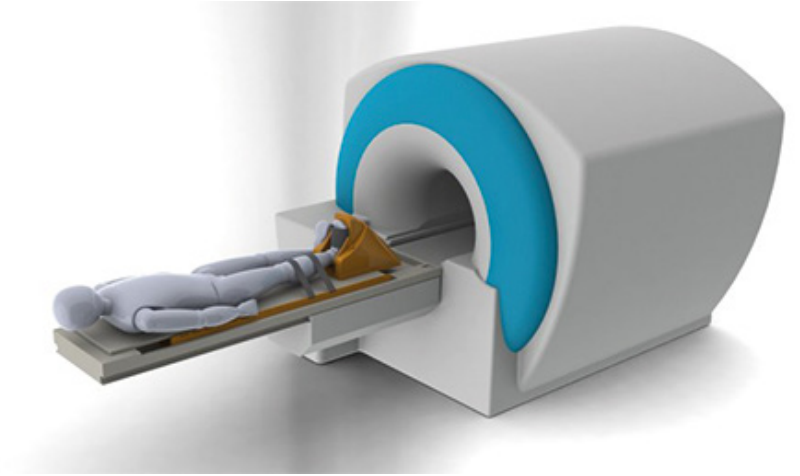
Shalini Selvarajah <sup>1</sup>, James H Black 3rd <sup>2</sup>, Adil H Haider <sup>3</sup>, Christopher J Abularrage <sup>4</sup>

## Regional intensity of vascular care and lower extremity amputation rates

Philip P Goodney <sup>1</sup>, Kerianne Holman, Peter K Henke, Lori L Travis, Justin B Dimick, Therese A Stukel, Elliott S Fisher, John D Birkmeyer

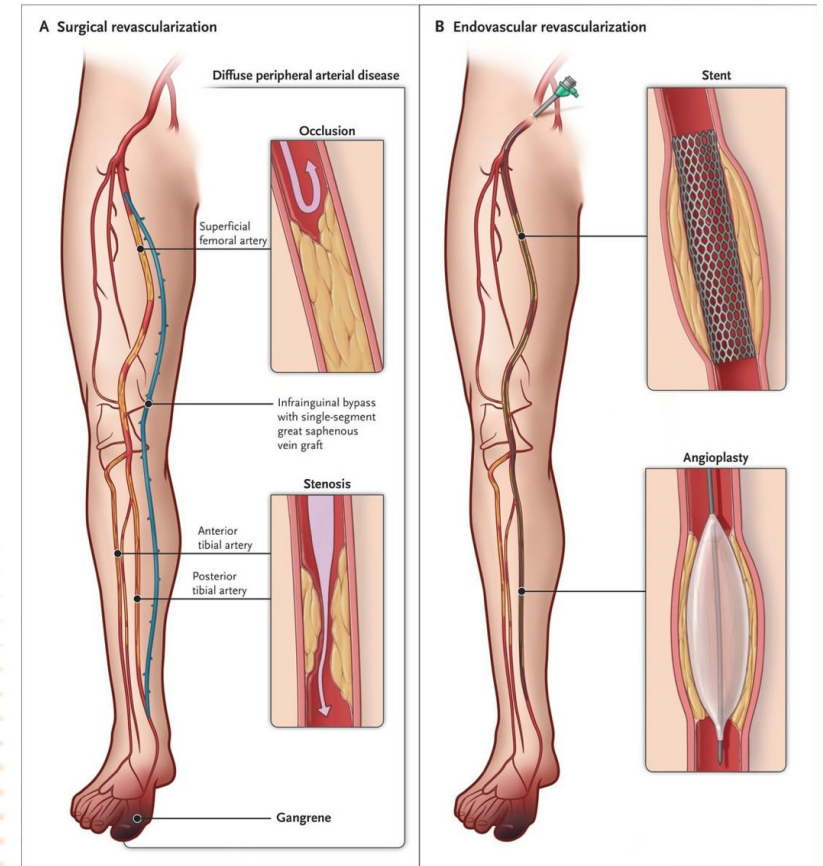
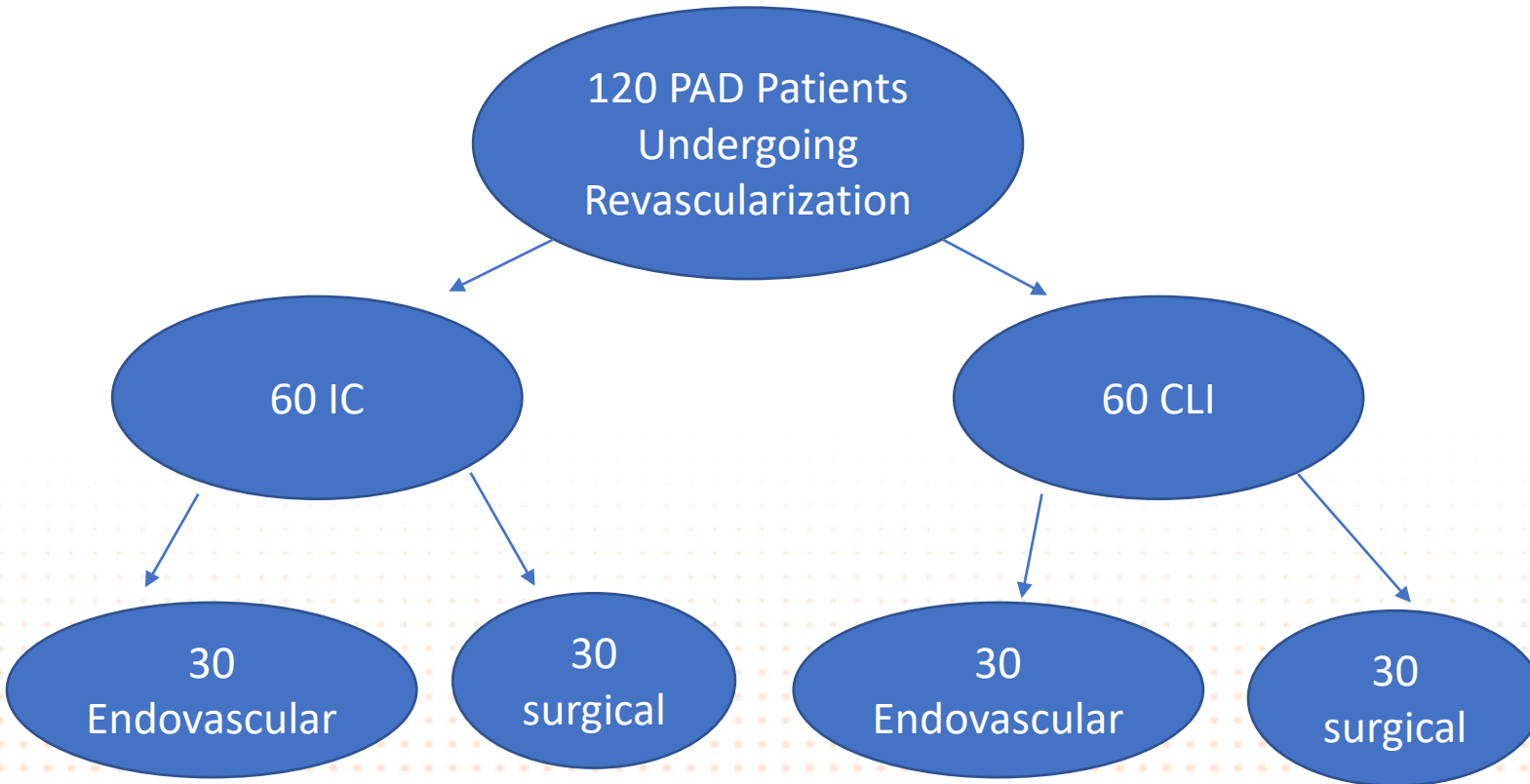
# Our work

- Creatine chemical exchange saturation transfer imaging (CrCEST)
- Safe, non-contrast MRI done on standard 3T scanner
- Metabolic energetics from skeletal muscle
- Can be compared to perfusion data for a complete picture of limb function





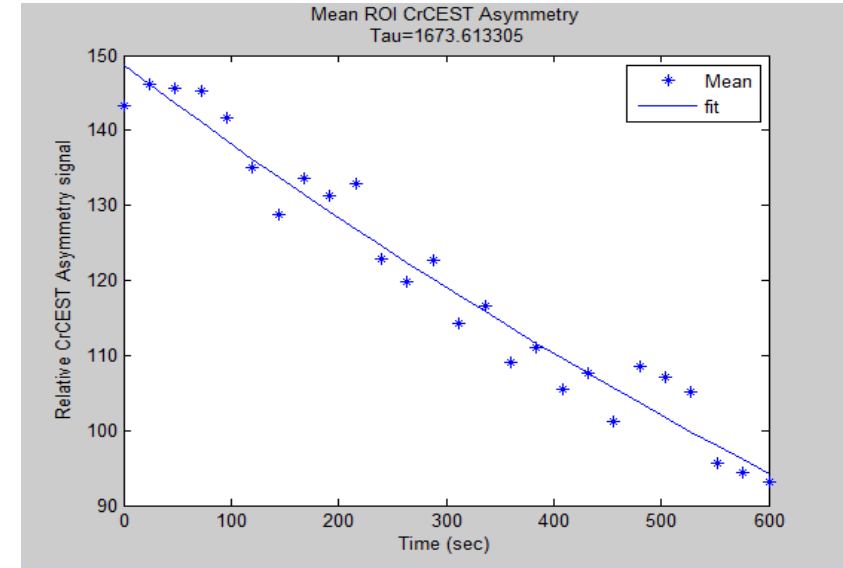
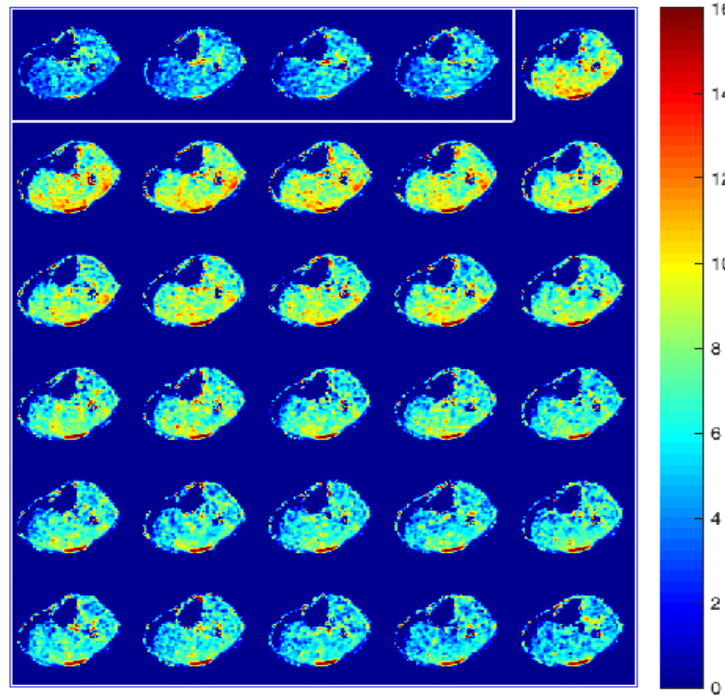
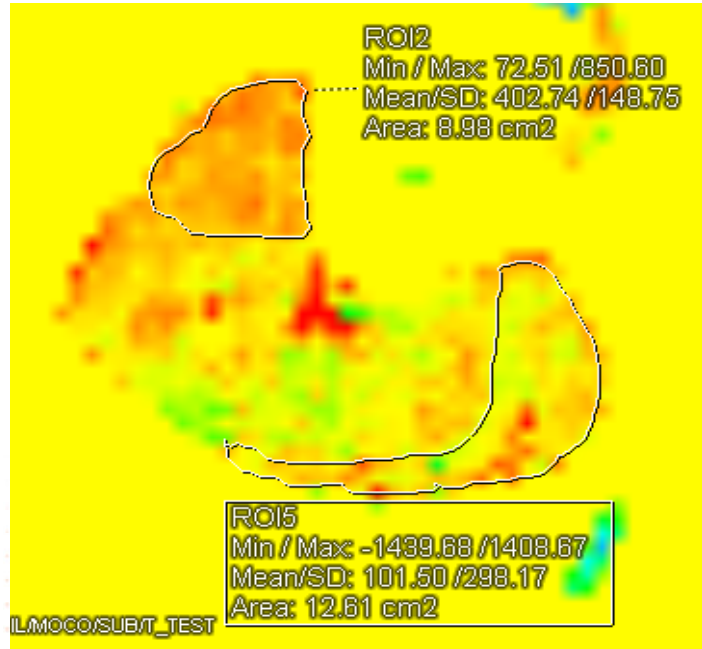
# Current work



Daniel Muller, New England Journal of Medicine, 2019

Scans pre-revascularization, 6-weeks and 6 months post-revascularization

# Arterial Spin Labeling and CrCEST



+

6-min walk score

Scans pre-revascularization, 6-weeks and 6 months post-revascularization



# What we'd like to find

- Can metabolic information predict procedural outcomes?
- Are there metabolic differences among racial groups before and after surgery?
- Are there racial or socioeconomic differences in revascularization recommendations and outcomes?

...The only problem is recruiting

Out of our current 24 recruited patients:

6 are women

3 are Black

1 has not completed High School

ZERO are Hispanic

# How can we better recruit?

- Open to new ideas, outreach campaigns to increase early PAD intervention at UVA.
- Recently received IRB approval to advertise the study more broadly
- Do you know someone with PAD?  
Clinical Research coordinator: Jennifer Kay JRH2G@hscmail.mcc.virginia.edu  
PI for the study: Dr. Chris Kramer, IRB #20015

## **Meyer Lab**

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Steven Allen, PhD  
Xue Feng, PhD  
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Zhixing Wang  
Sheng Chen  
Kang Yan

## **Cardiac Imaging**

Christopher Kramer, MD  
Toril Patel, MD  
Jennifer Kay, RN



NIH T32EB003841, T32HL007284, R01HL075792



Clinical Research coordinator: Jennifer Kay  
JRH2G@hscmail.mcc.virginia.edu  
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IRB #20015

Questions? Ideas? Email at [hls4zh@virginia.edu](mailto:hls4zh@virginia.edu)

