Welcome!
Please be seated by 9 am

Wifi Password: PCORI2019

To follow slides on your laptop:

- https://www.pcori.org/events/2019/advisory-panel-clinical-effectiveness-and-decision-science-spring-2019-meeting

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Clinical Effectiveness and Decision Science Advisory Panel Meeting

June 14, 2019

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Housekeeping

- **Today's webinar is open to the public and is being recorded.**
  - Meeting materials can be found on the PCORI website, www.pcori.org:
    - Meetings & Events → Upcoming → Advisory Panel on Clinical Effectiveness and Decision Science Spring 2019 Meeting
  - Comments may be submitted via chat; no public comment period is scheduled.
- Please remember to **speak loudly** and **clearly into a microphone**.
- State your name and affiliation when you speak.
- Please avoid technical language in your discussion.

Conflict of Interest Statement

Disclosures of conflicts of interest of members of this Committee are publicly available on PCORI's website and are required to be updated annually. Members of this Committee are also reminded to update conflict of interest disclosures if the information has changed by contacting your staff representative.

If this Committee will deliberate or take action on a matter that presents a conflict of interest for you, please inform the Chair so we can discuss how to address the issue. If you have questions about conflict of interest disclosures or recusals relating to you or others, please contact your staff representative.

Welcome & Introductions

David Hickam, MD, MPH
Program Director, CEDS
Patient-Centered Outcomes Research Institute

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Welcome from PCORI

David Hickam, MD, MPH
Program Director, Science

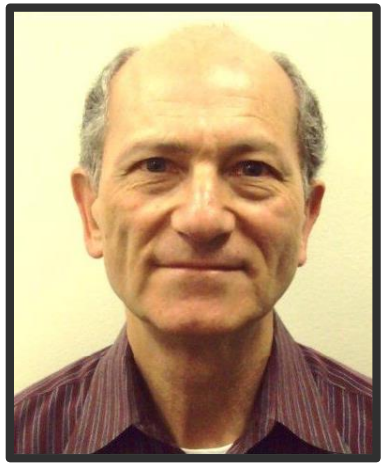
Department: Clinical Effectiveness and Decision Science

David Hickam, MD, MPH, is a program director of the Clinical Effectiveness and Decision Science program at PCORI. He is responsible for developing PCORI's research program that evaluates comparisons among alternative clinical strategies, methodologies, and communication and dissemination research.

Introductions of NEW Chair & Co-Chair

Cornell Wright, MPA
Executive Director, NC Office of Minority Health Disparities
NC Department of Health and Human Services
Representation: Policy Makers
CEDS Advisory Panel Chair

Lawrence Goldberg, MD
Psychiatrist Surveyor, The Joint Commission
Representation: Clinicians
CEDS Advisory Panel Co-Chair



PCORI: The Big Picture, Summer 2019

- PCORI has reached the point where final results of our funded studies are regularly being published in medical journals.
  - Hundreds of completed studies
  - Hundreds of funded studies still underway

- Under the current law, this is the last year in which funds will be transferred into the PCOR Trust Fund.
  - We are continuing to issue funding announcements (three-year maximum duration of studies).
  - The US House of Representatives has introduced a bill (HR3030) to extend PCORI funding through 2029.

Overview - Previous CEDS Meeting Fall 2018

- The day-long meeting was devoted to refining research topic questions related to:
  - Communication of Clinical Uncertainties
  - Complex Patients, Medical Decision Making and Implications for Research
- Hosted two guest presenters to provide context for these topics and highlight key areas for which new research is needed.
- Panelists divided into small groups to discuss questions that aligned with the morning presentations/topics.
- Panelists reconvened in a large group to report back on themes from the small group discussions.

Overview – Fall 2018 Discussions

- Evidence-based decision making and ways to address varying levels of uncertainty related to personalized medicine and complex patients.
- Encourage new comparative effectiveness research on care models that emphasize interprofessional communication such as the medical home.

- PCORI decided to expand the focus of the Communication and Dissemination Research (CDR) PFA for Cycle 1 2019 (which opened January 3, 2019) to include interprofessional and/or team communication for coordinating care to improve clinical care and outcomes.
- Following PCORI outreach, the use of genetic testing has been endorsed as a high-priority topic by payer groups.

CEDS Panel Members

- Rafael Alfonso-Cristancho, MD, MSc, PhD
- Ashish Atreja, MD, MPH
- Nancy Blake, PhD, RN, NEA-BC, CCRN
- Zeeshan Butt, PhD
- Neela Goswami, MD, MPH
- Felix Fernandez, MD, MSc
- Lawrence Goldberg, MD (Incoming Co-Chair)
- Melissa Hicks
- Jeff Hersh, MD, PhD
- Kate Houghton, MPA
- Emilie Johnson, MD, MPH
- Robin Karlin, MS
- Susan Lin, ScD, OTR/L, FAOTA
- Helen Osborne, M.Ed., OTR/L
- Ruth M. Parker, MD, MACP
- Nancy Perrin, PhD
- Janice T. Radak
- Frank Rider, MS
- Andrew Rosenberg, JD, MP
- Michael Schneider, DC, PhD
- Sandi W. Smith, PhD
- Danny van Leeuwen, MPH, RN, CPHQ (Outgoing Co-Chair)
- Maureen White, MD, MS, MBA
- Nancy White, DPT
- Cornell Wright, MPA (Chair)

Overview & Activities

Cornell Wright, MPA
Lawrence Goldberg, MD

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Agenda Overview

Time	Duration	Agenda Item
9–9:15 am	(15 min)	**Welcome and Introductions**
9:15–9:30 am	(15 min)	**Overview and Meeting Activities**
9:30–10:15 am	(45 min)	**Presentation & Discussion – Dr. Mary McDermott**
10:15–10:30 am	(15 min)	**BREAK**
10:30–11:15 am	(45 min)	**Presentation & Discussion – Dr. Robert Zwolak**
11:15 am–noon	(45 min)	**Presentation & Discussion – Dr. Kenneth Rosenfield**
Noon–12:45 pm	(45 min)	**LUNCH & Acknowledgements**
Small/Large Group Discussion Sessions		
12:45–1:45 pm	(1 hour)	**Small Group Discussions**
1:45–2:45 pm	(1 hour)	**Large Group Report-back & Discussion**
2:45–3 pm	(15 min)	**BREAK**
3–3:45 pm	(45 min)	**PCORI Reauthorization Update**
3:45–4 pm	(15 min)	**Wrap-up/Closing & Adjourn**

Bridget Gaglio, PhD, MPH
Senior Program Officer, CEDS
Patient-Centered Outcomes Research Institute

Today's Topic – Peripheral Artery Disease

This topic has been identified over time through a variety of PCORI topic discussions

- Previous stakeholder and advisory panel meetings
- Discussions among PCORI staff and PCORI's Board of Governors

Presenters with three unique perspectives in the field of PAD:

- Dr. Mary McDermott, Northwestern University
- Dr. Bob Zwolak, Dartmouth-Hitchcock Medical Center
- Dr. Ken Rosenfield, Massachusetts General Hospital

Mary M. McDermott, MD

Jeremiah Stamler Professor of Medicine

Northwestern University Feinberg School of Medicine

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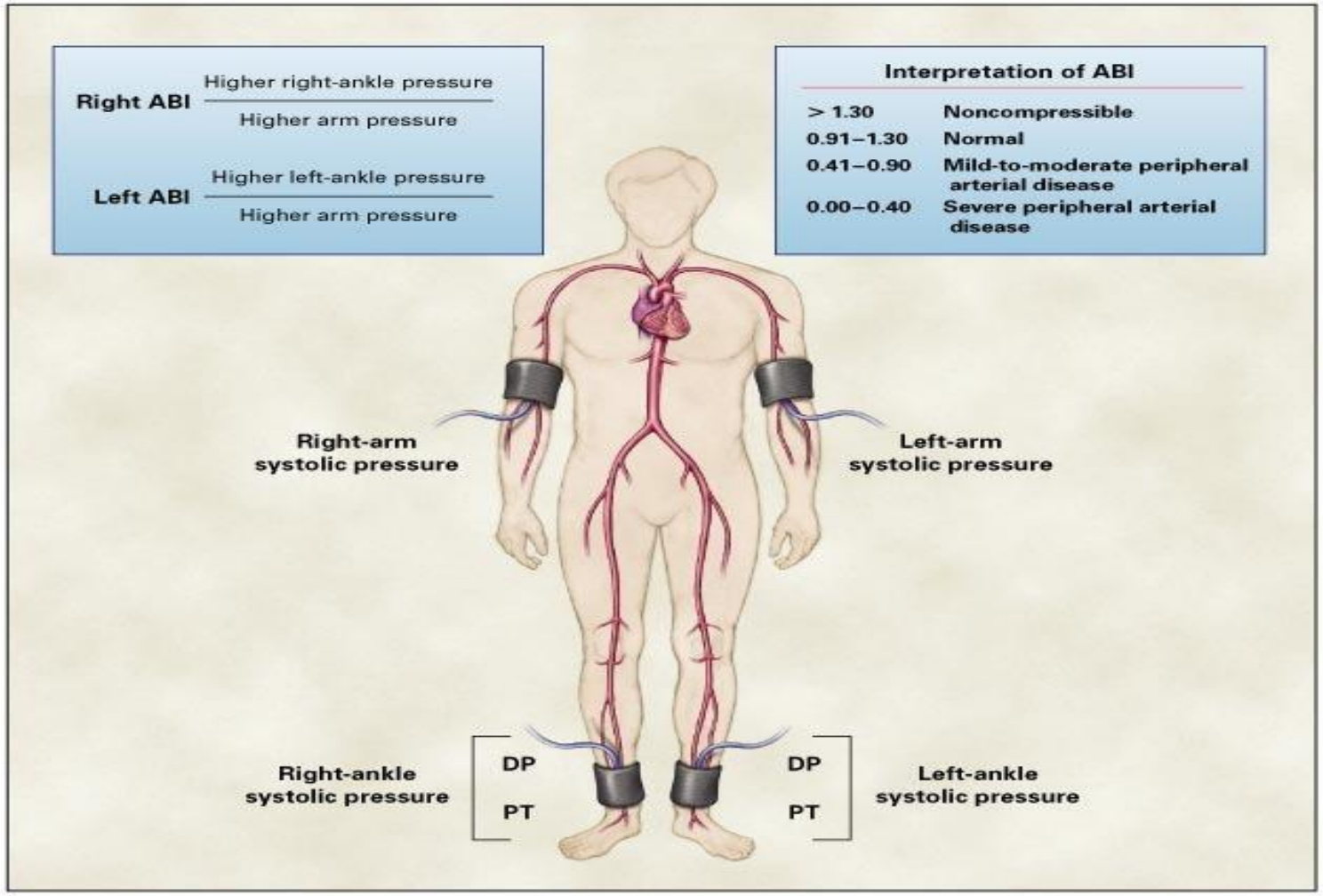
Peripheral Artery Disease

- Affects more than 200 million men and women worldwide
- People with PAD have increased rates of cardiac and stroke events
- People with PAD have greater walking impairment and increased mobility loss
- PAD is disabling
- **PAD is underdiagnosed, undertreated, understudied**

Peripheral Artery Disease

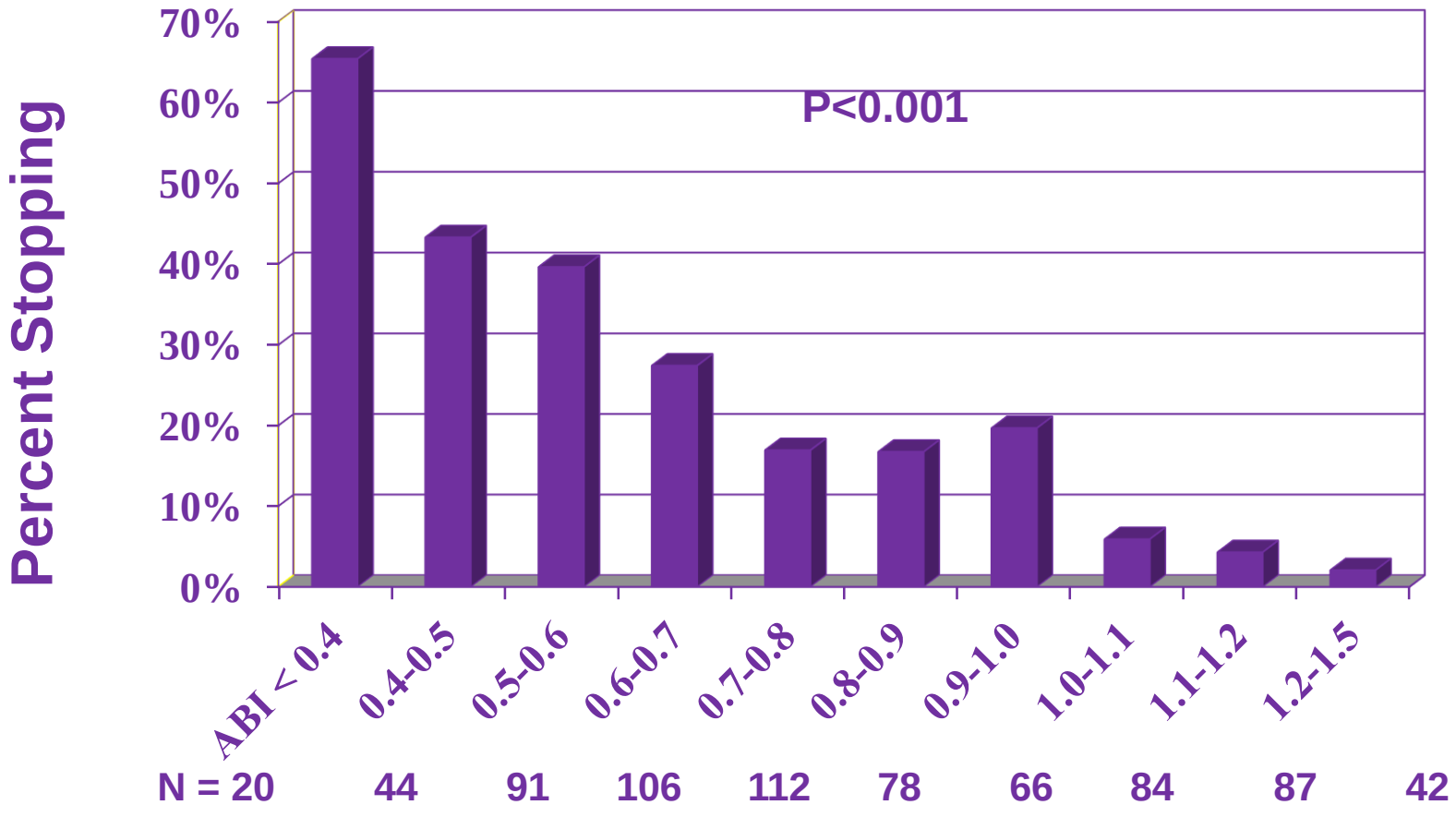


Hiatt WR. *New Engl J Med* 2001;344:1608-1621

Clinical Significance of peripheral artery disease

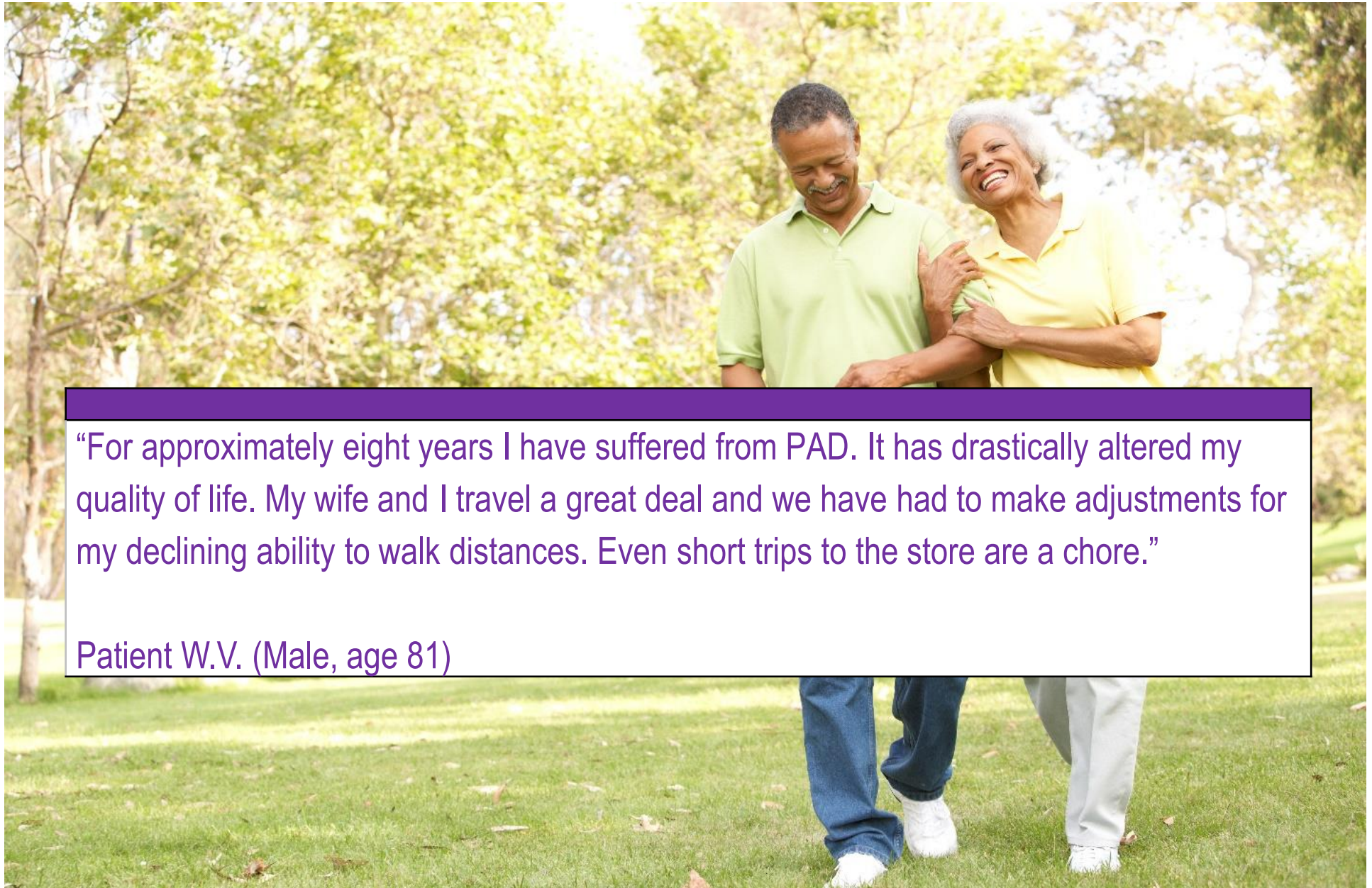
- **People with PAD have**
  - functional impairment and mobility loss
  - high rates of cardiovascular events

Age-Adjusted Proportion of Men and Women Who Stopped During the 6-minute Walk by Ankle Brachial Index Category (N=741)



McDermott MM et al. *Ann Intern Med* 2002;136:873-883.

Quotes from PAD patients



"For approximately eight years I have suffered from PAD. It has drastically altered my quality of life. My wife and I travel a great deal and we have had to make adjustments for my declining ability to walk distances. Even short trips to the store are a chore."

Patient W.V. (Male, age 81)

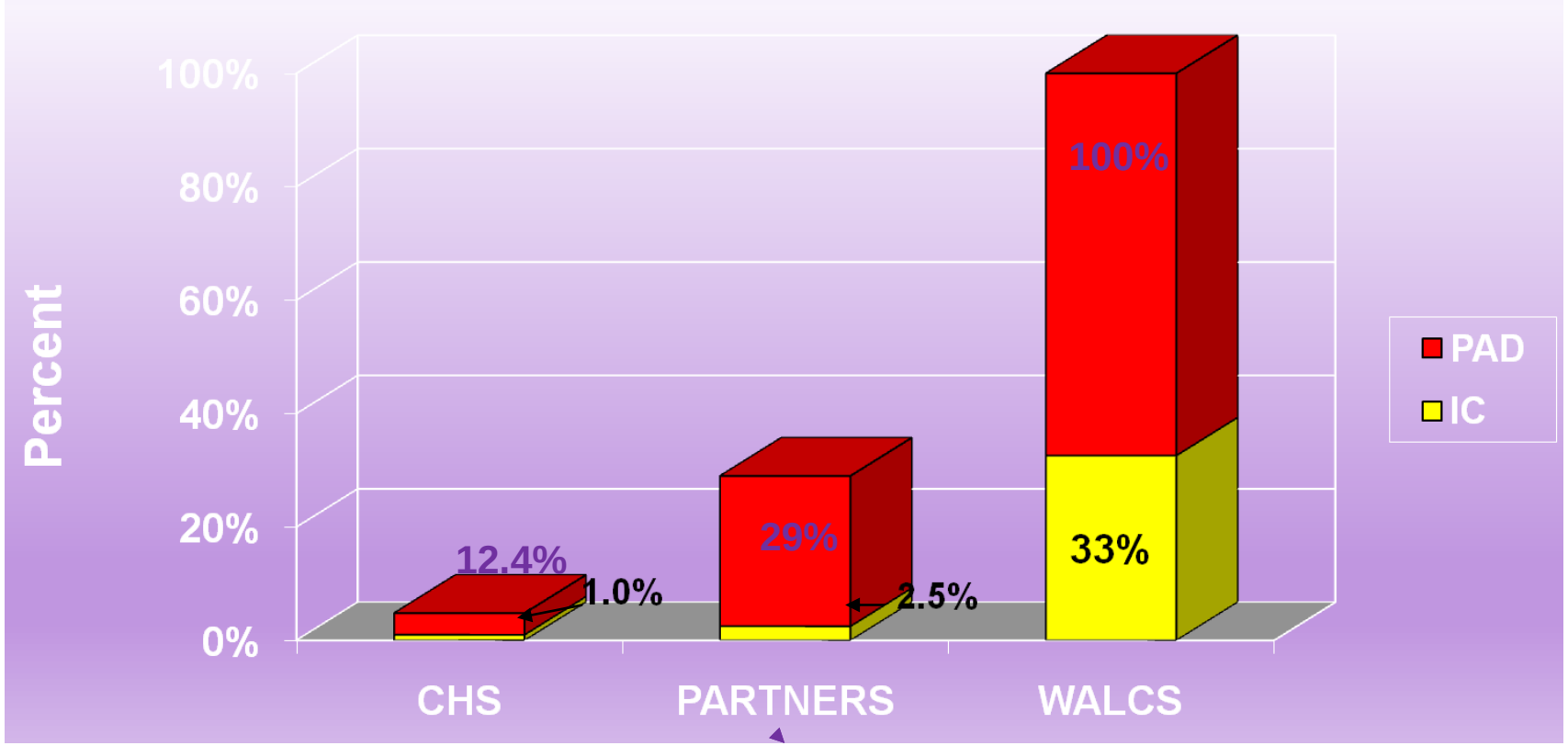
Problem #1. Peripheral artery disease is underrecognized, underdiagnosed and undertreated

Intermittent claudication is the most classical symptom of PAD

- Exertional leg pain that…..
  - Involves the calf
  - Resolves within 10 minutes of rest
  - Does not begin at rest
  - Does not resolve while walking

Rose GA. Bull World Health Organ 1962;27:645-678.

PAD presents atypically and is frequently undiagnosed



Newman AB, et al. J Clin Epi 2001; 54:294-300.

Hirsch AT, et al. JAMA 2001; 286: 1317-1324.

McDermott MM, et al. JAMA 2001;286:1599-1606.

Peripheral artery disease

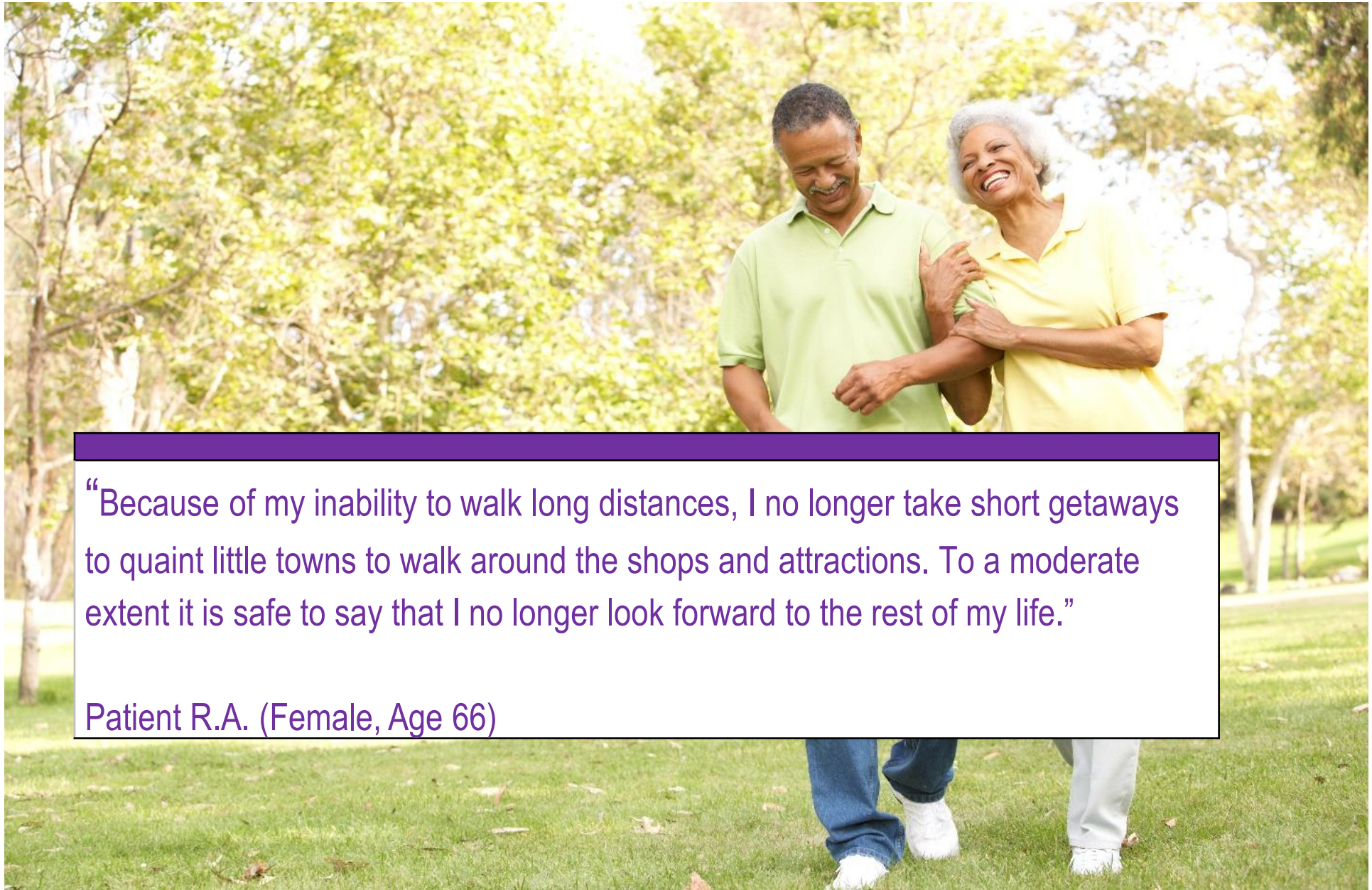
- Underdiagnosed
  - People with PAD are older and frequently have unclear symptoms that may be confused with arthritis or spinal degenerative disease.
- Undertreated
  - People with PAD are less likely than others to receive cardiovascular preventive therapies.
  - Most patients with PAD do not exercise.
- Underappreciated

Funding Priority #1

- Increase recognition, diagnosis, and treatment of peripheral artery disease
  - Among clinicians
  - Among patients

Problem #2. Patients with PAD have functional impairment and few effective medical therapies improve functional impairment in PAD

Quotes from PAD participants



"Because of my inability to walk long distances, I no longer take short getaways to quaint little towns to walk around the shops and attractions. To a moderate extent it is safe to say that I no longer look forward to the rest of my life."

Patient R.A. (Female, Age 66)

Few medical therapies exist for PAD

Only two FDA-approved medications.

- **Cilostazol** – modestly improves walking performance
- **Pentoxifylline** - not better than placebo

Supervised treadmill exercise

- Effective
- Recommended by clinical practice guidelines
- Covered by CMS for symptomatic PAD since 2017
- But few people with PAD participate

Most PAD patients do not participate in supervised exercise programs

- **Participation is burdensome**
  - **69% of PAD patients eligible for randomized trials of supervised exercise refused participation due to inconvenience, other health issues, or lack of interest**

Harwood AE et al. *Ann Vasc Surg* 2016;34:280-289.

Funding priority #2: Increase participation in supervised treadmill exercise by participants with PAD

Home-based walking exercise interventions in PAD

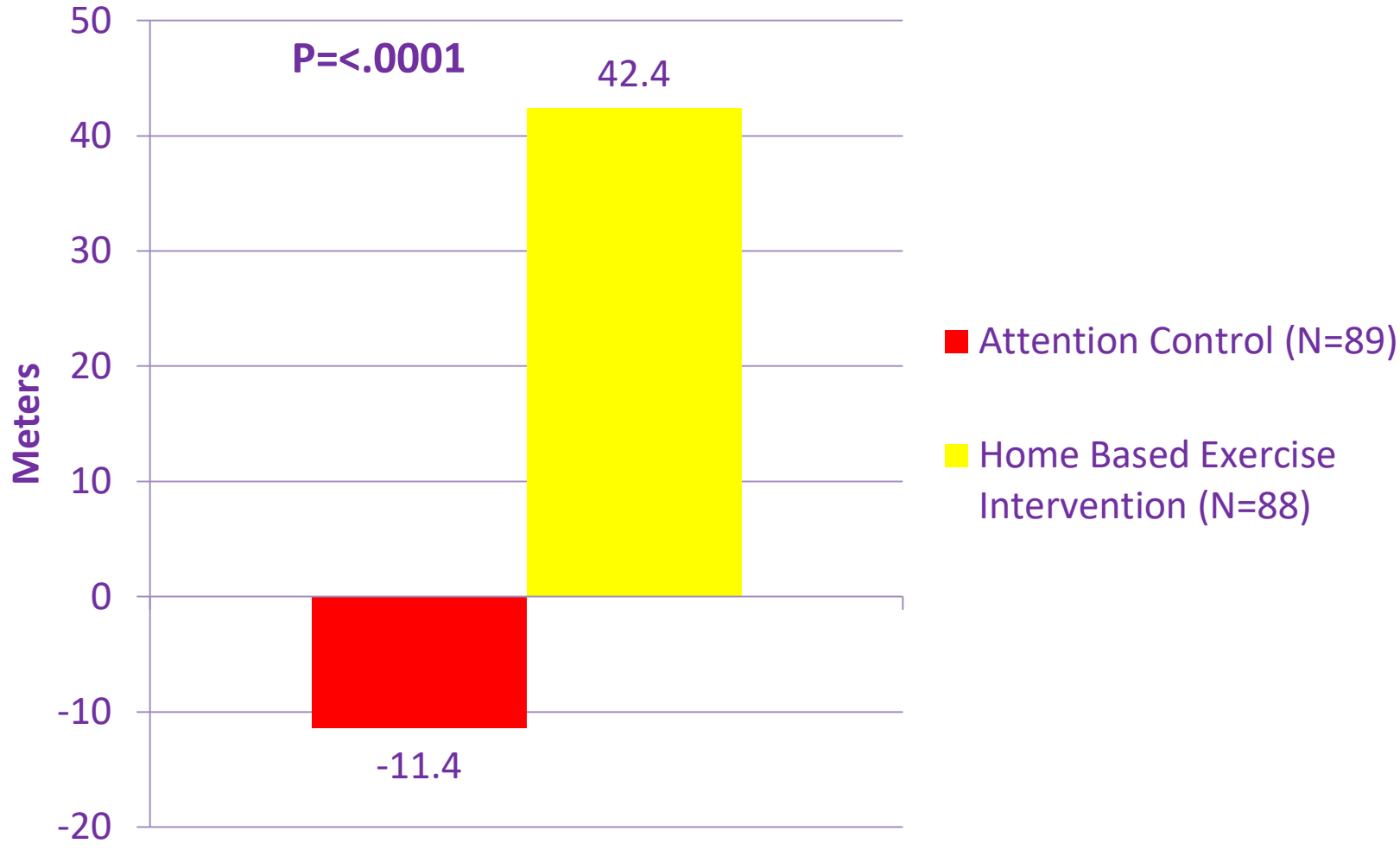
- More accessible and acceptable to patients with PAD
- Avoid burden of attending 3x/weekly exercise sessions
- Recommended by clinical practice guidelines “Reasonable to recommend”
- Can be effective

GOALS Trial

- Home-based walking exercise intervention in PAD
- Participants attended one group session per week
- Tested whether home-based walking exercise could improve walking ability in PAD

McDermott MM et al, *JAMA* 2013;310:57-65.

GOALS Trial: Change in Six-minute Walk at Six-month Follow-up



McDermott MM et al, *JAMA* 2013;310:57-65.

HONOR Study

- PCORI-funded home-based exercise multicentered randomized clinical trial in 200 PAD participants
- Nine-month intervention
- Intervention included
  - Fitbit wearable device
  - Coach (call frequency monthly for last 4.5 months)

McDermott MM et al. JAMA 2018

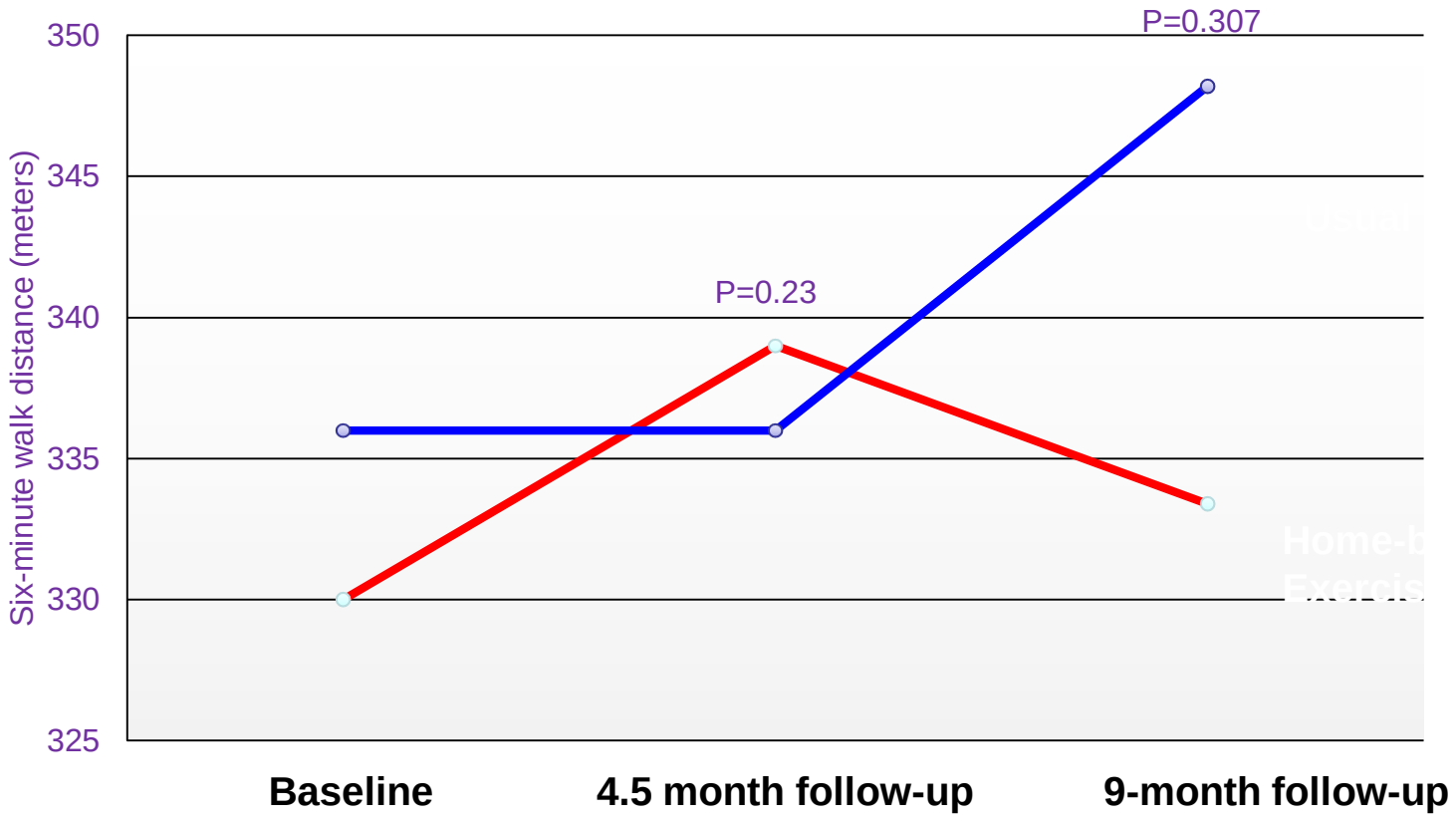
Fitbit Activity Monitor used in the HONOR Trial

Figure 1a. Fitbit shown next to quarter

Figure 1b. Uploaded Fitbit data from PAD participant

Figure 1 Legend. Figure 1a shows the Fitbit adjacent to a quarter. Figure 1b shows uploaded data from a PAD participant in our pilot study. As shown in Figure 1b, the y axis shows number of steps and the x-axis shows time. As shown in Figure 1b, this PAD participant was extremely inactive when he was not exercising.

Effect of HONOR home-based exercise intervention on change in six-minute walk distance in PAD.



McDermott MM et al. JAMA 2018

Funding priority #3

- Develop scalable and effective home-based walking exercise interventions that have a sustained beneficial effect on walking impairment in PAD

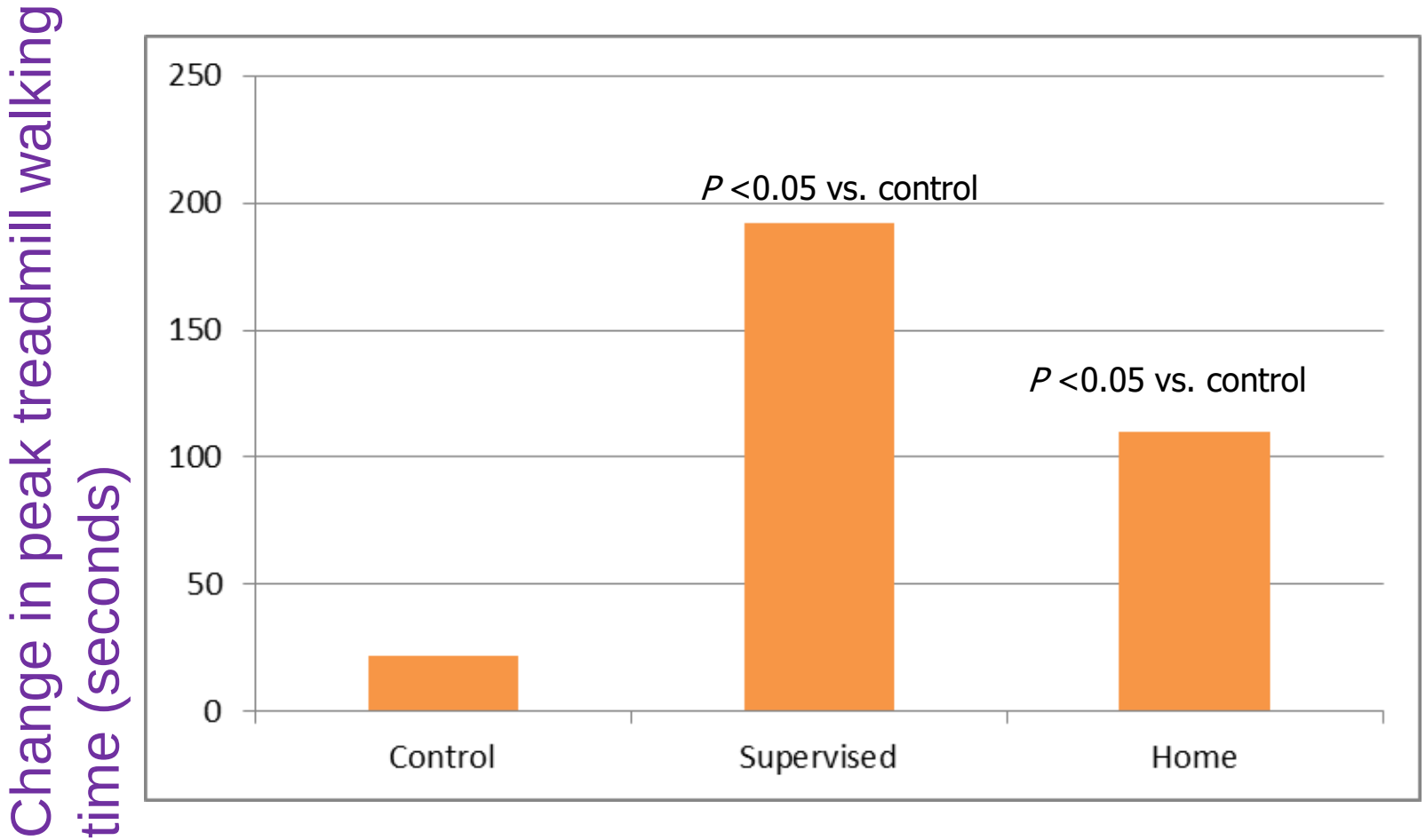
Funding priority #4. Identify new effective medical therapies for PAD

Problem #3. What is the best walking outcome measurement in PAD?

Treadmill walking has been the gold standard outcome measurement in PAD

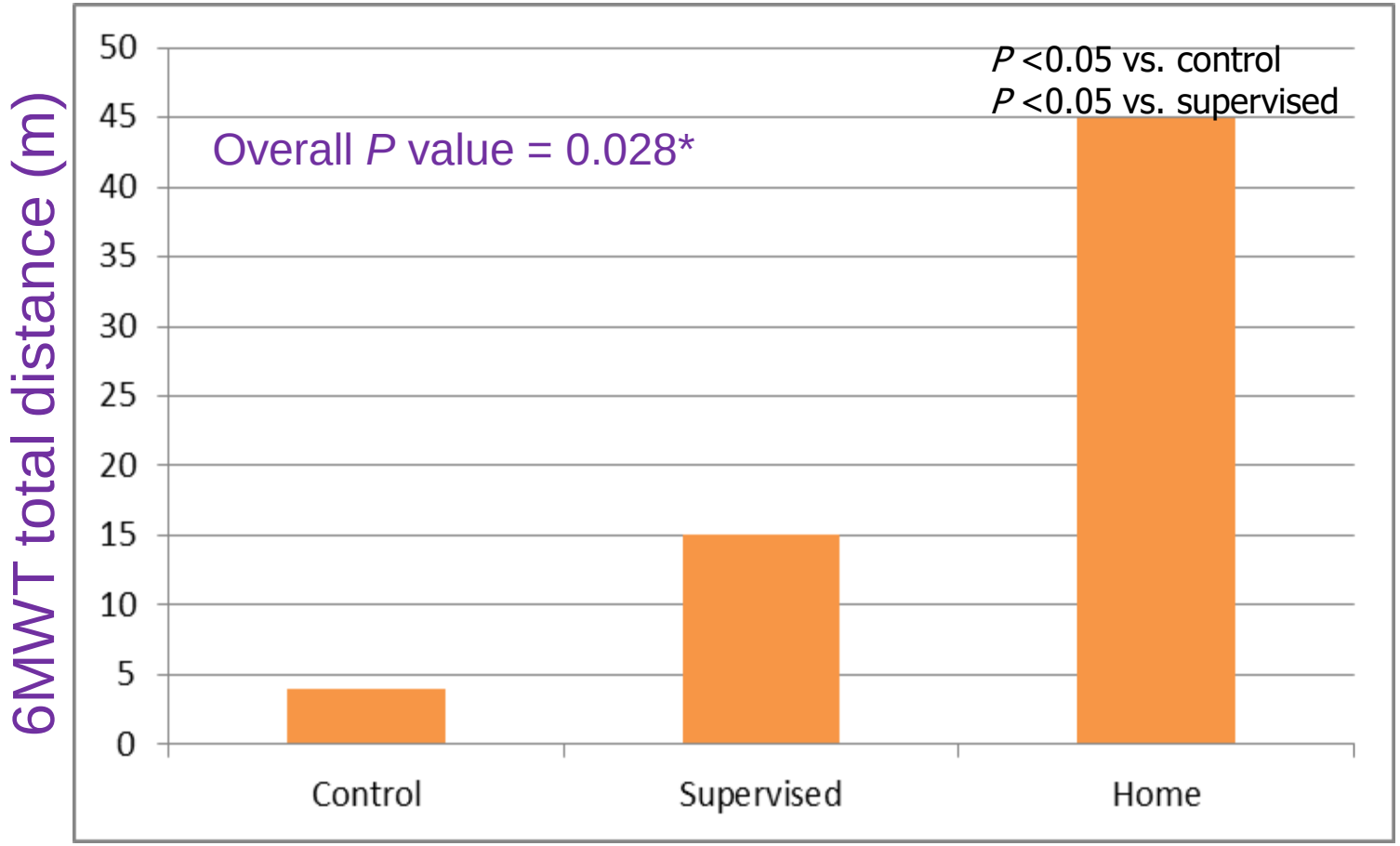
- Treadmill testing does not represent walking in daily life.
- Treadmill walking does not correlate well with physical activity in daily life.
- Patients care more about walking in their community than treadmill walking.

Change in treadmill walking following exercise interventions in PAD



Gardner AW et al, *J Am Heart Assoc* 2014;3:e001107.

Changes in six-minute walk distance following exercise interventions in PAD



Gardner AW et al, *J Am Heart Assoc* 2014;3:e001107.

Funding priority #4. Identify relevant and meaningful outcome measurements for patients with PAD

Funding Priorities

- 1. Increase recognition, diagnosis and treatment of peripheral artery disease.
- 2. Increase participation in supervised treadmill exercise by patients with PAD.
- 3. Develop scalable and effective home-based exercise interventions for PAD.
- 4. Identify the most relevant and meaningful outcome measures for patients with PAD.

BREAK
10:15–10:30 AM

Up Next: Presentation & Discussion
Bob Zwolak, MD, PhD

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Bob Zwolak, MD, PhD
Chief of Surgery
Manchester VA Medical Center

Professor of Surgery
Geisel School of Medicine at Dartmouth

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Presenter Disclosure Information

Robert M. Zwolak, MD, PhD

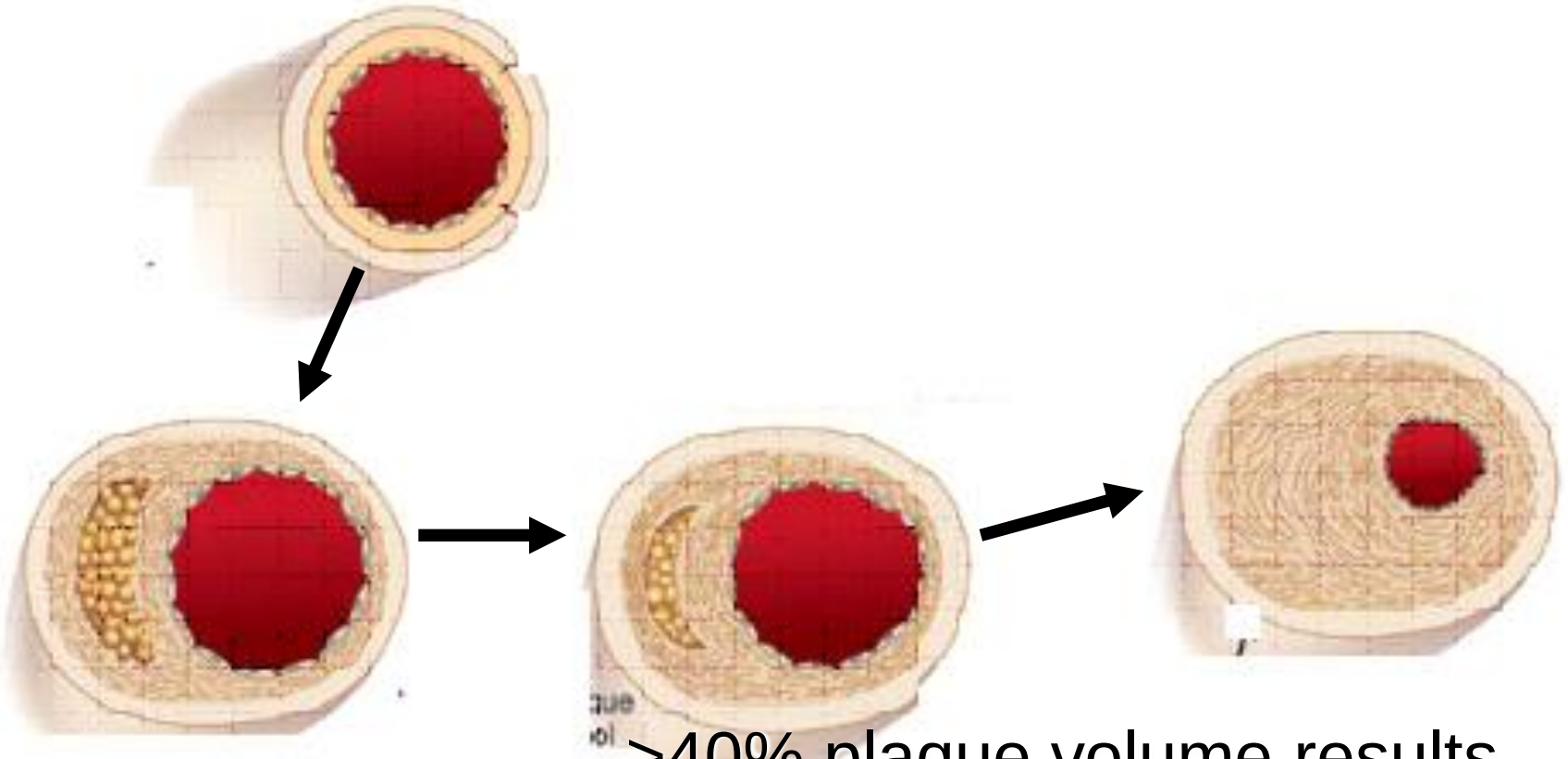
No Disclosure relevant to this presentation

Benchmarks of PCORI Research

- Help patients make decisions
- “Research Done Differently”
- Meaningful patient engagement at all steps
- Useful
- Pragmatic
- Better, Faster, Cheaper
- Research that takes advantage of PCORNET
- Targeted topics that hit the bullseye

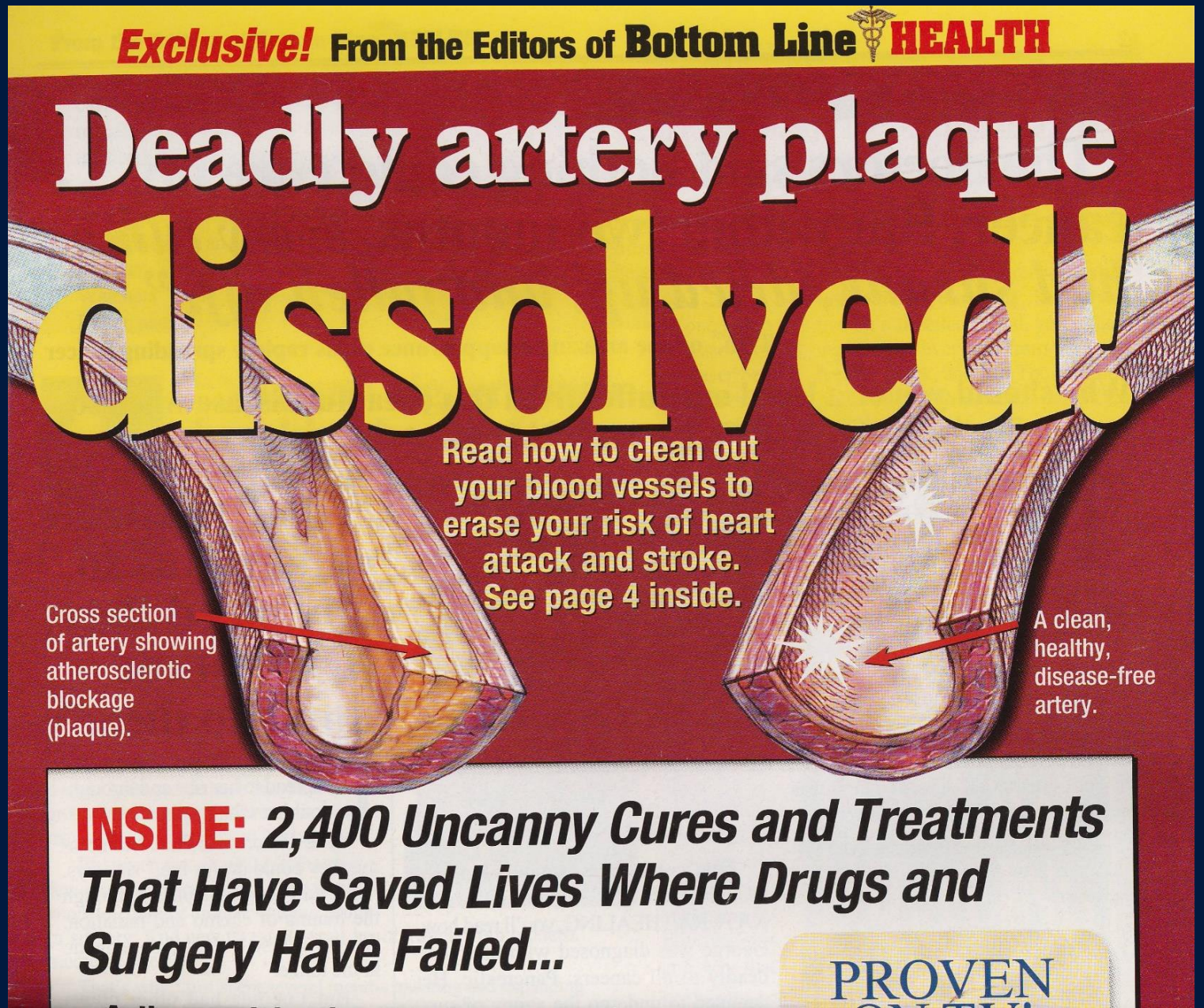
Atherosclerosis and Outward Remodeling

Outward remodeling maintains lumen diameter

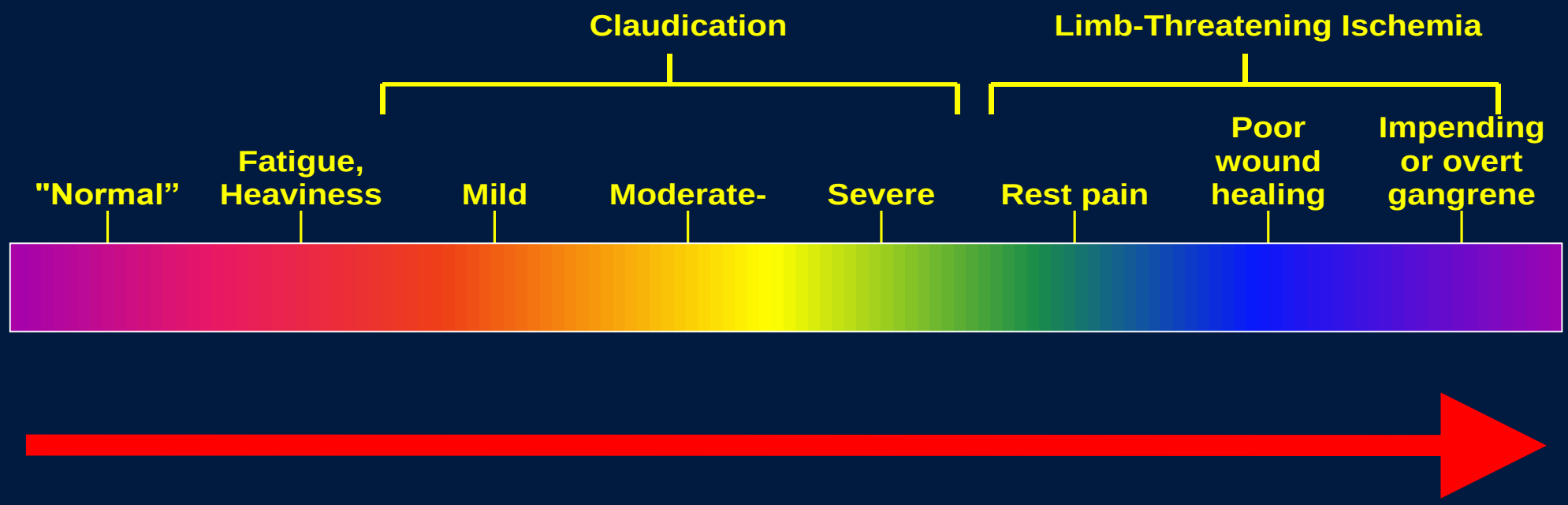


>40% plaque volume results in loss of lumen diameter

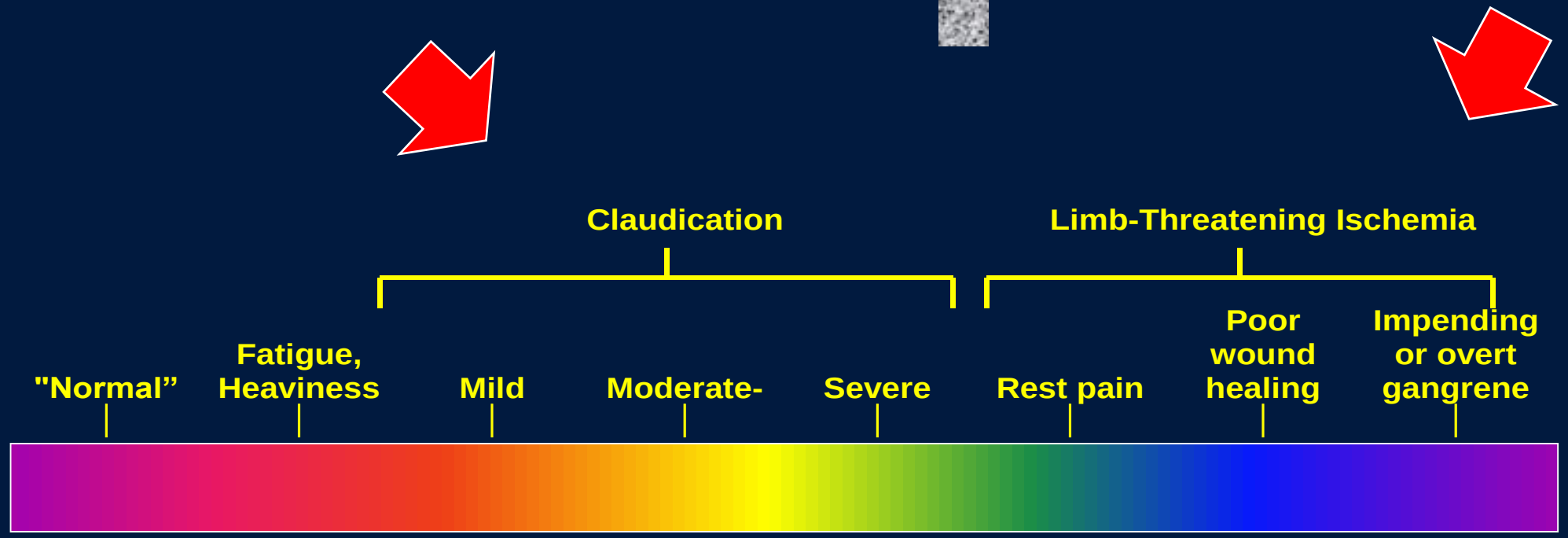
Treatment Options



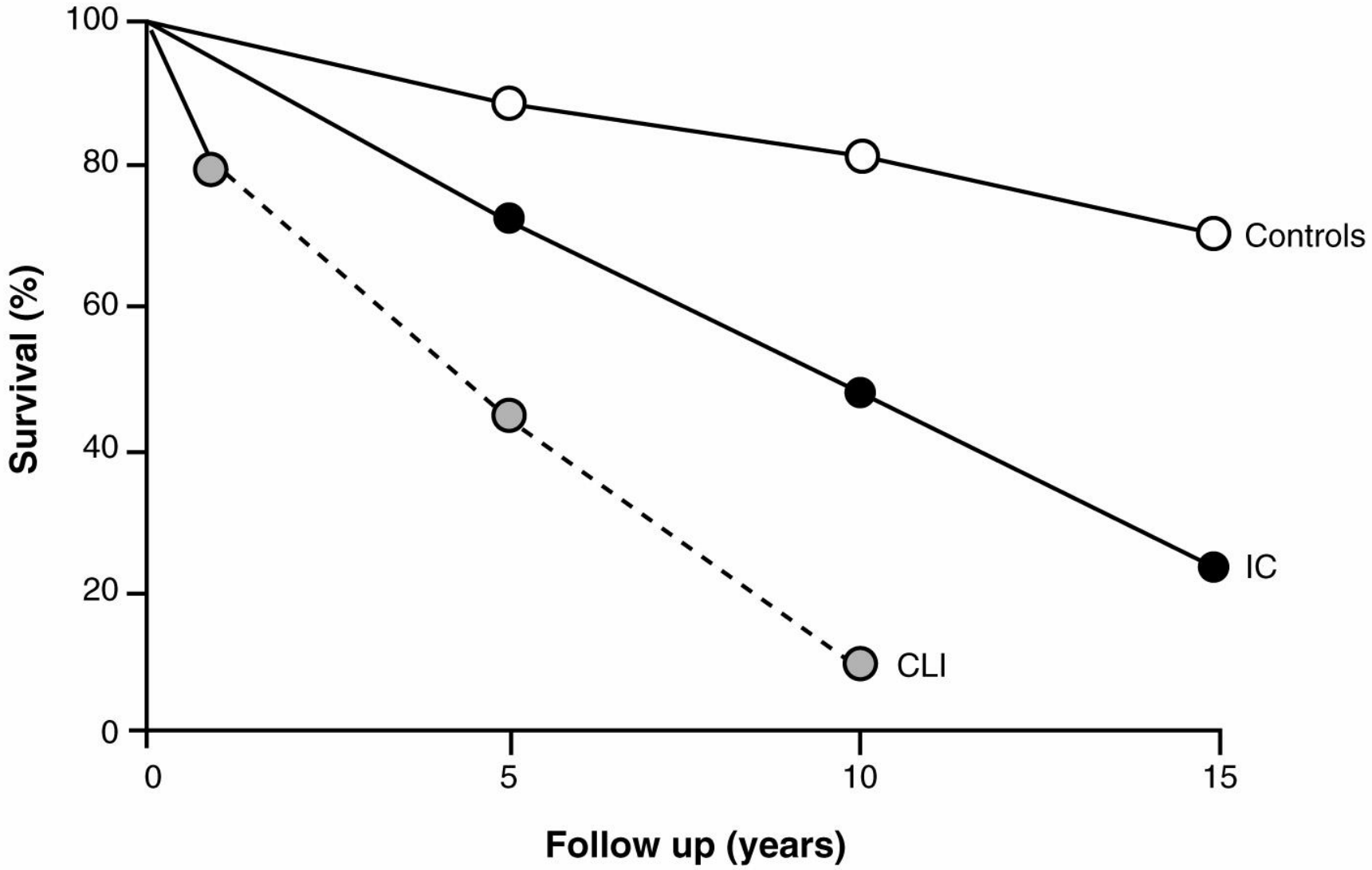
Spectrum of Peripheral Artery Disease (PAD)



To be Useful, PAD Research Must limit population to Claudication or Limb-threat Ischemia



Fate of Patients with PAD



Taken from TASC

There’s no cure for Peripheral Arterial Disease, but lifestyle changes and medication can help reduce the symptoms.

NHS Website

In a few cases, a procedure to restore blood flow to the legs is indicated.

* Angioplasty
* Arterial Bypass Graft

NHS Website

Critical Limb Ischemia (CLI)

- Major unmet public health need
    1. 10-40% Amputation within one year
    2. 20% One year mortality
- Limited therapeutic options:
    1. Revasc expensive, not always possible
    2. Conservative wound care – poor results
    3. Amputation – high adverse QoL impact

NET RESULT: CLI Expensive, Morbid, Deadly

Critical Limb Ischemia with Rest Pain

Dependent Rubor

Ischemic Ulceration / Gangrene

Clinical Classification of Patients with PAD

Rutherford Classification

- Category 0: Asymptomatic
- Category 1: Mild claudication
- Category 2: Moderate claudication
- Category 3: Severe claudication
- Category 4: Ischemic Rest pain
- Category 5: Minor Tissue loss
- Category 6: Major Tissue loss

Anatomic Classification of Patients with PAD

TASC A Fem/Pop/Tib Lesions:

- Single stenosis/occlusion (unilateral/bilateral)
  <10cm not involving the bifurcation

* TransAtlantic Inter-Society Consensus document on PAD version 2

TASC B Fem-Pop-Tib Lesions

- Multiple stenoses or occlusions <5 cm each not involving the trifurcation
- Single stenosis or occlusion < 15 cm not involving the trifurcation
- Single or multiple lesions in the absence of continuous tibial runoff to improve inflow for distal surgical bypass

Percutaneous Interventions can Recanalize Completely Occluded TASC B lesion

TASC C Fem-Pop-Tib Lesions

- Heavily calcified CFA stenosis
- Heavily calcified stenoses or occlusions >15 cm
- Recurrent stenoses or occlusions after one redo

TASC D Fem-Pop-Tib Lesions

- Complete CFA occlusion
- Complete SFA occlusion in excess of 20 cm
- Complete popliteal artery and proximal trifurcation occlusion

Summary: TASC Recommendations for Fem-Pop Treatment

- Percutaneous intervention is “usually” best first choice for TASC A&B.
- Insufficient data to decide TASC C.
- Surgery first choice for TASC D.

Enormous Variation in Patient Attitudes & Expectations

- Claudication
  - *“I can’t walk more than 50 feet, but I’ve learned to live with it. I’m OK.”*
  - *“I can only walk two blocks before my leg hurts. This has to be fixed.”*

Enormous Variation in Patient Attitudes & Expectations

- Critical Limb Ischemia
  - *“I hate being in the hospital. Do whatever is fast and guaranteed to work even if that’s an amputation.”*
  - *“I’d rather die than have a leg amputation.”*

Treatment Options

Appropriate treatment depends on:
Disease Severity
Disease Location
Focal vs Diffuse Location Stenosis
vs Complete Occlusion

and Patient Preference

Treatment Options

- Risk Factor Control
- Walking Exercise / Supervised Walking
- Pletal / Cilostazol, Statin, Anti-platelet
- Percutaneous Intervention
  - ✓ Balloon Angioplasty, Plain-Old, or Drug-Coated
  - ✓ Stent, Covered Stent, Drug-coated Stent
  - ✓ Atherectomy: mechanical, laser,
- Bypass Surgery
- Major Limb Amputation

It is possible to perform a high-quality study in this arena.

Balloon Angioplasty vs Nitinol Stenting in the SFA

12-month data

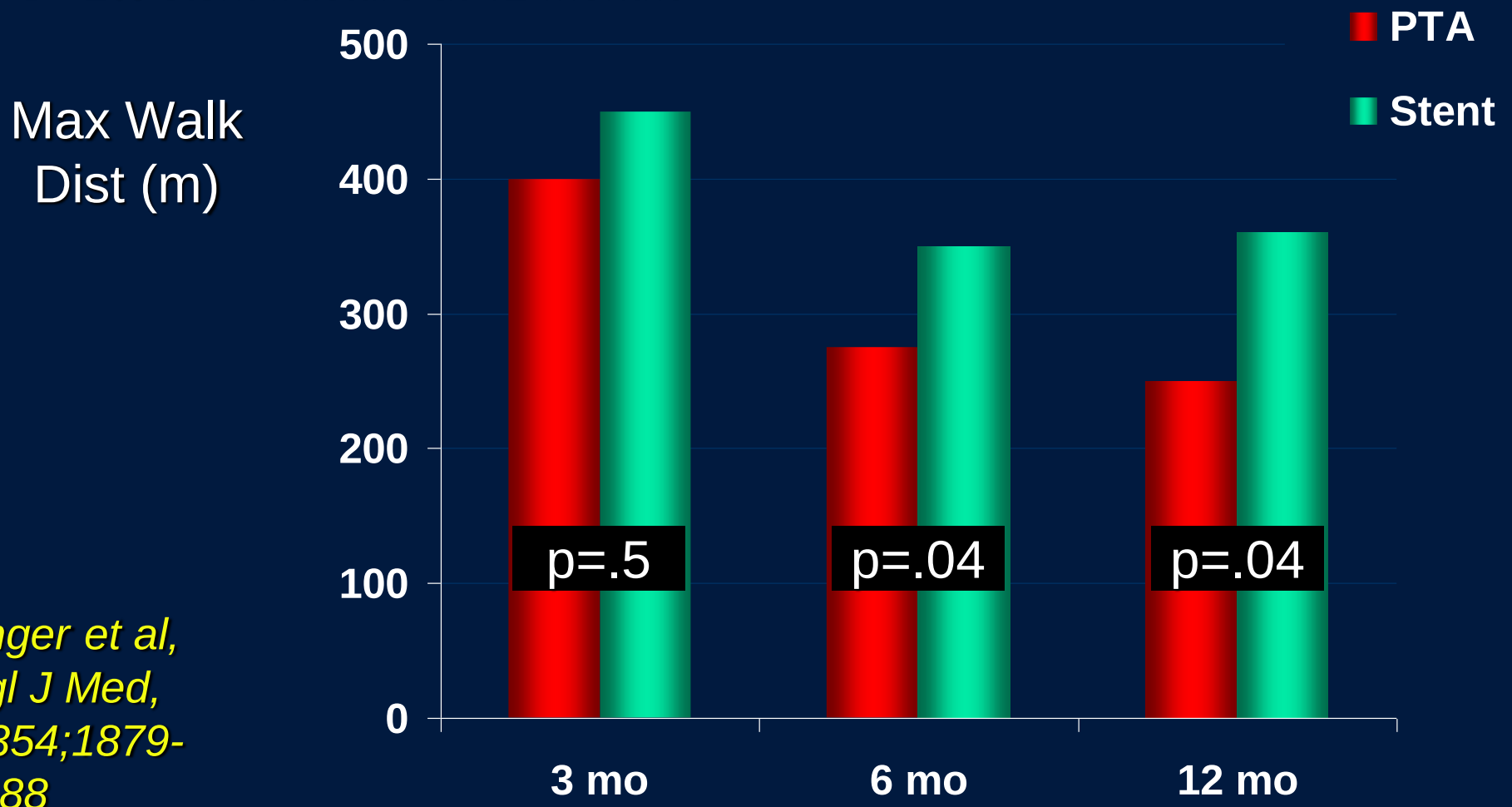
- Randomized controlled trial
- Mean lesion length 12 cm
- Restenosis rate 37% for stent-treated patients versus 63% for angioplasty
- Improved treadmill walking for stent group
- 2% incidence of stent fracture

Schillinger et al, NEJM, 2006

SFA Intervention: Results of an RCT

Angioplasty vs Primary Stenting

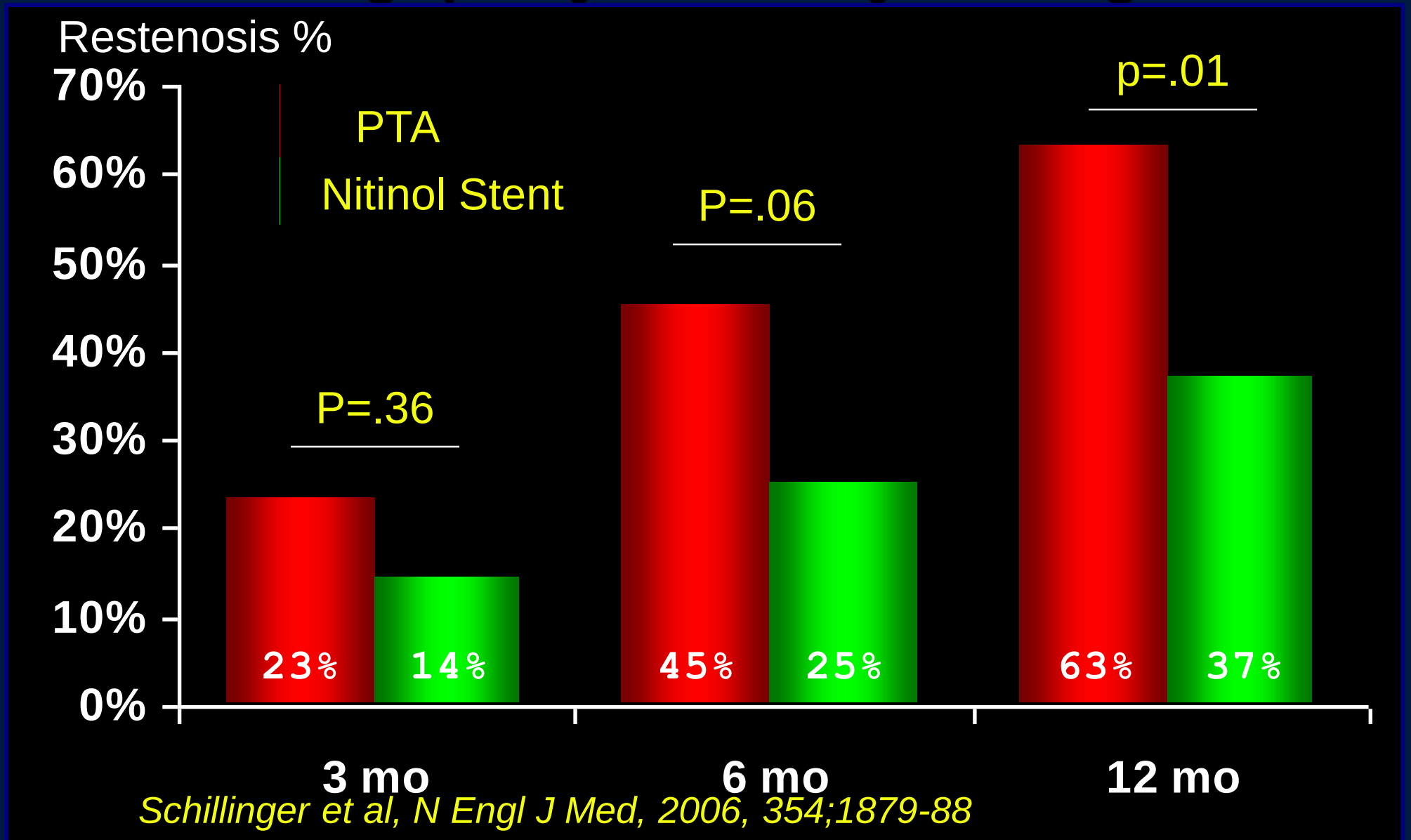
- 104 patients randomized to Nitinol Stent vs PTA
- Mean lesion length 13 cm
- 2% stent fracture at 12 months



Schillinger et al, N Engl J Med, 2006, 354;1879-88

SFA Intervention: Results of an RCT

Angioplasty vs Primary Stenting



Schillinger et al, N Engl J Med, 2006, 354;1879-88

Reanalysis of data, pooled analysis and long-term analysis can be very revealing.

Risk of Death Following Application of Paclitaxel-Coated Balloons and Stents in the Femoropopliteal Artery of the Leg: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Konstantinos Katsanos, MD, PhD, MSc, EBIR; Stavros Spiliopoulos, MD, PhD; Panagiotis Kitrou, MD, PhD; Miltiadis Krokidis, MD, PhD; Dimitrios Karnabatidis, MD, PhD

Conclusions—There is increased risk of death following application of paclitaxel-coated balloons and stents in the femoropopliteal artery of the lower limbs. Further investigations are urgently warranted.

Clinical Trial Registration—URL: www.crd.york.ac.uk/PROSPERO. Unique identifier: CRD42018099447. (*J Am Heart Assoc.* 2018;7:e011245. DOI: 10.1161/JAHA.118.011245.)

Lower Extremity Drug-Eluting Stents Increase Death Compared to Bare Metal Stents at 4-5 Years

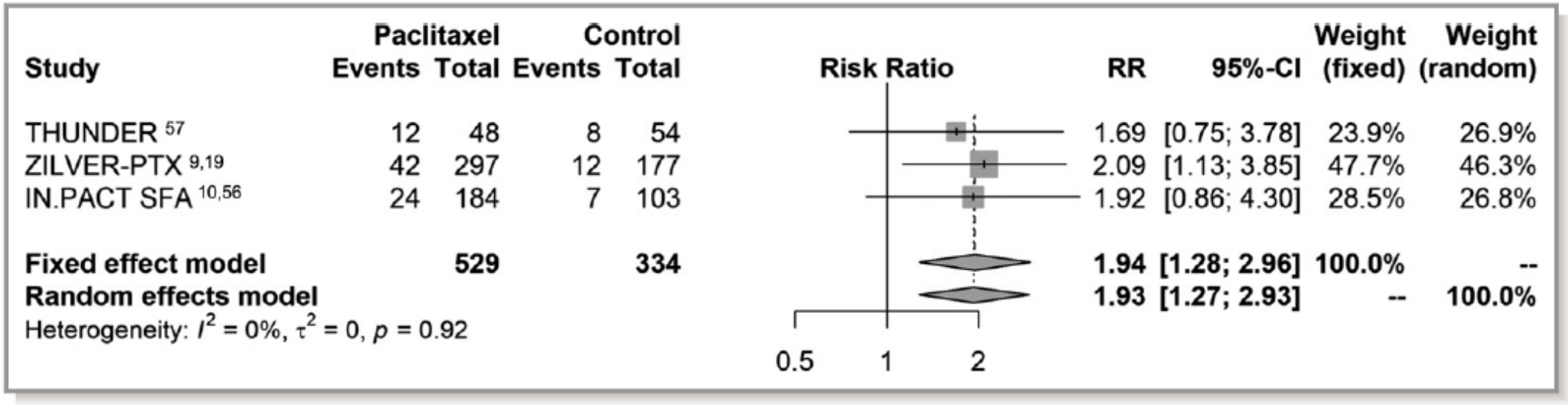


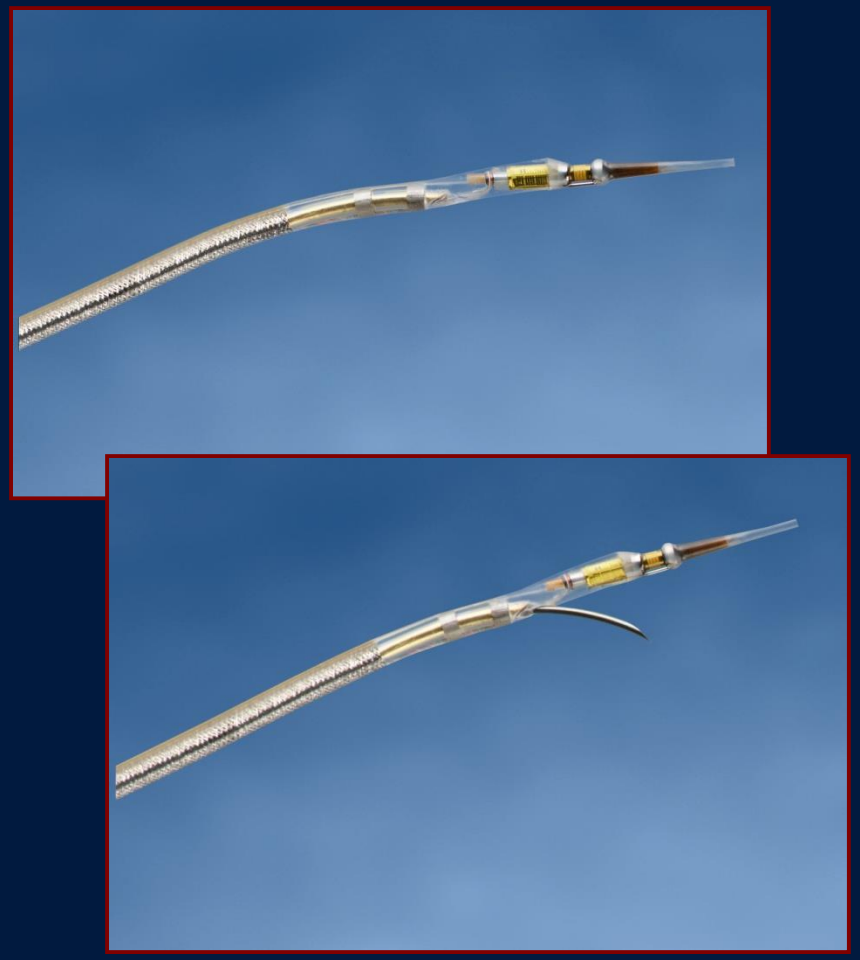
Figure 3. Random effects forest plot of all-cause death at 4 to 5 years. Pooled point estimate was expressed as risk ratio (RR).

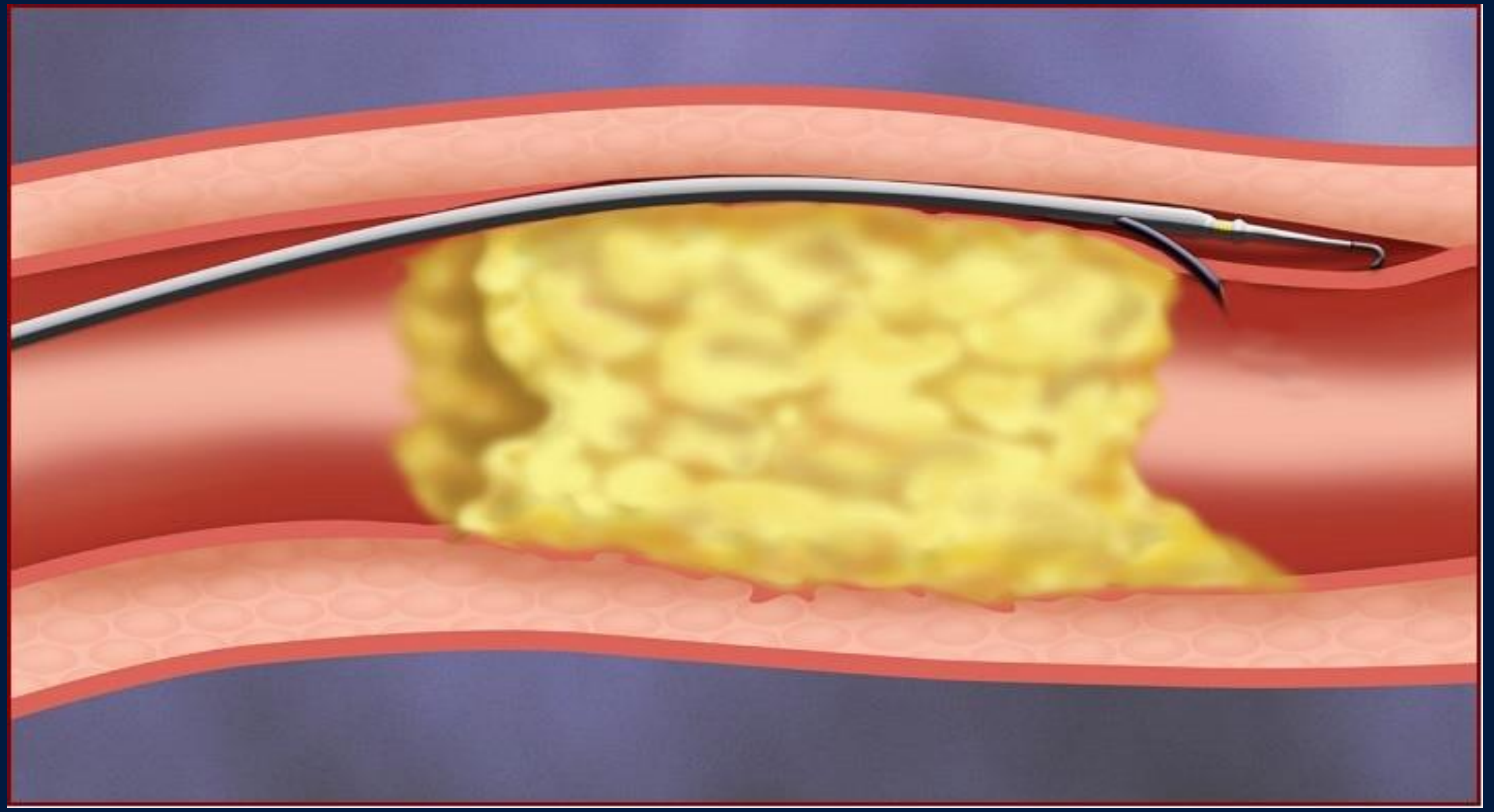
Katsanos et al
J Am Heart Assoc
Dec 2018

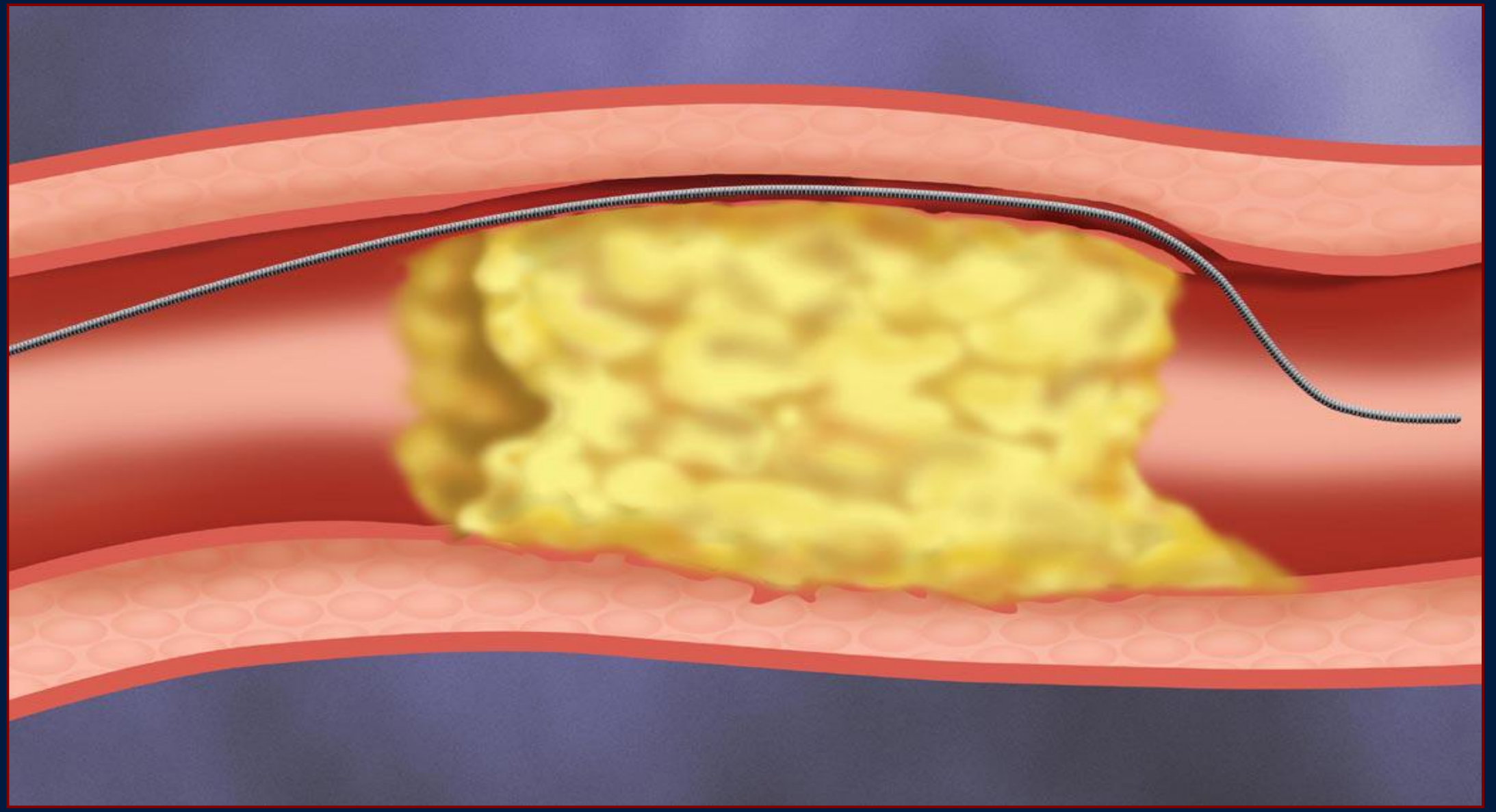
It’s hard to imagine that super high-tech gadgets will ever have a true evidence base.

Re-entry devices in the SFA
Chronic Total Occlusion

- Front runner
- Pioneer
- Outback
  - Pre-dilate track
  - Less successful with calcification
  - Precise vessel re-entry

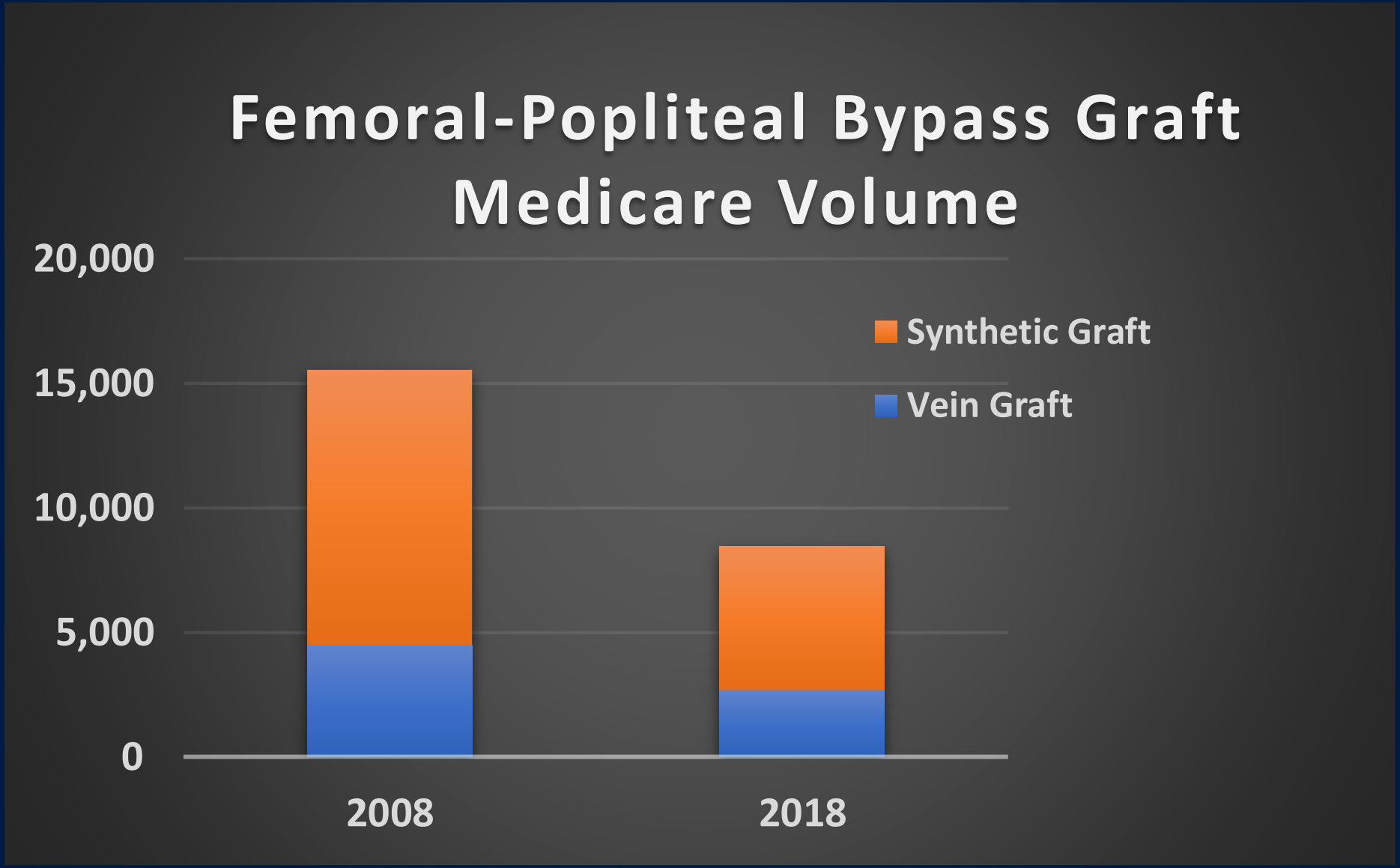






Does Current Practice Follow Published Evidence?

Surgical Bypass Grafts are Rarely Done



Lower Extremity Bypass Surgery

Bypass Surgery for Critical Limb Ischemia 1998 Outcomes

- Short-term Outcomes (6 months)
  - Death 6.3%
  - Amputation 6%
  - Peri-procedural complication 26%
  - Symptoms not resolved 25%
  - Loss of independence 12%
- Only 14% of patients had “ideal” 3-year outcome following open surgery.

Nicoloff et al , J Vasc Surg , 256-63, 1998

Bypass Surgery for Critical Limb Ischemia 2006 Outcomes (Prevent III Trial)

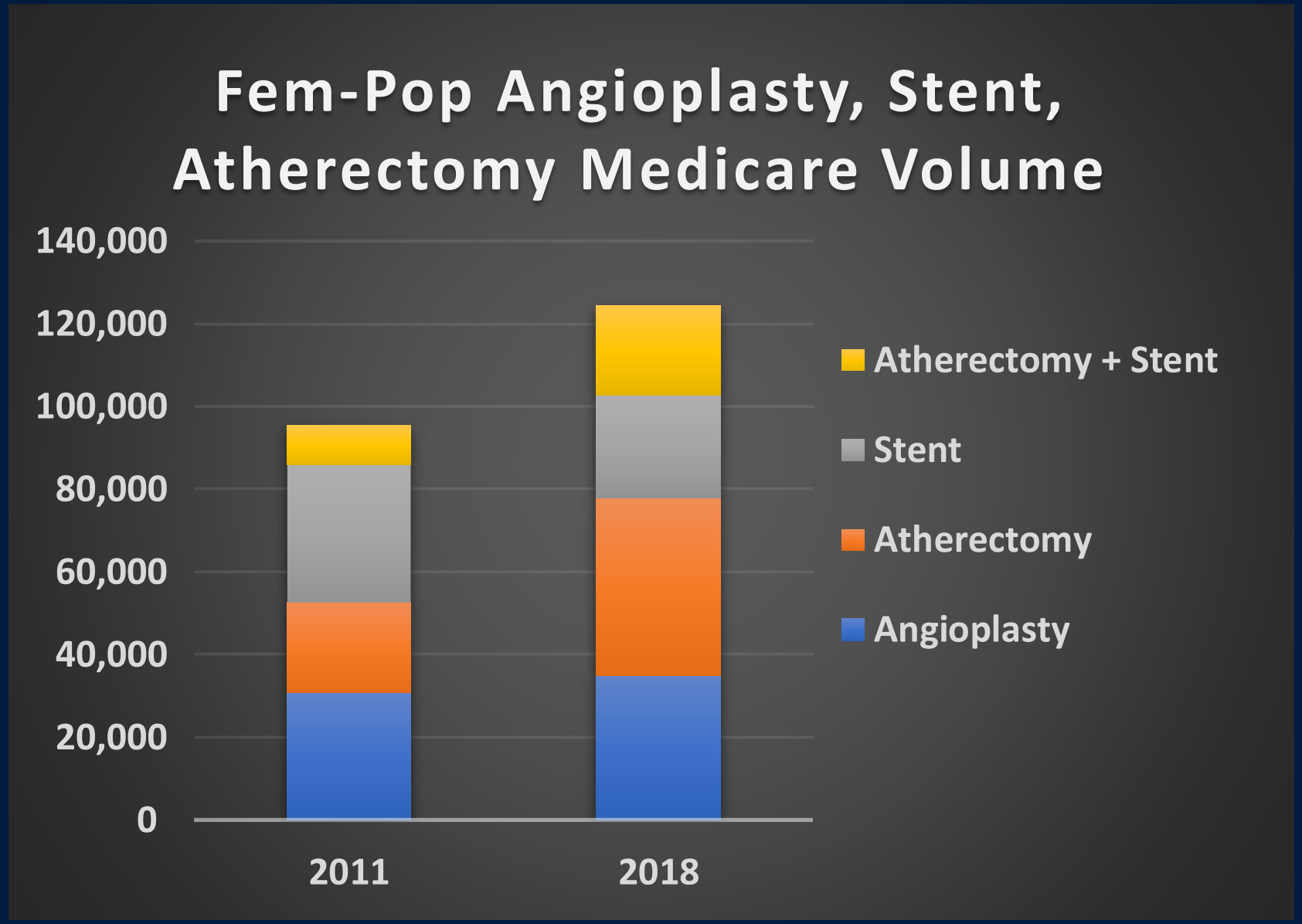
- 1,404 patients
- 6-month outcomes
  - 13% mortality
  - 10% major amputation rate
  - 18% major complication rate
- Primary Patency (12 months)
  - 61% in good option patients
  - 42% in poor option patients (25% of study pop)
    - Spliced, non GSV, or GSV<3mm

Conte et al, J Vasc Surg; 2006:43, 742-51

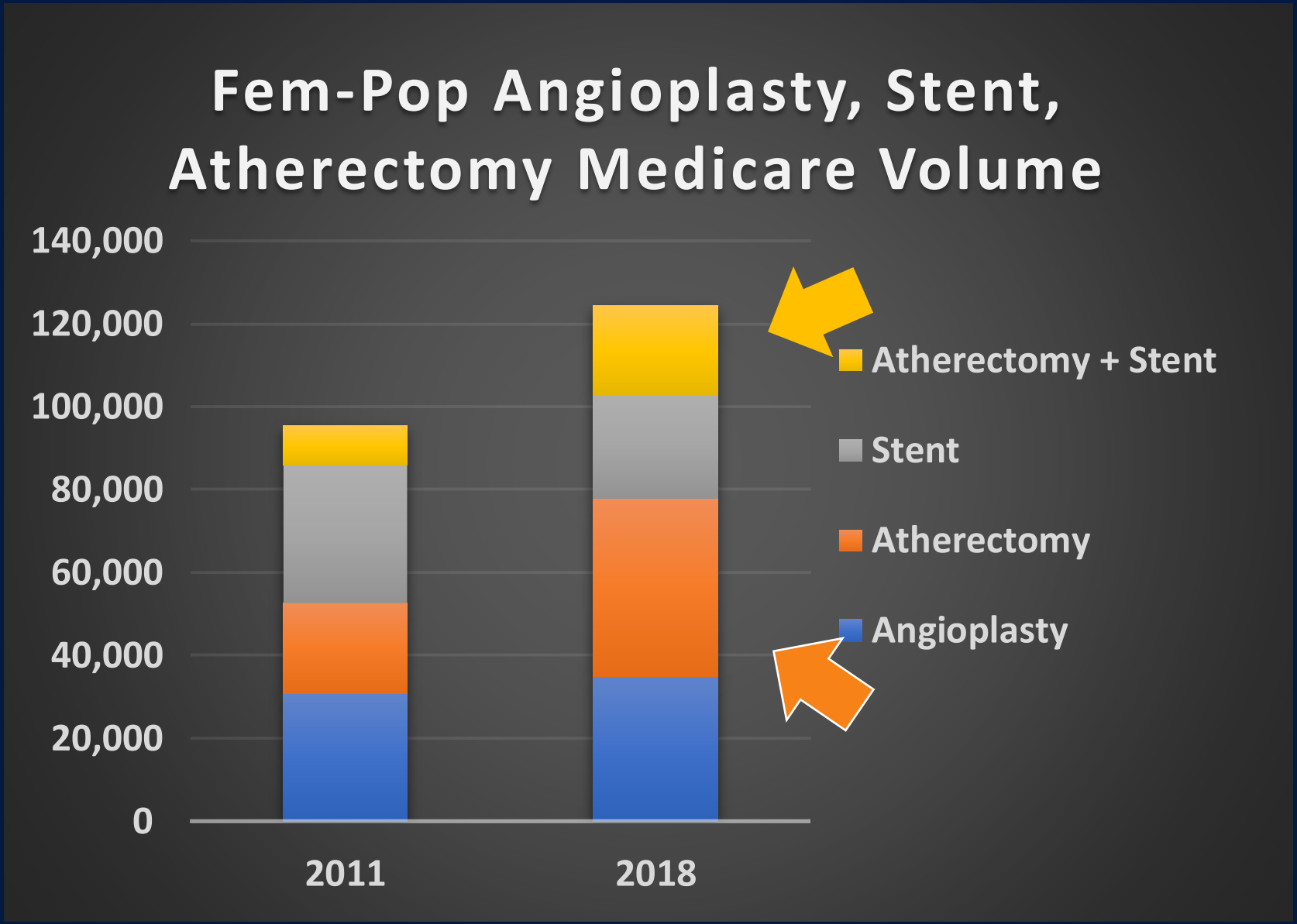
Summary of Bypass Surgery for Critical Ischemia

- When considered across wide range of providers, results with open surgical bypass for CLI are still not great.
- Alternatives are being considered.
- But a big operation may be warranted if there's a chance of saving your leg without another successful alternative.

Percutaneous Intervention Rapid Growth



Atherectomy Very Rapid Growth



Site of Service Paradox for Atherectomy and Evidence Seems not to Support Growth

Procedure	Growth 2011-2018	Site-of-Service Hospital	Site of Service Office
Fem-Pop Balloon Angioplasty	+14%	87%	12%
Fem-Pop Stent	-25%	89%	10%
Fem-Pop **Atherectomy**	**+97%**	52%	**48%**
Fem-Pop **Atherectomy** + Stent	**+123%**	47%	**63%**

Mechanical Atherectomy

- 52 stable PAD patients, most claudicants
- 71 stenoses, mixed primary, native restenosis, in-stent restenosis
- Mechanical “Silverhawk” atherectomy

- NO CONTROLS

Zeller et al , J Endovasc Ther, 2004:11;676-85

Mechanical Atherectomy

- 70 procedures
- 30% claudicants, 30% rest pain
- TASC C and D lesions 60% of cases
- 1 yr primary patency 63%, lower in TASC C & D lesions

Keeling et al , J Vasc Surg, 2007

Summary: Atherectomy vs. ? in SFA

First Author	Year	Structure	Outcome
Zeller	2004	Prospective Uncontrolled	Works sometimes
Keeling	2007	Prospective Uncontrolled	Works sometimes

Meier Sem In Vasc Surg 2009

What Do Current Guidelines and Appropriate Use Criteria Say about Atherectomy?

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

PUBLISHED BY ELSEVIER

VOL. 69, NO. 11, 2017
ISSN 0735-1097/$36.00
http://dx.doi.org/10.1016/j.jacc.2016.11.007

CLINICAL PRACTICE GUIDELINE

2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

Developed in Collaboration With the American Association of Cardiovascular and Pulmonary Rehabilitation, Inter-Society Consensus for the Management of Peripheral Arterial Disease, Society for Cardiovascular Angiography and Interventions, Society for Clinical Vascular Surgery, Society of Interventional Radiology, Society for Vascular Medicine, Society for Vascular Nursing, Society for Vascular Surgery, and Vascular and Endovascular Surgery Society

Writing Marie D. Gerhard-Herman, MD, FACC, FAHA, *Chair* Mehdi H. Shishehbor, DO, MPH, PhD, FACC, FAHA,

TABLE 1 Applying Class of Recommendation and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care* (Updated August 2015)

CLASS (STRENGTH) OF RECOMMENDATION

CLASS I (STRONG) — Benefit >>> Risk

Suggested phrases for writing recommendations:

- Is recommended
- Is indicated/useful/effective/beneficial
- Should be performed/administered/other
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is recommended/indicated in preference to treatment B
  - Treatment A should be chosen over treatment B

CLASS IIa (MODERATE) — Benefit >> Risk

Suggested phrases for writing recommendations:

- Is reasonable
- Can be useful/effective/beneficial
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is probably recommended/indicated in preference to treatment B
  - It is reasonable to choose treatment A over treatment B

CLASS IIb (WEAK) — Benefit ≥ Risk

Suggested phrases for writing recommendations:

- May/might be reasonable
- May/might be considered
- Usefulness/effectiveness is unknown/unclear/uncertain or not well established

CLASS III: No Benefit (MODERATE) — Benefit = Risk

(Generally, LOE A or B use only)

Suggested phrases for writing recommendations:

- Is not recommended
- Is not indicated/useful/effective/beneficial
- Should not be performed/administered/other

CLASS III: Harm (STRONG) — Risk > Benefit

Suggested phrases for writing recommendations:

LEVEL (QUALITY) OF EVIDENCE‡

LEVEL A

- High-quality evidence‡ from more than 1 RCT
- Meta-analyses of high-quality RCTs
- One or more RCTs corroborated by high-quality registry studies

LEVEL B-R (Randomized)

- Moderate-quality evidence‡ from 1 or more RCTs
- Meta-analyses of moderate-quality RCTs

LEVEL B-NR (Nonrandomized)

- Moderate-quality evidence‡ from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies
- Meta-analyses of such studies

LEVEL C-LD (Limited Data)

- Randomized or nonrandomized observational or registry studies with limitations of design or execution
- Meta-analyses of such studies
- Physiological or mechanistic studies in human subjects

LEVEL C-EO (Expert Opinion)

Consensus of expert opinion based on clinical experience

COR and LOE are determined independently (any COR may be paired with any LOE).

A recommendation with LOE C does not imply that the recommendation is weak. Many important clinical questions addressed in guidelines do not lend themselves to clinical trials. Although RCTs are unavailable, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

* The outcome or result of the intervention should be specified (an improved clinical outcome or increased diagnostic accuracy or incremental prognostic information).

† For comparative-effectiveness recommendations (COR I and IIa; LOE A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.

‡ The method of assessing quality is evolving, including the application of standardized,

Recommendation for Revascularization for Claudication

COR	LOE	RECOMMENDATION
IIa	A	Revascularization is a reasonable treatment option for the patient with lifestyle-limiting claudication with an inadequate response to GDMT (12,37,38,232,233).

See Online Data Supplements 35 and 36.

A minority of patients with claudication (estimated at <10% to 15% over 5 years or more) will progress to CLI (234–237). Therefore, the role of revascularization in claudication is improvement in claudication symptoms and functional status, and consequently in QoL, rather than limb salvage. Revascularization is reasonable when the patient who is being treated with GDMT (including structured exercise therapy) presents with persistent lifestyle-limiting claudication (12,37,38,232,233). Lifestyle-limiting claudication is defined by the patient rather than by any test. It includes impairment of activities of daily living and/or vocational and/or recreational activities due to claudication. There should be clear discussion with the patient about expected risks and benefits of revascularization, as well as discussion of the durability of proposed procedures.

8. REVASCULARIZATION FOR CLAUDICATION

An individualized approach to revascularization for claudication is recommended for each patient to optimize outcome. Revascularization is but one component of care for the patient with claudication, as each patient should have a customized care plan that also includes medical therapy (Section 5), structured exercise therapy (Section 6), and care to minimize tissue loss (Section 7). If a strategy of revascularization for claudication is undertaken, the revascularization strategy should be evidence based and can include endovascular revascularization, surgery, or both.

Assessment of the appropriateness of specific endovascular techniques for specific lesions for the treatment of claudication is beyond the scope of this document.

From the Society for Vascular Surgery

(J Vasc Surg 2015;61:2S-41S.)

Society for Vascular Surgery practice guidelines for atherosclerotic occlusive disease of the lower extremities: Management of asymptomatic disease and claudication

Society for Vascular Surgery Lower Extremity Guidelines Writing Group: Michael S. Conte, MD, (Co-Chair),[a] Frank B. Pomposelli, MD, (Co-Chair),[b] Daniel G. Clair, MD,[c] Patrick J. Geraghty, MD,[d] James F. McKinsey, MD,[e] Joseph L. Mills, MD,[f] Gregory L. Moneta, MD,[g] M. Hassan Murad, MD,[h] Richard J. Powell, MD,[i] Amy B. Reed, MD,[j] Andres Schanzer, MD,[k] and Anton N. Sidawy, MD, MPH,[l] *San Francisco, Calif; Boston and Worcester, Mass; Cleveland, Ohio; St. Louis, Mo; New York, NY; Tucson, Ariz; Portland, Ore; Rochester, Minn; Lebanon, NH; Hershey, Pa; and Washington, D.C.*

Peripheral arterial disease (PAD) continues to grow in global prevalence and consumes an increasing amount of resources in the United States health care system. Overall rates of intervention for PAD have been rising steadily in recent years. Changing demographics, evolution of technologies, and an expanding database of outcomes studies are primary forces influencing clinical decision making in PAD. The management of PAD is multidisciplinary, involving primary care physicians and vascular specialists with varying expertise in diagnostic and treatment modalities. PAD represents a broad spectrum of disease from asymptomatic through severe limb ischemia. The Society for Vascular Surgery Lower Extremity Practice Guidelines committee reviewed the evidence supporting clinical care in the treatment of asymptomatic PAD and intermittent claudication (IC). The committee made specific practice recommendations using the GRADE (Grades of Recommendation Assessment, Development and

Plaque excision by mechanical atherectomy using cutting blades, laser ablation, or "sanding" with a diamond-encrusted burr has been proposed as an alternative to angioplasty and stenting for symptomatic PAD. In a recent meta-analysis of four randomized studies including only 220 patients comparing atherectomy with other established treatments, including angioplasty, stenting, lower extremity bypass, and exercise therapy, the authors concluded there was no evidence to support the superiority of atherectomy over angioplasty for any outcome. They also observed

2017 ESC Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases, in collaboration with the European Society for Vascular Surgery (ESVS)

Document covering atherosclerotic disease of extracranial carotid and vertebral, mesenteric, renal, upper and lower extremity arteries

Endorsed by: the European Stroke Organization (ESO)

The Task Force for the Diagnosis and Treatment of Peripheral Arterial Diseases of the European Society of Cardiology (ESC) and of the European Society for Vascular Surgery (ESVS)

"Atherectomy" written once in 60-page comprehensive document with no supportive data

ACC/AHA/SCAI/SIR/SVM 2018 Appropriate Use Criteria for Peripheral Artery Intervention

A Report of the American College of Cardiology Appropriate Use Criteria Task Force, American Heart Association, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, and Society for Vascular Medicine

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ACC/AHA/SCAI/SIR/SVM 2018 Appropriate Use Criteria for Peripheral Artery Intervention

TABLE 2.3 Intermittent Claudication Despite Guideline-Directed Medical Therapy—Chronic Total Occlusion

Indications	AUC Score: Continue or Intensify Medical Therapy	AUC Score: Endovascular Treatment	AUC Score: Surgical Treatment
18. ■ Aortoiliac	A (9)	A (7)	M (6)
19. ■ SFA and popliteal artery	A (9)	M (6)	M (6)
20. ■ Below the knee	A (9)	M (4)	R (3)

A = Appropriate; AUC = Appropriate Use Criteria; M = May Be Appropriate; R = Rarely Appropriate; SFA = superficial femoral artery.

TABLE 5.1 Isolated Common Iliac Artery

Indications	AUC Score: Atherectomy	Balloon Angioplasty	Stent
27. ■ Discrete stenosis	R (2)	A (7)	A (8)
28. ■ Diffuse disease or multiple stenoses of the CIA	R (2)	M (6)	A (8)

A = Appropriate; AUC = Appropriate Use Criteria; CIA = common iliac artery; M = May Be Appropriate; R = Rarely Appropriate.

TABLE 5.2 Isolated External Iliac Artery

Indications	AUC Score: Atherectomy	Balloon Angioplasty	Stent
29. ■ Discrete stenosis	R (2)	A (7)	A (8)

A = Appropriate; AUC = Appropriate Use Criteria; R = Rarely Appropriate.

APPROPRIATE USE CRITERIA

ACC/AHA/SCAI/SIR/SVM 2018 Appropriate Use Criteria for Peripheral Artery Intervention

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TABLE 5.4 SFA and Popliteal Artery

Indications	AUC Score: Atherectomy	Balloon Angioplasty	Drug-Coated Balloon	Bare Metal Stent	Drug-Eluting Stent	Covered Stent
32. ■ Length <100 mm	M (6)	A (7)	A (7)	A (7)	A (7)	M (6)
33. ■ Length ≥100 mm	M (5)	M (5)	A (7)	A (7)	A (7)	M (6)

A = Appropriate; AUC = Appropriate Use Criteria; M = May Be Appropriate; SFA = superficial femoral artery.

TABLE 5.5 Below the Knee

Indications	AUC Score: Atherectomy	Balloon Angioplasty	Drug-Coated Balloon	Bare Metal Stent	Drug-Eluting Stent	Covered Stent
34. ■ Length <100 mm	M (4)	A (7)	M (4)	M (5)	A (7)	R (3)
35. ■ Length ≥100 mm	M (4)	A (7)	M (4)	M (5)	M (6)	R (3)

A = Appropriate; AUC = Appropriate Use Criteria; M = May Be Appropriate; R = Rarely Appropriate.

APPROPRIATE USE CRITERIA

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Similarly, the use of atherectomy in the superficial femoral and popliteal arteries and below-the-knee vessels also received a lower score, again because of the lack of comparative data relative to technologies with prospectively collected data. The evidence base to judge inter-

With this modest evidence, why is there
a 100% increase in atherectomy over seven years?

Conclusions

- PAD is a terrible disease
- No good medical therapy for CLI
- Bypass remain most durable, but most morbid, often not an option in multiple co-morbid patients
- Endovascular less durable, less morbid
- Choice of endovascular modality remains murky, especially atherectomy

More Clinical Equipoise Questions

- Complex intervention vs straightforward bypass surgery for claudicants who fail GBMT
- Role of DOACs to enhance bypass or intervention patency
- Gaps identified by BEST Trial

PAD:
Perspectives of a Vascular Medicine Physician and Interventionalist

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Massachusetts General Hospital

pcori
PATIENT-CENTERED OUTCOMES RESEARCH INSTITUTE

Kenneth Rosenfield, MD, MHCDS
Conflicts of Interest

- **Consultant/Scientific Advisory Board:** Abbott Vascular; Access Closure; AMGEN; Cardinal Health; Volcano/Philips; Surmodics; Cruzar; Capture Vascular; Endospan; Magneto; Janssen; MD Insider; Micell; Silk Road; Valcare; Thrombolex; Univ. of Maryland
- **Grants/Contracts:** Atrium; NIH; Inari
- **Equity:** Access Closure; AngioDynamics; Bio2Medical; Endospan; Embolitech; EXIMO; JanaCare; PQ Bypass; Primacea; MD Insider; Silk Road; Cruzar Systems; Capture Vascular; Micell; Valcare
- **Board Member:**
  - VIVA Physicians, a not for profit 501c3 organization dedicated to advancing the field of vascular medicine and intervention through education and research (www.vivapvd.com)
  - National PERT Consortium™, a not for profit 501c3 organization dedicated to advancing treatment and improving outcomes in Pulmonary Embolism

Agenda

- Implications of PAD, Claudication, and CLI
- Non-invasive therapy
  - Optimal medical therapy – the foundation
  - Supervised (or unsupervised) exercise
- Options for treatment
- Evolution/transition toward endovascular approach
- Indications for invasive therapy – Guidelines and AUC
- Outcomes that matter and how to assess/measure (IC and CLI)
  - Mortality, quality of life
  - Patient-reported outcomes
- Team-based care
- EVIDENCE GAP

Implications of PAD and CLI

- 83 yo M from Venezuela w non-healing wounds/ulcers of the LLE over the past year→ can no longer walk
- Reportedly failed endovascular and open revascularization procedures d/t “heavy calcification”
- Scheduled for amputation → flew up to MGH

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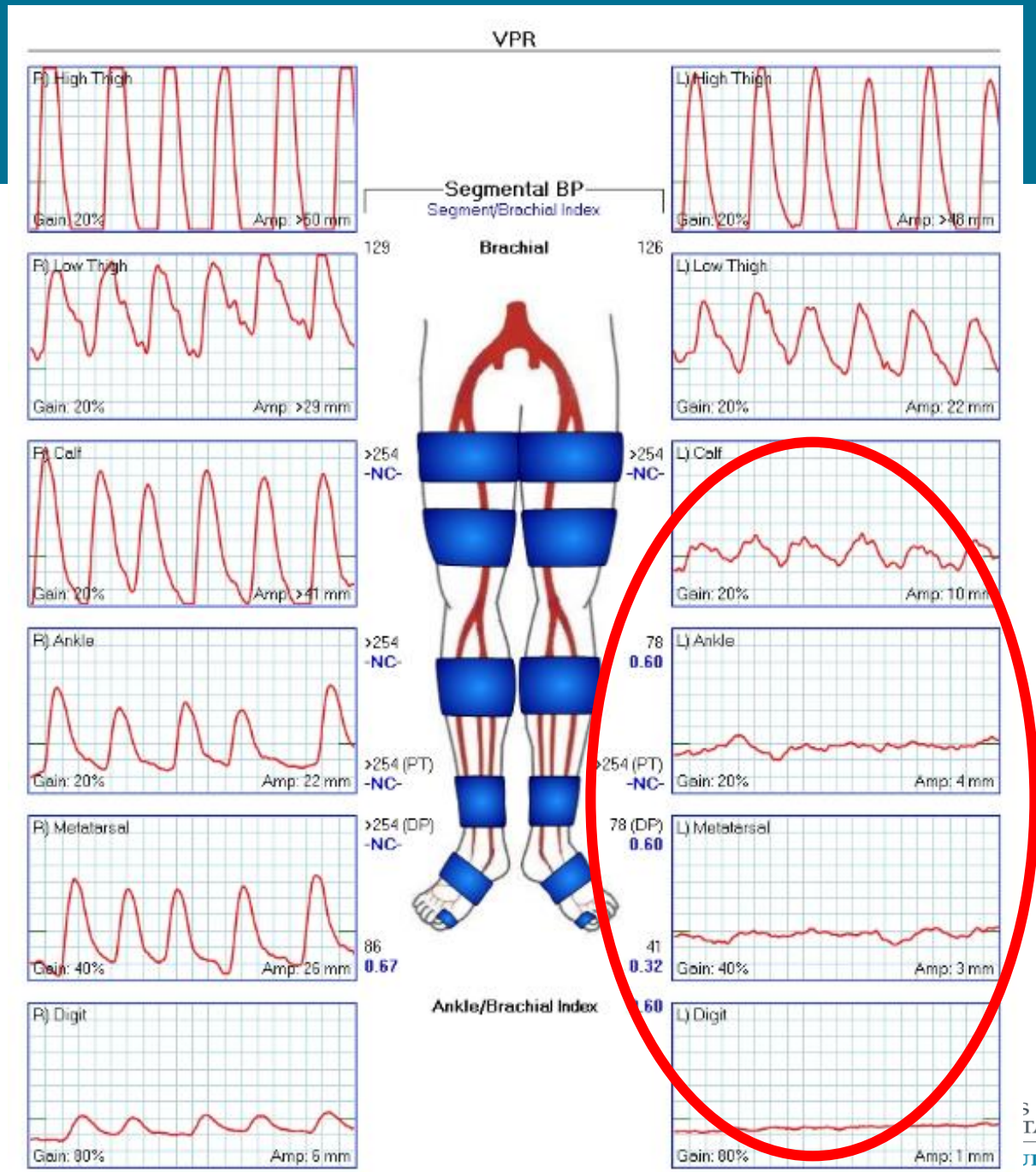
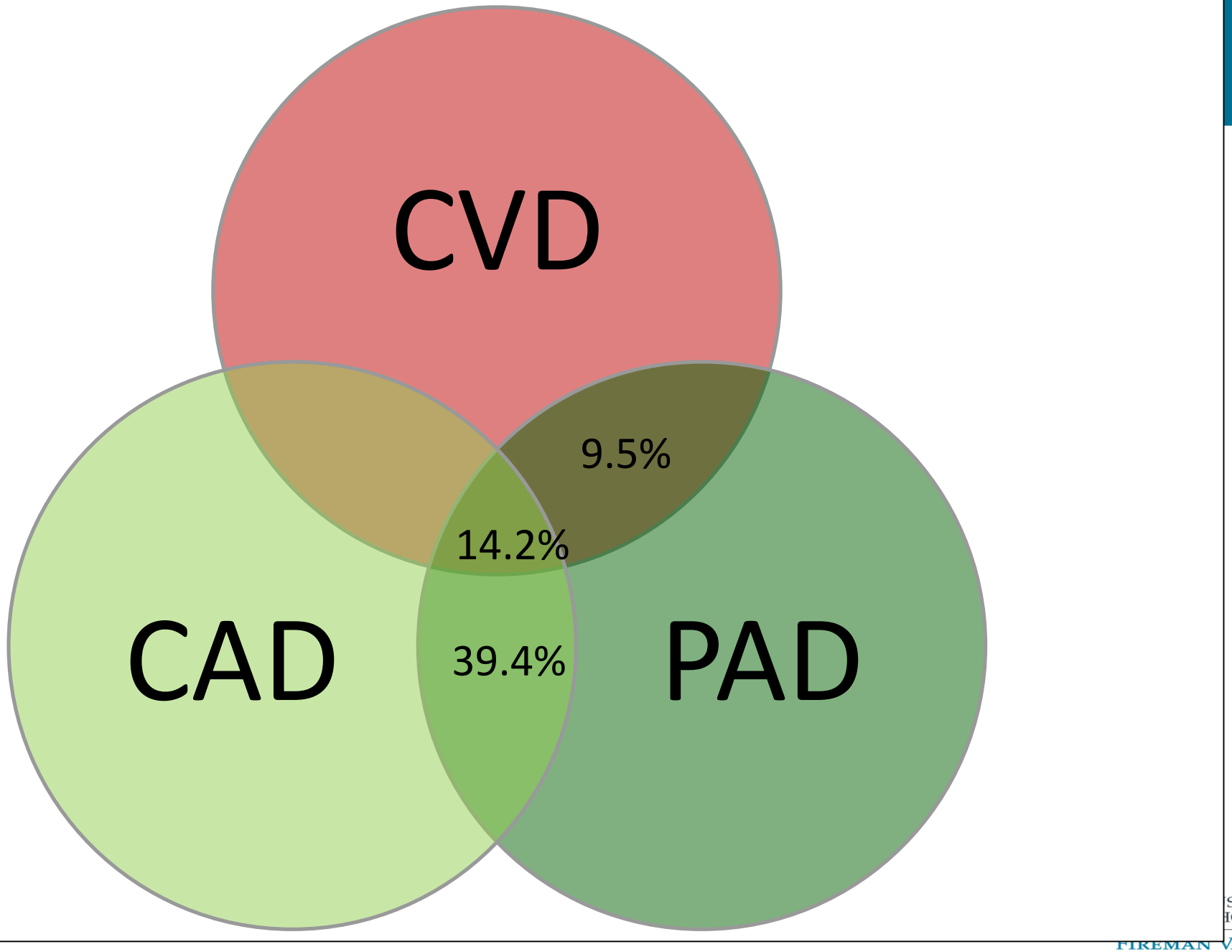
ABI & PVR waveforms



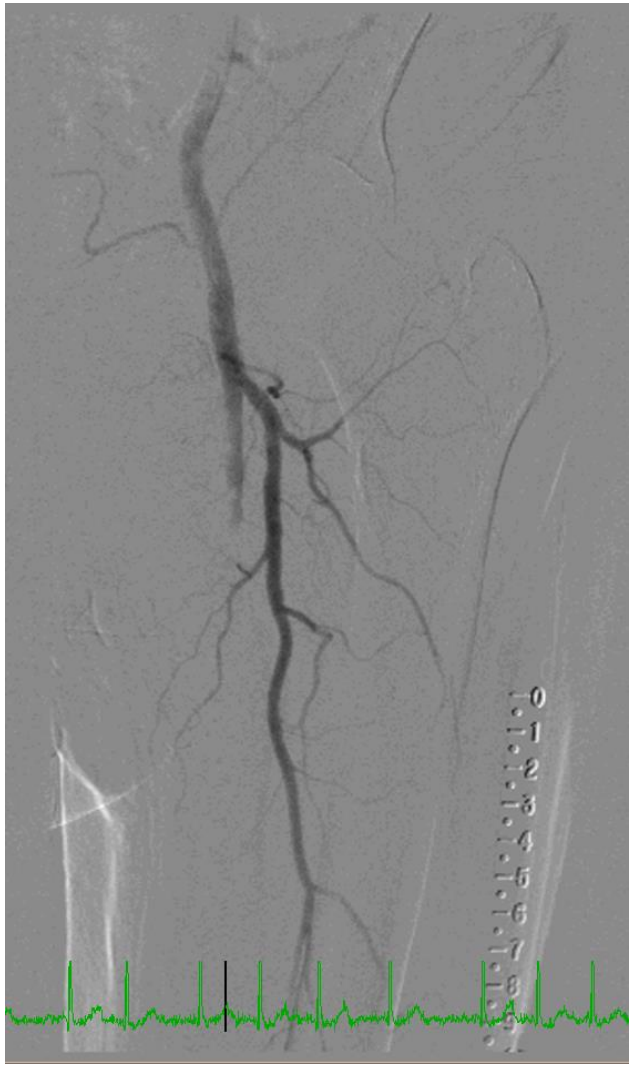
Pa

- P
- L



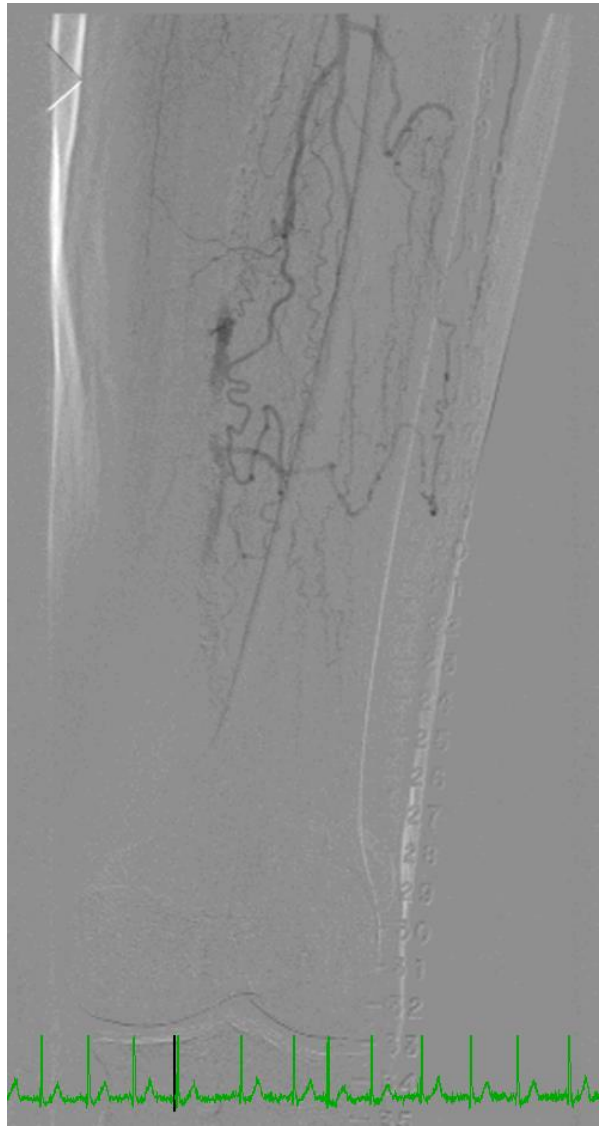
Angiography

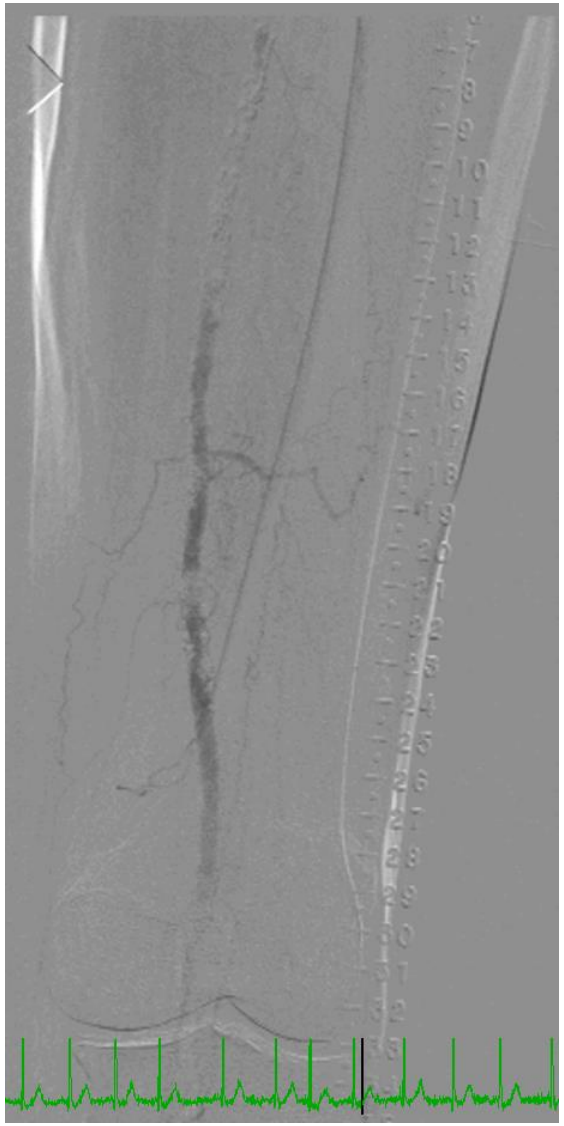
Left SFA with multiple high-grade stenoses, ….occluded, with islands of reconstitution

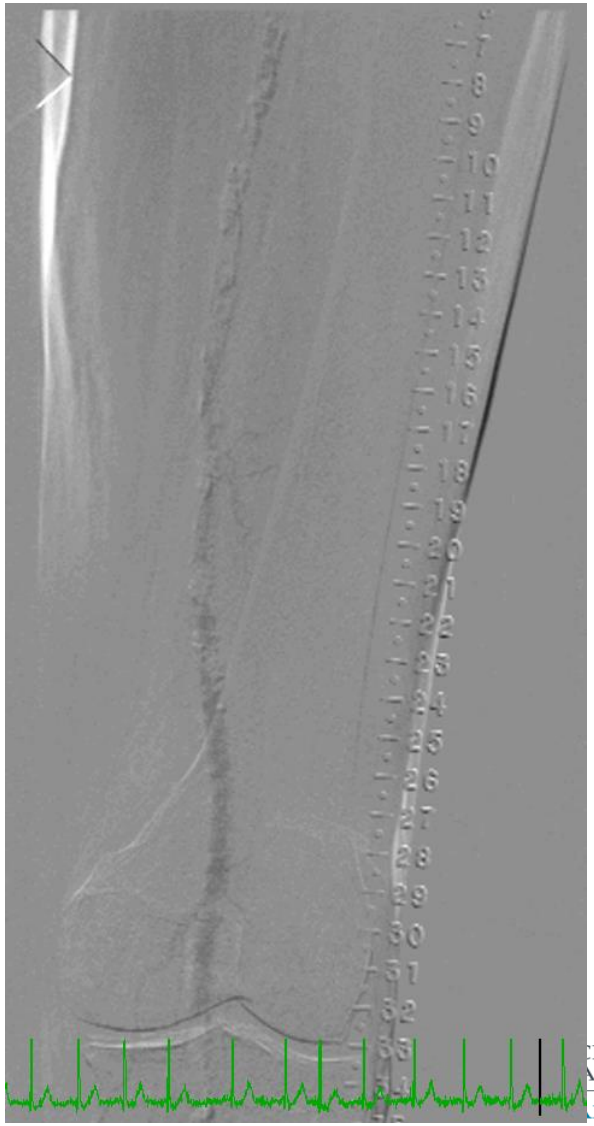


Angiography

Left SFA and Popliteal



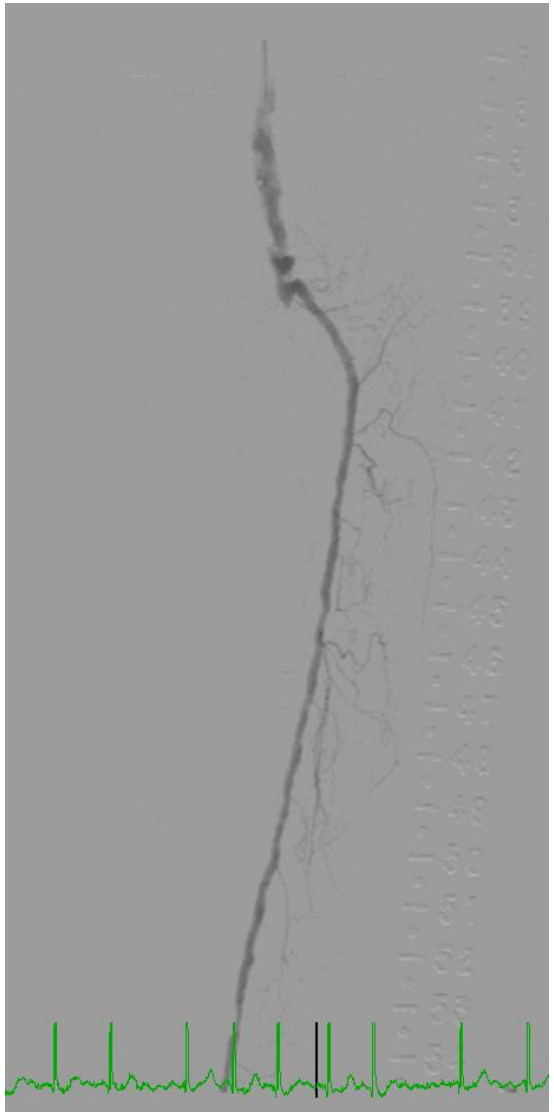




Angiography

Severe disease into left popliteal with occluded tibioperoneal trunk

Severely diseased anterior tibial with compromised, thready single-vessel flow into the foot



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Strategy?

- Amputation?
- Revascularize:
  - Open?
  - Endo?

Procedure

SFA/pop lesions ultimately crossed with specialty wire and support cath

Serial dilations beginning with 2.0 mm balloon

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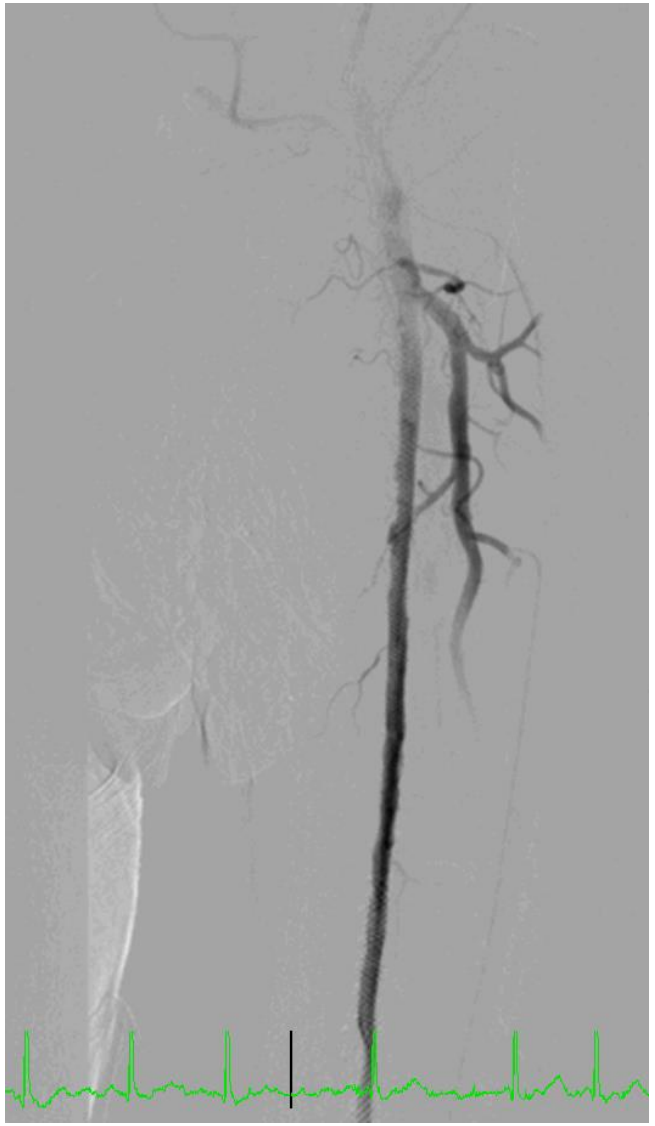
Procedure

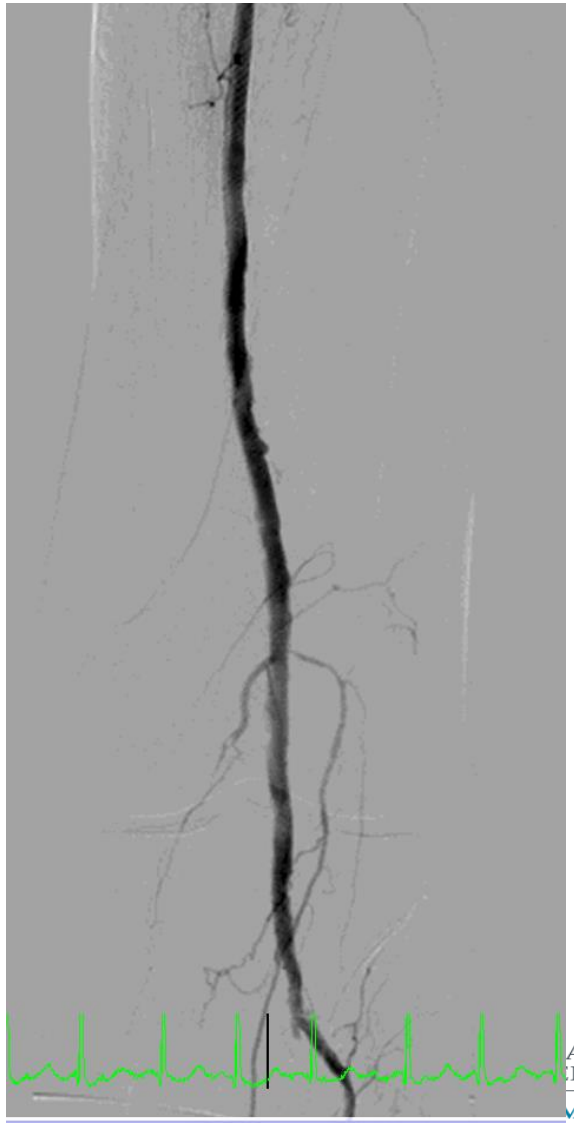
3.0 x 38 coronary DES

5.0 x 39 peripheral BMS

5.0, 5.5, 6.0 Supera stents

Post stenting





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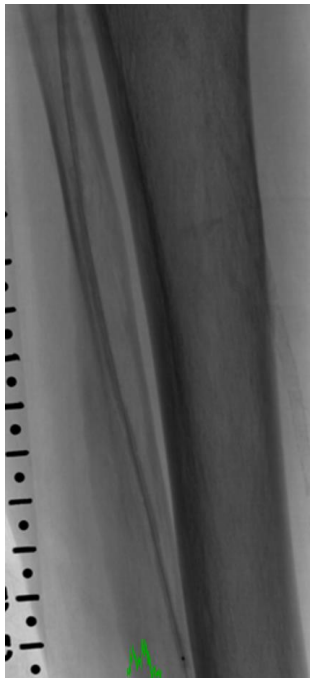
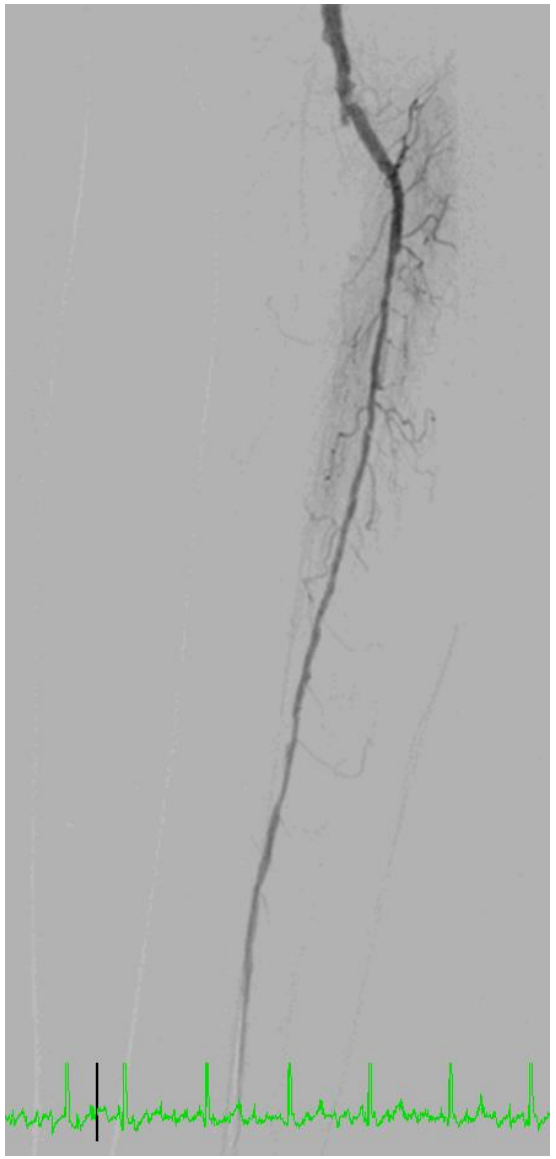
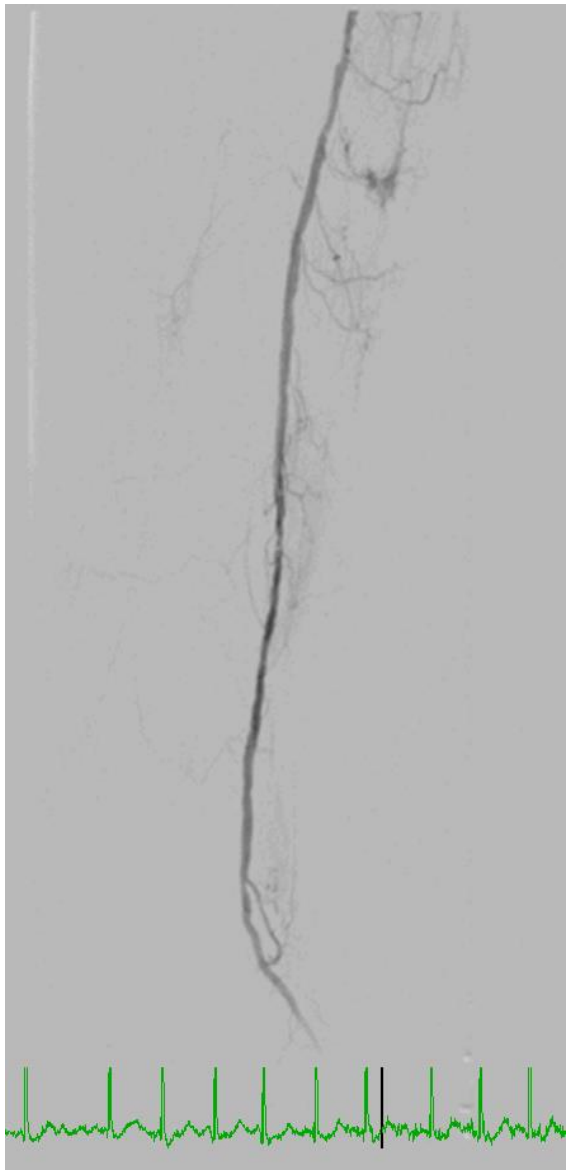
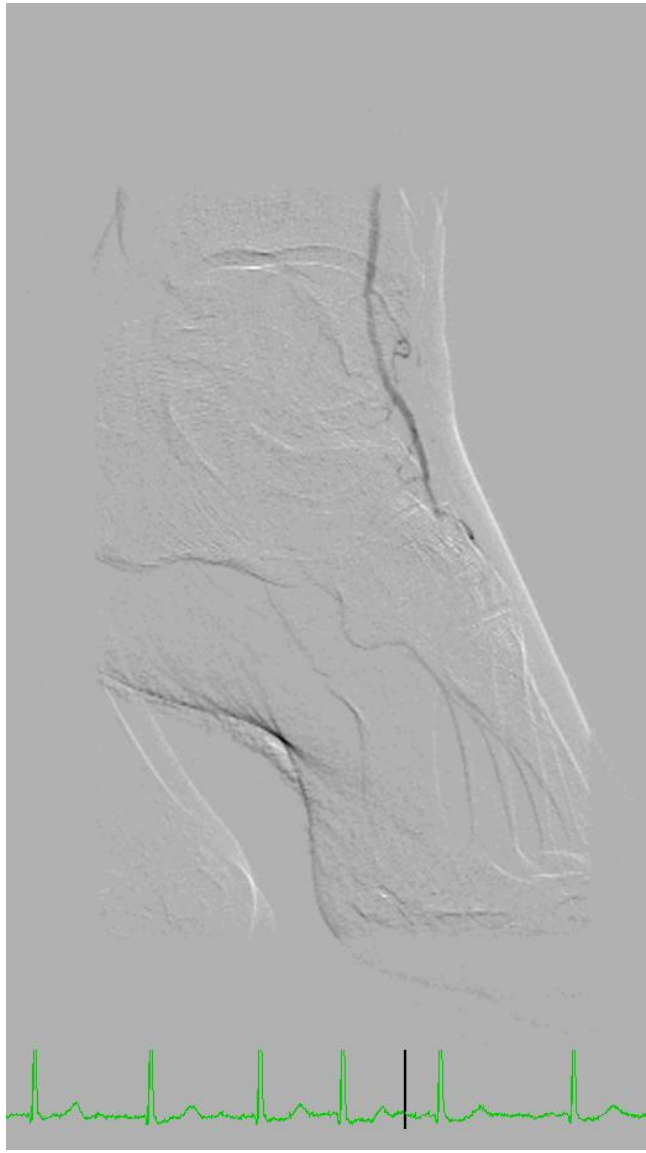
Anterior tibial

Ballooned with a long 2.0 mm balloon









Stop now? More?

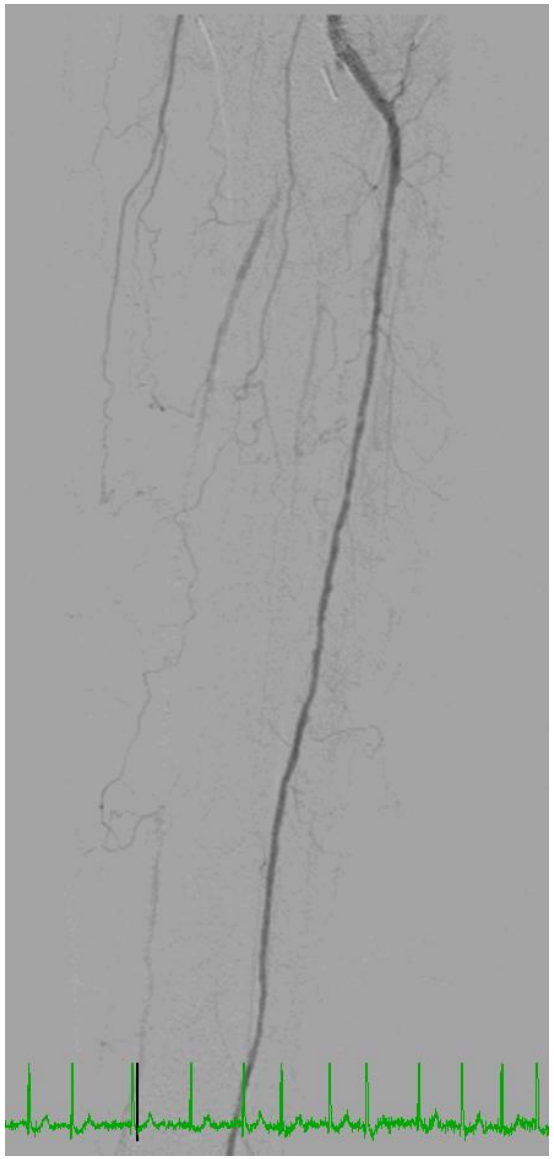
- One-vessel runoff to the foot and improved inflow?
- Concern about ability to heal … AT not providing sufficient flow

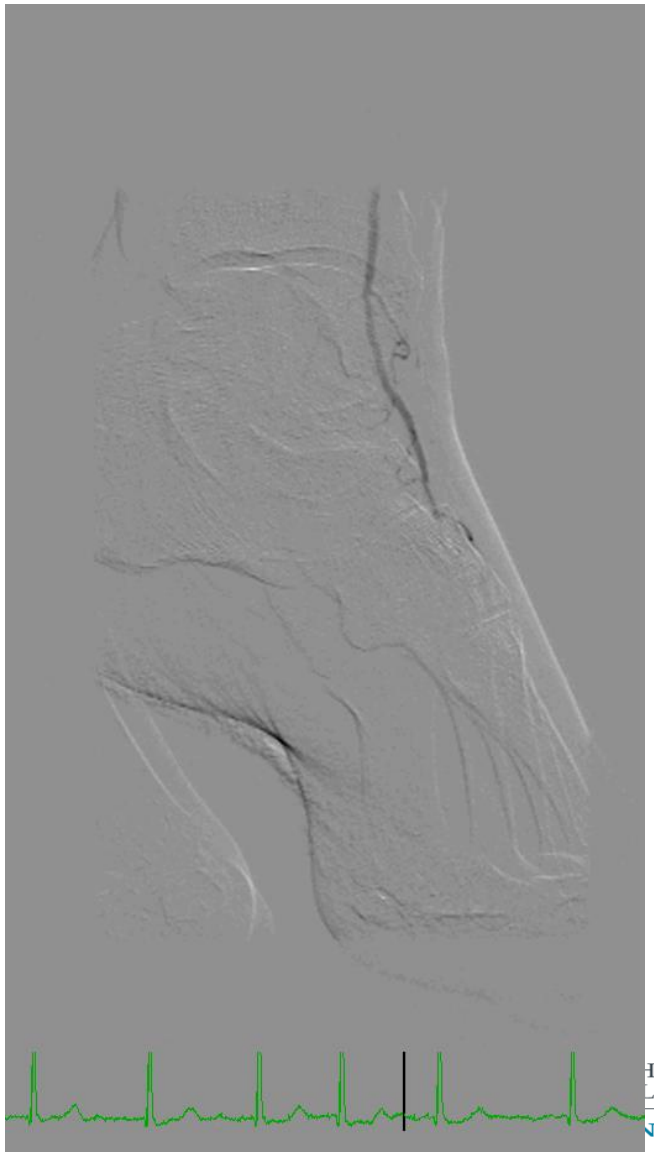
Angiography Staged

Return to lab

AT patent in segment of recent stent

Runoff to foot insufficient





Crossed with wire and catheter support

Dilated with 2.5 mm balloon

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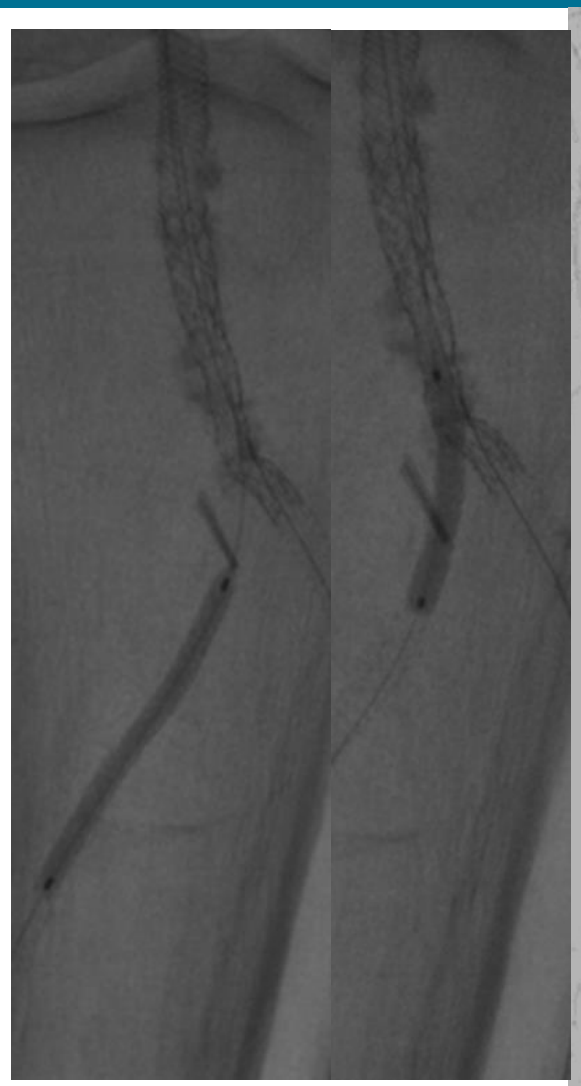
3.0 x 38 and 3.0 x 23
Coronary DES deployed



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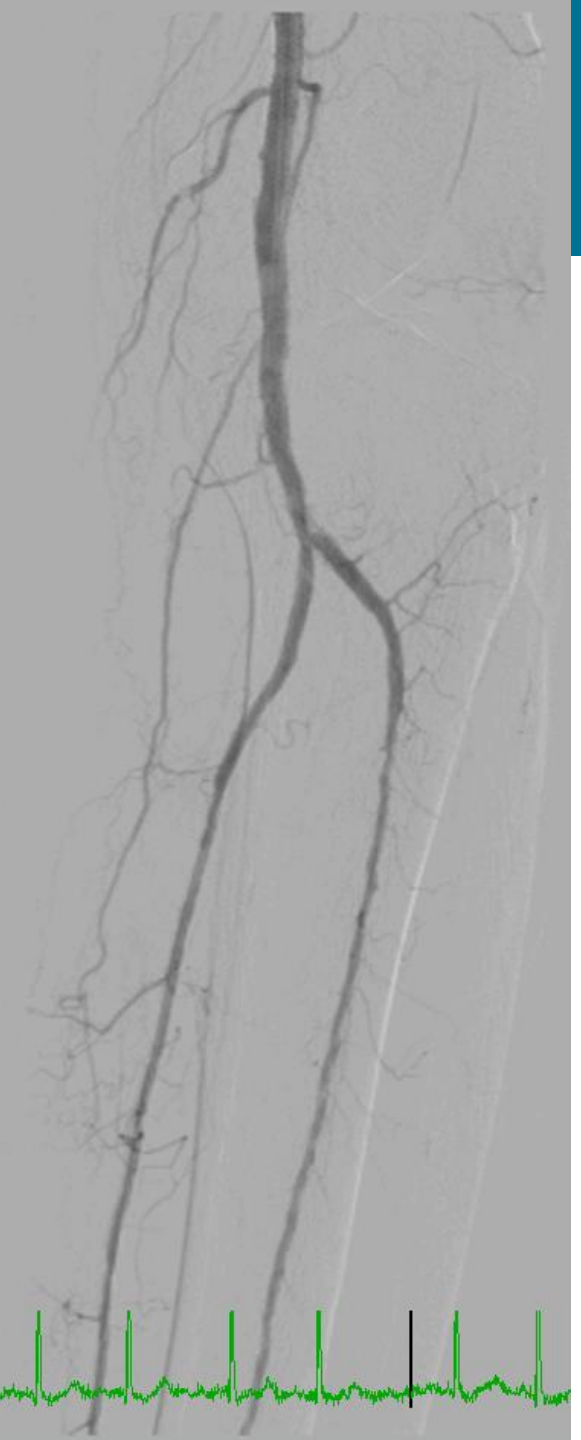
DP in foot dilated with 1.5 balloon and 2.0 mm scoring balloon

Final kissing balloon inflation of proximal tibial vessels TPT/AT



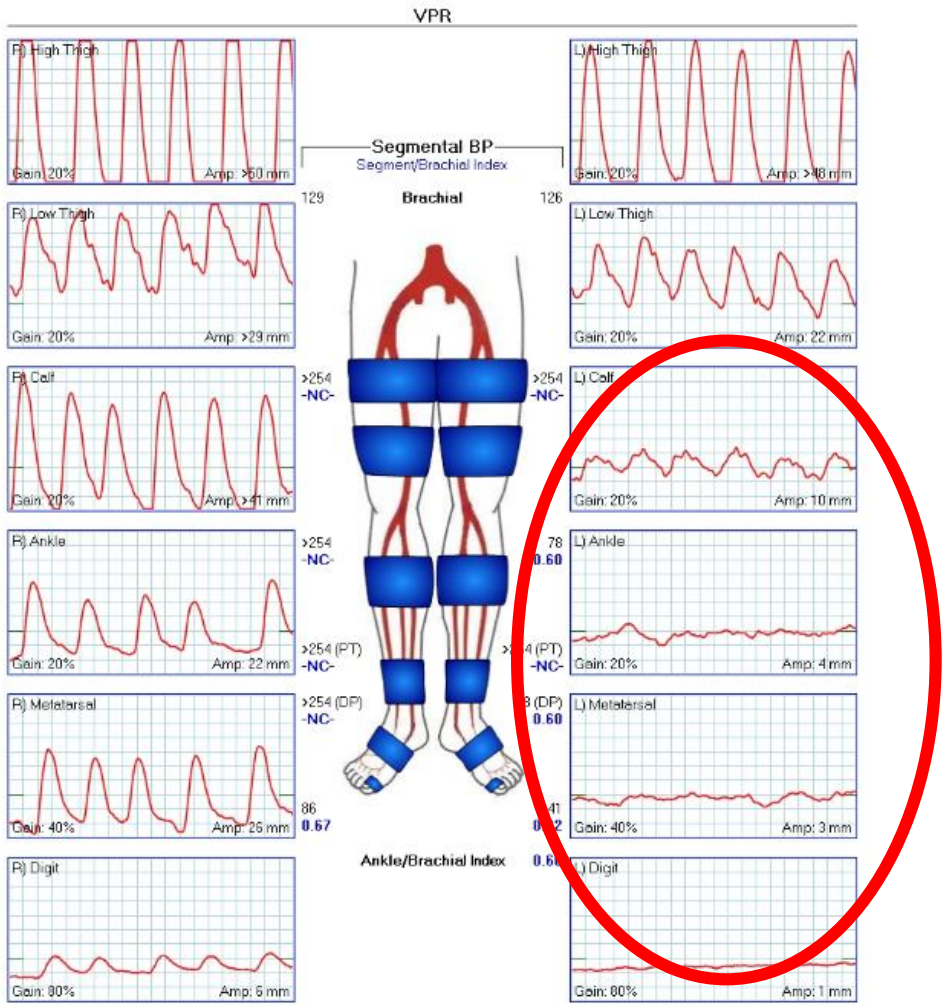
Final

Remarkable result angiographically….

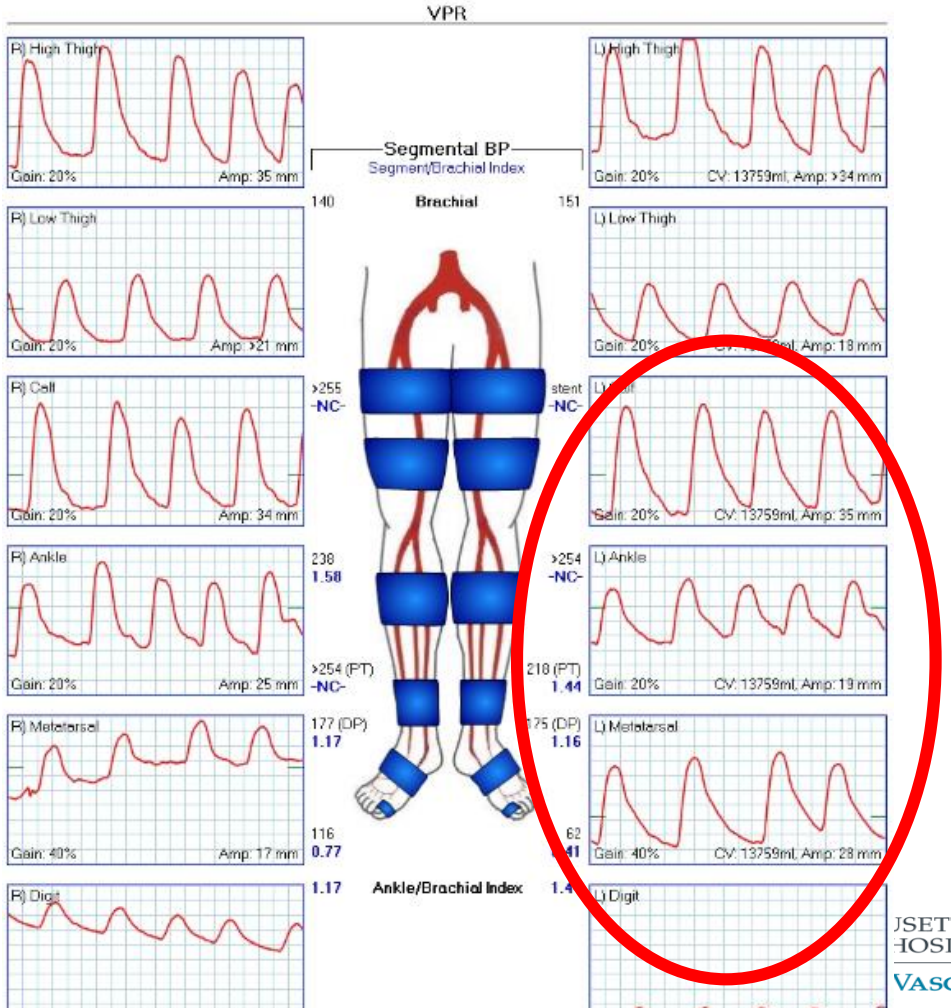
….and clinically → Rapid resolution of ulcers

PVR's

Before



After



Why Is This So Important?

Limb Loss in the U.S.

- >3,500 new amputees each week (185,000/year)
- 1-2 million amputees in the US
  - Breast cancer, autoimmune deficiency syndrome, schizophrenia, and Parkinson's disease have comparable prevalence
- Hospital costs for amputations >$8.3B in 2009
- Males are >70% of the amputee population
- African-Americans 4x amputations of white Americans
- Hispanic-Americans 1.5x amputations of white Americans
- Leg amputations make up 90% of the total
- Causes
  - 54% Vascular Disease (includes diabetes & PAD)
  - 45% Trauma
  - <2% Cancer or Congenital Deformity

Prognosis in CLI patients
Not much has changed…

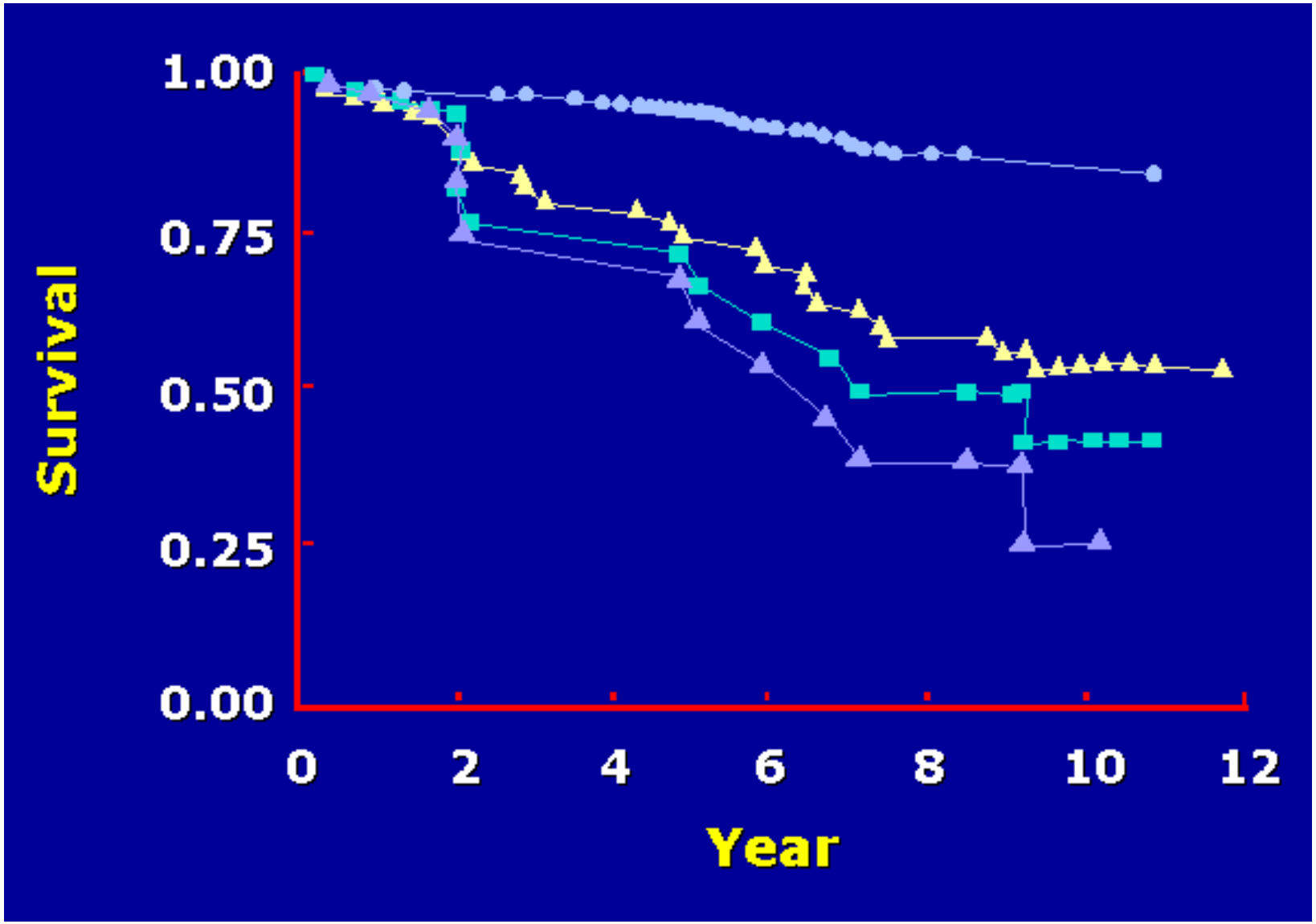
- One year after diagnosis
  - ~25% will have died
  - 30% still alive but have had a major amputation
- 3-year limb-loss rate of ~40%
- Quality-of-life indices similar to patients with end-stage cancer

The Implications of CLI

"We often see a man pass away by degrees, and limb by limb lose the sensation of life: first the toes of the feet grow livid, next die the feet and legs, afterwards over the other limbs go creeping the cold footsteps of death..."

-Leviticus (96-55 BC)

PAD: Effect on mortality

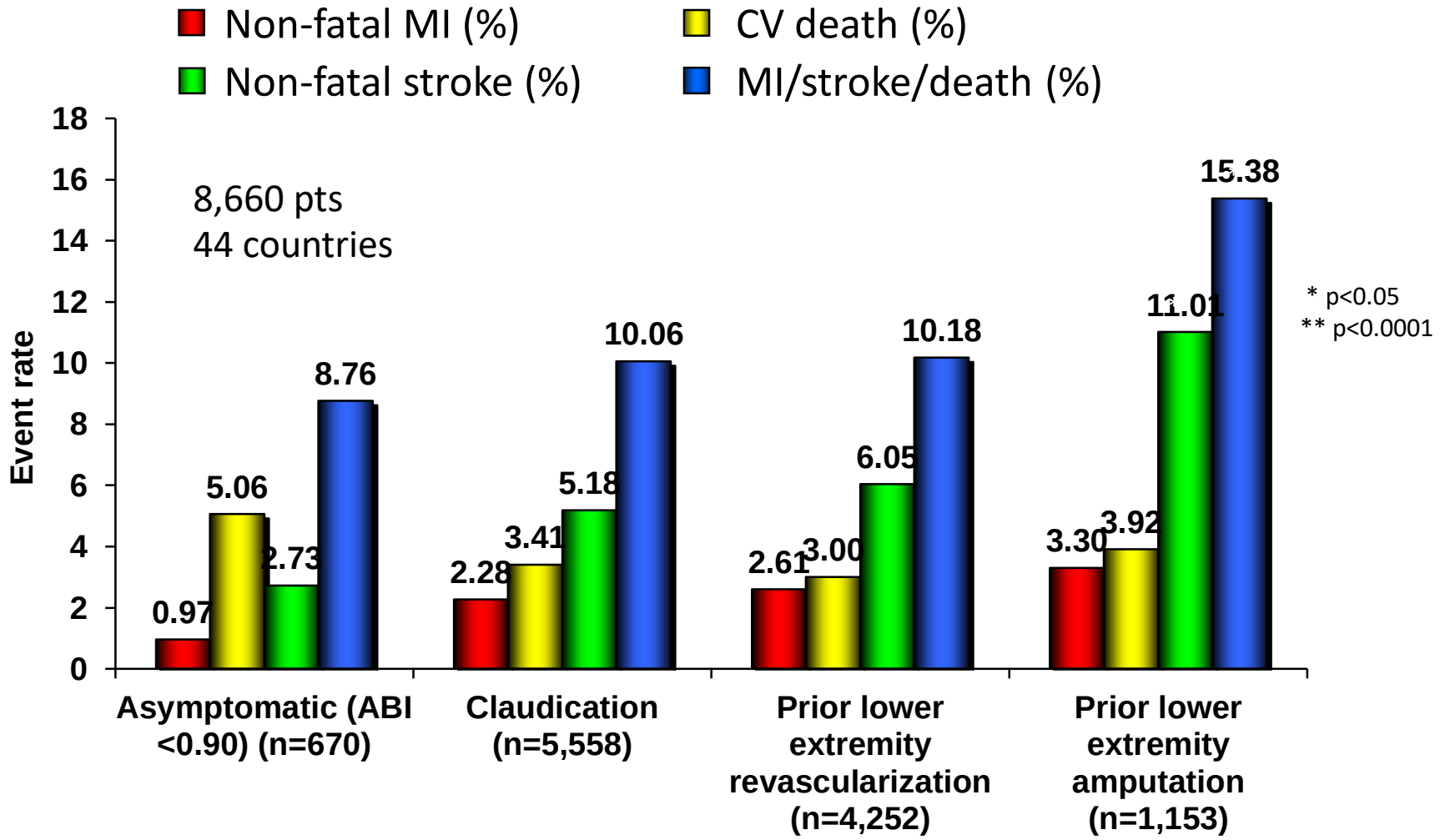


- Normal
- PAD: No Symptoms
- PAD: Symptomatic
- PAD: Severe Symptoms

Criqui et al. NEJM 1992; 326: 381-386.

Two-year CV Event Rates in PAD Patients

REduction of Atherothrombosis for Continued Health

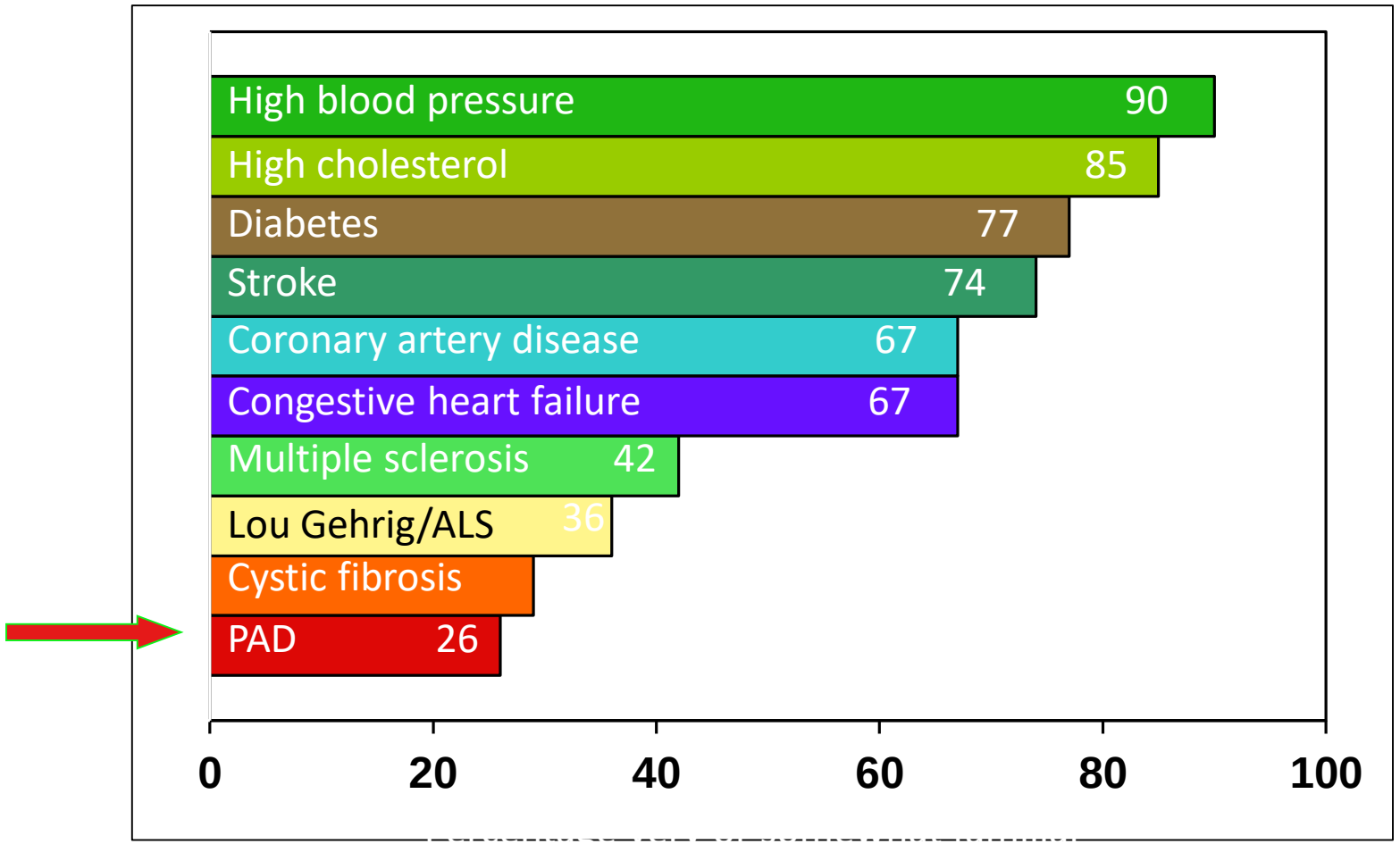


Abstract presentation, ESC, September 5, 2007

1. Bhatt DL et al, on behalf of the REACH Registry Investigators. *JAMA* 2006;295(2):180-189.
2. Ohman EM et al, on behalf of the REACH Registry Investigators. *Am Heart J* 2006;151(4):786.e1-10.

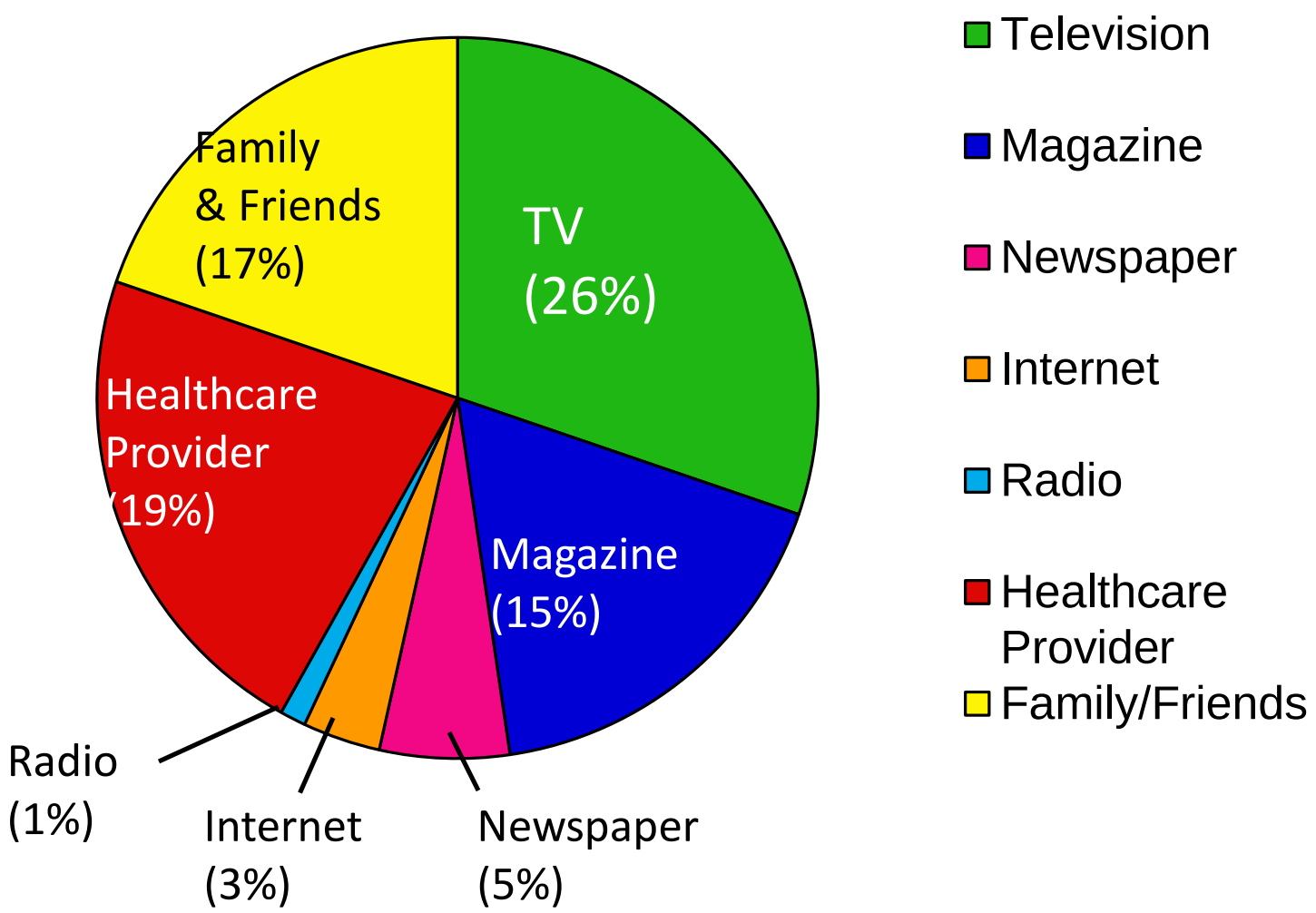
PAD Awareness is Markedly Lower than Other CV and Non-CV Diseases

How familiar are you with the following conditions:
very familiar, somewhat familiar, not too familiar, or not at all familiar?



Gaps in Public Knowledge of Peripheral Arterial Disease: The First National PAD Public Awareness Survey. Circulation 2007;116

Few Americans First Learn about PAD through Health Care Providers



Gaps in Public Knowledge of Peripheral Arterial Disease: The First National PAD Public Awareness Survey. Circulation 2007;116

Clinical Manifestations of PAD – Classification

TABLE 1 Clinical Symptom Classification

Fontaine Classification					Rutherford Classification		
Stage	Symptoms	↔	Proposed PARC Universal Data Elements	↔	Grade	Category	Symptoms
I	Asymptomatic		Asymptomatic		0	0	Asymptomatic
II	Intermittent claudication/other exertional limb symptoms		Mild claudication/limb symptoms (no limitation in walking)	↔	0	1	Mild claudication
IIa		↔	Moderate claudication/ limb symptoms (able to walk without stopping >2 blocks or 200 m or 4 min)		1	2	Moderate claudication
IIb			Severe claudication/limb symptoms (only able to walk without stopping <2 blocks or 200 m or 4 min)	↔	1	3	Severe claudication
III	Ischemic rest pain	↔	Ischemic rest pain (pain in the distal limb at rest felt to be due to limited arterial perfusion)	↔	II	4	Ischemic rest pain
IV	Ulceration or gangrene	↔	Ischemic ulcers on distal leg	↔	III	5	Ischemic ulceration
			Ischemic gangrene	↔	III	6	Ischemic gangrene

Therapies for PAD

Preventing Death

- Antiplatelets
- Cholesterol lowering: “statins”
- ACE inhibitors
- Beta blockers

Reducing Symptoms

- Exercise
- Cilostazol
- Catheter-based interventions
- Reconstructive surgery

Saving Limbs

- Catheter-based interventions
- Reconstructive surgery

Key Reference

2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease: Executive Summary

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

Developed in Collaboration With the American Association of Cardiovascular and Pulmonary Rehabilitation, Inter-Society Consensus for the Management of Peripheral Arterial Disease, Society for Cardiovascular Angiography and Interventions, Society for Clinical Vascular Surgery, Society of Interventional Radiology, Society for Vascular Medicine, Society for Vascular Nursing, Society for Vascular Surgery, and Endovascular Surgery Society

Gerhard-Herman MD, et al 2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease, Journal of the American College of Cardiology (2016), doi: 10.1016/j.jacc.2016.11.007.

OMT in PAD (IC and CLI) = PREVENTION

Level I Recommendations from Guidelines

- Smoking cessation
- Anti-platelet therapy
- Lipid-lowering therapy
- Antihypertensive therapy
- Glycemic control
- Exercise

Exercise Intervention is the Initial Therapy for PAD

May 2017: CMS Covers SET for PAD

4/28/2017 Insurers weigh a simpler treatment for artery disease: supervised workouts

STAT

Insurers weigh a simpler, cheaper treatment for artery disease: supervised workouts

By Eric Boodman @ericboodman

March 20, 2017

AP/Stock

When Char Zinda's doctors discovered that she had had a couple of small, undiagnosed heart attacks, their instructions were to start walking.

She was game. She tried going to the local university's indoor walking track near her house. But she couldn't even walk two tenths of a mile before her legs began to hurt — a lot. Sometimes the pain was in her ankles, sometimes in her calves, sometimes in her thighs. "It made me cry," said the 64-year-old, who lives in Morris, Minn.

That was a telltale sign of peripheral artery disease, which affects an estimated 8 million Americans. Zinda had a number of treatment possibilities, but the cheapest and least invasive has generally not been covered by insurance, despite years' worth of evidence that it can be as effective as other options.

That is on the cusp of changing, experts say, because of a long-awaited proposal from the Centers for Medicare and Medicaid Services to cover what's known as supervised exercise therapy — a program of graduated exercise with the help of an exercise physiologist, which is currently covered after certain kinds of cardiac events, but not for PAD.

- Improves exercise performance, walking ability, physical functioning, and QOL
  - Up to 180%↑PFWD (180 meters) [2,3,4]
  - 120-150%↑MWD (128 meters) in meta-analyses[2,3,4]
  - Improved quality of life SF-36 physical component summary scores[1,5]
- Highly cost effective when compared to catheter-based revascularization[6]
- Alternate home-based approaches may overcome patient barriers
- Augments effect of intervention

[1]Stewart KJ, et al. N Engl J Med. 2002;347:1941. [2]Gardner AW, et al. JAMA 1995;274:975. [3]Leng GC, et al. Cochrane Review 2000. CD000990. [4]Fakhry F, et al. J Vasc Surg 2012;56:1132. [5]Parmenter BJ, et al. Vasc Med 2015. [6]Treesak C, et al. Vasc Med. 2004 9:279.

Indications for Revascularization

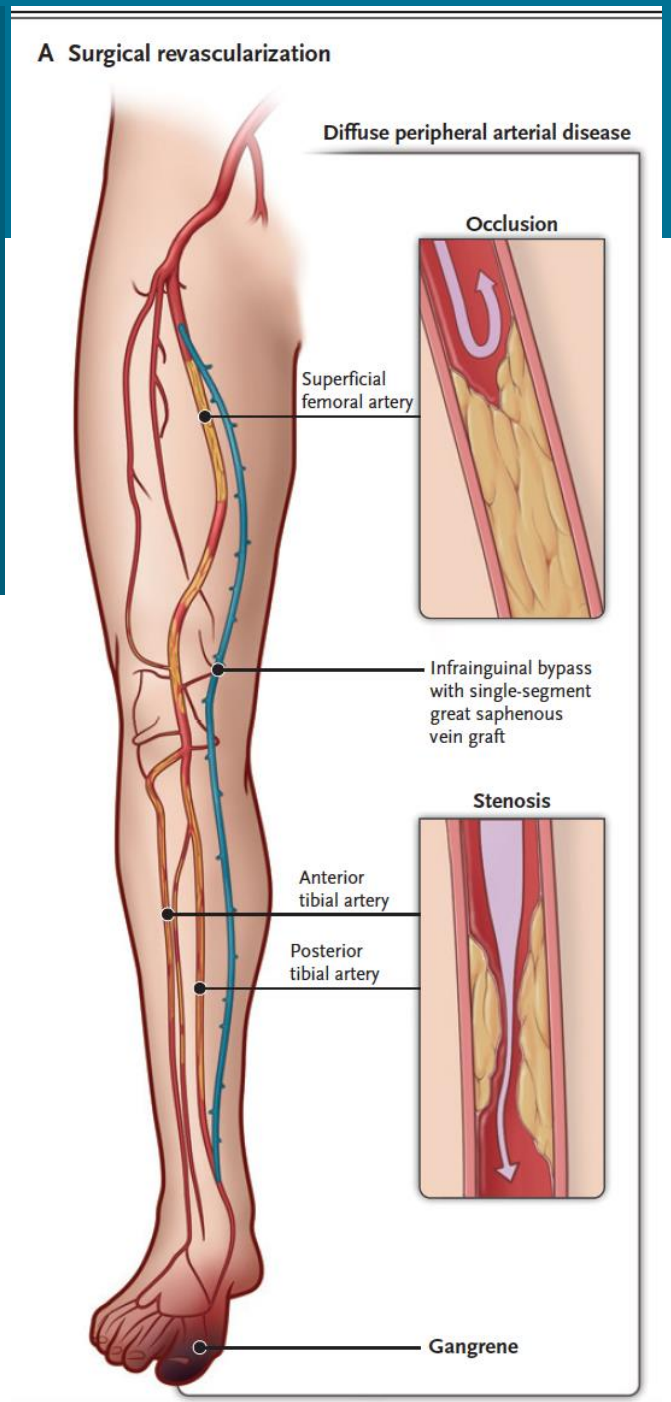
- Critical limb ischemia
  - Rest pain (“the five Ps”)
  - Tissue loss/necrosis (ulcers, gangrene)
  - Refractory infection
- Claudication
  - Reduce disability
  - Improve quality of life

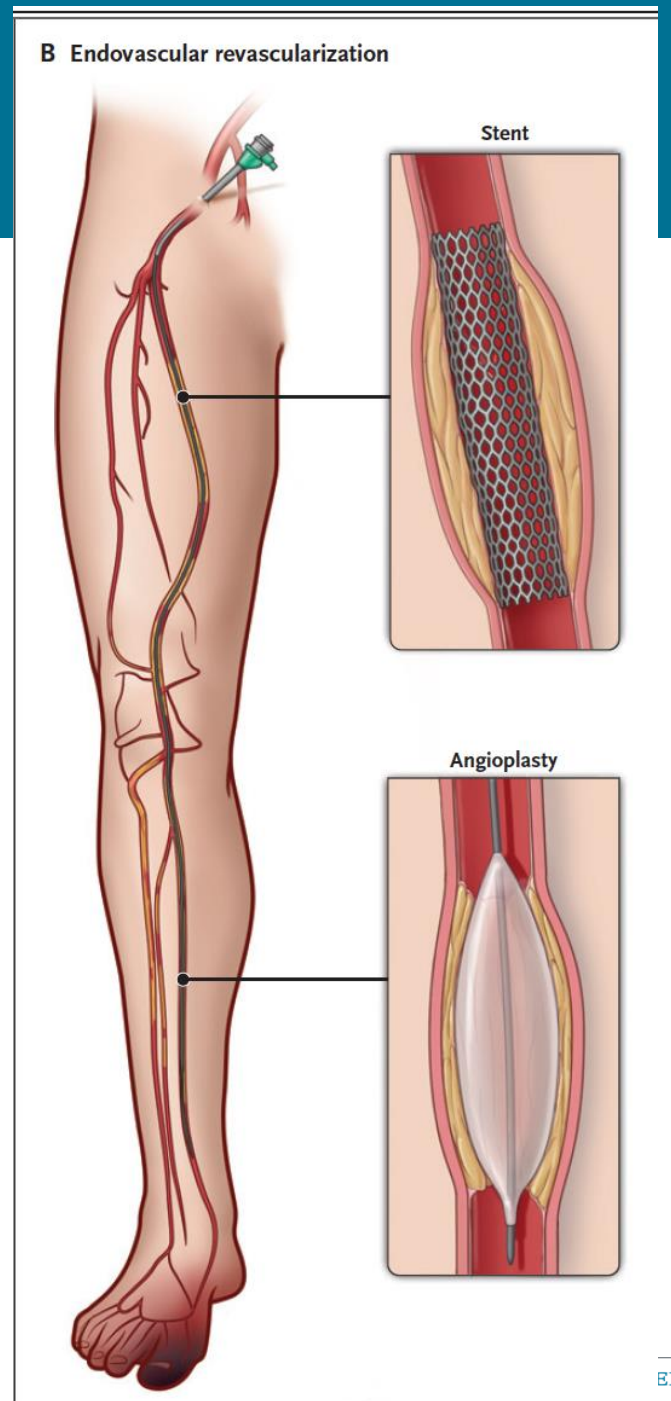
CLI: Defining the Problem

- Critical reduction of blood flow to the lower extremity resulting in…
  - Rest pain (RC IV)
  - Tissue loss and ulceration (RC V)
  - Gangrene (RC VI)
- May present as multilevel disease or preserved flow through to the popliteal artery with tibial obstruction

TASC WG/Management of peripheral arterial disease. J Vasc Surg. 2000;31:S168–S170.

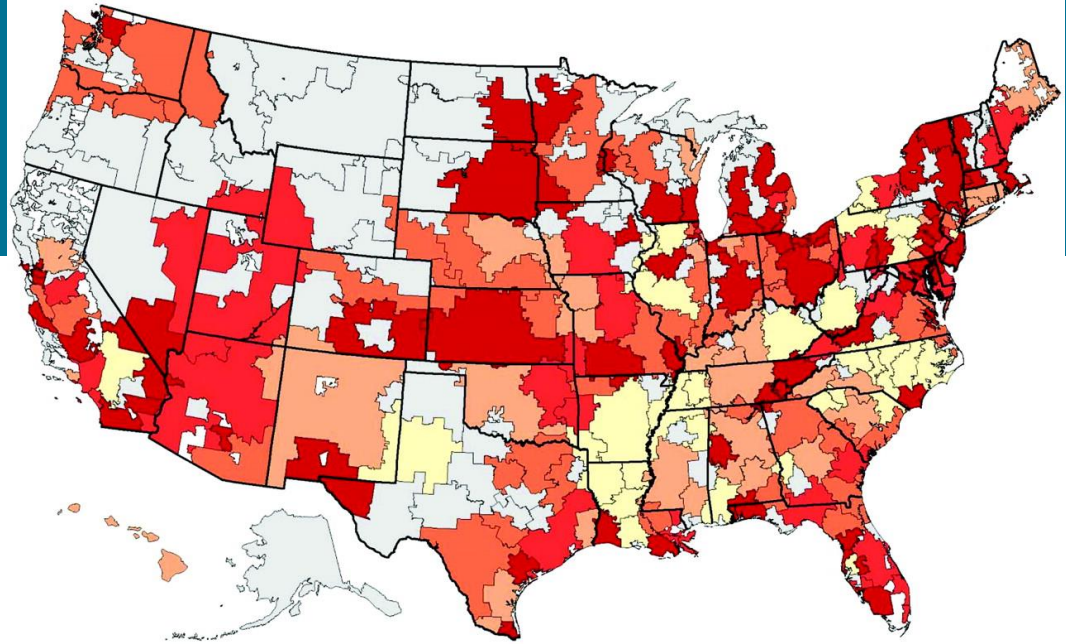
Revascularization Options in Chronic Limb Threatening Ischemia (CLI)

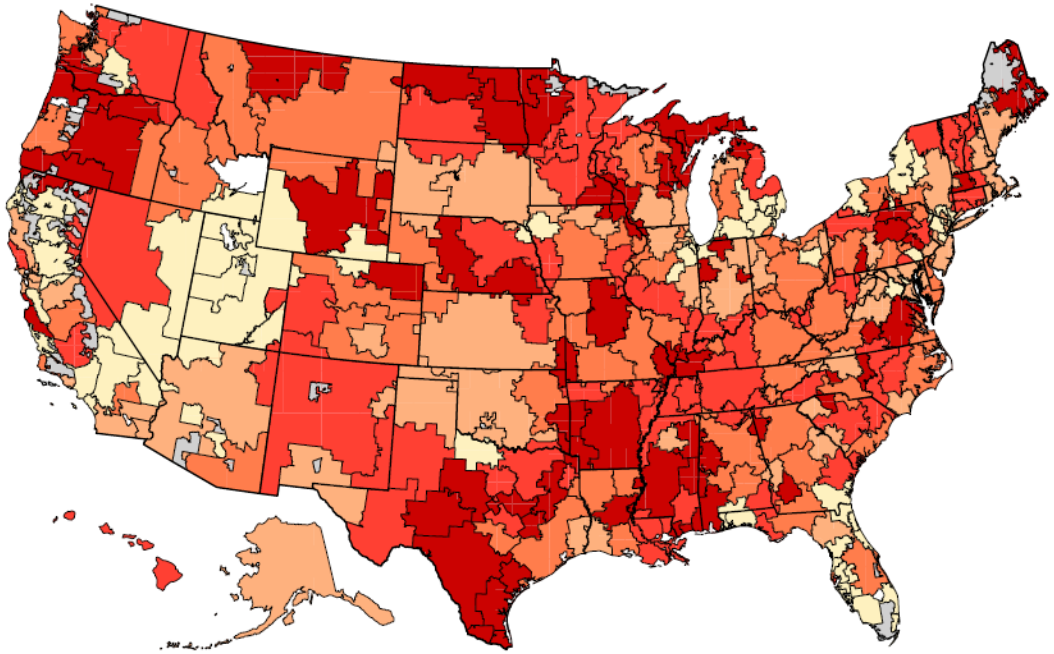




Variation in Amputation, Revascularization, and Intensity of Vascular Care among Patients with CLI

Dartmouth Atlas of Cardiovascular and Thoracic Healthcare Care. Manning Selvage & Lee; 1998 Goodney et al. Circulation Cardiovasc. Qual and Outcomes 2011

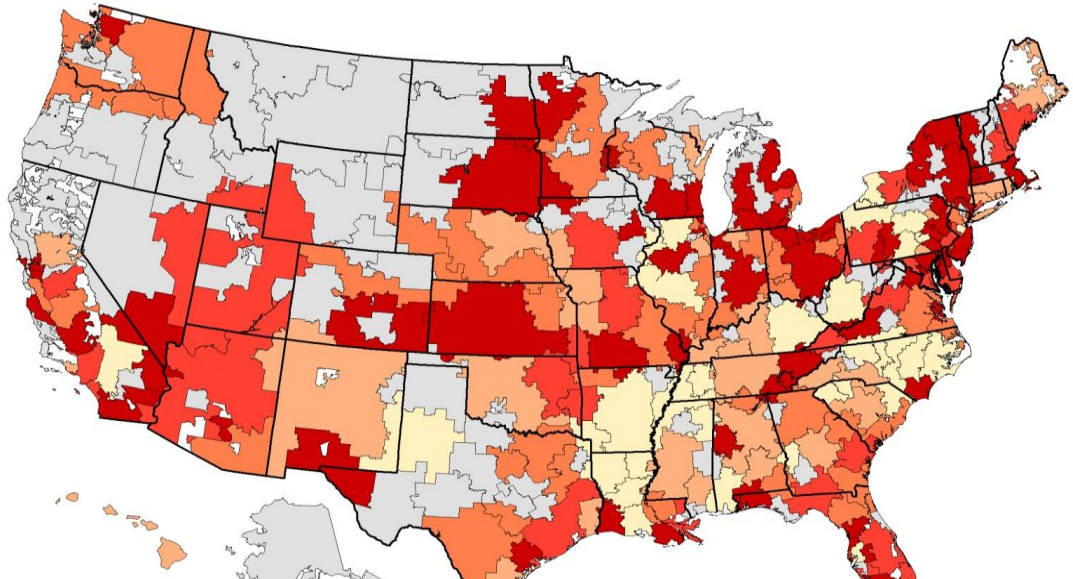




Rate of Revascularization in the Year Prior to Amputation for PAD

by Hospital Referral Region (2003-06)

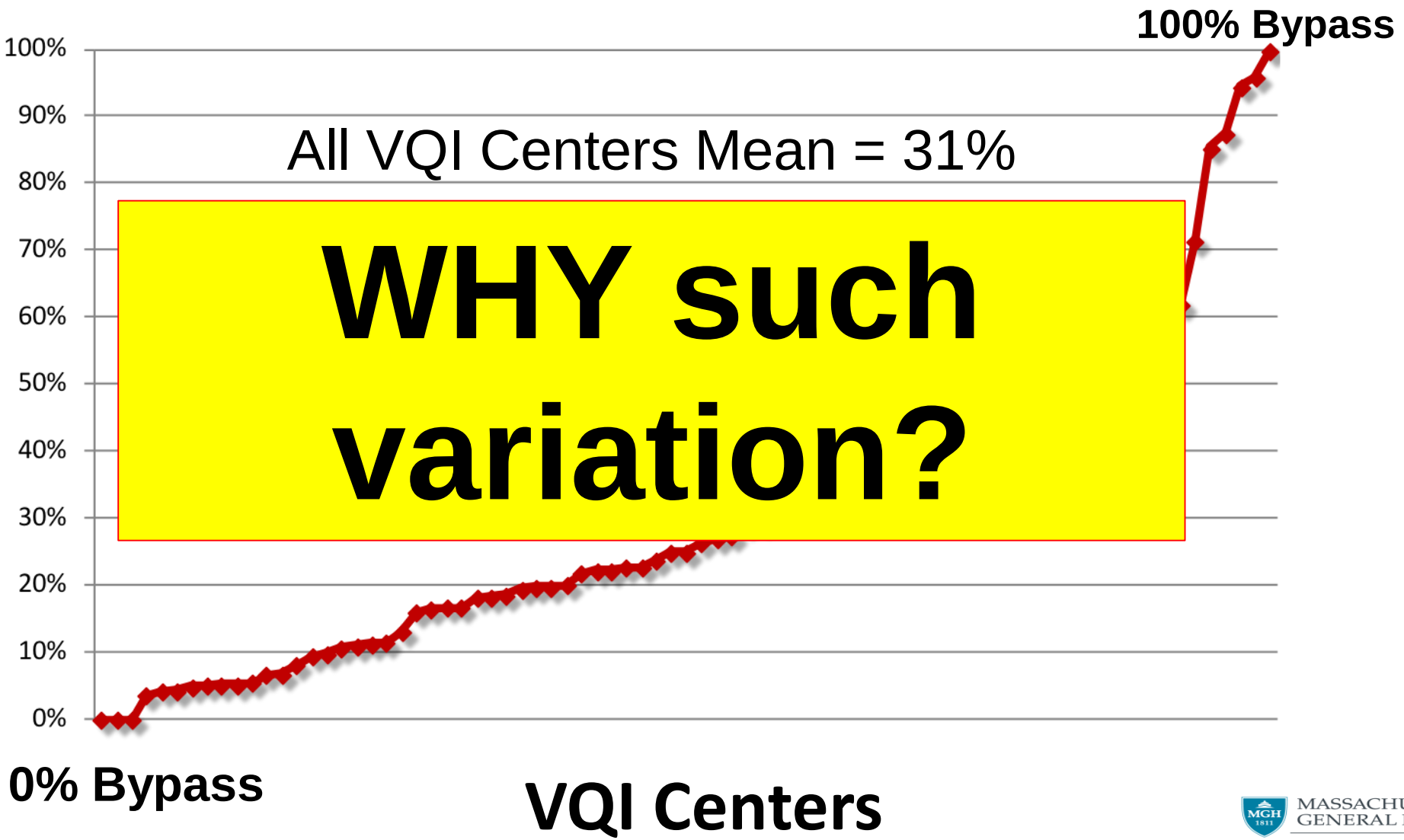
0.58 or Greater	(68)
0.49-0.58	(34)
0.45-0.49	(40)
0.41-0.45	(35)
0.32-0.41	(32)
Insufficient data	(97)
Not populated	



Any Amputation per 1,000 Medicare Beneficiaries with Diabetes/ Peripheral Artery Disease

by Hospital Referral Region (2007-11)

% of Patients with CLI and Infrainguinal PAD Treated Using Surgical Bypass (vs. Endovascular Therapy)



The Evidence Gap in PAD/CLI (RCTs)

	CAD Coronary Artery Disease	CVD Cerebral Vascular Disease	CLI Critical Limb Ischemia
Affected Individuals in the US	**28.2 million†**	**7.8 million†**	**~10 million † †**
Completed Landmark RCTs	CAPRICORN (2001) EUROPA (2003) COURAGE (2007) PLATO (2009) ATLAS ACS 2–TIMI 51 (2012) FREEDOM (2012) DAPT (2014) PEGASUS-TIMI 54 (2015) IMPROVE-IT (2015) COMPASS (2017) CULPRIT-SHOCK (2017)	ACAS (1995) NASCET (1998) ARCHeR(2003) SAPPHIRE(2005) SPARCL (2006) CREST-1 (2010) ACST-1(2010) SAMMPRIS (2015) ACT-1 (2016)	BASIL (2005)

† **Circulation. 2018;137:e558–e577, CDC Fact Sheet**

† †**JACC-Agarwal, 2016**

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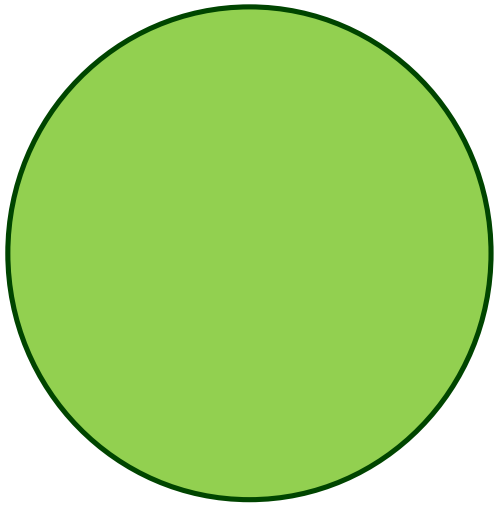
The Evidence Gap in PAD/CLI (RCT's)

	CAD Coronary Artery Disease	CVD Cerebral Vascular Disease	CLI Critical Limb Ischemia
Affected Individuals in the US	**28.2 million**†	**7.8 million**†	**~10 million** **(JACC-Agarwal, 2016)**
Patients Studied (to scale)	 **129,698**	 **17,995**	 **452**

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Where are we in 2019?

"You've come a long way, baby!"

Redefining the Treatment of Peripheral Artery Disease

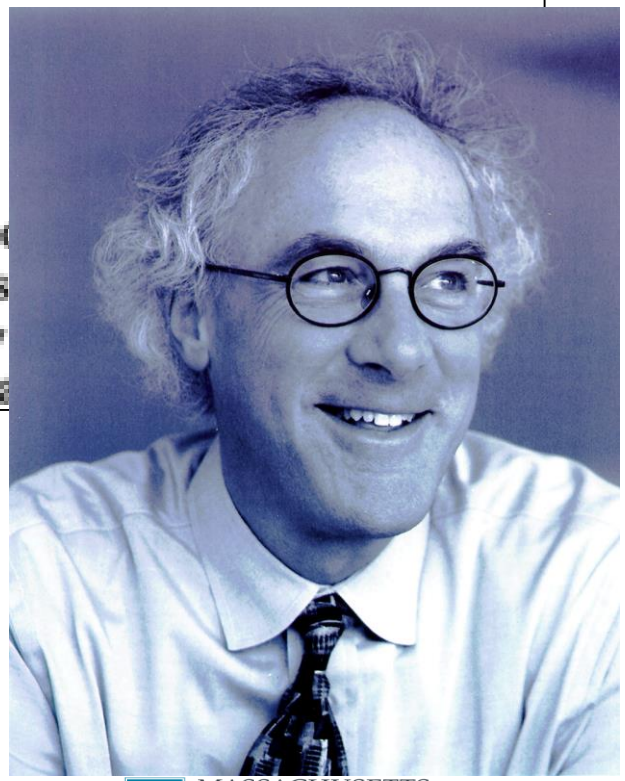
Role of Percutaneous Revascularization

Jeffrey M. Isner, MD, and Kenneth Rosenfield, MD

The times, they are a changin'.
Bob Dylan

The application of a catheter-based approach to the treatment of arterial occlusion of the lower extremities was proposed by Dotter and Judkins[1] nearly 30 years ago; 13 years later, Gruentzig[2] widespread basis to convert t tal or less lengthy occlusions with less technical difficulty efficacy. Plain old balloon a

Isner and Rosenfield; Circulation; 1993



Jeffrey Michael Isner, MD
1947-2001

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Endovascular Therapy for PAD

Advantages

- Less invasive
- Safer, less morbidity and mortality
- Similar efficacy compared to surgery
- Shorter length of hospital stay
- Faster return to work
- **$$**Less expensive **$$**
- Patients prefer it

“Don’t treat…high risk of rupture!!” (1995)

SETTS
OSPITAL
VASCULAR CENTER

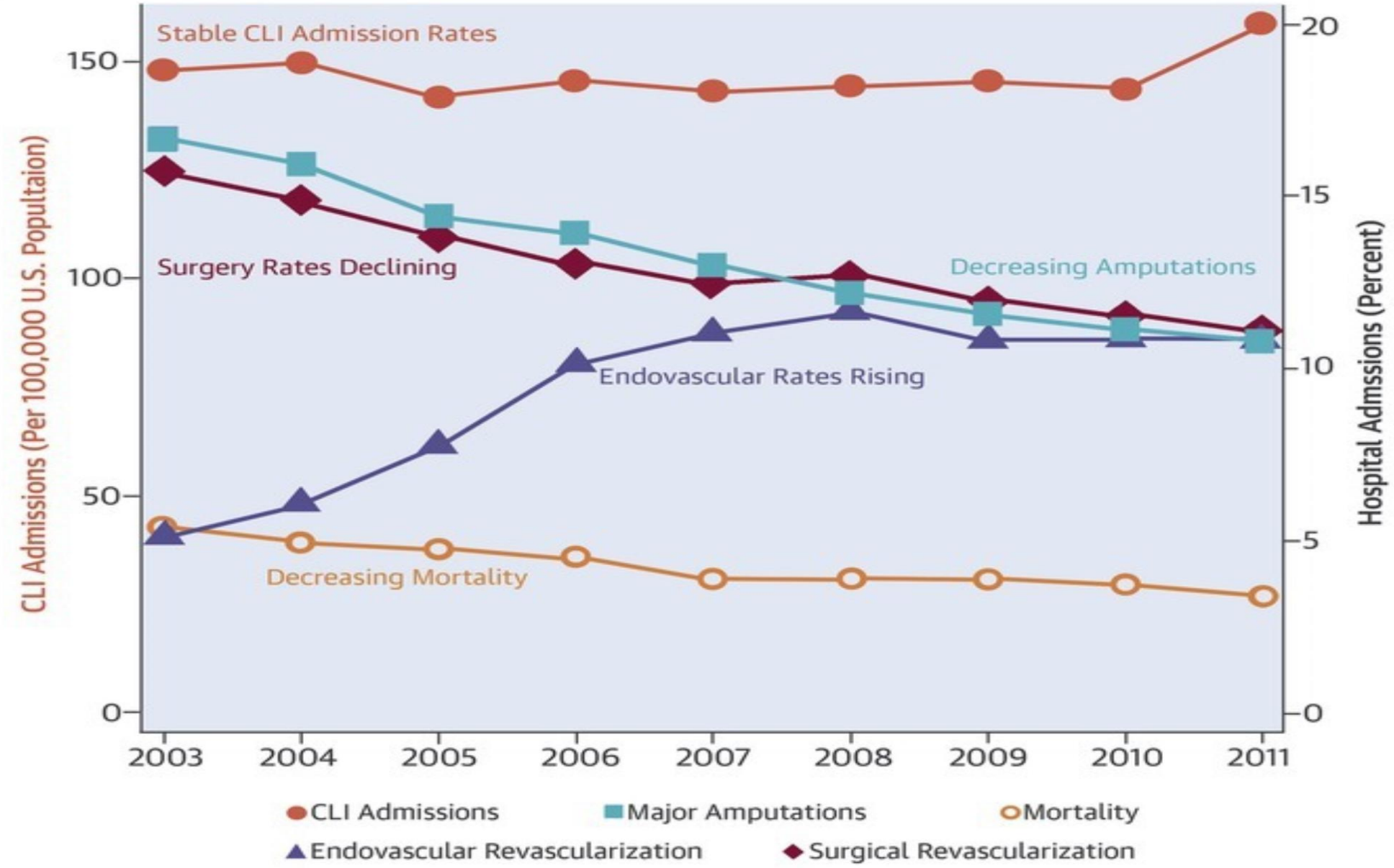
Now *THAT'S* Progress - Endovascular Tools and Devices

- **Balloons**
  - **Low profile, high pressure, cutting, scoring**
- **Guidewires**
  - **Wide array of sizes, flexibility, tip strength, length, durability, steerability. Specialty wires- TO/other**
- **Stents**
  - **Flexible, low profile, polymers, biodegradable coatings, DES, covered, mesh-covered, etc.**
- **Atherectomy/debulking**
  - **Laser, rotational atherectomy, etc.**

Complex Aortoiliac Disease

Now routinely treated with PTA/stents

CENTRAL ILLUSTRATION: U.S. Trends in CLI Hospital Admissions and Outcomes



Agarwal, S. et al. J Am Coll Cardiol. 2016;67(16):1901–13.

Peripheral Artery Disease
Paradigm Shift (1989-2019)

- Effective, less invasive strategies available
- **Transition from *open* to *endovascular***
- Better-informed patients; active participants
- Lower threshold for intervention
- More aggressive efforts to save limbs and preserve independence
- BUT, are there data to support all this???
- *NB: Rapidly changing field has presented a challenge to develop evidence base*

From the New England Society for Vascular Surgery

Intermediate results of percutaneous endovascular therapy of femoropopliteal occlusive disease: A contemporary series

Mark Frederick Conrad, MD, Richard P. Cambria, MD, David H. Stone, MD, David C. Brewster, MD, Christopher J. Kwolek, MD, Michael T. Watkins, MD, Thomas K. Chung, MA,

"These data suggest that it would be appropriate to use PTA as initial therapy for…occlusive disease regardless of clinical classification at presentation or TASC category of lesion severity."

actuarial primary patency was 54.3%, and assisted patency was 92.6% (37 peripheral reinterventions), resulting in a limb preservation rate of 95.4% in all patients regardless of clinical presentation. Interval conversion to bypass surgery occurred in 19 patients (8%). Comparison between critical limb ischemia and claudication revealed a primary patency of 40.8% vs 64.8%, assisted patency of 93.8% vs 92.6%, and limb salvage of 89.7% vs 100%, respectively. Negative predictors of primary patency determined by multivariate analysis included history of congestive heart failure ($P = .02$) and TASC C/D ($P = .02$). However, further evaluation of TASC C/D vs A/B revealed an assisted patency of 89.7% vs 94.3% ($P = .37$) and limb salvage of 94.3% vs 96.4% ($P = .58$).

Conclusions: Femoropopliteal PTA can be performed with a low perioperative morbidity and mortality. Intermediate primary patency is directly related to TASC classification. Although secondary intervention is often necessary to maintain patency in TASC C/D lesions, these data suggest that it would be appropriate to use PTA as initial therapy for chronic femoropopliteal occlusive disease regardless of clinical classification at presentation or TASC category of lesion severity. (J Vasc Surg 2006;44:762-9.)

Vascular Intervention
New Paradigm: "endo first!"

- If anatomy suitable for percutaneous Rx, then this should usually be attempted first:
  - Less invasive
  - Lower "cost" to patient
  - Repeatable
  - Often, even if reoccludes after healing has occurred, no sxs and no need to reintervene ("tide-over" concept)
- Caveats:
  - Must not "burn bridge" to surgery

Current Status of CLI Treatment?

Tremendous variability …

Revascularization Options in CLI

Bypass Surgery

Which Treatment Strategy is Best?

Endovascular Therapy

CLI: Limitations of Current Data and Studies

- Retrospective
- Poorly controlled
- Suboptimal endpoints
  - Amputation free survival
  - Target lesion revascularization
  - Patency
- Sponsor/Operator bias
- Short or incomplete follow up

AHRQ – "Need for level 1 evidence"

Peripheral Vascular Disease

Comparative effectiveness of endovascular and surgical revascularization for patients with peripheral artery disease and critical limb ischemia: Systematic review of revascularization in critical limb ischemia

W. Schuyler Jones, MD,[a,b] Rowena J. Dolor, MD,[a,c] Vic Hasselblad, PhD,[a] Sreekanth Vemulapalli, MD,[a,b] Sumeet Subherwal, MD,[a] Kristine Schmit, MD,[a,c] Brooke Heidenfelder, PhD,[a,c] and Manesh R. Patel, MD[a,b]
Durham, NC

Background For patients with critical limb ischemia (CLI), the optimal treatment to enhance limb preservation, prevent death, and improve functional status is unknown. We performed a systematic review and meta-analysis to assess the comparative effectiveness of endovascular revascularization and surgical revascularization in patients with CLI.

Methods We systematically searched PubMed, Embase, and the Cochrane Database of Systematic Reviews for relevant English-language studies published from January 1995 to August 2012. Two investigators screened each abstract and full-text article for inclusion, abstracted the data, and performed quality ratings and evidence grading. Random-effects models were used to compute summary estimates of effects, with endovascular treatment as the control group.

Results We identified a total of 23 studies, including 1 randomized controlled trial, which reported no difference in amputation-free survival at 3 years (odds ratio [OR] 1.22, 95% CI 0.84-1.77) and all-cause mortality (OR 1.07, 0.73-1.56) between the 2 treatments. Meta-analysis of the observational studies showed a statistically nonsignificant reduction in all-cause mortality at 6 months (11 studies, OR 0.85, 0.57-1.27) and amputation-free survival at 1 year (2 studies, OR 0.76, 0.48-1.21) in patients treated with endovascular revascularization. There was no difference in overall death, amputation, or amputation

…There is paucity of high-quality data available to guide clinical decision making….

Comparative Effectiveness Trials for Vascular Disease

- Carotid Endarterectomy
  - NASCET, ACAS, ACST, VA Trial, ECST,GALA
- CEA vs Carotid Stent
  - ACT I, CREST, CASANOVA,EVA 3s, ICSS, SAPPHIRE, SPACE, CAVATAS
- AAA
  - ADAM, UK Small AAA
- AAA vs EVAR
  - DREAM I and II, EVAR I and II, OVER , ACE, Numerous IDE studies.
- CLI: Bypass vs Endo
  - BASIL

BEST-CLI

Best **E**ndovascular vs. Best **S**urgical **T**herapy in Patients with **C**ritical **L**imb **I**schemia

Sponsored by the National Heart Lung and Blood Institute

BWH

CENTER BOSTON MEDICAL
EXCEPTIONAL CARE. WITHOUT EXCEPTION.

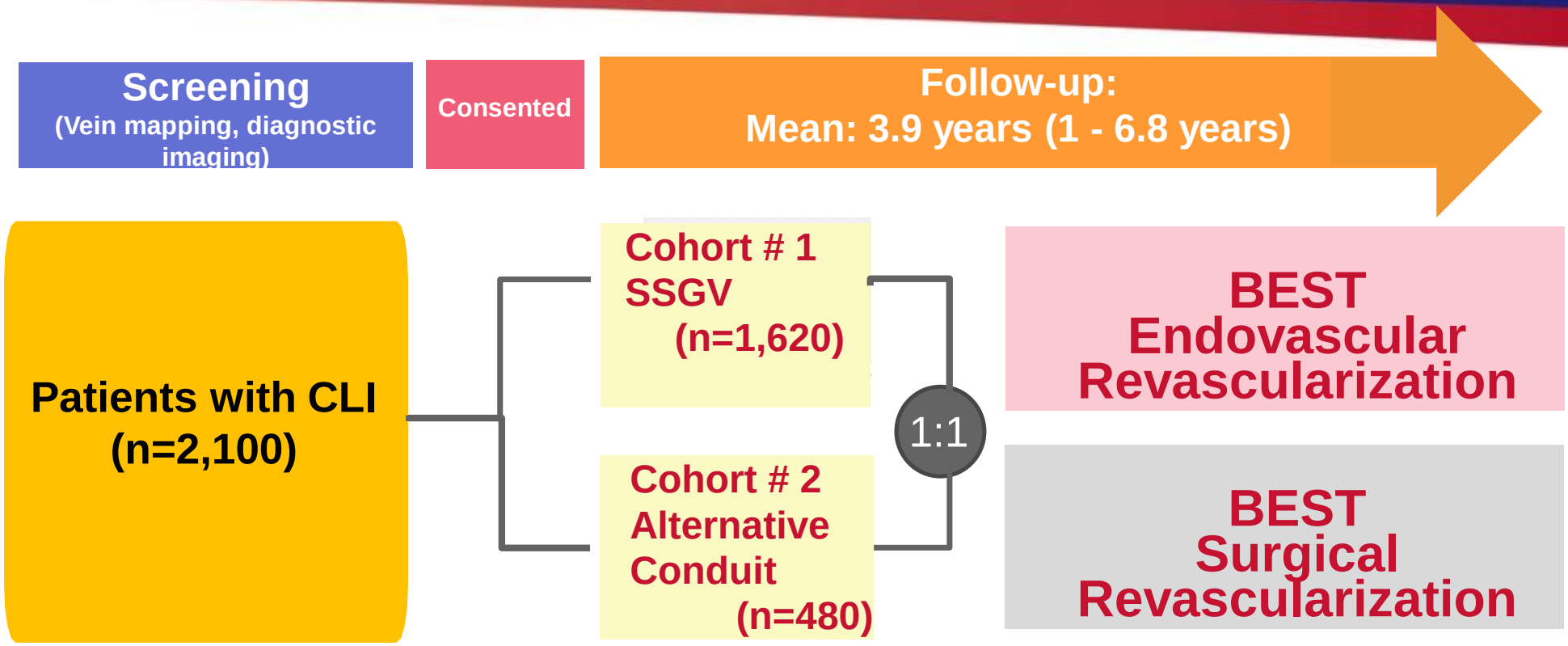
MGH 1811

neri
New England Research Institutes

BEST-CLI Trial - Overview

- Prospective, randomized, multicenter, multispecialty, pragmatic, open-label superiority trial
- 2,100 patients at 160 clinical sites
- Funding by NIH = $27.3 million
- ***Goal: to assess treatment efficacy, functional outcomes, cost, and <u>value</u> in patients with CLI and infrainguinal PAD who are candidates for both open vascular and endovascular surgery***

BEST-CLI Study Design



Primary Endpoint:

- MALE (Major Adverse Limb Event) - Free Survival

Secondary Endpoint (Clinical, Functional, Cost-effectiveness)

- RAFS (Re-intervention and amputation-free survival);
- MALE-POD Freedom (MALE or death within 30 days of index procedure);QoL, VascuQoL
- Treatment associated costs (in- and out-patient)

Safety Endpoint:

- MACE (Major Adverse Cardiovascular Events) through 30 days post index procedure

Robust Patient-Centered Outcomes (QOL) & Cost-Effectiveness Analysis

Functional status / quality of life measures

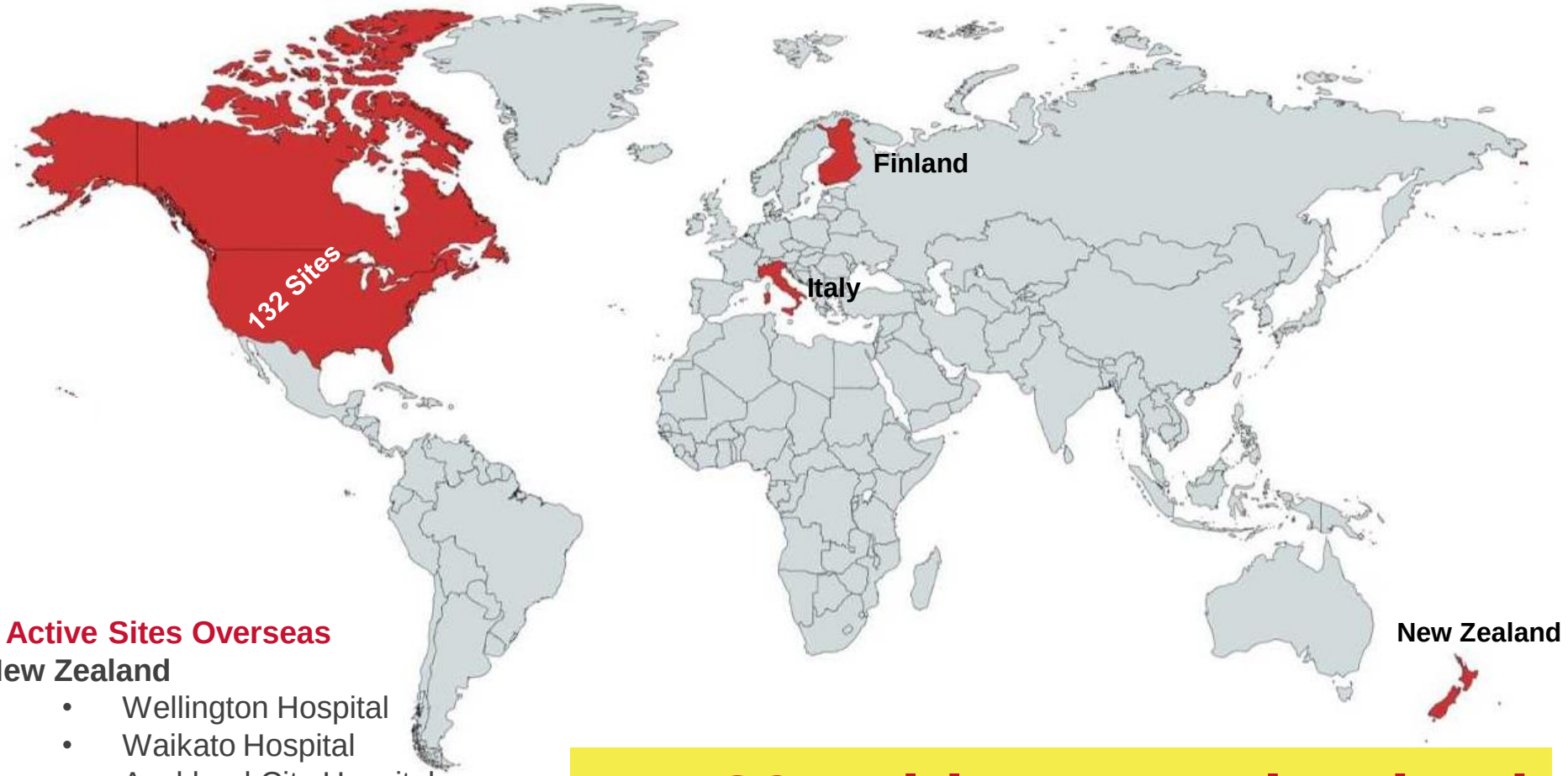
- EQ5D as main measure
- SF-12

All financial costs of care

- Hospital care (index admission and all f/u)
- Outpatient care
- Rehabilitation

BEST-CLI Global Footprint

137 sites currently open for enrollment



5 Active Sites Overseas

New Zealand

- Wellington Hospital
- Waikato Hospital
- Auckland City Hospital

Finland

- Helsinki University Hospital

Italy

- San Giovanni di Dio Hospital

1,729 subjects randomized (82% complete)

What questions will BEST-CLI answer?

- How does **infrainguinal bypass with optimal conduit (SSGSV)** fare against **endovascular therapy?**
- How does **bypass with non-optimal conduit** fare against **endovascular therapy?**
- **Assessment of**

Define an evidence-based standard of care

ial disease, clinical presentation, gender, race, age, diabetes, heel ulcer, renal dysfunction

- Prospective validation of **SVS WIfI** classification and **OPG endpoints**
- Relationship of **hemodynamic outcomes** of revascularization **to clinical outcomes**

HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

"turf" *n., ...**4.** Slang. **a.** A range of authority or influence; a bailiwick. **b.** A geographical area; a territory.* ***c. The area claimed by a gang as its personal territory.***

-The American Heritage College Dictionary

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Value of Integrated Vascular Care?

- Vascular patients are complex and have systemic vascular disease involving several organ systems
- Collaboration amongst specialists often enhances management and results in optimal care

"To adopt this approach with maximum concern for safety and efficacy clearly requires ***coordinated input from enlightened experts in cardiology, radiology, and vascular surgery.*** *The cost of underuse of such input will be reflected in both loss of dollars and patient-years that might have been otherwise fulfilling and useful."*

- Isner and Rosenfield; Circulation; 1993

May, 1993

- Palmaz
- Katzen
- Spittell
- Isner
- Fogarty
- Hiatt
- Dzau

1994

- Cook
- Wholey
- Stanley
- Gray
- Strandness
- Hiatt
- Strandness
- Isner

1995

- Parody
- Hyatt
- Becker
- Isner
- Parody
- Hiatt
- Spittell
- (Rutherford)

Critical Limb Ischemia (CLI) Team

Definition: Specialists at a given site who treat patients with CLI within the confines of the BEST-CLI Trial

- Specialty PIs, Co-investigators
- Research Nurses, Coordinators

Mission: maximize interdisciplinary collaboration within each site to ensure successful conduct of BEST-CLI, and raise standard of care

Requirements:

81% of sites are multi-disciplinary

- Willingness to sacrifice and compromise
- Focus on the **patient first**; recognition that team benefits pts
- Self-awareness that cannot be all-knowing
- Acceptance that we can learn from colleagues

Take home points – BEST-CLI is a Landmark Trial

- Largest randomized trial of CLI patients
- It will…
  - produce Level 1 evidence
  - define care for years to come
  - answer some important questions (not all!)
  - address value-based care
  - inform the next trials
  - promote team-based approach
- BEST is already redefining practice at many sites
- *Does NOT address Patient Preference or Shared Decision Making*

Revascularization for Claudication…The largest evidence gap!! ACC/AHA 2016 Guidelines

8.1. Revascularization for Claudication: Recommendation

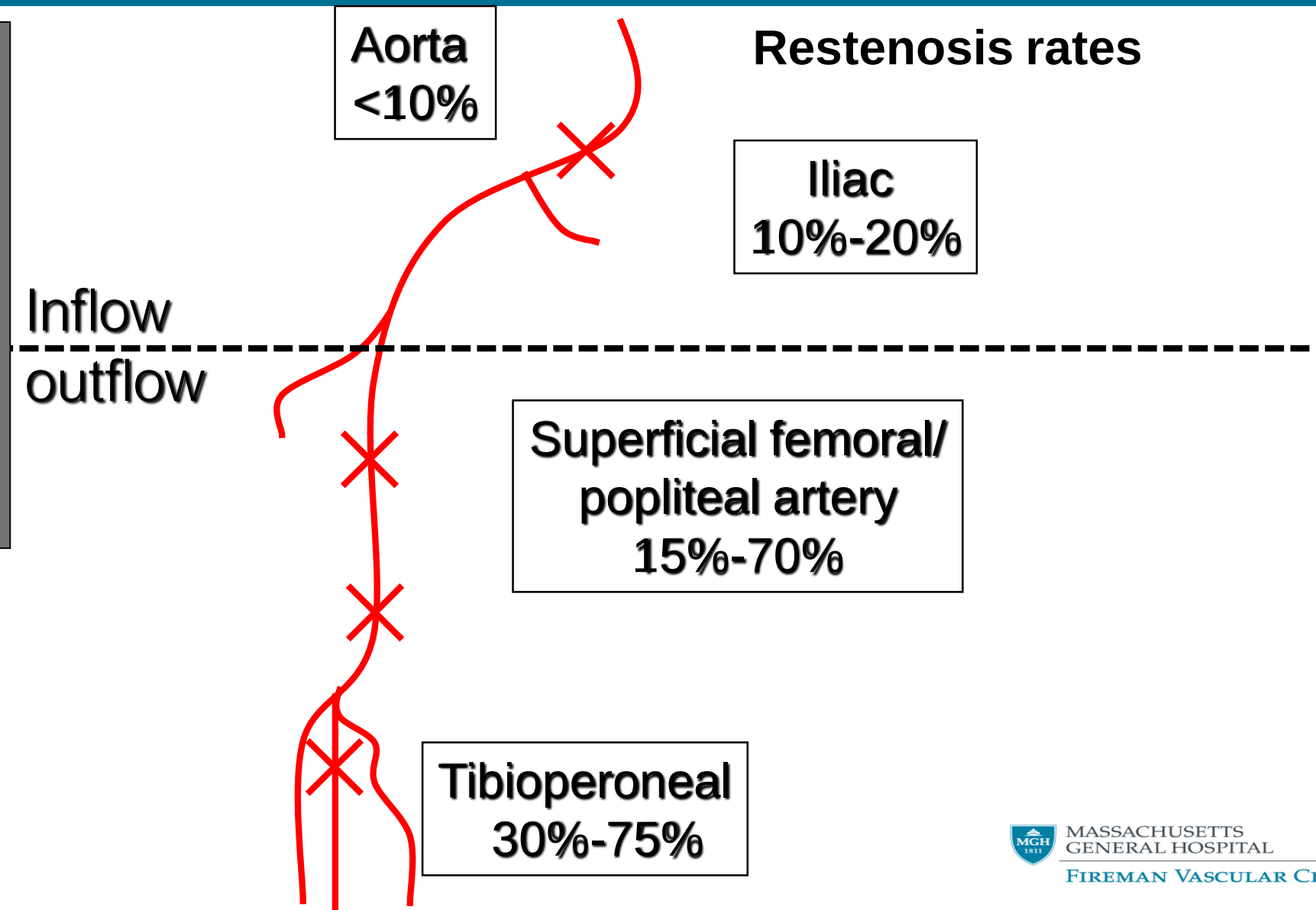
Recommendation for Revascularization for Claudication		
COR	**LOE**	**Recommendation**
IIa	**A**	**Revascularization is a reasonable treatment option for the patient with lifestyle-limiting claudication with an inadequate response to GDMT (12, 37, 38, 232, 233).**
See Online Data Supplements 35 and 36.		A minority of patients with claudication (estimated at <10% to 15% over 5 years or more) will progress to CLI (234-237). Therefore, the role of revascularization in claudication is improvement in claudication symptoms and functional status, and consequently in QoL, rather than limb salvage. Revascularization is reasonable when the patient who is being treated with GDMT (including structured exercise therapy) presents with persistent lifestyle-limiting claudication (12, 37, 38, 232, 233). Lifestyle-limiting claudication is defined by the patient rather than by any test. It includes impairment of activities of daily living and/or vocational and/or recreational activities due to claudication. There should be clear discussion with the patient about expected risks and benefits of revascularization, as well as discussion of the durability of proposed procedures.

Gerhard-Herman MD, et al 2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease, Journal of the American College of Cardiology (2016), doi: 10.1016/j.jacc.2016.11.007.

“Inflow” versus “Outflow”
Factors influencing threshold for intervention

Principles

- Fix inflow first
- Prox revasc=
  - ⬆ Tech success
- Distal revasc=
  - ⬆ Tech difficulty
  - ⬆ Restenosis
- For healing ulcers, must restore straight-line flow to foot



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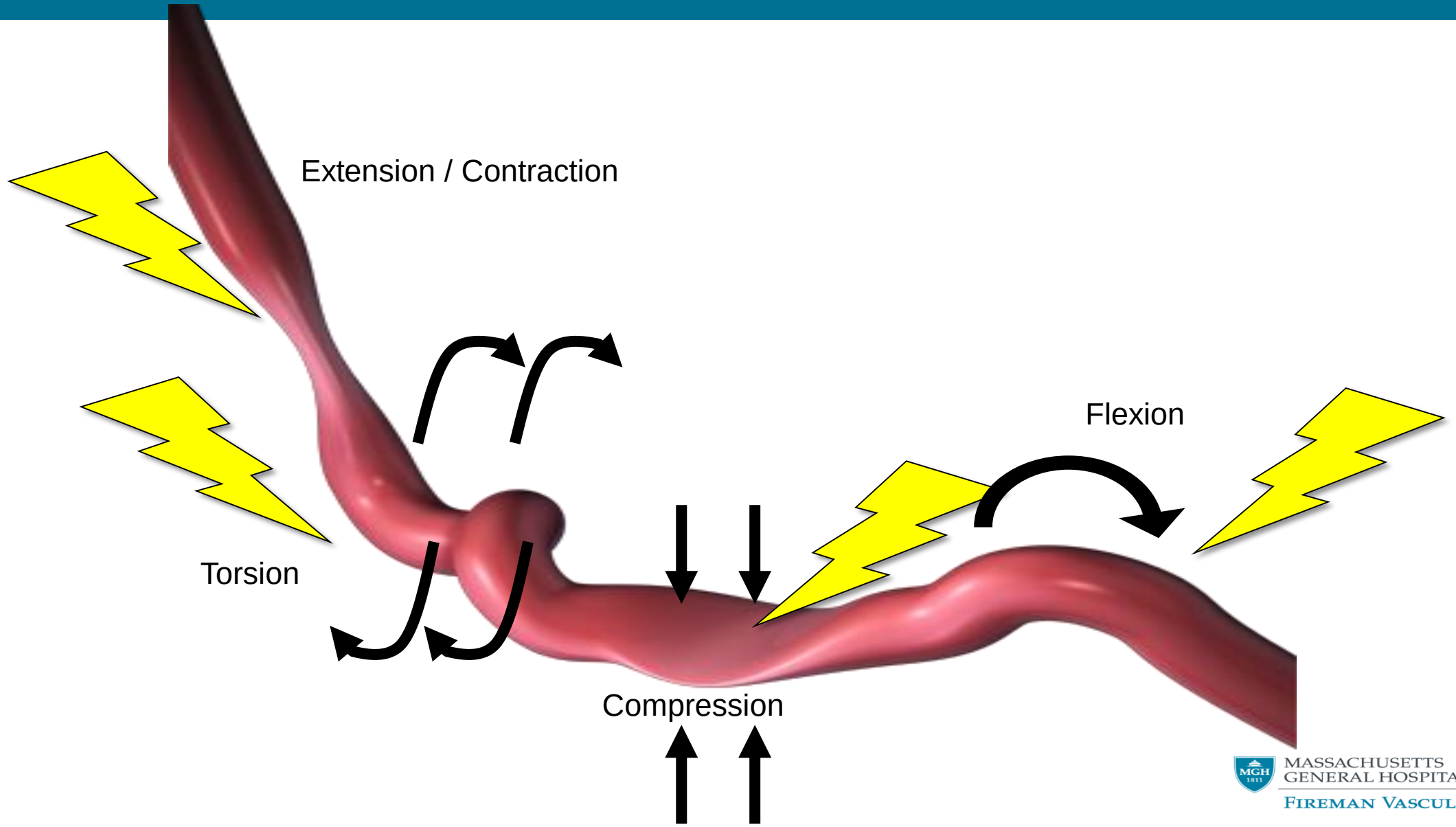
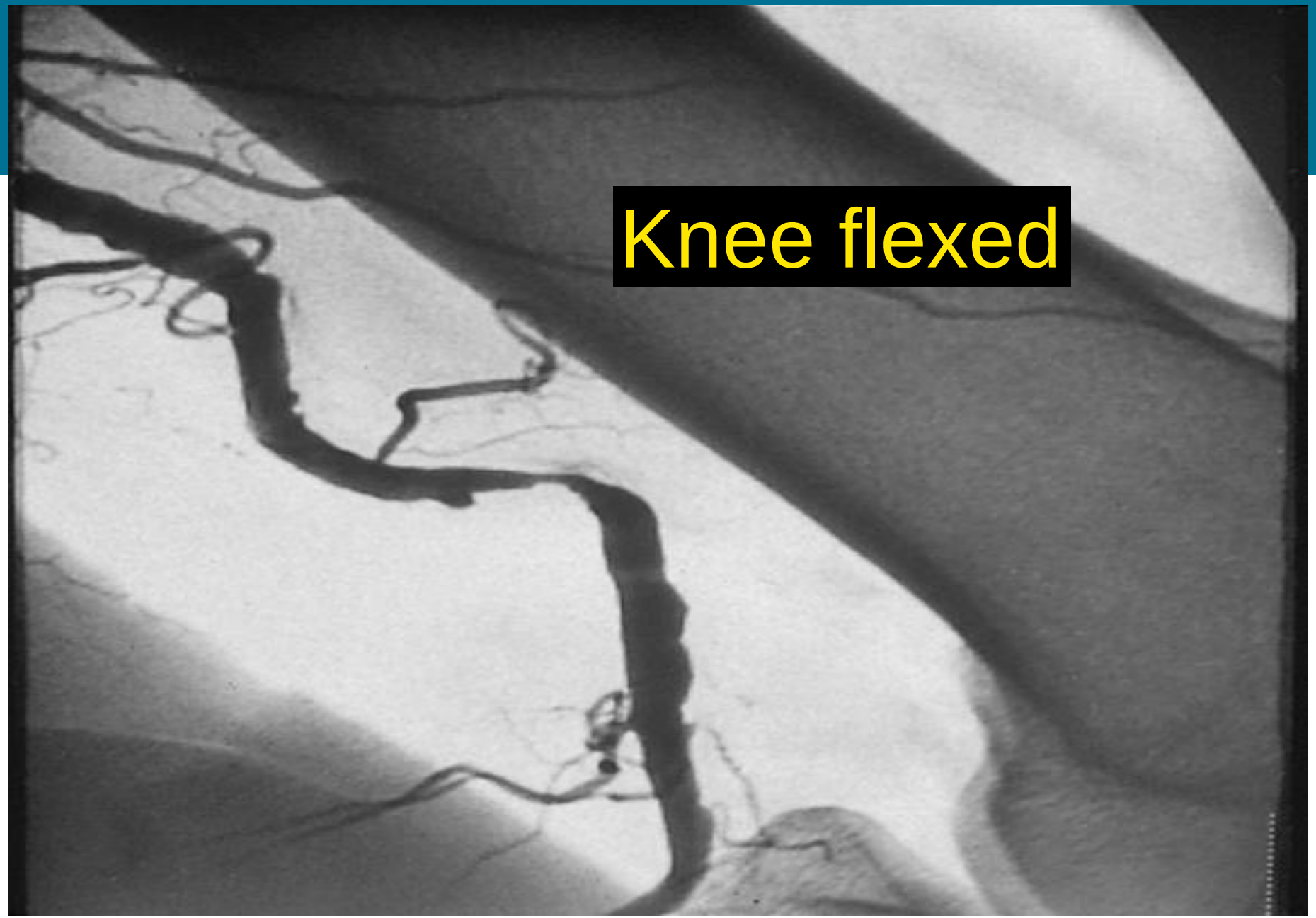
The SFA is a Challenging Artery to Treat

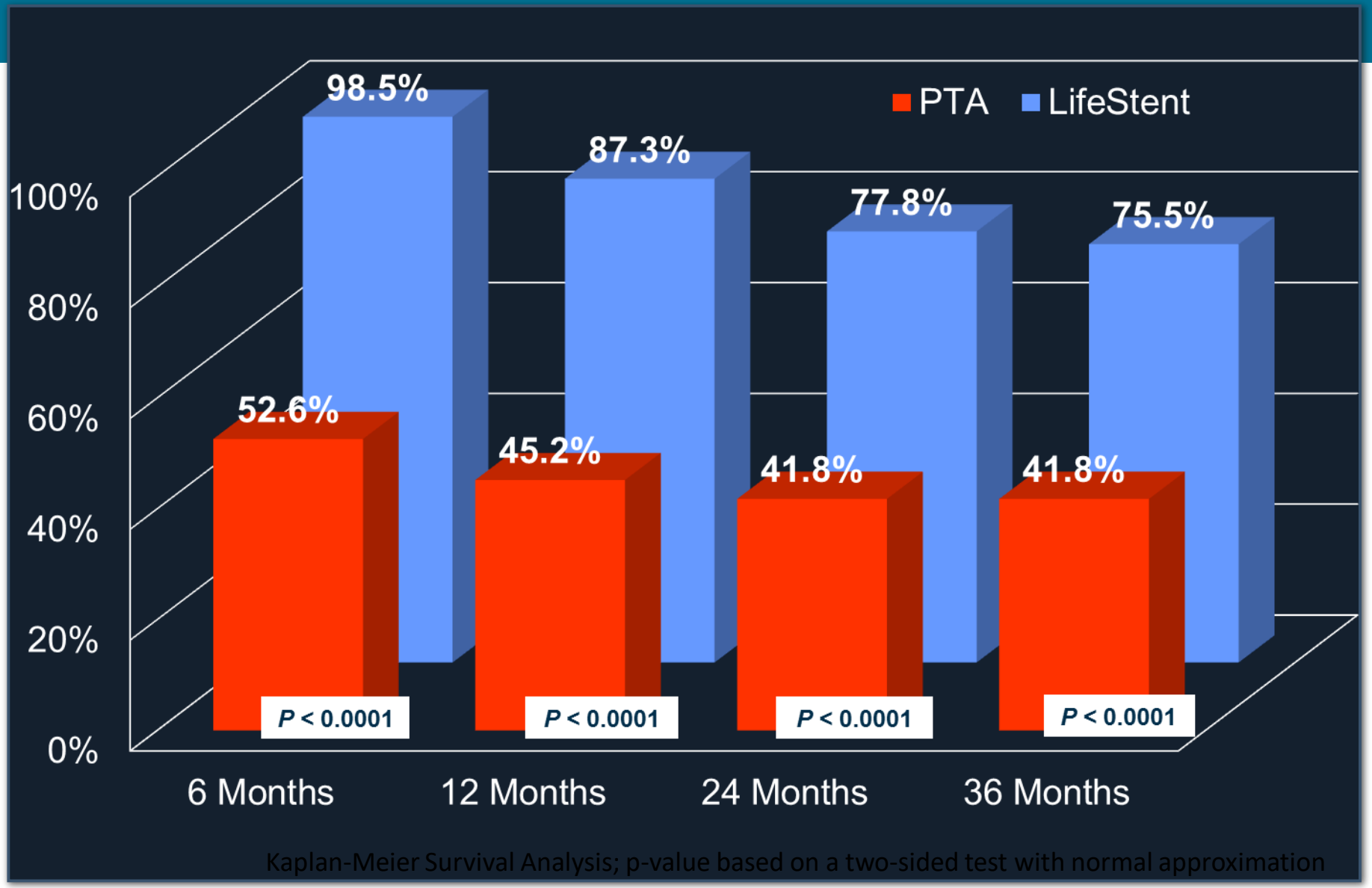




Courtesy of Gary Ansel

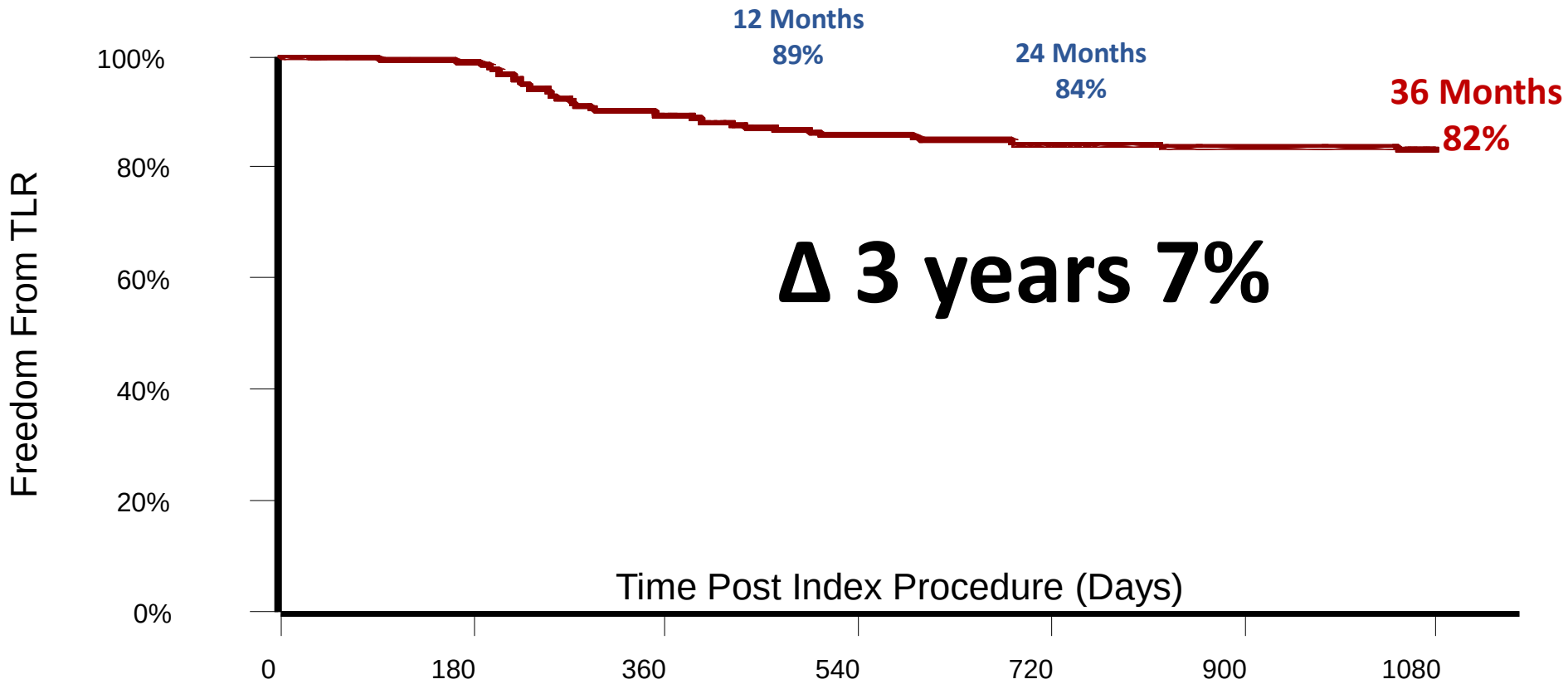
SFA Stenting is Superior to PTA Alone

RESILIENT: Freedom from TLR



Laird JR et al. J Endovasc Ther. 2012 Feb;19(1):1-9. doi: 10.1583/11-3627.1

SUPERA: Freedom From Clinically Driven TLR Through 3 Years



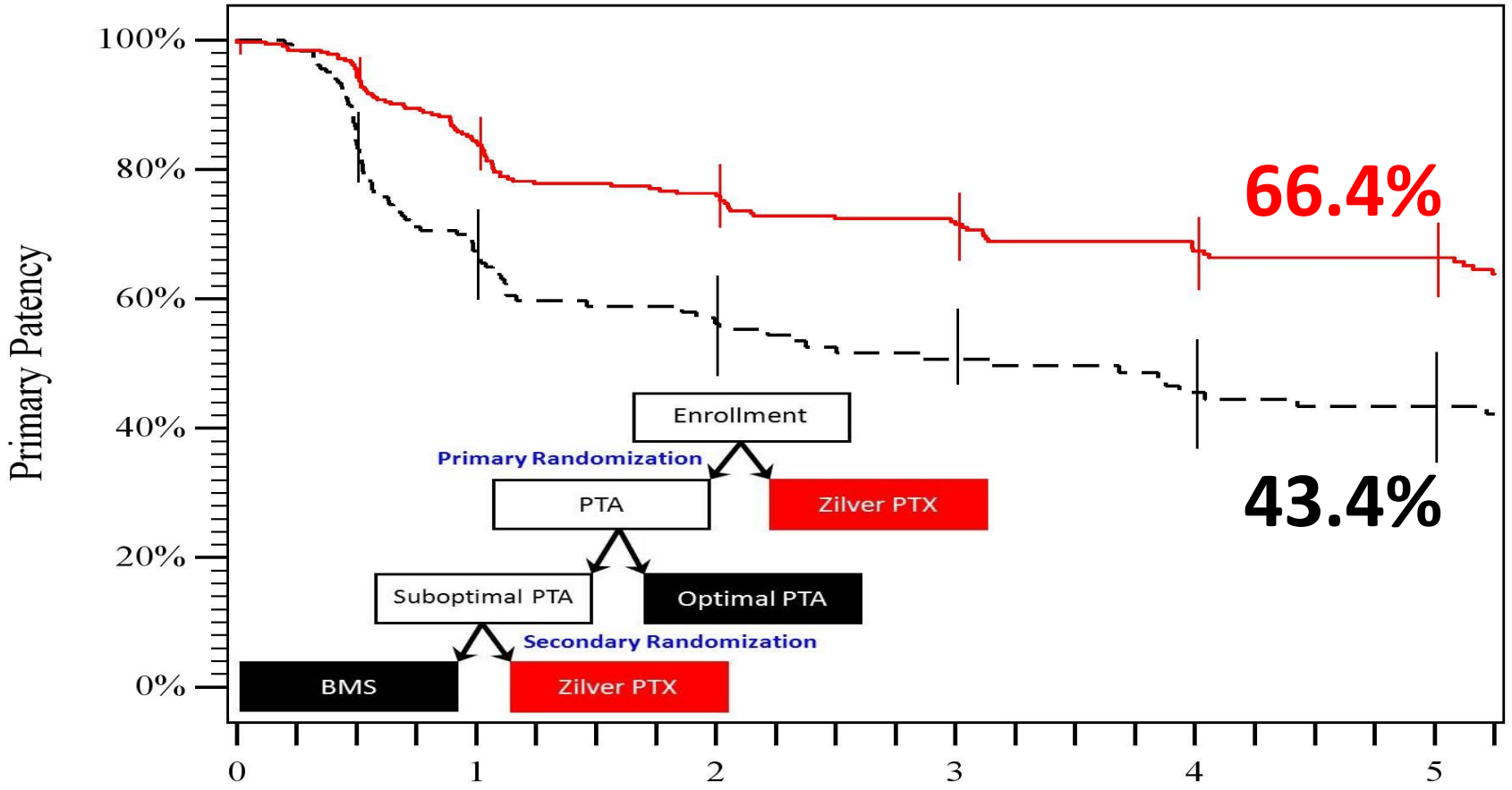
Courtesy: Lawrence Garcia, MD, VIVA 2014

Supera Stent: Bent Knee Lateral

MASSACHUSETTS GENERAL HOSPITAL

Courtesy: S. Parikh, MD, FACC, FSCAI

5-year Primary Patency (PSVR < 2.0) Zilver PTX vs. Standard Care



Zilver PTX

Optimal PTA + BMS

$p < 0.01$ log-rank

At 5 years, Zilver PTX demonstrates a 41% reduction in restenosis compared to standard care

Source: Dake M. The Zilver PTX randomized trial of paclitaxel-eluting stents for femoropopliteal artery disease: 5-year results. Presented at: VIVA 2014: Vascular Interventional Advances Conference; November 4-7, 2014; Las Vegas, Nevada.

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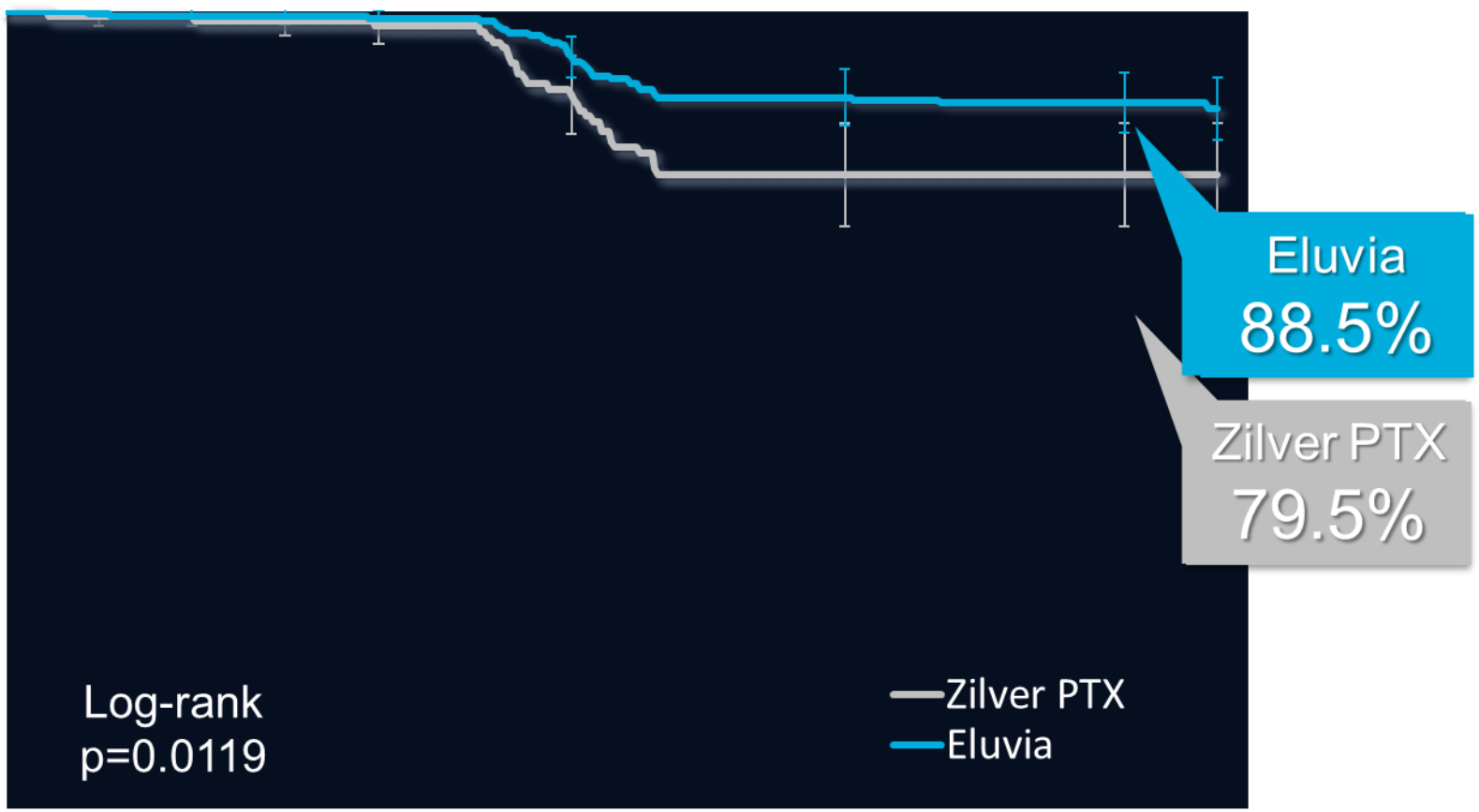
Effectiveness | Primary Patency at 12 Months

IMPERIAL CLINICAL TRIAL

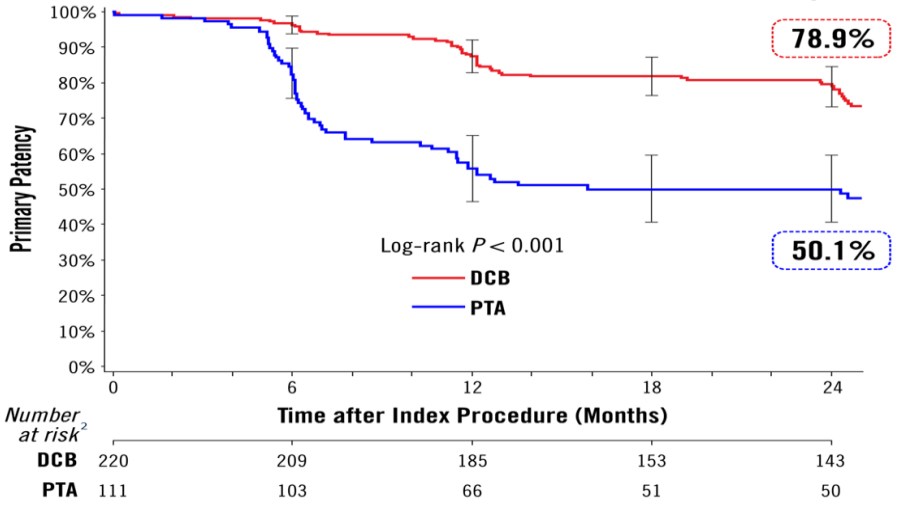
Kaplan-Meier Analysis of Primary Patency



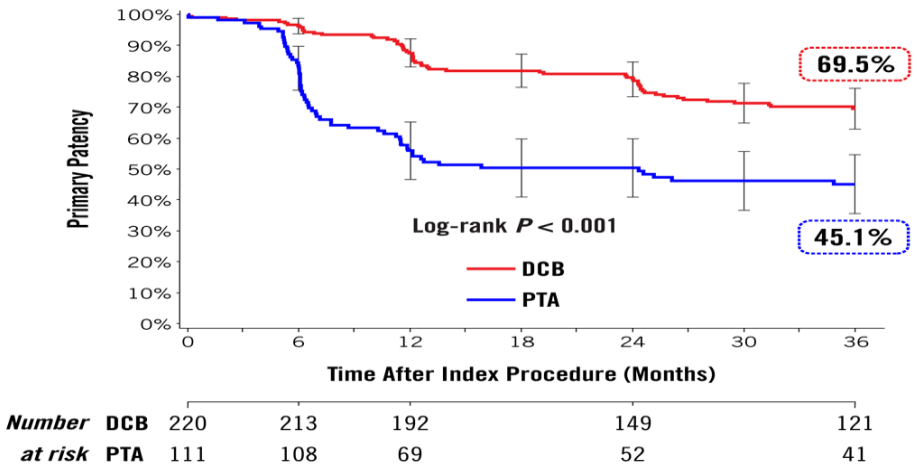
Primary patency defined as duplex ultrasound PSVR ≤2.4, in the absence of clinically-driven target lesion

IN.PACT DCB Has Shown Superior Results Compared to PTA in Pivotal IDE Trials

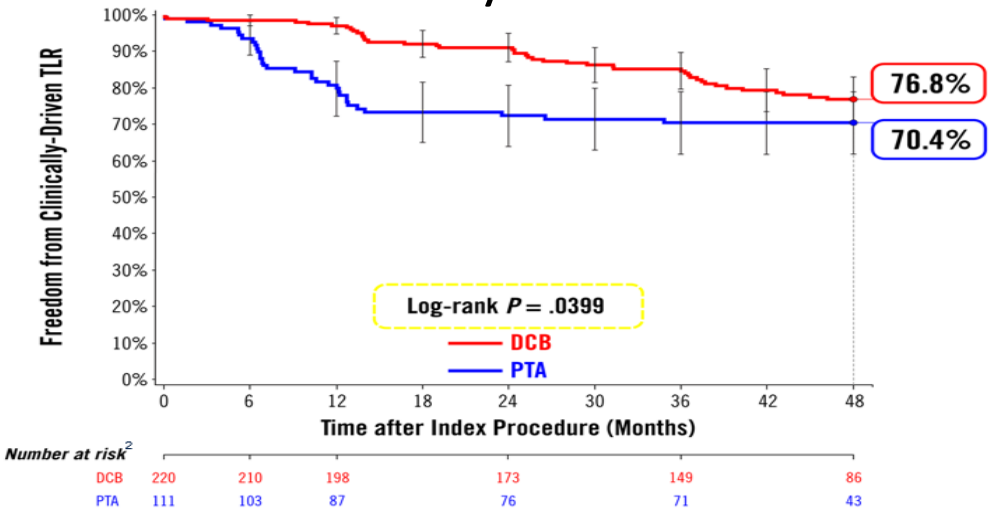
IN.PACT SFA 2-year Patency[1]



IN.PACT SFA 3-year Patency[2]



IN.PACT SFA 4-year FF CD-TLR[3]



1. Laird J, et al. JACC. 2015;66:2328-2338.
2. Schneider P, et.al. Circ CI. 2018;1-8.
3. Schneider P, VIVA 2017

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Question: SFA/Pop Treatment Choices

- PTA alone
- Nitinol Stent – Conventional
- Nitinol Stent – Vascular Mimetic Implant
- Drug Eluting Stent
- Drug Coated Balloon
- Stent Graft
- Atherectomy Alone
  - Orbital vs Directional vs Rotational/Aspiration vs Laser
- Atherectomy + Stent + Drug Coated Balloon

SCAI Consensus Guidelines for Device Selection in FP PVI Device Selection as DEFINITIVE Therapy

	PTA	Specialty balloons	BMS (Self-expanding)	DES	DCB	Covered stents	Laser atherectomy	Directional atherectomy	Orbital/Rotational atherectomy	Excisional/aspiration atherectomy
1. CFA bifurcation lesion	IIB C-LD	IIB C-EO	IIA B-R	IIA C-EO	IIA C-EO	III H C-EO	III NB C-EO	III NB C-EO	III NB C-EO	III NB C-EO
2. Above knee popliteal lesion	III NB B-R	III NB C-EO	IIA A	I B-R	I A	IIB B-R	III NB C-EO	III NB C-EO	III NB C-EO	III NB C-EO
3. Ostial SFA lesion	IIB B-R	IIB C-EO	IIA A	I B-R	I A	IIB C-EO	III NB C-EO	III NB C-EO	III NB C-EO	III NB C-EO
4. Focal SFA lesion	IIB A	III NB C-LD	IIA A	I B-R	I A	IIB B-R	III NB C-LD	III NB C-LD	III NB C-LD	III NB C-LD
5. Intermediate SFA lesion	III NB B-R	III NB C-LD	IIA A	I B-R	I A	IIB B-R	III NB C-LD	III NB C-LD	III NB C-LD	III NB C-LD
6. Diffuse SFA lesion	III NB B-NR	III NB C-EO	IIA B-NR	I B-NR	I B-R	IIA B-R	III NB C-EO	III NB C-EO	III NB C-EO	III NB C-EO
7. Moderate to severe calcified, focal lesion	IIB B-NR	IIB C-LD	IIA C-LD	I C-LD	I C-LD	IIB C-EO	III NB C-LD	III NB C-LD	III NB C-LD	III NB C-LD
8. Moderate to severe calcified, intermediate lesion	III NB B-NR	III NB C-LD	IIA C-LD	I C-LD	I C-LD	IIB C-EO	III NB C-LD	III NB C-LD	III NB C-LD	III NB C-LD
9. Moderate to severe calcified, diffuse lesion	III NB B-NR	III NB C-LD	IIA C-EO	I C-EO	I C-LD	IIA C-EO	III NB C-EO	III NB C-EO	III NB C-EO	III NB/ C-EO
10. Chronic total occlusion, focal lesion	IIB B-R	III NB C-EO	IIA B-R	I B-R	I B-R	IIB C-LD	III NB C-EO	III NB C-EO	III NB C-EO	III NB C-EO
11. Chronic total occlusion, intermediate lesion	III NB B-R	III NB C-EO	IIA B-R	I B-R	I B-R	IIB B-R	III NB C-EO	III NB C-EO	III NB C-EO	III NB C-EO
12. Chronic total occlusion, diffuse lesion	III NB B-NR	III NB C-EO	IIA C-LD	I B-NR	I B-NR	IIA B-R	III NB C-EO	III NB C-EO	III NB C-EO	III NB C-EO
13. ISR, focal lesion	IIB B-R	III NB C-LD	III NB C-EO	IIB C-LD	I B-R	IIB C-LD	IIA B-R	III NB C-EO	III H C-EO	III NB C-EO
14. ISR, intermediate lesion	III NB B-R	III NB C-LD	III NB C-EO	IIA C-LD	I B-R	IIB B-R	IIA B-R	III NB C-EO	III H C-EO	III NB C-EO

Feldman DN et al. Catheter Cardiovasc Interv

Appropriate Use Criteria

Received: 5 May 2017 | Accepted: 5 May 2017

DOI: 10.1002/ccd.27141

PERIPHERAL VASCULAR DISEASE

Core Curriculum

WILEY

SCAI appropriate use criteria for peripheral arterial interventions: An update

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Bruce H. Gray, DO, FSCAI[3] | Herbert D. Aronow, MD, MPH, FSCAI[4] |
Robert M. Bersin, MD, MPH, FSCAI[5] | Larry J. Diaz-Sandoval, MD, FSCAI[6] |
Robert S. Dieter, MD, RVT, FSCAI[7] | Douglas E. Drachman, MD, FSCAI[8] |
Dmitriy N. Feldman, MD, FSCAI[9] | Osvaldo S. Gigliotti, MD, FSCAI[10] |
Kamal Gupta, MD, FSCAI[11] | Sahil A. Parikh, MD, FSCAI[12] |
Duane S. Pinto, MD, MPH, FSCAI[13] | Mehdi H. Shishehbor, DO, MPH, PhD, FSCAI[14] |
Christopher J. White, MD, MSCAI[15]

SCAI AUC and FP PVI: 2017 Update

	PTA	BMA	DEA	DCA	LASER	Directional Atherec	Rotational atherec	Cutting ball
RC 0-1, severe (≥70%) FP disease, focal lesion.	2	2	2	2	1	1	1	1
RC 0-1, severe (≥70%) FP disease, moderate lesion.	2	2	1	1	1	1	1	1
RC 0-1, severe (≥70%) FP diffuse lesion.	2	1	1	2	1	1	1	1
RC 0-1, severe (≥70%) FP, ISR.	2	1	2	2	1	1	1	1
RC 0-1, FP, CTO.	2	1	1	1	1	1	1	1
RC 0-1, severe (≥70%), FP, focal undilatable lesion.	1	1	1	1	1	1	2	2
RC 2-3, severe (≥70%) FP disease, focal lesion.	7	7	7	8	3	4	3	1
RC 2-3, severe (≥70%) FP, moderate lesion.	6	7	8	8	4	3	2	1
RC 2-3, severe (≥70%) FP diffuse lesion.	4	6	7	8	4	3	3	1
RC 2-3, severe (≥70%), FP, ISR.	4	5	7	8	7	3	3	3
RC 2-3, FP, CTO.	3	6	8	8	5	3	3	3
RC 2-3, severe (≥70%), FP, focal undilatable lesion.	2	2	2	2	6	3	8	7
RC 4-6, severe (≥70%) FP disease, focal lesion.	7	7	7	8	3	4	3	1
RC 4-6, severe (≥70%) FP moderate lesion.	5	7	8	8	4	3	3	1
RC 4-6, severe (≥70%) FP diffuse lesion.	4	7	8	8	4	3	3	1
RC 4-6, severe (≥70%), FP, ISR.	4	6	7	8	7	3	3	3
RC 4-6, FP, CTO.	3	6	8	8	5	3	3	3
RC 4-6, severe (≥70%), FP, focal undilatable lesion.	2	2	2	2	5	3	8	8

Appropriate
May Be Appropriate
Rarely Appropriate

Klein AJ et al. Catheter Cardiova Interv. 2017;90(4):E90-E110.

Risk of Death Following Application of Paclitaxel-Coated Balloons and Stents in the Femoropopliteal Artery of the Leg: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Konstantinos Katsanos, MD, PhD, MSc, EBIR; Stavros Spiliopoulos, MD, PhD; Panagiotis Kitrou, MD, PhD; Miltiadis Krokidis, MD, PhD; Dimitrios Karnabatidis, MD, PhD

Background—Several randomized controlled trials (RCTs) have already shown that paclitaxel-coated balloons and stents significantly reduce the rates of vessel restenosis and target lesion revascularization after lower extremity interventions.

Methods and Results—A systematic review and meta-analysis of RCTs investigating paclitaxel-coated devices in the femoral and/or popliteal arteries was performed. The primary safety measure was all-cause patient death. Risk ratios and risk differences were pooled with a random effects model. In all, 28 RCTs with 4663 patients (89% intermittent claudication) were analyzed. All-cause patient death at 1 year (28 RCTs with 4432 cases) was similar between paclitaxel-coated devices and control arms (2.3% versus 2.3% crude risk of death; risk ratio, 1.08; 95% CI, 0.72–1.61). All-cause death at 2 years (12 RCTs with 2316 cases) was significantly increased in the case of paclitaxel versus control (7.2% versus 3.8% crude risk of death; risk ratio, 1.68; 95% CI, 1.15–2.47; —number-needed-to-harm, 29 patients [95% CI, 19–59]). All-cause death up to 5 years (3 RCTs with 863 cases) increased further in the case of paclitaxel (14.7% versus 8.1% crude risk of death; risk ratio, 1.93; 95% CI, 1.27–2.93; —number-needed-to-harm, 14 patients [95% CI, 9–32]). Meta-regression showed a significant relationship between exposure to paclitaxel (dose-time product) and absolute risk of death (0.4±0.1% excess risk of death per paclitaxel mg-year; $P<0.001$). Trial sequential analysis excluded false-positive findings with 99% certainty (2-sided α, 1.0%).

Conclusions—There is increased risk of death following application of paclitaxel-coated balloons and stents in the femoropopliteal artery of the lower limbs. Further investigations are urgently warranted.

Clinical Trial Registration—URL: www.crd.york.ac.uk/PROSPERO. Unique identifier: CRD42018099447. **(*J Am Heart Assoc.* 2018;7:e011245. DOI: 10.1161/JAHA.118.011245.)**

Key Words: balloon angioplasty • paclitaxel • paclitaxel-coated balloon • paclitaxel-eluting stent

Summary

- Enormous strides and progress in treatment of PAD (Asymptomatic, Claudication, and CLI)
- Evidence base lacking
- Moving target and multiple specialties involved
- Patients and practitioners underinformed
- Patients undertreated
- High degree of variability
- Patient driven decision-making (shared decision-making) is lacking
- Outcomes measurements “immature” and need improvement/definition, particularly w/respect to desired outcomes as defined by patients

The Real Challenge in PAD: Evidence Gap

- Paucity of level 1 trials and other data to guide therapeutic decision-making and define "best practices", in comparison to other fields of medicine.
- Consequence → large divergence of practice patterns for same entities, depending upon patient/provider awareness, knowledge base, biases perceptions, and expertise.
- Variation starts at the level of public awareness and patient education, and extends from the primary care provider to the vascular subspecialist.
- Underscores great need for additional high-level clinical research in PAD…THIS IS OUR CHALLENGE!
- "Gap" is particularly evident for **patient-centered outcomes**, both for CLI and Intermittent Claudication.
- TREMENDOUS OPPORTUNITY TO ADVANCE SCIENCE AND PRACTICE

Funding opportunities that could affect patient-centered outcomes

- Interaction between CAD and PAD
- Role of endo versus open
- Influence of team-based care in CLI patients (versus single-specialty)
- Incorporation of patients and families in decision-making

Thank you for the opportunity and privilege to present

Lunch
Noon–12:45 PM

Up Next: Acknowledgements

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Acknowledgements
12:30 – 12:45 PM

Up Next: Small Group Discussions

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Spring 2019 Acknowledgments

- In recognition of time served as a PCORI Advisory Panel member, we would like to acknowledge the following members whose terms are ending this fall:

- Janice Radak
- Ashish Atreja
- Emilie Johnson
- Frank Rider
- Nancy Perrin
- Danny van Leeuwen

Small Group Discussions

Small Group Discussions

The color sticker on your name tag indicates the group you are in.

There is one facilitator and one PCORI staff notetaker for each group.

The groups/room assignments are as follows:

Yellow Group |

Facilitator: Cornell Wright, MPA

Green Group |

Facilitator: Lawrence Goldberg, MD, PhD

Large Group Discussion
Report Back from the Small Group Sessions

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Large Group Discussion

- Reconvene to present a summary of what was discussed during small groups:
  - Yellow
  - Green

Discussion Questions

1. Based on the three presentations you heard today, and the areas identified as needing further research, where could PCORI have an impact?

2. What PAD/PVD patient subpopulations could benefit most from comparative effectiveness research? Why?

3. What PAD/PVD interventions would make the most sense to compare in a formal research project? Why?

4. What primary outcomes would be important to study for patients with PAD/PVD? Why?

5. As a group, identify two to three PAD/PVD comparative effectiveness research questions PCORI should focus on.

BREAK
2:45 – 3 PM

Up Next: PCORI Reauthorization Update
Jean Slutsky, PA, MSPH
Andrew Hu, MPP

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PCORI Reauthorization Update

Jean Slutsky, PA, MSPH
Chief Engagement and Dissemination Officer, PCORI

Andrew Hu, MPP
Director, Public Policy and Government Relations, PCORI

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Summary on Reauthorization

- Legislative activity is progressing with bipartisan action in the Senate and increasing support in the House.
  - The four Senate Champions have solicited feedback and input from stakeholders and are working to develop a consensus legislative proposal
  - House Democratic Champions have introduced legislation to reauthorize PCORI (H.R. 3030) and are continuing work to build Republican support
  - PCORI reauthorization was discussed at a recent hearing in front of the House Energy & Commerce Health Subcommittee and is currently included in a broader legislative package being considered by both House and Senate

- Third-party advocates have established an independent, proactive effort to support PCORI.
  - The *Friends of PCORI Reauthorization* coalition has established a website and is building membership
  - They have also sent to Congress a letter of support with over 200 organizations and individual signatories

- PCORI must continue its education and awareness-building campaign.
  - The Bipartisan Policy Center and the Alliance for Health Policy have held recent events highlighting the importance of investing in CER
  - PCORI also continues to engage with members of Congress and key policymakers

Congressional Activity

Reauthorization Update

Senate Champions

Mark Warner (D-VA)

Bill Cassidy (R-LA)

Chris Van Hollen (D-MD)

Shelly Moore Capito (R-WV)

Bipartisan senate staff have met with representatives from key stakeholder communities and are working on drafting a legislative proposal.

Democrat leads in the House have introduced legislation to reauthorize PCORI and are working to secure bipartisan support while committees make progress on a broader legislative package that does include PCORI reauthorization.

House Champions

Diana DeGette (D-CO)

Don Beyer (D-VA)

Stakeholder Positions on Reauthorization

Currently, all stakeholder communities are supporting PCORI's reauthorization though some groups – namely payers/employers – are requesting policy changes.

Payers/Employers (Starting point)	Providers/Health Systems	Patient/Advocacy Groups
• Increased representation on the Board (requesting four additional seats) • Require PCORI to conduct cost-effectiveness analysis • Direct PCORI to fund research on "high impact" topics • Supporting only a three-year reauthorization	• Greater investment in registry-based research • Funding of evidence reviews to inform clinical guidelines • Supporting a full 10-year reauthorization	• Maintain patient centricity and prohibition on cost-effectiveness analysis • Increase ability for patient/disease organizations to lead research awards • Supporting a full 10-year reauthorization

Third-Party Activity

Third-Party Advocacy

Friends of PCORI Reauthorization is fully up and running with a membership of over 85 organizations. (reauthorizepcori.org)

They have circulated a sign-on letter that they have sent to Congressional leaders signaling support for a 10-year reauthorization of PCORI and noting the importance of patient-centered outcomes research. The letter had over **200 signatories** representing organizations and individuals from all aspects of the stakeholder community.

The organization also plans to conduct meetings with key Congressional offices and support an advocacy day in the fall.

Increasing Visibility and Awareness of PCORI

Engaging Thought-Leaders and Informing Policymakers

PCORI is leveraging the thought leadership and platforms of various organizations to bolster PCORI's image and highlight the value of the research.

Examples include:

- Bipartisan Policy Center Event: *"Comparative Effectiveness Research: Recent Applications and Future Investments"*
  - This event resulted in BPC publicly endorsing PCORI's reauthorization and will likely also produce an op-ed highlighting PCOR's return on investment to the health system

- Alliance for Health Policy Event: *"Right Care, Right Patient, Right Time: The Role of Comparative Effectiveness Research"*
  - This event on Capitol Hill showcased the history and evolution of PCORI and reiterated the continued need for CER as a tool to improve our health system

- FasterCures Thought Leaders Breakfast
  - This discussion brought together key policymakers to discuss the importance of PCORI and set a vision for how PCORI can play a greater role in informing policy beyond reauthorization
  - FasterCures and the National Health Council are working on a joint op-ed to be published later this month

Wrap-up

Cornell Wright, MPA

Adjourn