

Asymptomatic Patients with Peripheral Arterial Disease

MEDCAC Panel
July 22, 2015

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Disclosure Slide

I have no financial disclosures
related to this topic

Asymptomatic Patients *with* Peripheral Arterial Disease or PAD



One in every 20
Americans over the
age of 50 has P.A.D.

P.A.D. raises your
risk of heart attack
and stroke.

Stay in Circulation
Take Steps to Learn About P.A.D.

Coordinated by the National Heart, Lung, and Blood Institute



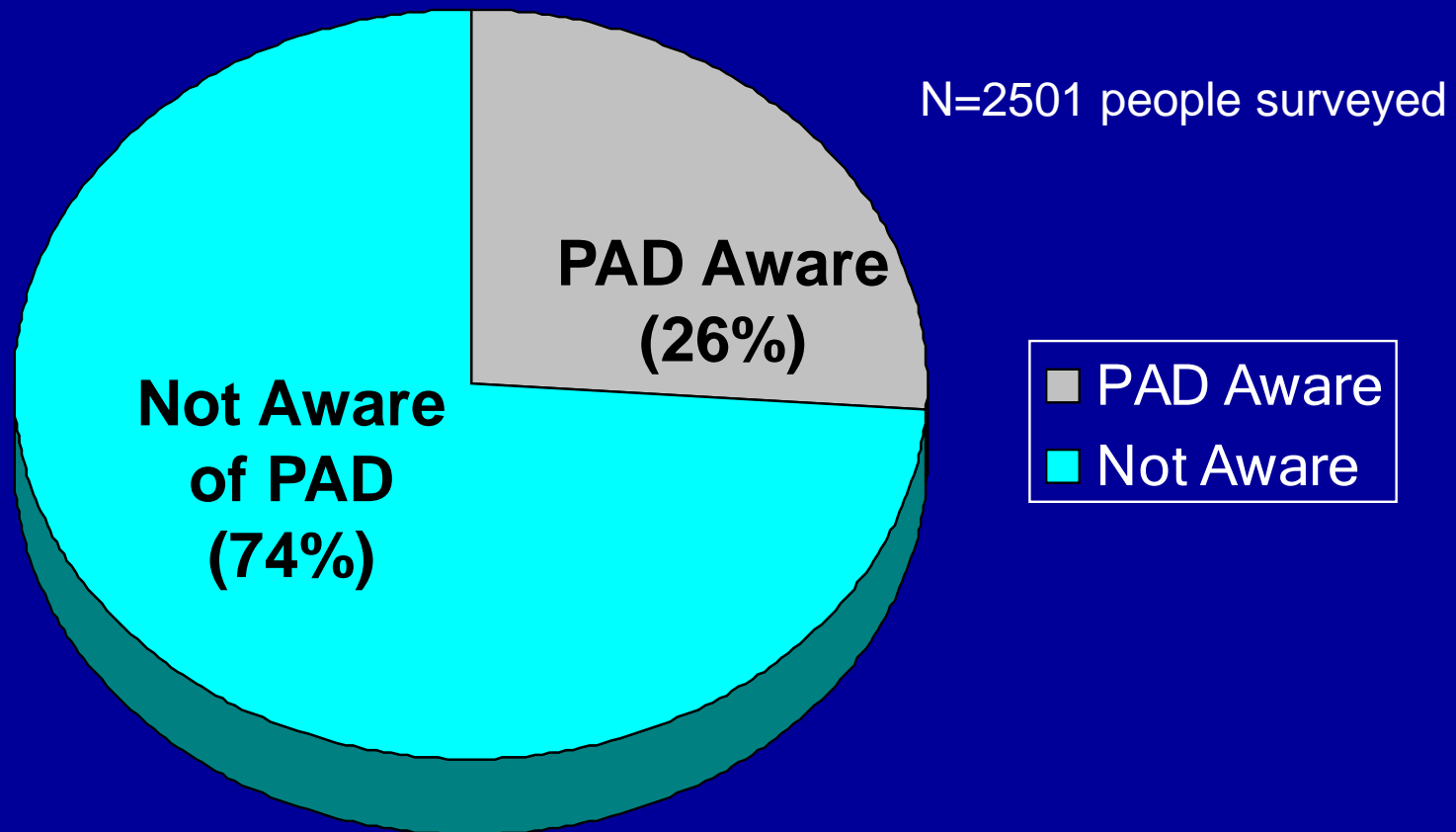
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
National Heart, Lung, and Blood Institute



Peripheral Arterial Disease

- Common
- Under diagnosed
- Significant morbidity
- Poor Quality of life
- Overlaps with CAD and CVD
- Predictor of adverse prognosis

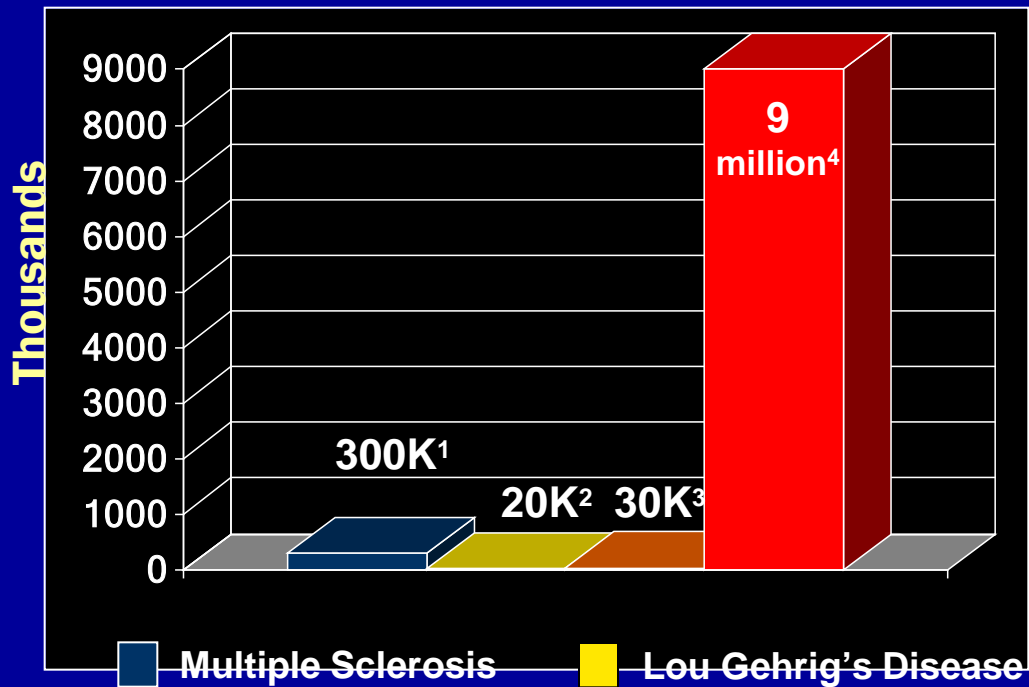
PAD is Common... But Your Patient Has Never Heard of it!



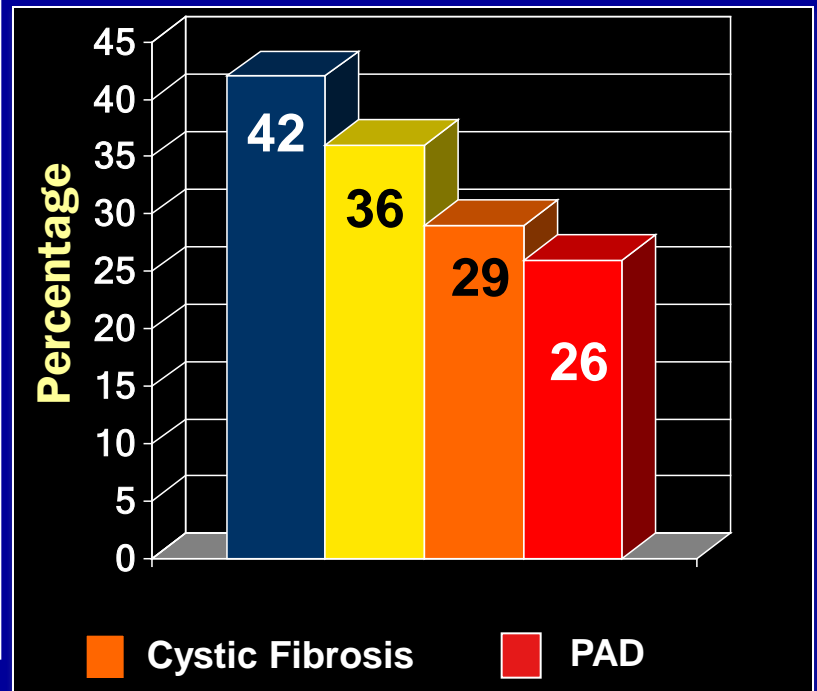
“PAD Aware” defined by “somewhat” or “very familiar” responses

PAD is Common... But Your Patient Has Never Heard of it!

Disease Prevalence



Disease Awareness



¹Multiple Sclerosis: Hope Through Research, NINDS. NIH Publication No. 96-75. September 1996.

²Amyotrophic Lateral Sclerosis Fact Sheet. NINDS. NIH Publication No. 00-916. April 2003.

³Cystic Fibrosis Foundation Fact Sheet, 06/07

⁴Am J Prev Med 2007;32:328-33

Atherosclerotic Risk Factors Are Less Intensively Treated in Patients with Peripheral Arterial Disease Than in Patients with Coronary Artery Disease

*Mary McGrae McDermott, MD, Shruti Mehta, BA, Helen Ahn, BA,
Philip Greenland, MD*

- Patients with peripheral arterial disease are less intensively treated than patients with coronary artery disease

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Table 2. Therapeutic Management of Atherosclerotic Risk Factors Among Patients with Peripheral Arterial Disease and Patients with Coronary Artery Disease*

	PAD	CAD	p Value	Exclusive PAD	Exclusive CAD	p value
★ Patients with high cholesterol level, n	115	100		48	78	
Patients on medication, %	46	58	.08	40	56	.06
Patients advised to follow low-cholesterol diet, %	83	94	.01	79	92	.03
Patients with hypertension, n	134	92		68	65	
Patients who are currently taking medication, %	81	79	.82	80	79	.89
Patients who currently smoke, n [†]	34	12				
Physician has advised to quit, %	82	92	.44			
Physician advised to quit within past year, %	70	91	.16			
Patients not considering quitting, %	38	42	.83			
★ Patients who are able to walk, n	194	144		97	102	
Patients who exercise regularly, n [‡] %	50	71	<.01	46	71	<.001
Patients who do not exercise regularly, n [‡]	97	42		52	30	
Physician has discussed exercise, %	47	74	<.01	35	83	<.001

- PAD patients - less likely to recall a physicians advice to exercise
- PAD patients were significantly less likely to be taking cholesterol lowering medications or advised to follow a low-cholesterol, low-fat diet

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Table 3. Medications Prescribed to Patients with Peripheral Arterial Disease Versus Patients with Coronary Artery Disease*

	PAD n = 202	CAD n = 147	p Value	Exclusive PAD* n = 99	Exclusive CAD† n = 104	p Value
★ All patients						
Aspirin, %	47	76	<.001	37	82	<.001
Warfarin, %	28	13	<.001	23	12	.03
Aspirin or warfarin, %	66	88	<.001	57	88	<.001
Vitamin E, vitamin C, or beta-carotene, %	30	37	.13	31	43	.08
Patients without atrial fibrillation or prior leg or coronary revascularization procedures, n	71	96		43	72	
Aspirin, %	49	81	<.001	42	83	<.001
Warfarin, %	10	8	.73	9	7	.65
Aspirin or warfarin, %	56	87	<.001	49	86	<.001

*CAD indicates coronary artery disease; PAD, peripheral arterial disease.

†By definition, patients with exclusive PAD did not have angina, past myocardial infarction, cardiac arrest, congestive heart failure, or prior coronary revascularization. Patients with exclusive CAD did not have a history of PAD or symptoms of intermittent claudication.

- PAD patients were less likely to be taking aspirin

Epidemiology and Prevention

Secondary Prevention and Mortality in Peripheral Artery Disease

National Health and Nutrition Examination Study, 1999 to 2004

Reena L. Pande, MD; Todd S. Perlstein, MD, MMSc;
Joshua A. Beckman, MD, MSc; Mark A. Creager, MD

- PAD based on NHANES survey
 - statin use reported in only 31%
 - ACEI/ARB medication use was only 24.9%
 - aspirin use was only 36%
- Corresponding to:
 - 5 million adults with PAD not taking statins
 - 5.4 million adults with PAD not taking ACEI/ARB
 - 4.5 million adults not taking aspirin

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Table 3. Population Estimates of Nonuse of Recommended Therapies in Peripheral Artery Disease

	All PAD Subjects (n=647)		PAD Subjects With Recognized CVD (n=196)		PAD Subjects Without CVD (n=451)	
	%	n	%	n	%	n
Statin nonuse	69.5 (2.5)	4 995 332 (179 414)	42.5 (4.2)	929 433 (91 850)	81.7 (2.7)	4 087 147 (135 444)
LDL >100 mg/dL	68.4 (3.8)	4 632 576 (256 021)	62.5 (5.7)	1 366 814 (124 653)	70.7 (4.3)	3 426 456 (209 269)
LDL >70 mg/dL	94.7 (1.4)	6 420 475 (94 200)	89.8 (2.8)	1 963 838 (61 233)	96.7 (1.4)	4 684 998 (65 760)
ACEI/ARB nonuse	75.1 (1.9)	5 395 919 (134 887)	65.6 (3.3)	1 434 608 (72 168)	79.2 (2.2)	3 964 926 (109 609)
SBP \geq 140 mm Hg	45.7 (2.3)	3 246 751 (159 757)	48.9 (3.8)	1 069 395 (83 102)	44.4 (3.0)	2 186 748 (148 910)
Aspirin nonuse	64.2 (2.9)	4 535 159 (206 899)	44.1 (4.1)	964 424 (89 663)	73.0 (3.1)	3 654 114 (153 152)
Not taking any antiplatelet therapy	61.0 (3.2)	4 379 153 (228 488)	34.2 (4.6)	747 920 (100 597)	72.6 (3.1)	3 634 990 (156 014)

PAD indicates peripheral artery disease; CVD, cardiovascular disease (including myocardial infarction, angina, coronary heart disease, or stroke); LDL, low-density lipoprotein; ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; and SBP, systolic blood pressure. Values in parentheses are SE.

Nonuse of Recommended Therapies in PAD

Vascular Hospitalization Rates and Costs in Patients With Peripheral Artery Disease in the United States

Elizabeth M. Mahoney, ScD; Kaijun Wang, MS, PhD; Hong H. Keo, MD; Sue Duval, PhD;
Kim G. Smolderen, PhD; David J. Cohen, MD, MSc, PhD; Gabriel Steg, MD;
Deepak L. Bhatt, MD, MPH; Alan T. Hirsch, MD; on behalf of the Reduction of Atherothrombosis for
Continued Health (REACH) Registry Investigators*

Reduction of Atherothrombosis for Continued Health (REACH) Registry

- Registry compared 2-year rates of vascular-related hospitalizations and associated costs in US patients in patients at risk of atherothrombosis
- At 2 years, mean cumulative hospitalization costs per patient:
 - **\$7,445 (Asymptomatic PAD)**
 - \$7,000 (History of claudication)
 - \$10,430 (Lower limb amputation)
 - \$11,693 (Revascularization)
- A history of peripheral intervention (lower limb revascularization or amputation) was associated with higher rates of subsequent procedures at both 1 and 2 years

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Reduction of Atherothrombosis for Continued Health (REACH) Registry

- Data from REACH:
 - demonstrated a higher rate of polyvascular disease for patients with PAD than CAD or CVD
 - a greater degree of undertreatment of atherosclerosis risk factors in patients with PAD relative to those with CAD or CVD.
 - revealed higher cardiovascular event rates for patients with PAD compared to patients with CAD or CVD

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Reduction of Atherothrombosis for Continued Health (REACH) Registry

- The economic burden associated with peripheral vascular-related hospitalizations in patients with PAD is considerable
- Stable patients with **asymptomatic PAD** have high annual costs, largely because of the high rate of cardiovascular events and hospitalizations, and costs escalate in the more symptomatic PAD categories due to hospitalizations and vascular-related procedures

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Reduction of Atherothrombosis for Continued Health (REACH) Registry

- Based on the data from REACH and the 2004 US census data, total annual costs associated with vascular-related hospitalizations in patients with PAD were estimated to be in excess of \$21 billion
- By examining 2-year hospitalization costs based on the REACH data and a previous study, these costs are also high in patients with **asymptomatic PAD** ^{1, 2}

¹Cardiovasc Qual Outcomes 2010;3:642-651

²Cardiovasc Qual Outcomes 2008;1:38-45

A meta-analysis of the outcome of endovascular and noninvasive therapies in the treatment of intermittent claudication

Anna A. Ahimastos, PhD,^a Elise P. Pappas, BSpExSc, GDipExPhys,^b Petra G. Buttner, PhD,^c Philip J. Walker, MBBS, FRACS,^d Bronwyn A. Kingwell, PhD,^a and Jonathan Golledge, MChir, FRACS,^b *Melbourne, Victoria; and Townsville and Brisbane, Queensland, Australia*

- Meta-analysis of randomized trials assessing the efficacy of endovascular therapy (EVT) compared with noninvasive therapies for the treatment of intermittent claudication
- In patients with intermittent claudication, current evidence supports improved ABI and treadmill walking when EVT is added to medical therapy or supervised exercise during early follow up
- No evidence that EVT alone provides improved outcome over supervised exercise alone
- Where supervised exercise programs are available and patients willing to participate in them, outcomes as measured by treadmill walking can be expected to be no different than EVT

PAD is a Morbid Disease

- Major risk factor for lower extremity amputation^{1,2}
- QOL impairment more severe than CHF or recent MI³
- Functional impairment is common, even among patients with atypical leg symptoms⁴⁻⁷
 - decreased walking distance
 - decreased walking velocity
- Objective evidence of depression twice as common among patients with PAD⁸

¹Weitz JI et al. Circulation. 1996;94:3026.

²Hirsch AT, et al. ACC/AHA Guidelines. Critical limb ischemia 2.6.3.

³Schneider JR et al. Ann Vasc Surg. 1993;7:419.

⁴⁻⁷McDermott MM et al. Ann Intern Med. 2002;136:873. Circulation. 2000;101:1007. JAMA. 2001;286:13
J Gen Intern Med 1999;14:173.

⁸Arseven A, et al. Vasc Med. 2001;6:229.

Peripheral Arterial Disease (PAD)

- Millions of US adults with PAD are not receiving secondary prevention therapies
- These therapies may reduce the risk of adverse cardiovascular events
- Treatment with multiple therapies is associated with reduced all-cause mortality

Take Home Messages...

- PAD is common, under diagnosed, and under treated
- Most patients do not have “classic” symptoms
- PAD is a “coronary risk equivalent”
- Aggressive risk factor modification can save lives