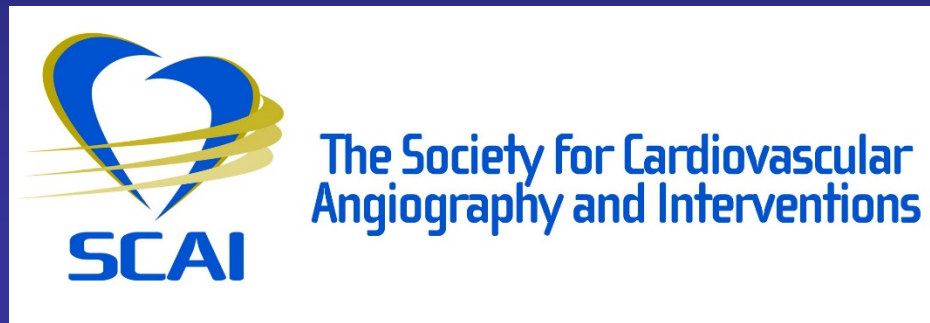


Critical Limb Ischemia Under- Diagnosed & Treated



Mehdi H. Shishehbor, DO, MPH, PhD

Director, Endovascular Services

Staff, Interventional cardiology and Vascular Medicine

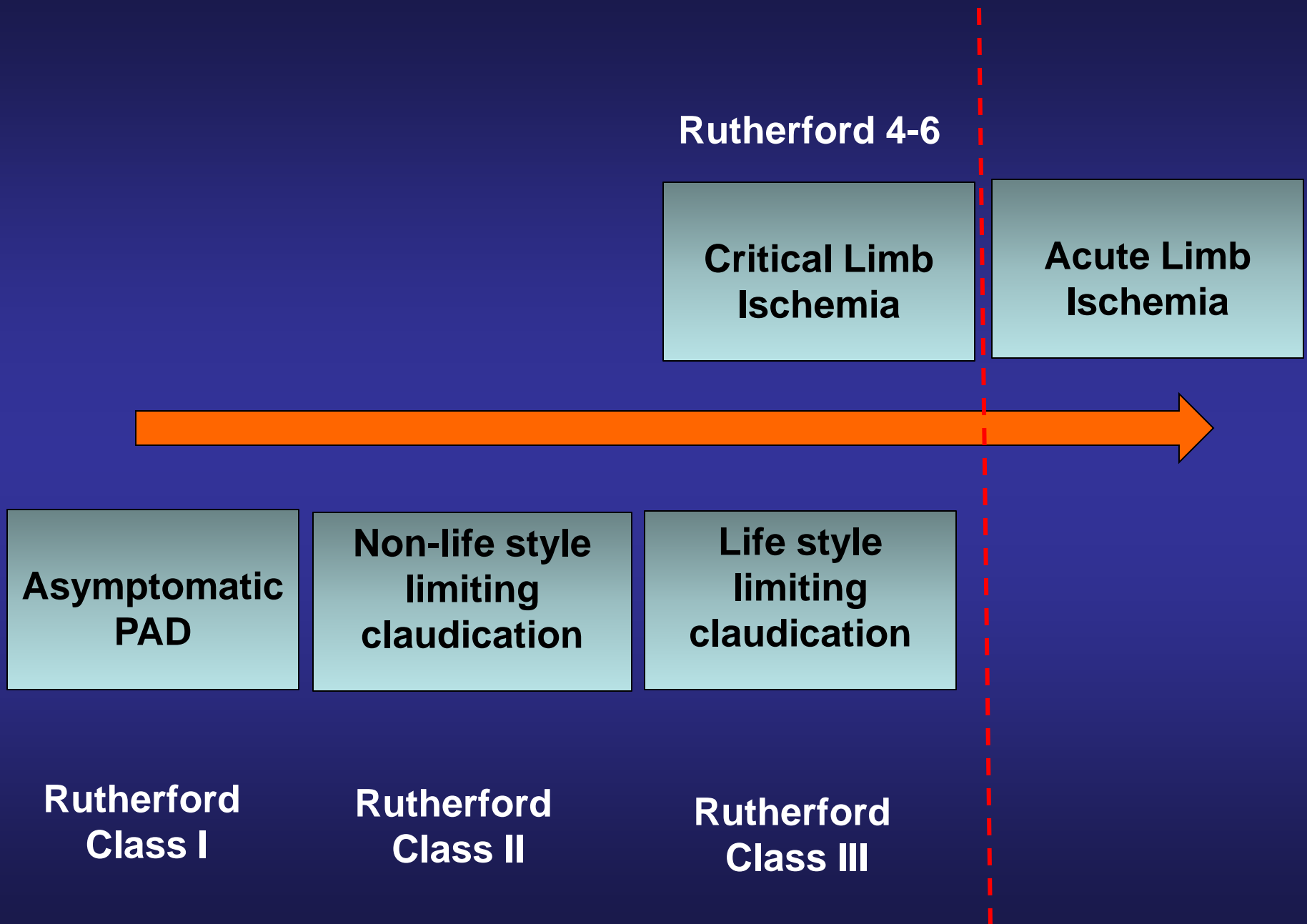


Disclosure

Education and Consulting for Medtronic,
Cook, Covidien, CSI, and Spectranetics
but **DO NOT** take any Compensation

Society for Cardiovascular Angiography and Interventions (SCAI)

The Society for Cardiovascular Angiography and Interventions is a 4,500-member professional organization representing invasive and interventional cardiologists and cardiac cath lab teams in approximately 70 countries. SCAI's mission is to promote excellence in invasive/interventional cardiovascular medicine through education and representation, and advancement of quality standards to enhance patient care.



Critical Limb Ischemia

- Rutherford 4-6
or
- Fontaine III, IV



Rest Pain

Tissue Loss or Gangrene



Inter-Society Consensus for the Management of PAD

Recommendation 24. Optimal treatment for patients with critical limb ischemia (CLI)

- Revascularization is the optimal treatment for patients with CLI [B].

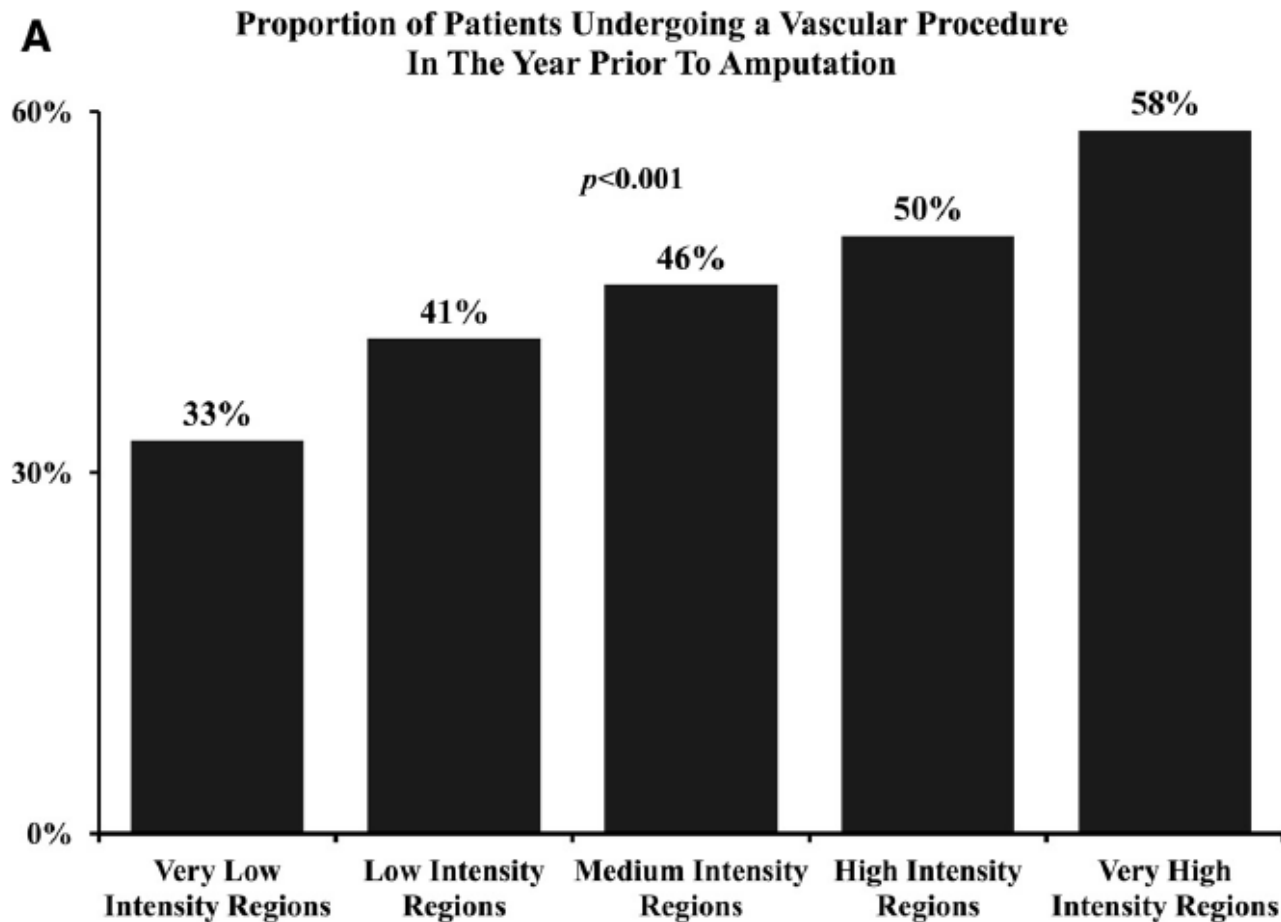
ACC/AHA GUIDELINES

ACC/AHA Guidelines for the Management of Patients With Peripheral Arterial Disease (Lower Extremity, Renal, Mesenteric, and Abdominal Aortic)

4. The tibial or pedal artery that is capable of providing continuous and uncompromised outflow to the foot should be used as the site of distal anastomosis.
(Level of Evidence: B)

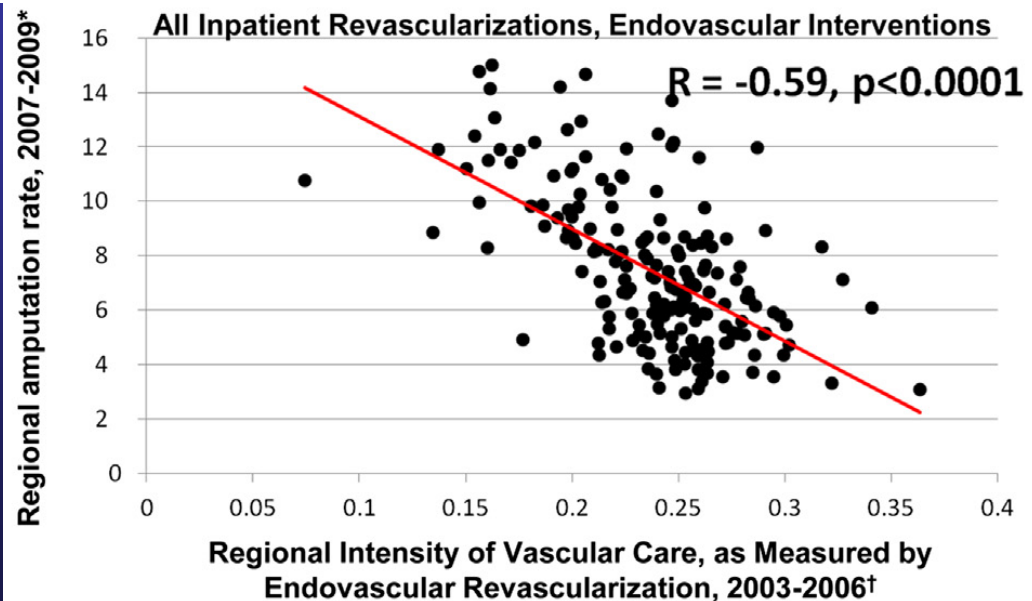
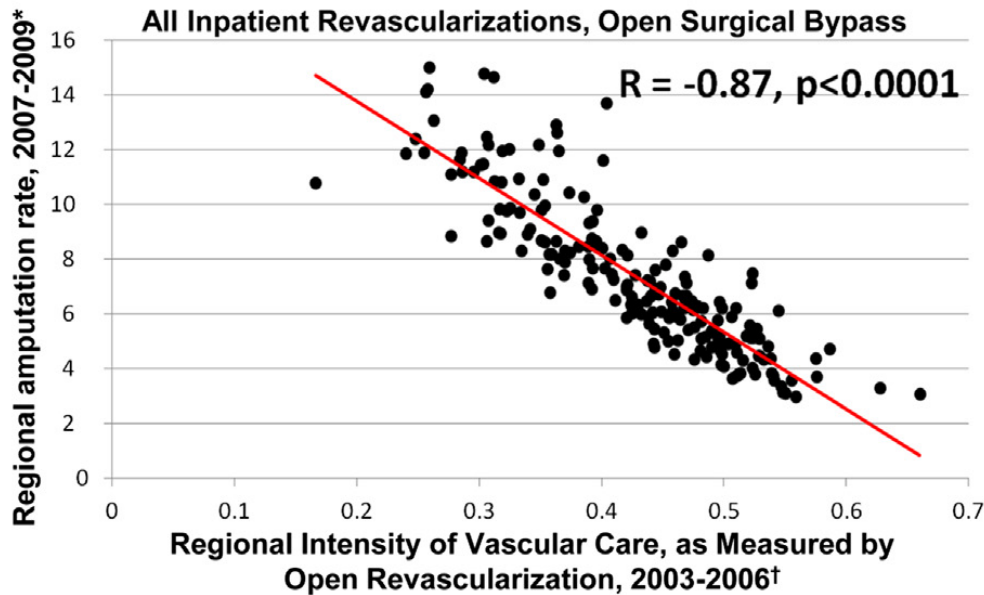
Variation in the Use of Lower Extremity Vascular Procedures for Critical Limb Ischemia

Philip P. Goodney, MD, MS; Lori L. Travis, MS; Brahmajee K. Nallamothu, MD, MPH; Kerianne Holman, MD, MPH; Bjoern Suckow, MD; Peter K. Henke, MD; F. Lee Lucas, PhD; David C. Goodman, MS, MD; John D. Birkmeyer, MD; Elliott S. Fisher, MD, MPH



Direct Correlation Between Revascularization and Prevention of Amputation

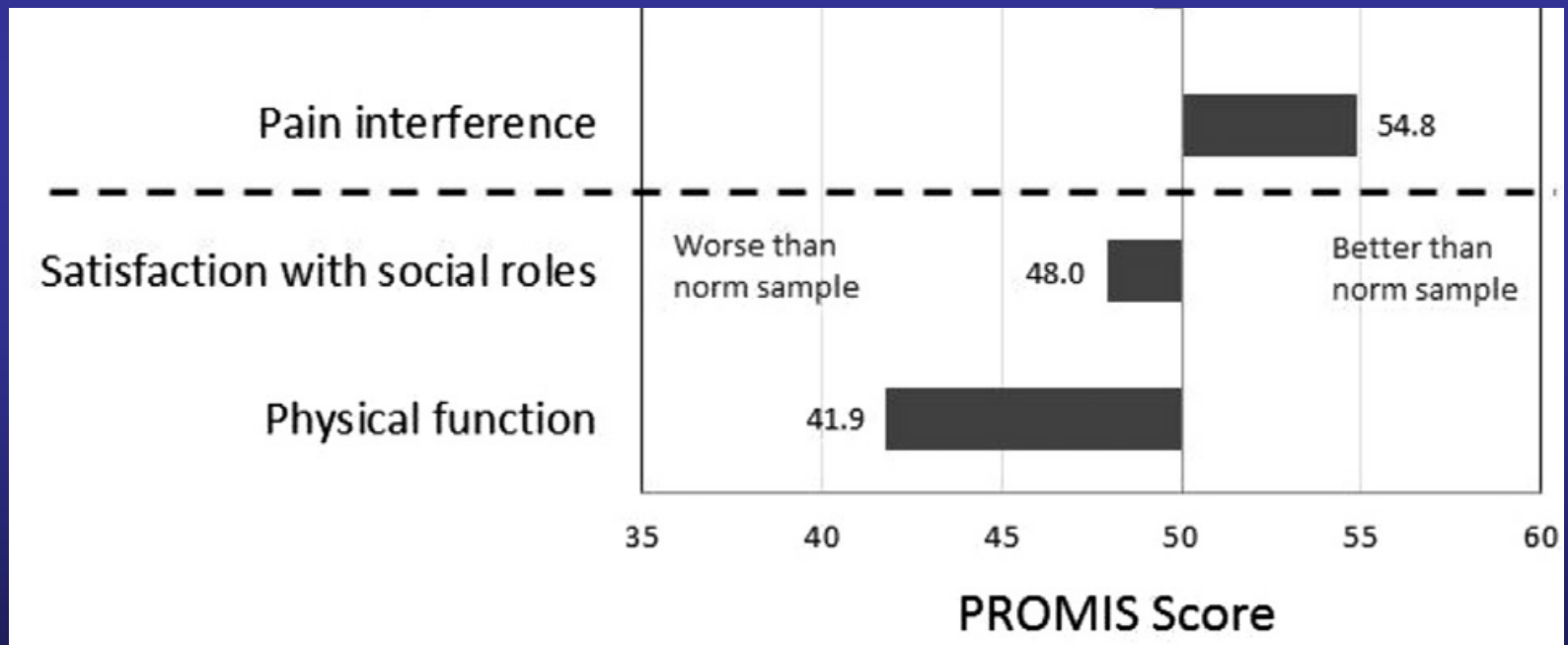
B



BASIL Trial - Over 30% of patients with CLI Die within 2 years

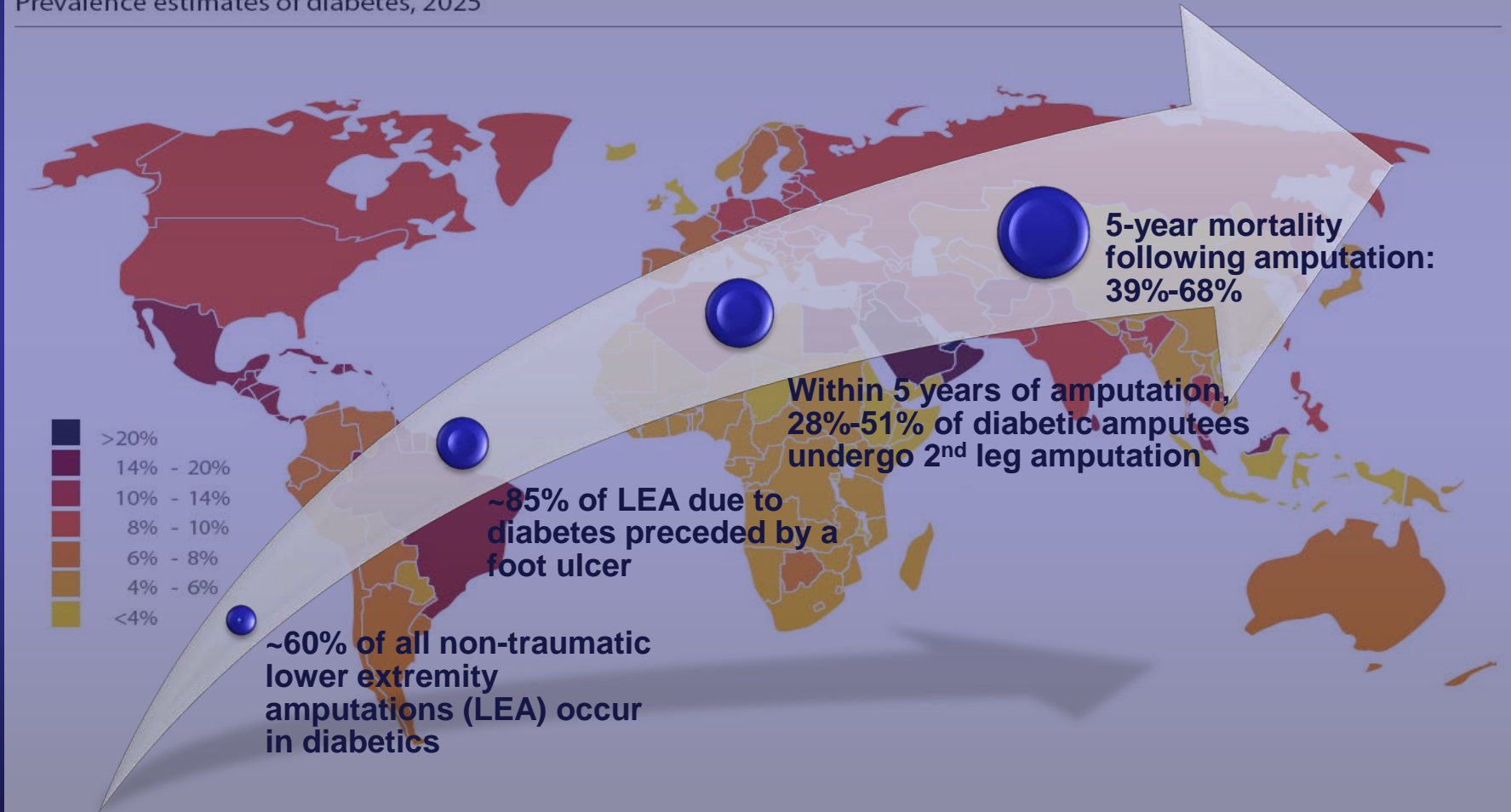


Amputation is Associated with Significant Decline in Physical Function and Increased Pain Interference

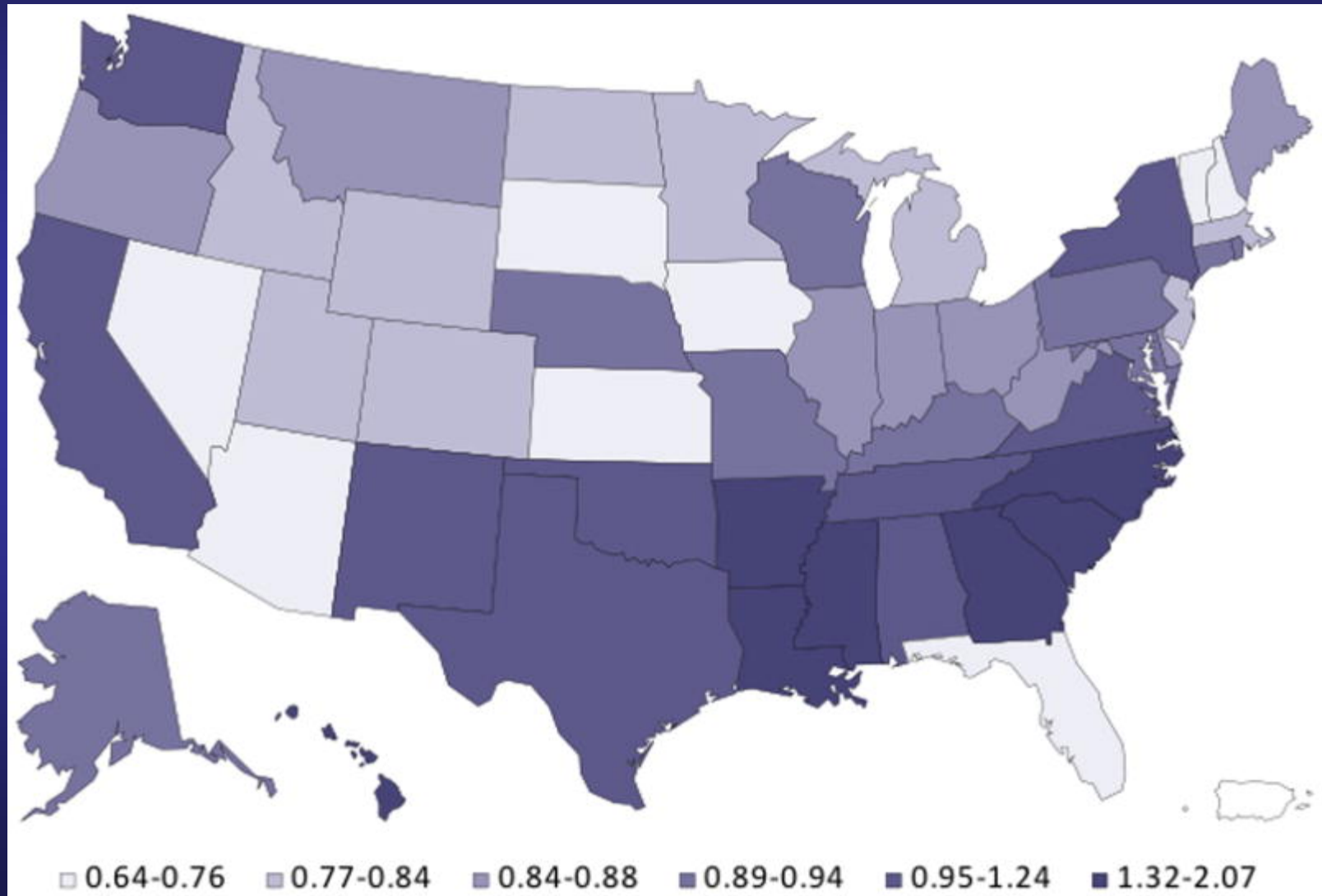


Diabetic Foot Ulcers Precede Most Lower Extremity Amputations

Prevalence estimates of diabetes, 2025



Significant Variation in Amputation Rates In the United States

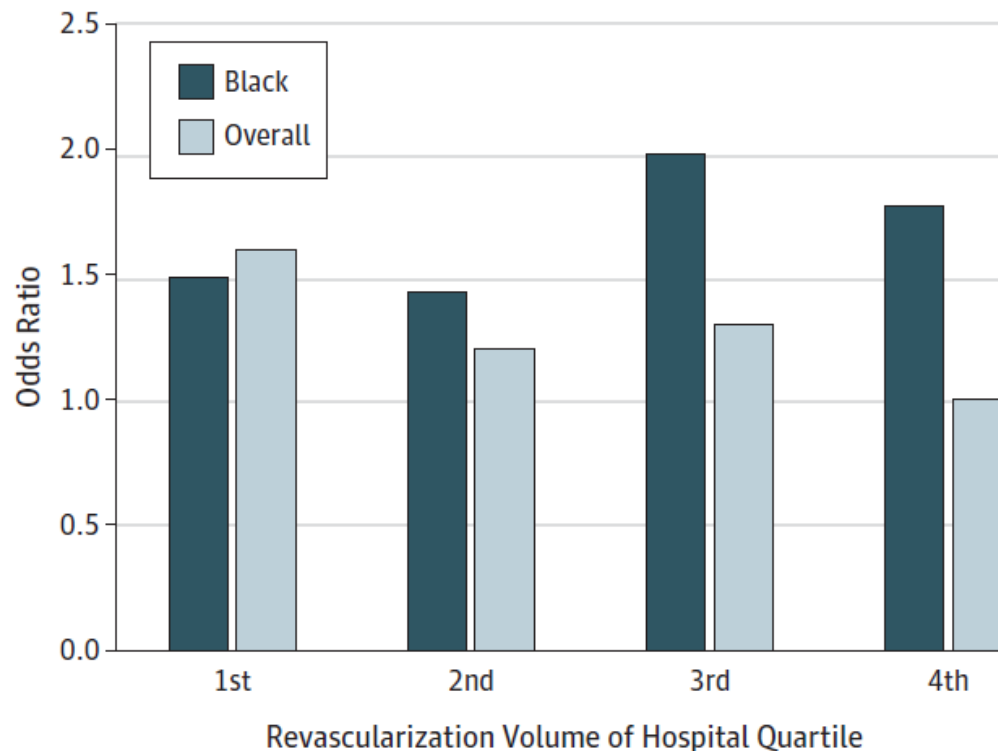


Influence of Race on the Management of Lower Extremity Ischemia

Revascularization vs Amputation

Tyler S. Durazzo, MD; Stanley Frencher, MD; Richard Gusberg, MD

Figure 2. Amputation Odds Ratio vs Revascularization Capacity of Hospitals

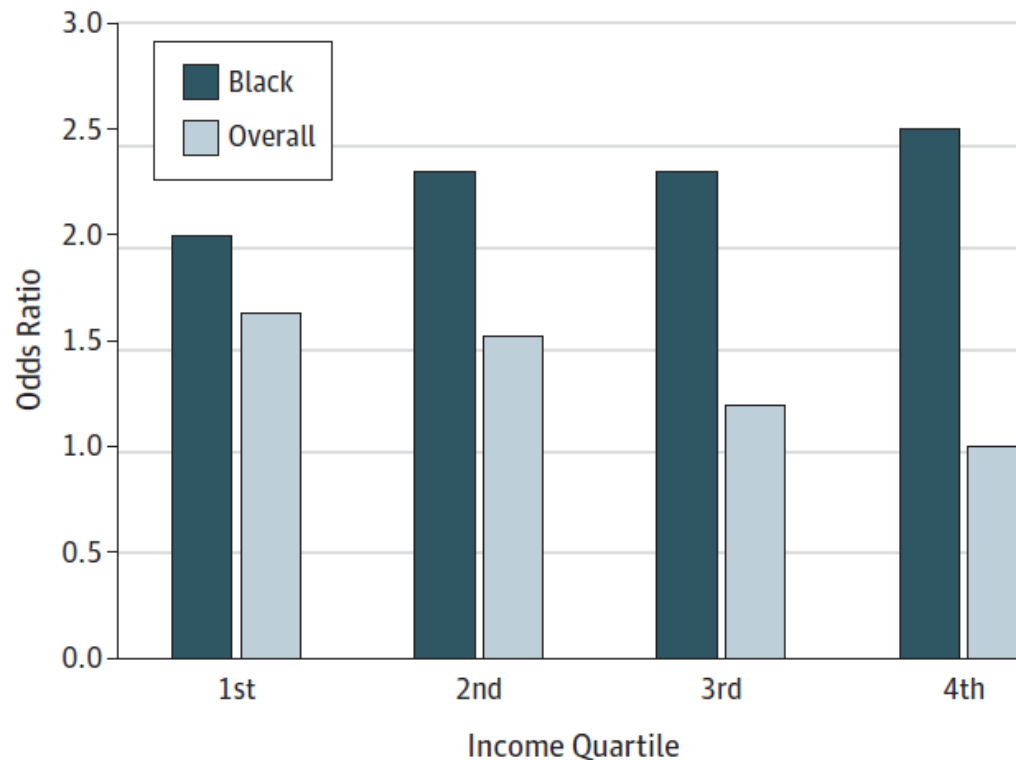


Influence of Race on the Management of Lower Extremity Ischemia

Revascularization vs Amputation

Tyler S. Durazzo, MD; Stanley Frencher, MD; Richard Gusberg, MD

Figure 3. Amputation Odds Ratio vs Wealth of Residing Zip Code



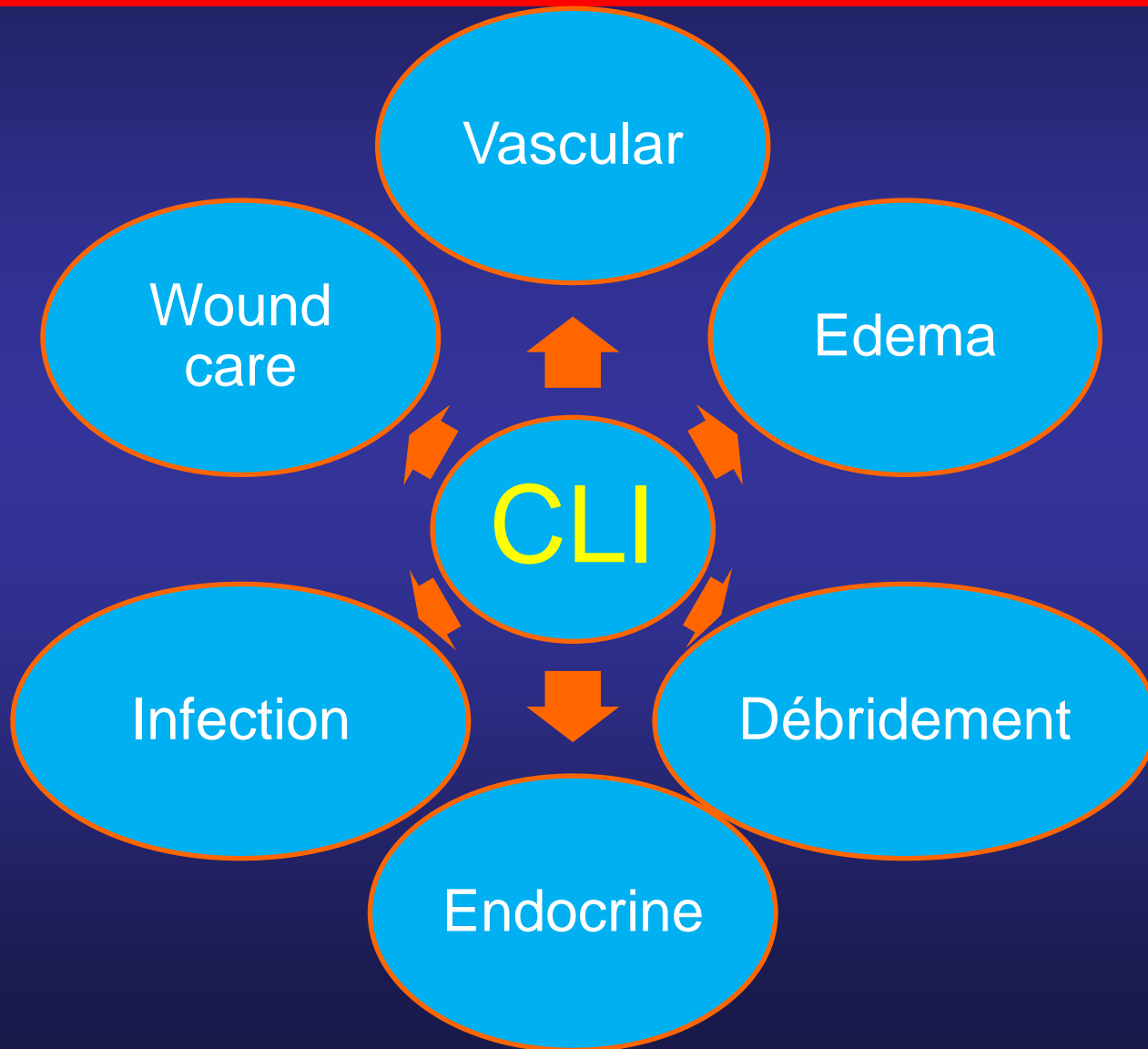
Invited Commentary

Why Do Nonwhite Patients Undergo Amputation More Commonly Than White Patients?

Karl A. Illig, MD

JAMA Surgery July 2013 Volume 148, Number 7

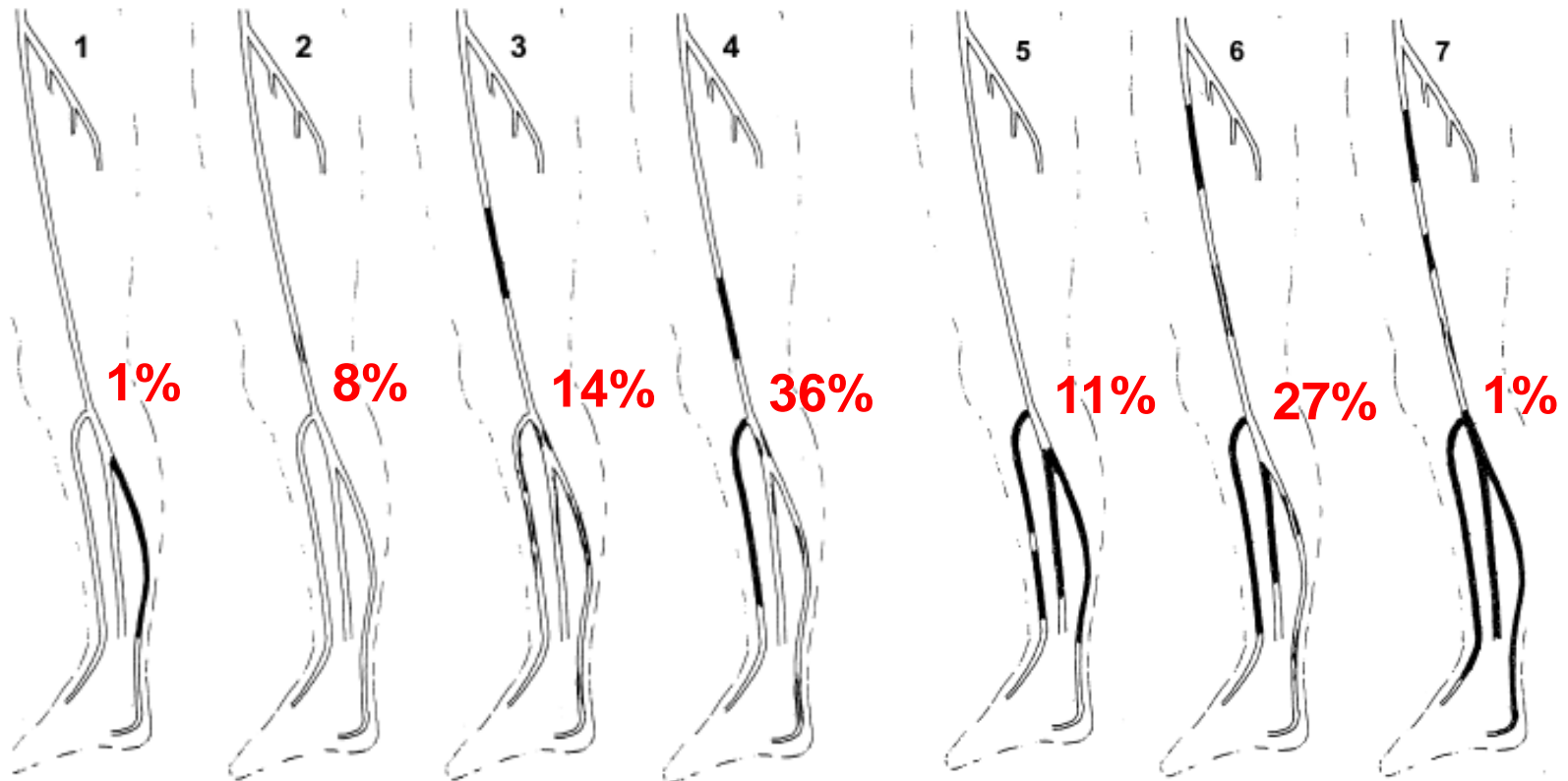
CLI is a Multidisciplinary Disease Process



Vascular Involvement in Diabetic Subjects with Ischemic Foot Ulcer: A New Morphologic Categorization of Disease Severity

L. Graziani,^{1*} A. Silvestro,¹ V. Bertone,² E. Manara,³ R. Andreini,⁴
A. Sigala,⁵ R. Mingardi⁶ and R. De Giglio⁷

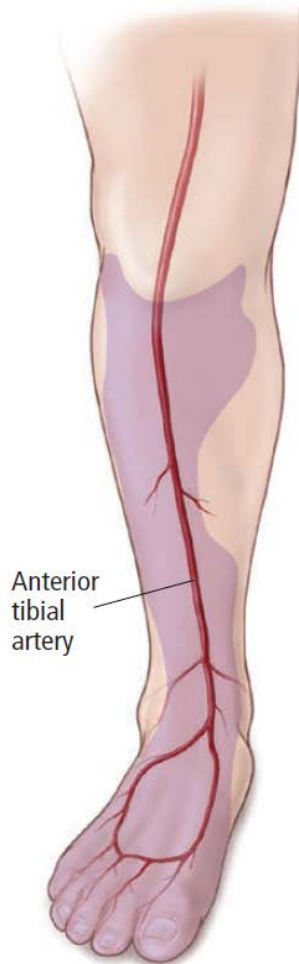
¹Servizio di Emodinamica, Istituto Clinico "Città di Brescia", Brescia, Italy, ²Unità di Diabetologia, Casa di Cura Clinica Castelli, Bergamo, Italy, ³Unità Operativa di Medicina e Oncologia, Istituti Ospedalieri di Cremona, Cremona, Italy, ⁴Unità Operativa di Medicina, Presidio Ospedaliero Pontedera, Pisa, Italy, ⁵Dipartimento di Farmacologia Clinica, Università di Brescia, Brescia, Italy, ⁶Unità Piede Diabetico e Medicina Vascolare, Casa di Cura Villa Berica, Vicenza, Italy, and ⁷Unità Operativa di Medicina Generale, Presidio Ospedaliero Abbiategrasso, Milano, Italy



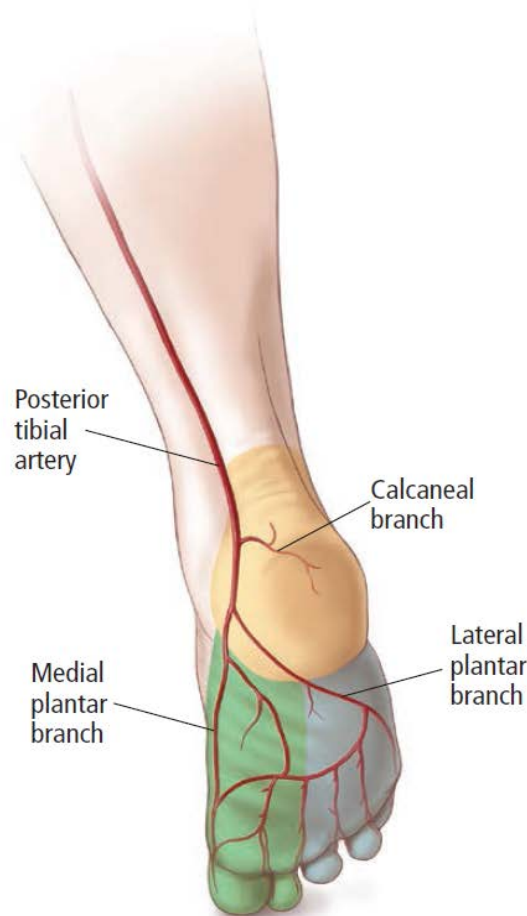
Angiosome Concept

Angiosomes of the lower extremity

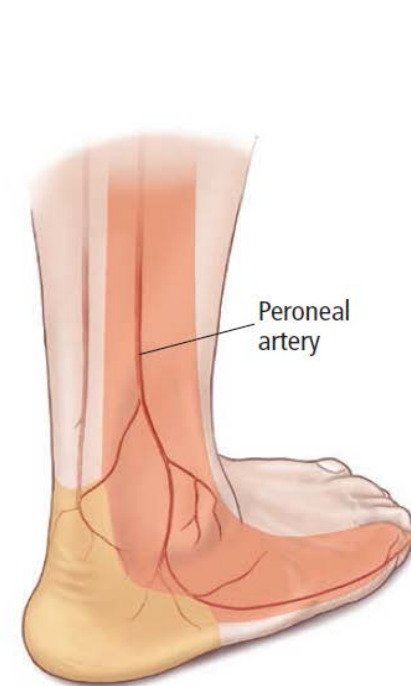
Anterior tibial angiosome



Posterior tibial angiosome



Peroneal angiosome



CCF
Medical Illustrator: Beth Halasz ©2014

Systematic Review and Meta-analysis of Direct Versus Indirect Angiosomal Revascularisation of Infrapopliteal Arteries

D.C. Bosanquet ^{a,*}, J.C.D. Glasbey ^b, I.M. Williams ^a, C.P. Twine ^c

^a South East Wales Regional Vascular Network, University Hospital of Wales, Cardiff, UK

^b Cardiff University School of Medicine, Cardiff, UK

^c South East Wales Regional Vascular Network, Royal Gwent Hospital, Newport, UK

Table 1. Demographic data and Newcastle—Ottawa (NO) score of included studies.

First author (year)	Retrospective/ prospective	Number of centres	Consecutive patients?	Vascular intervention	Propensity-matched groups	Follow up (mo)	Patients (n)
Acin (2014) ²⁹	Retrospective	Single	Yes	Endovascular	No	12.0, 24.0	ND
Alexandrescu (2008) ¹⁵	Retrospective	Multiple	ND	Endovascular	No	17.8	ND
Azuma (2012) ¹⁶	Retrospective	Single	ND	Bypass surgery	Yes	24.0	ND
Fossaceca (2013) ¹⁷	Retrospective	Single	ND	Endovascular	No	17.5	201
Iida (2012) ¹⁸	Retrospective	Multiple	Yes	Endovascular	Yes	18.0	236
Kabra (2013) ¹⁹	Prospective	Single	ND	Bypass surgery	No	6.0	64
Kret (2014) ²⁷	Retrospective	ND	Yes	Bypass surgery	No	ND	97
Lejay (2013) ²⁸	Retrospective	Single	Yes	Bypass surgery	No	12.0	54
Neville (2009) ²⁰	Retrospective	Single	Yes	Bypass surgery	No	ND	ND
Osawa (2013) ²¹	Retrospective	Single	ND	Endovascular	No	ND	38
Oshima (2012) ^{22,a}	ND	ND	Yes	Endovascular	No	12.0	55
Rashid (2013) ²³	Retrospective	Single	Yes	Bypass surgery	No	12.0	ND
Soderstrom (2013) ²⁴	Retrospective	Single	Yes	Endovascular	Yes	12.0	ND
Soon (2012) ^{25,a}	Retrospective	ND	ND	Endovascular	No	ND	350
Varela (2010) ²⁶	Retrospective	ND	Yes	Both	No	12.0	70

Systematic Review and Meta-analysis of Direct Versus Indirect Angiosomal Revascularisation of Infrapopliteal Arteries

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^a South East Wales Regional Vascular Network, University Hospital of Wales, Cardiff, UK

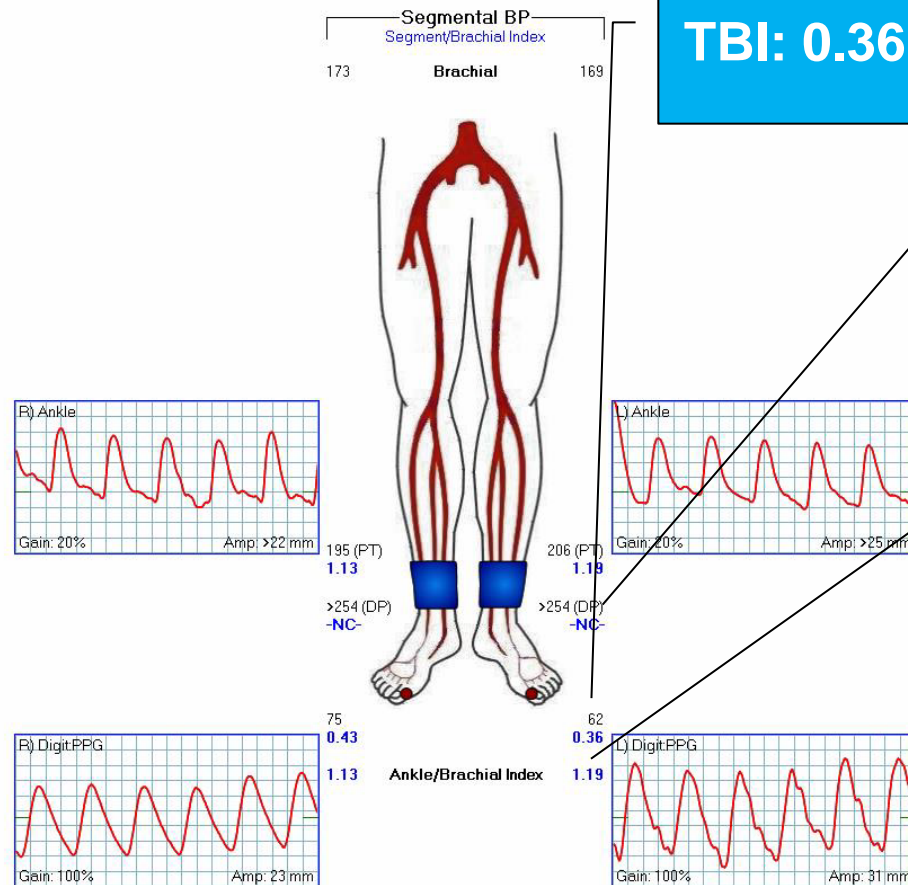
^b Cardiff University School of Medicine, Cardiff, UK

^c South East Wales Regional Vascular Network, Royal Gwent Hospital, Newport, UK

Study or Subgroup	Favours DR		IR		Weight	Odds Ratio M-H, Random, 95% CI	Odds Ratio M-H, Random, 95% CI
	Events	Total	Events	Total			
1.1.1 All studies							
Acin	14	44	23	39	11.5%	0.32 [0.13, 0.80]	
Alexandrescu	14	85	8	17	7.6%	0.22 [0.07, 0.67]	
Azuma	1	48	3	48	1.8%	0.32 [0.03, 3.18]	
Fossaceca	80	167	23	34	15.4%	0.44 [0.20, 0.96]	
Kabra	12	39	5	15	5.8%	0.89 [0.25, 3.17]	
Kret	37	54	41	52	12.1%	0.58 [0.24, 1.41]	
Neville	2	22	8	21	3.2%	0.16 [0.03, 0.89]	
Osawa	1	29	6	22	1.9%	0.10 [0.01, 0.86]	
Rashid	9	66	16	75	11.7%	0.58 [0.24, 1.42]	
Soderstrom	26	84	45	84	23.5%	0.39 [0.21, 0.73]	
Valera	4	45	8	31	5.5%	0.28 [0.08, 1.03]	
Subtotal (95% CI)		683		438	100.0%	0.40 [0.29, 0.54]	
Total events	200		186				

**52 y.o. male, severe
DM (HgbA1c:13), HTN, HL**

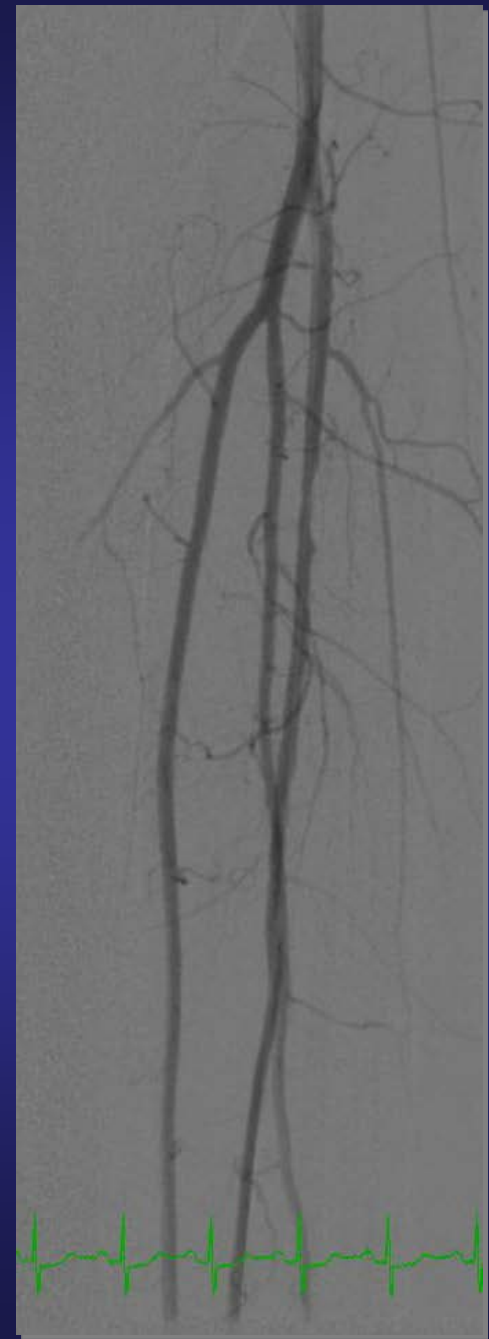
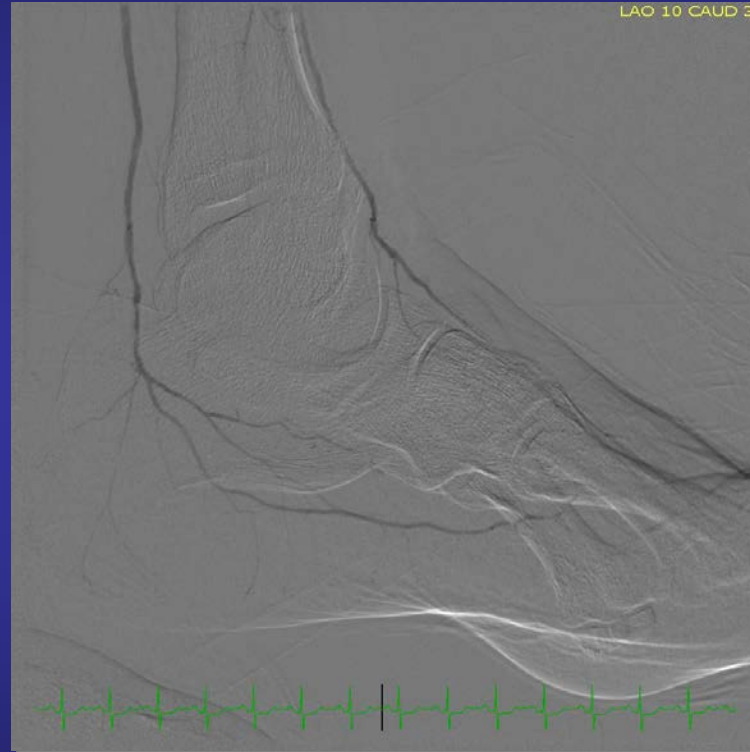
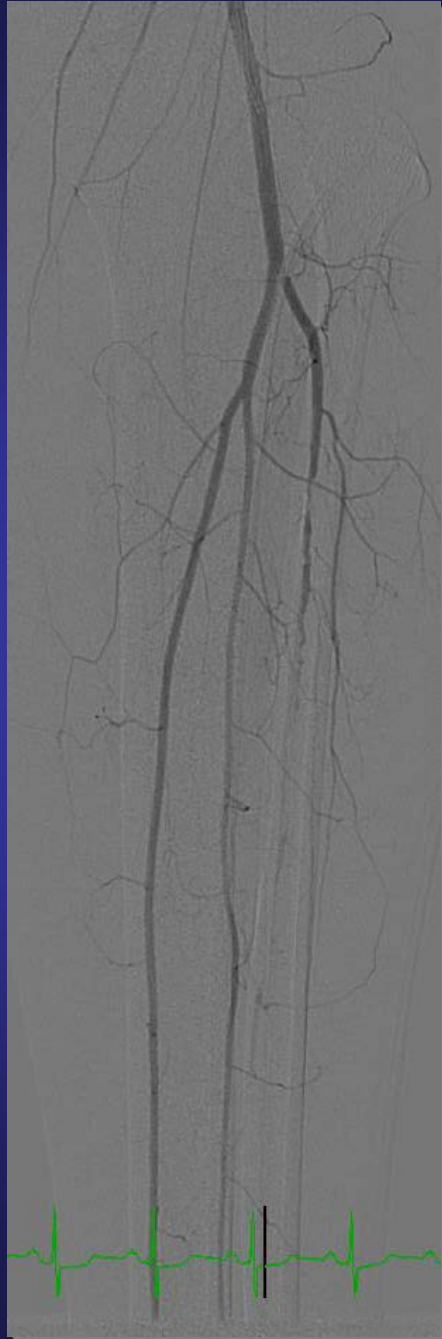




DP ABI : NC

ABI: 1.19

Angiogram





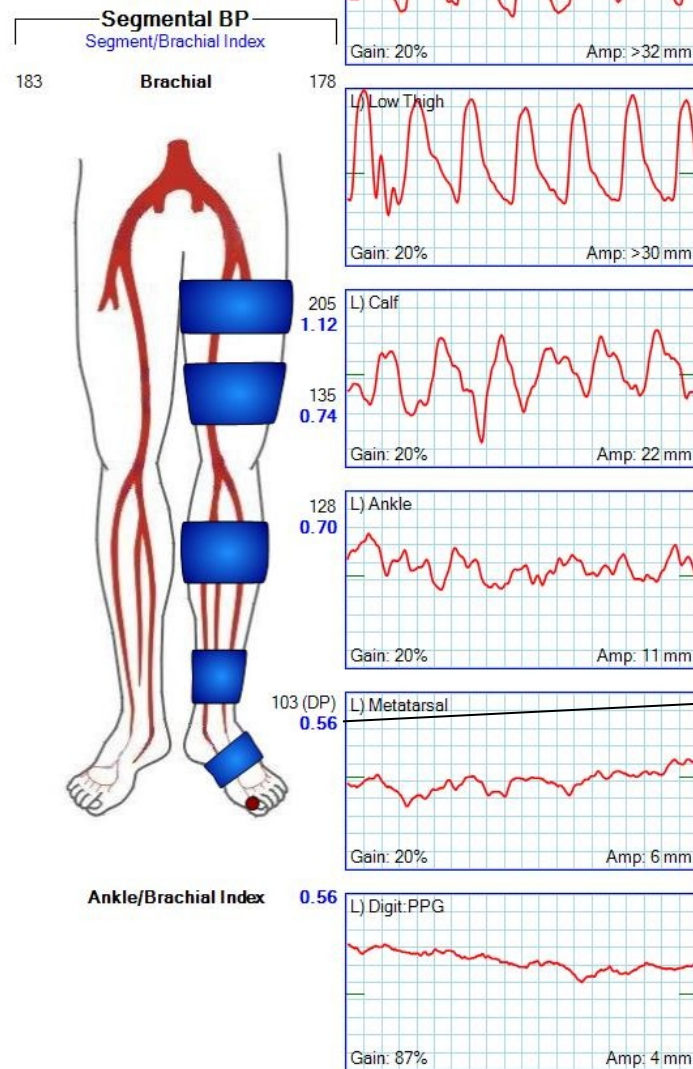
3 Weeks Post-intervention



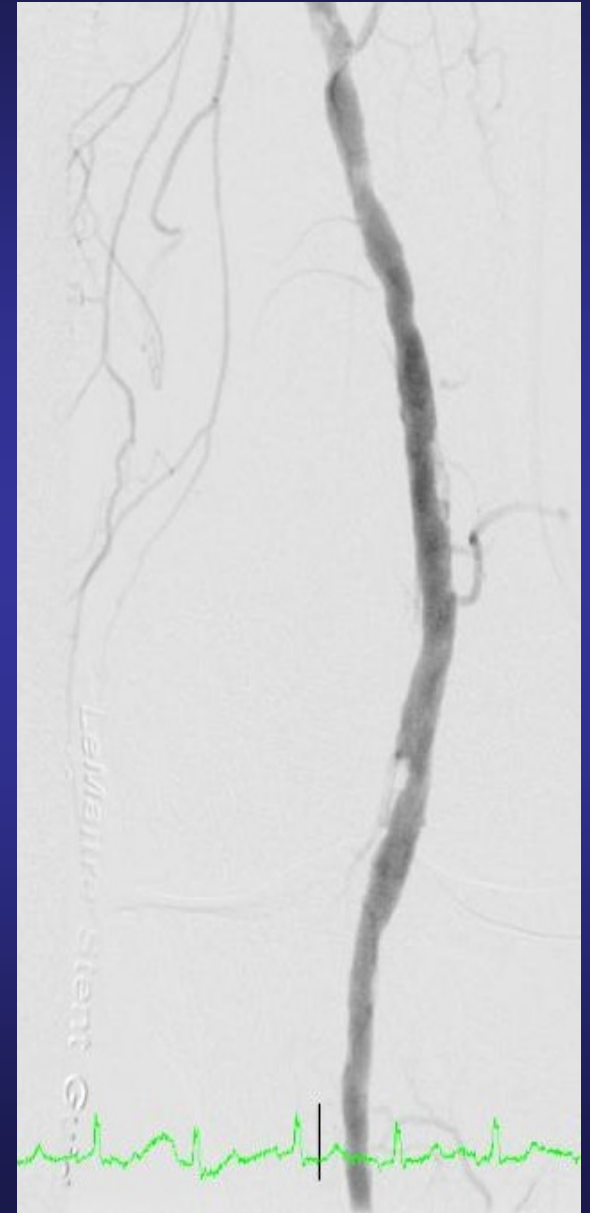
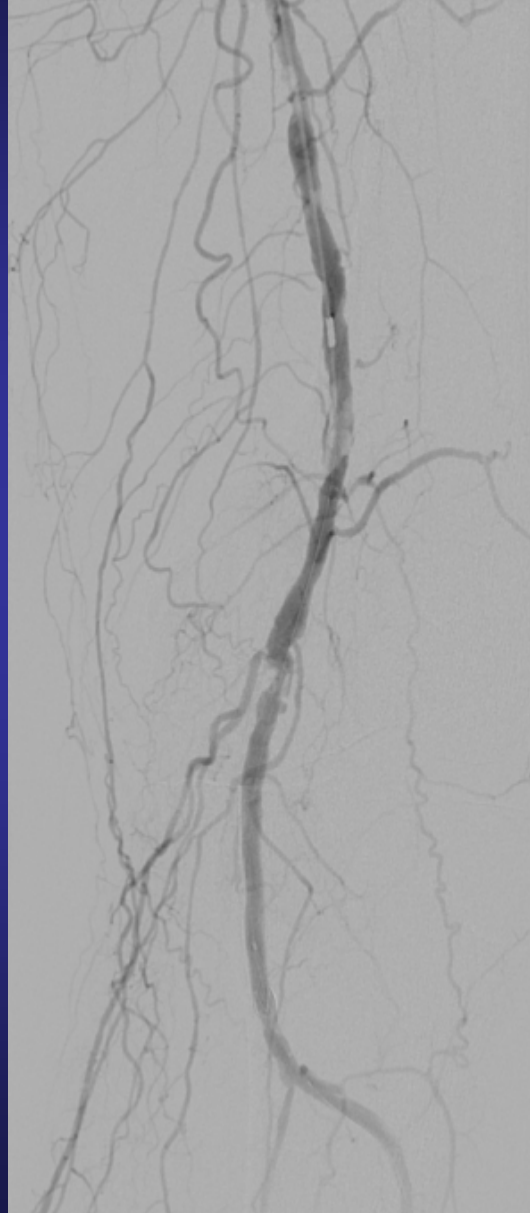
6 Weeks Post-intervention

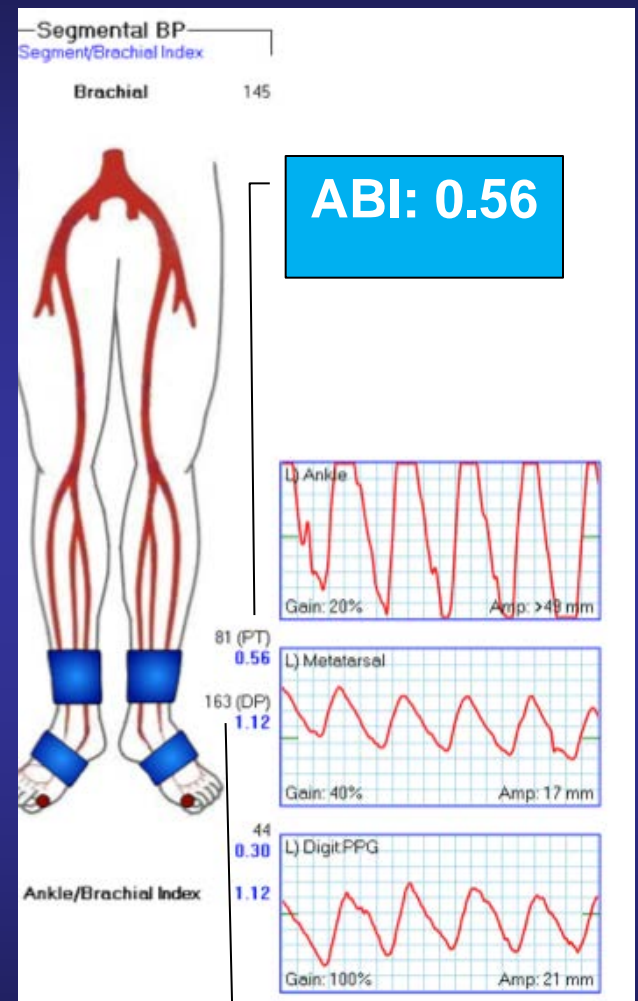
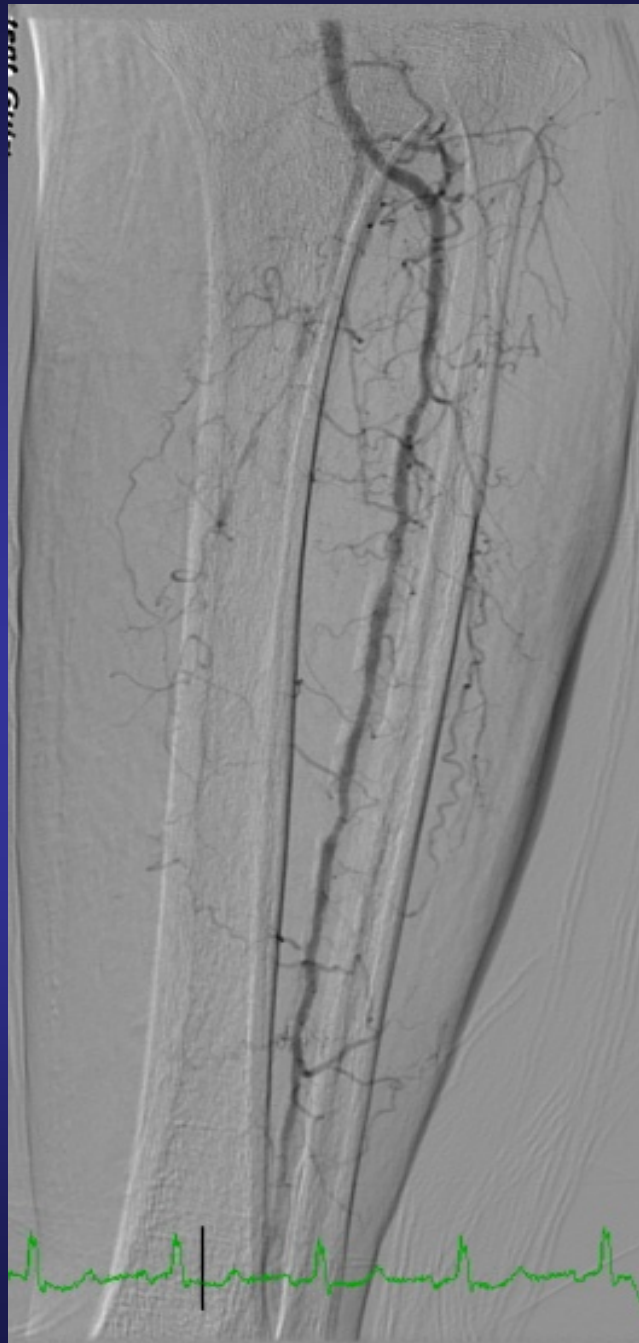


- 82 year diabetic lady with bilateral midfoot collapse due to Charcot arthropathy and partial 1st ray amputations
- Presents with left midfoot ulceration x 1 month

**ABI: 0.56**

Left popliteal artery intervention



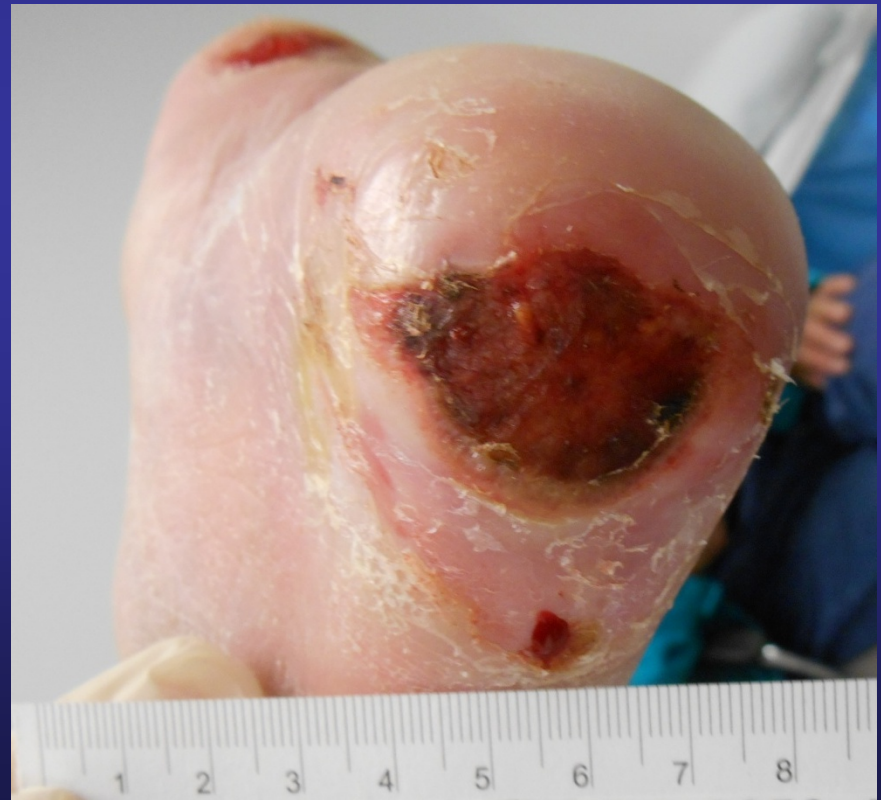


ABI: 1.12



- Post-intervention sharp and enzymatic debridement
- Non-weight bearing

3 weeks later...

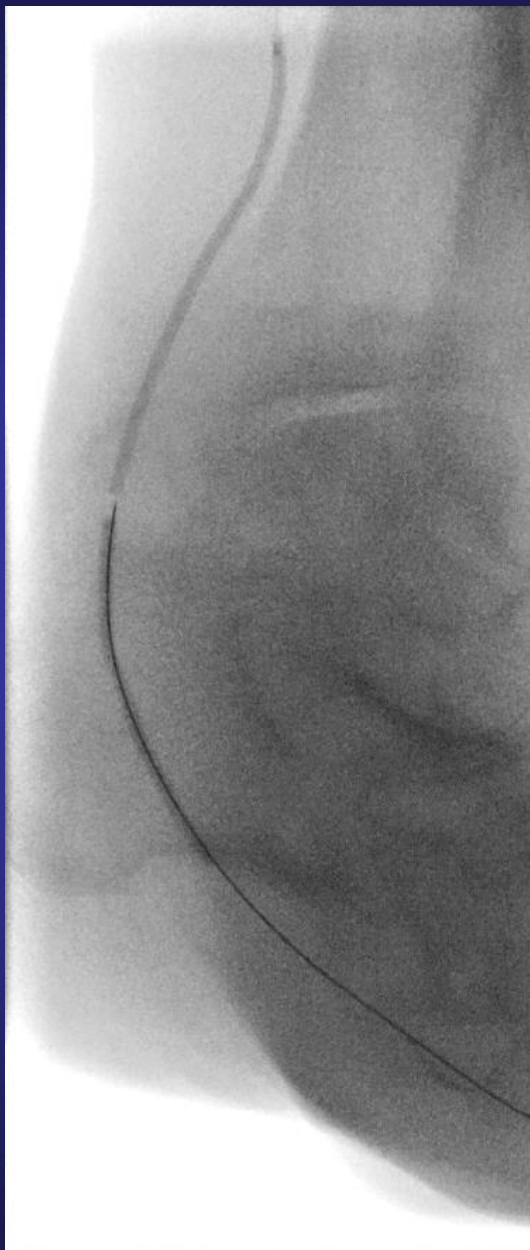




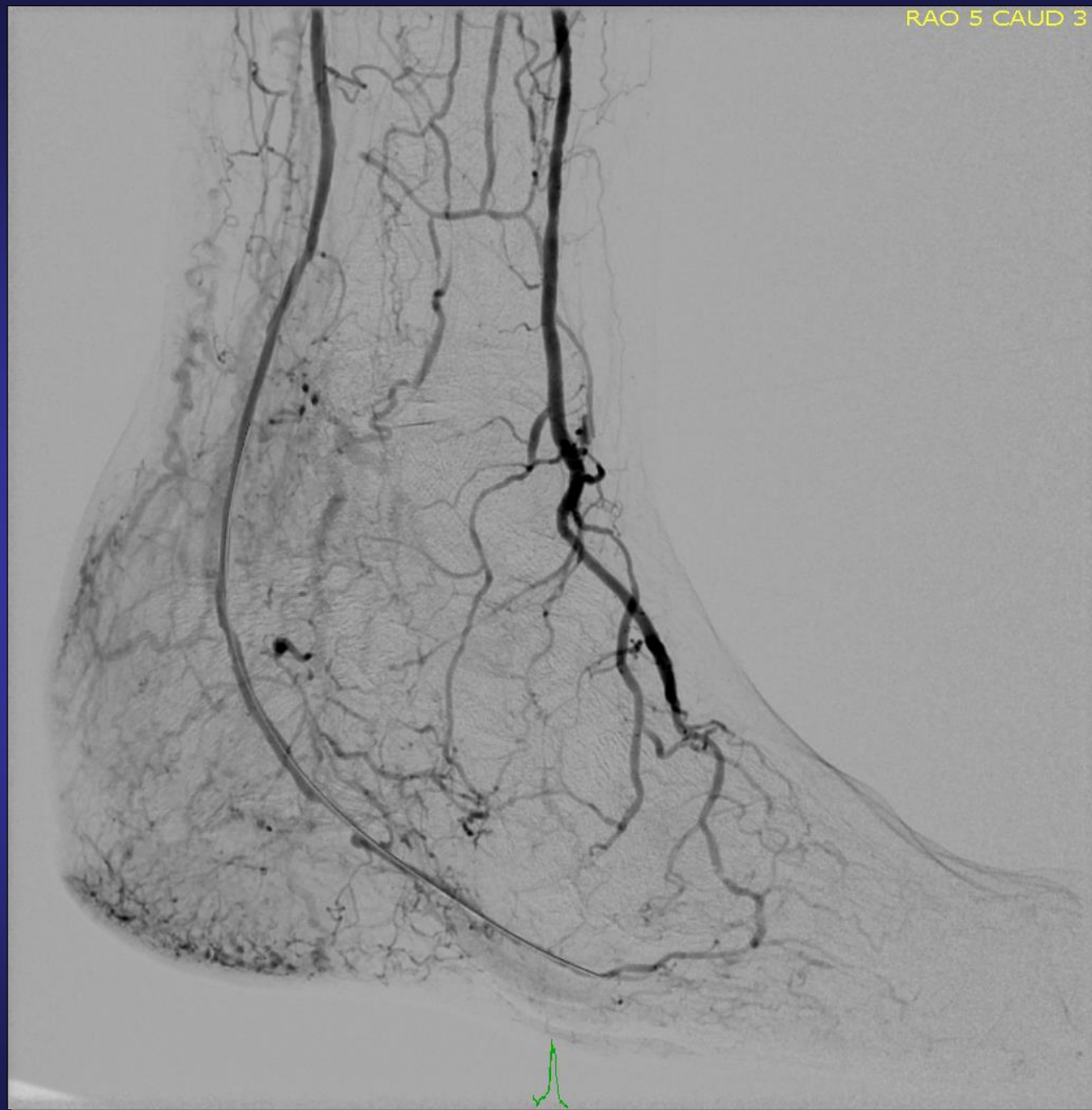
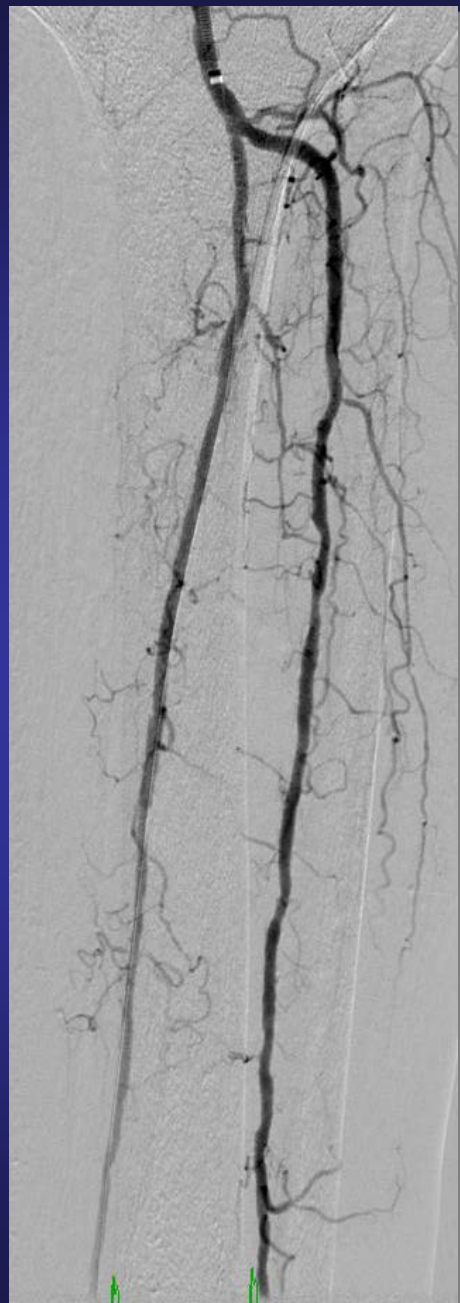
7 Weeks Post-Intervention

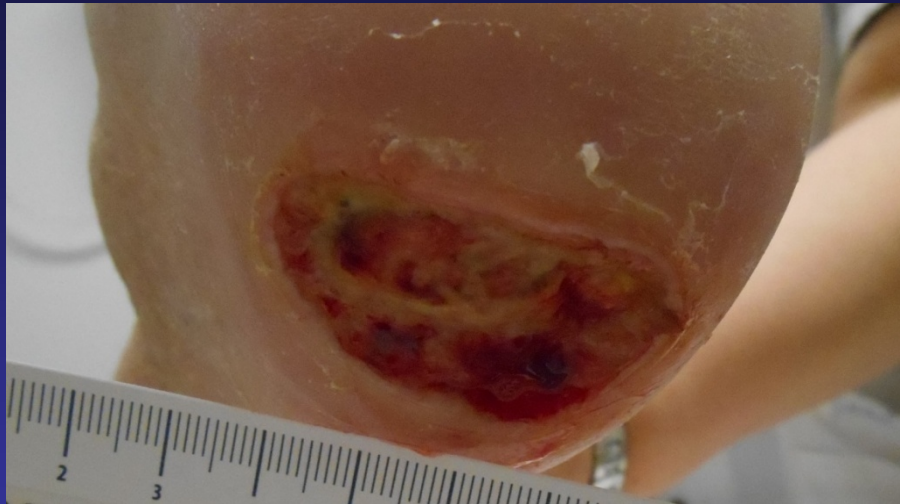


12 Weeks Post-Intervention



RAO 5 CAUD 3





4 Weeks Post-Repeat Intervention



8 Weeks Post-Repeat Intervention



**16 Weeks
Post-Repeat Intervention**

**21 Weeks
Post-Repeat Intervention**



Thank You!!