ETHNIC DISPARITIES IN THE TREATMENT OF PAD

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Summit Health

I have no Pertinent Financial Disclosures

"Given that diabetes, hypertension, and heart disease are preventable and treatable, targeted public health and policy efforts are needed to address structural inequities that contribute to racial disparities in rural health," Wadhera said.

Despite advances in public health, interventional therapies, access to health care, and state of art device technology-pharmaceuticals, improvements in life expectancy have slowed for some groups and death rates no longer improving.

20-Year Data Highlight Little Progress in Rural Racial Health Disparities

March 15, 2021
Gianna Melillo

Between 1999 and 2018, Black adults living in rural regions of the United States experienced high mortality rates due to diabetes, high blood pressure, heart disease, and stroke compared with White adults, according to new research published in the Journal of the American College of Cardiology.

SOCIAL DETERMINANTS OF HEALTH

80%

20%

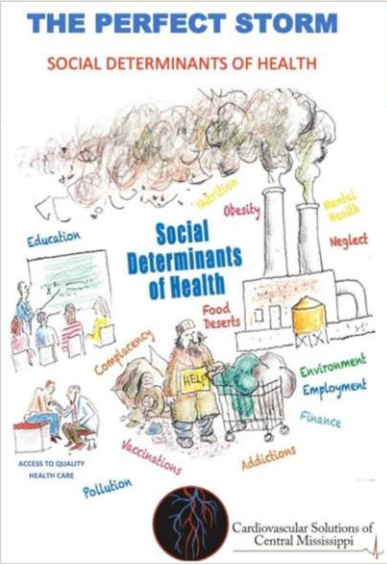


Figure 1

Social Determinants of Health

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	Quality of care
Medical bills	Playgrounds	Higher education		Stress	
Support	Walkability				
	Zip code / geography				

Health Outcomes
Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

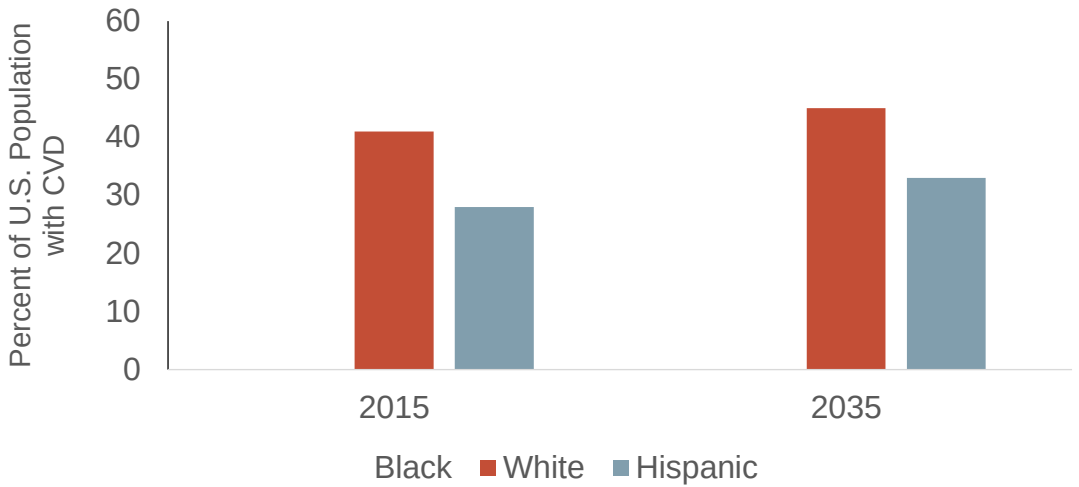
KFF

www.kff.org/racial-equity-and-health-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/

In the next two decades, black Americans will have the highest rates of cardiovascular disease.”

Lifetime risk of PAD is approximately 30% in Blacks versus 19% in whites.[2]

Prevalence of CVD by Race



Projected Prevalence of CVD by Race (2015-2035)

1. AHA: CVD COSTLY BURDEN ANALYSIS THROUGH 2035

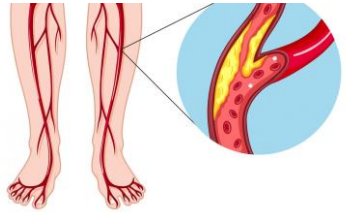
2. Matsushita K, et al. Lifetime risk of PAD defined by ABI in the uS. J Am Heart Assoc. 2019 Sep 17; 8(18):

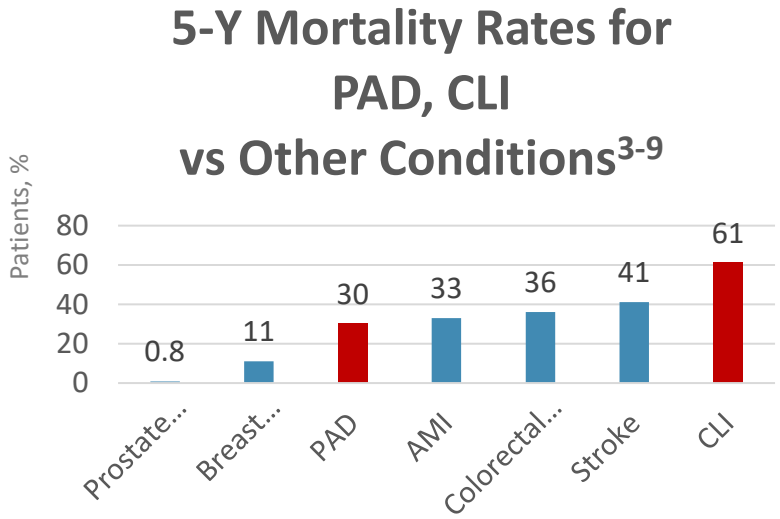
Causes of disparities in PAD/CLI

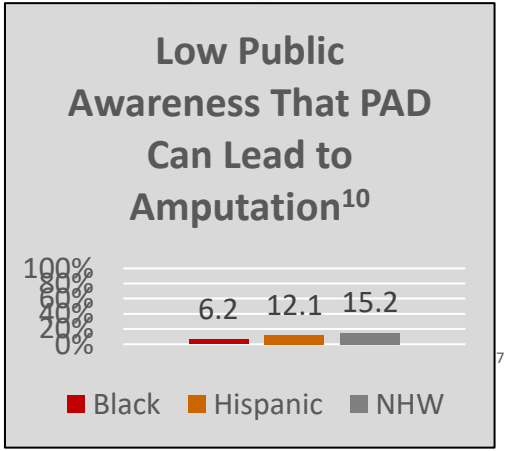
- Lack of awareness on patient, provider and community levels
- Differences in risk factors and comorbidities (DM,CKD,HTN,MetS, MVD)
- High prevalence of risk factors and undertreatment
- Clinical presentation variation
- Social-Political determinants of health/Structural racism
- Amputation Lottery
- Lack of screening “AT-RISK” population by USPSTF
- Disparities in clinical trials
- Statistical Discrimination
- Specialty Deserts/ Variation by specialty-delivery of care

PAD: Most Prevalent, Costly, Deadly Disease Most Americans Have Never Heard of

- ≈20 million Americans ≥40 y have PAD (ABI <0.9)
- Annual expenditure: $215-$380 billion[2]







ABI, ankle-brachial index; AMI, acute myocardial infarction; CLI, critical limb ischemia; NHW, non-Hispanic White; PAD, peripheral artery disease

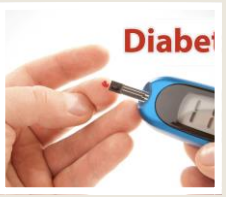
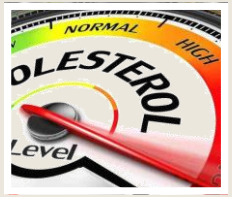
1. Virani SS et al. *Circulation*. 2021;143(8):e254-e743. 2. ABC. http://abcardio.org/wp-content/uploads/2018/09/PAD-Task-Force-Plan-Call-6Final.pdf. Accessed 8/2/22. 3. NCI. http://seer.cancer.gov/statfacts/html/prost.html. Accessed 8/2/22. 4. NCI. http://seer.cancer.gov/statfacts/html/breast.html. Accessed 8/2/22. 5. Weitz JI et al. *Circulation*. 1996;94:3026-3049. 6. Herlitz J et al. *Cardiology*. 1988;75(4):250-259. 7. NCI. http://seer.cancer.gov/statfacts/html/colorect.html. Accessed 8/2/22. 8. Hartmann A et al. *Neurology*. 2001;57:2000-2005. 9. Ljungman C et al. *Eur J Vasc Endovasc Surg*. 1996;11:176-182. 10. Hirsch AT et al. *Circulation*. 2007;116:2086-2094.

PAD RISK FACTORS AND RELATIVE RISKS

RISK FACTOR	RELATIVE RISK
AGE	2X-3X PER DECADE
SMOKING	**2X-5X**
DIABETES	**2X-4X**
HYPERTENSION	1X-2X
HIGH CHOLESTEROL	1X-2X
CHRONIC KIDNEY DISEASE	**2X-3X**
RACE-AFRICAN AMERICAN	2X
FAMILY HISTORY	2X

Source: Dormandy JA. J Vasc Surg. 2000;31(Suppl):S1-296, Berger JS. J Vasc Surg. 2013;58:673-81, Selvin E. Circulation 2004;110:738-43, Criqui MH. Vasc Med. 2001;6(Suppl):3-7, Belch JJ. Arch Intern Med. 2003;163:884-92, Criqui MH. Circulation 2005;112:2703-7, Ostchega Y. J Am Geriatr Soc. 2007;55:583-9 and Wassel CL. J Am Coll Cardiol. 2011;58:1386-92.

Modifiable PAD Risk Factors Often Neglected in Black Americans

Diabetes[1]	Obesity[2]	Hypertension[1]	High Cholesterol[1]	
				
OR: 1.38-1.84	**OR: 1.04-1.36**	**OR: 1.37-1.57**	**OR: 1.08-1.25**	
		OR increase of 1.27 for each 20-mm Hg SBP increase	*OR increase of 1.14 for each 39-mg/dL increase in TC*	

OR, odds ratio; SBP, systolic blood pressure; TC, total cholesterol

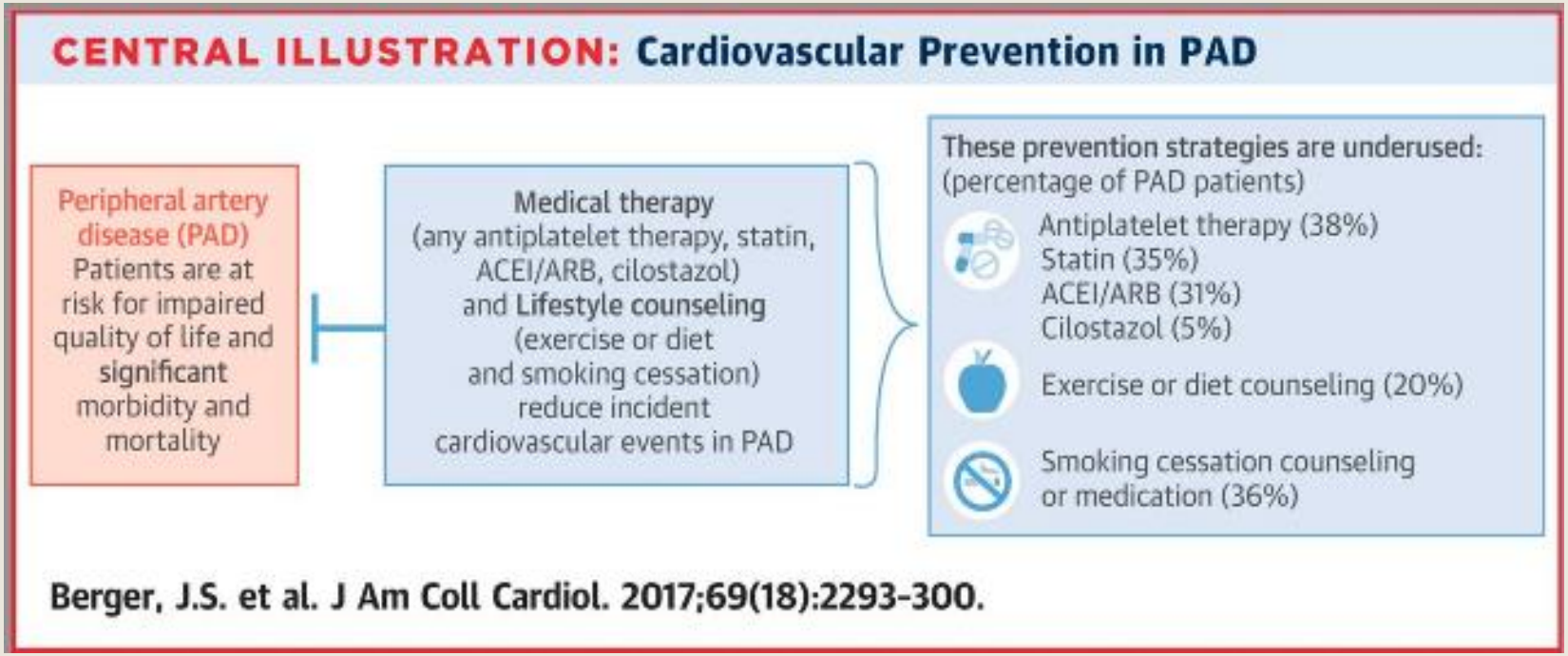
1. Virani SS et al. *Circulation*. 2021;143(8):e254-e743. 2. Hicks CW et al. *J Am Heart Assoc*. 2018;7(16):e008644. 3. Peripheral Matters. *Cardiology Magazine*. www.acc.org/Latest-in-Cardiology/Articles/2022/01/01/01/42/Peripheral-Matters-Disparities-in-the-Prevalence-Management-and-Outcomes-of-Peripheral-Artery-Disease. Accessed 8/16/22. 4. Hackler EL et al. *Circulation Res*. 2021;128:1913-1926. 5. Goodney PP et al. *Circ Cardiovasc Qual Outcomes*. 2012;5:94-102.

AFRICAN AMERICANS: DIFFERENCES IN PAD TREATMENTS AND OUTCOMES

- Undertreatment of CV Risk Factors More Likely in Blacks with PAD
- More likely to receive medical therapy without a revascularization procedure
- Highest disease severity at the time of diagnosis hence higher risk of hospitalization with CLI
- AA Undergoing Revascularization Have More Risk Factors and Severe Comorbidities (DM, HTN, CHF, CKD & Dialysis)
- Poorer Limb Outcomes than Whites after Endo/Surgical Revascularization for IC or CLI
- Blacks More Likely to Undergo Amputation and Less Likely to Undergo Revascularization

Source: Yost ML. Peripheral Artery Disease In African Americans: Prevalence, Review Of Disease Disparities And Causes Of These Disparities. THE SAGE GROUP. 2022.

WE STINK AT PREVENTION!



INADEQUATE MEDICAL MANAGEMENT INCREASES MALE & MA

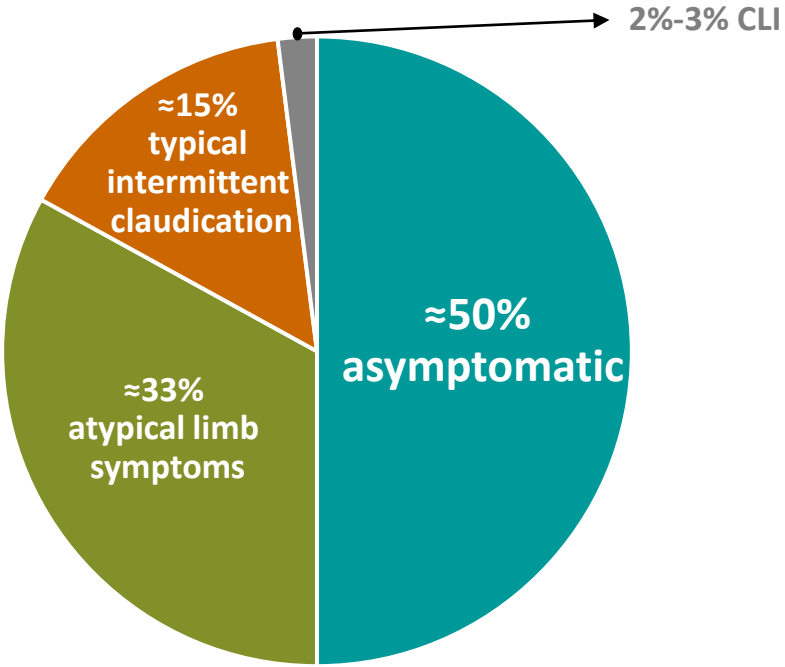
- 32% PAD PATIENTS TREATED OPTIMALLY WITH ALL 4 RF MODIFICATION THERAPIES (ANTIPLATELETS, ANTIHYPERTENSIVES, ANTIPLIIDS AND SMOKING CESSATION)
- OPTIMAL MEDICAL MANAGEMENT IN PAD REDUCES MALE BY 45% & MA BY 33%
- CLI PATIENTS' RISK FACTORS UNDERTREATED COMPARED WITH IC PATIENTS
- IN CLI, SUBOPTIMAL MEDICAL MANAGEMENT INCREASES RISK OF AMPUTATION AND/OR DEATH > 8.5X

Source: Armstrong EJ. J Am Heart Assoc 2014;3:e000697, Conte MS, J Vasc Surg 2005; 42(3): 456-65 and Chung J. J Vasc Surg 2013; 58:972-80.

Classic Claudication Is the *Exception*, Not the Rule

PAD Clinical Presentation

Like cancer:
Progressive, deadly, often silent



Hirsch AT et al. *J Am Coll Cardiol*. 2006;47(6):1239-312.

PAD Screening

AHA Recommendation

- Use ABI to screen for PAD in high-risk adults:
  - **Age ≥65 y**
  - **Age 50-64 y with traditional risk factors**
  - **Age <50 y** + **diabetes** + additional risk factor for **atherosclerosis**
  - Other atherosclerotic disease

Traditional Risk Factors

Older age

Diabetes
Hypertension
Hyperlipidemia
Chronic kidney disease

Atherosclerosis in another location

Smoking status

Family history

Is ABI the right screening tool for ALL?

AHA, American Heart Association

Gerhard-Herman MD et al. *J Am Coll Cardiol*. 2017;69(11):e71-126.

Why fear PAD ?

Similar characteristics of any CANCER

- Progressive
- Asymptomatic(?)
- When identified – usually too late

Cancer Patients are At-risk and Need to be Screened

– Pap smear, CXR, and mammography

- Coprevalance of CVD (#1 killer) among PAD pts is high (6X)
- Significant CV morbidity/mortality
- Extremely prevalent and numbers are only on the rise:
  - Aging population
  - Increasing diabetic population (> 30-50% of population by 2050)
  - Increasing overweight/obesity population (3/4 of population by 2020)

Treatment Options

Goal to provide relief of symptoms vs Goal to promote limb survival
MULTIDISCIPLINARY TEAM (MDT)

- Lifestyle changes
  - Quit smoking
  - Lower blood pressure
  - Lower LDL cholesterol
  - Manage diabetes and lower hemoglobin A1C
  - Healthy diet
  - Regular exercise including walking program (SET)

- Medication Goals
  - Prevent formation of blood clots
  - Lower cholesterol and high blood pressure
  - Manage Diabetes
  - Decrease claudication symptoms to improve walking ability

- Revascularization
  - Angioplasty
  - Stenting
  - Atherectomy
  - Bypass Surgery

Barriers to SET Participation in PAD

- Programs often not available
- Travelling to a center to a center is burdensome
- Co-pay ($11-20 3x a week for at least 12 weeks)
- Unable to get on a treadmill or exercise is not of interest
- Home based exercise therapy not reimbursed by CMS

FINANCIAL BURDEN OF GDMT-
Remove Barriers and Encourage Adoption

- FINANCIAL TOXICITY - ELIMINATE OUT OF POCKET COSTS
- DISCUSS THERAPY COST EFFECTIVENESS/IMPACT ON HEALTHCARE COSTS
- ADDRESS ACCESS TO THERAPY/SUBPOPULATIONS MORE LIKELY TO BENEFIT
- PRIOR AUTHORIZATION BARRIERS/PATIENT ASSISTANCE PROGRAMS
- SHARED DECISION MAKING/UNDERSTANDING RATIONALE FOR CHANGES
- SIDE EFFECTS
- POLYPHARMACY

REFERRAL TO VASCULAR SPECIALIST?

- IC, VS, VM, IR, podiatrist, General surgeon? – Availability vs Practice variability
- Increases the Odds of Diagnostic Testing Prior to Amputation
- In Medicare, Only 33% Referred to Vascular Specialist Prior to MA or Minor Amputation

Survey of Internists, Nephrologists & Endocrinologists Found That

74% Use Watchful Waiting as 'Treatment' for PAD

63% Do Not Consider Chronic Non-Healing Wounds a Reason for Specialist Referral

Source: Vemulapalli S. Circ Cardiovasc Qual Outcomes. 2014;7:142-150

CLI TREATMENT—A PATHWAY TO AMPUTATION

MA Frequently

the first and only therapy for CLI

51%-73%

No Angiogram—Despite the fact that an angiogram ↓ the odds by 90%

60%-71%

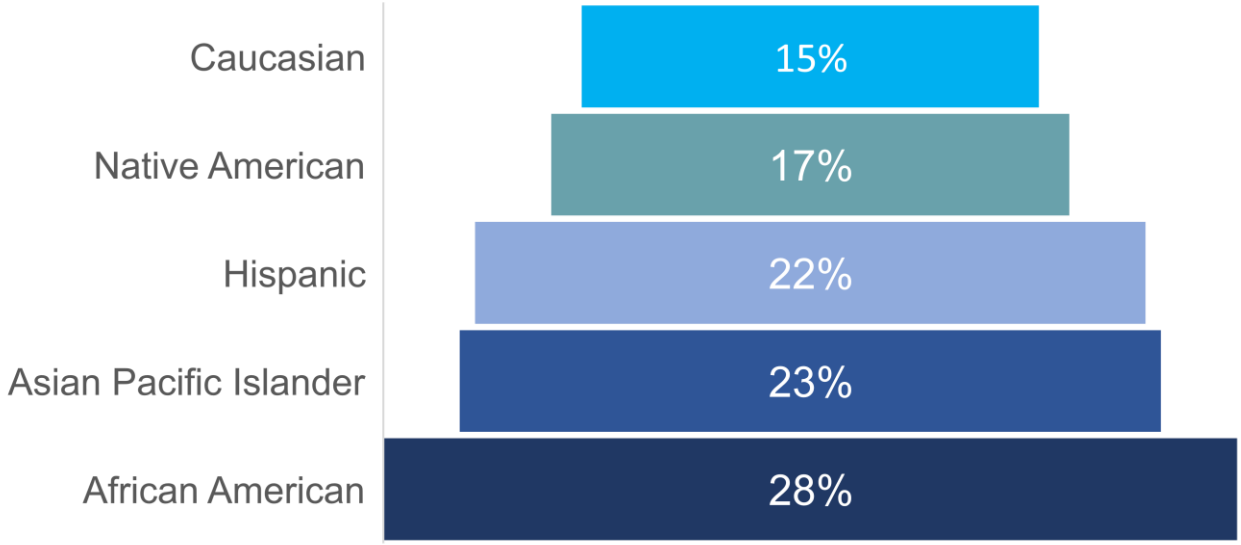
No Revascularization

Source: Henry AJ. J Vasc Surg 2011; 53(2): 330-9el, Allie. Eurointervention 2005; 1(1): 60-69 and Goodney. Cardiovasc Qual Outcomes 2012; 5:94-102

SLIDES COURTESY OF THE SAGE GROUP

Racial Disparities Exist in Amputation Rates in the United States

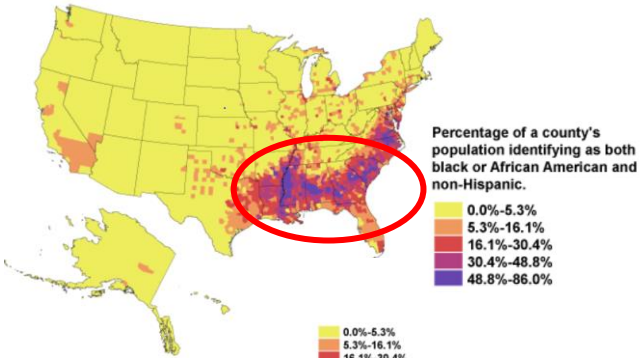
The existence of racial/ethnic disparities in the treatment and management of patients with peripheral artery disease has been documented in several studies.[1-4]



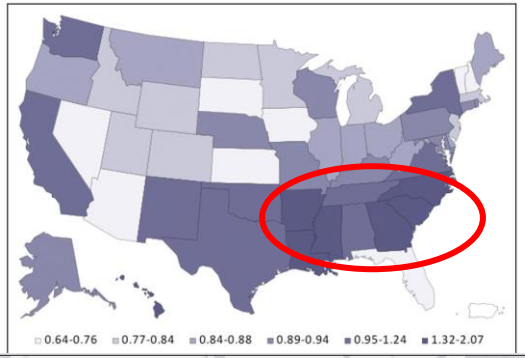
1. Hughes K, et al. Vasc Endovascular Surg. 2014;48(1):34-37. 2. Feinglass J, et al. Arch Surg. 2000;135(1):75-80. 3. Huber TS, et al. J Vasc Surg. 1999;30(3):417-425. 4. Guadagnoli E, et al. Arch Surg. 1995;130(4):381-386.

Regional Differences: Black Communities Hit Hardest

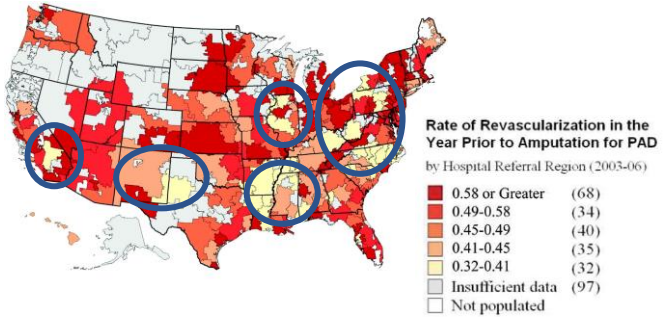
Black America[1]



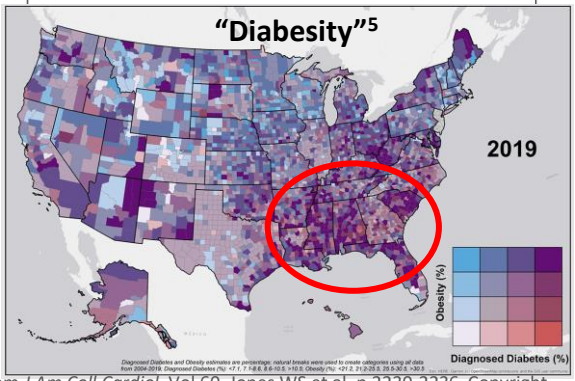
Lower Limb Amputations 3-4x Higher in Rural Black Southerners[2,3]



Revascularization Low in Certain Regions[4]



"Diabesity"[5]



1. CensusScope. https://censusscope.org/us/map_nhblack.html. 8/2/22. 2. Reprinted from *J Am Coll Cardiol*, Vol 60, Jones WS et al, p 2230-2236, Copyright 2012, with permission from Elsevier. 3. Dartmouth Atlas Project. 2014. 4. Reprinted with permission from Goodney PP et al. Variation in the use of lower extremity vascular procedures for critical limb ischemia. *Circ Cardiovasc Qual Outcomes*. 2012;5:94-102. 5. CDC. www.cdc.gov/diabetes/data/center/slides.html. 8/2/22.

Angiography before Amputation

- Angiography before amputation “was a view that some of us thought was so obvious that it didn’t need to be stated…”

- “But when I saw that there were pockets of the country where no one was getting angiograms, and it seemed to be along racial and socioeconomic lines. It made me sick to my stomach….”
  - *-Marie Gerhard Herman*

  Former chair of the PAD guidelines for ACC and AHA

USPSTF Negatively Impacts Early Diagnosis of PAD

Founded in 1984 by Congress

Extensive portfolio of services to improve the health of all Americans based on evidence-based recommendations about clinical preventive services provided by IM and Family practice providers

Center for Medicare and Medicaid Services (CMS) provides full coverage for an ‘A” or “B” rating

Debate: Mistarget the population, Mis-define the disease, Missing evidence of benefit

Hepatitis C screening and alcohol misuse screening and counseling for all ages 18 and over –Both got ‘B’ recommendations without evidence of benefit!

USPSTF Screening and Risk Assessment No to Asymptomatic Screening!

Comments also raised concern that an I statement could have a negative effect on health care disparities for PAD.

- These comments cited evidence that the prevalence of PAD is disproportionately higher among racial/ethnic minorities and low-socioeconomic populations, and noted that the I statement could discourage testing and perpetuate disparities in treatment and outcomes. The USPSTF recognizes these well-established disparities in care.

- However, the evidence on screening and treatment in these groups is currently lacking, and the USPSTF was unable to determine the overall balance of benefits and harms. Future research should include diverse populations and report on their outcomes. The USPSTF added language to the “Research Needs and Gaps” section to clarify this point.

Whence We Have Come: Continued Lack of Diversity in Clinical Trials

African-Americans: 12% of U.S.→ 5% of clinical trials.[1]

Hispanics: 16% of U.S.→ 1% of clinical trials.[2]

Elderly (>75) yrs: 40% of MIs→ 12% of MI clinical trials.[3]

Women: 51% of CV deaths→ 33% of CV trials.[4]

1. Data presented by P. Sanders in "Dialogues on Diversifying Clinical Trials," Washington, D.C., 2011 Sept 22. http://www.womenshealthresearch.org/site/PageServer?pagename=events_clinicaltrials.
2.Data presented by J. Tierney in "Dialogues on Diversifying Clinical Trials," Washington, D.C., 2011 Sept 22. http://www.womenshealthresearch.org/site/PageServer?pagename=events_clinicaltrials.
3.https://www.nytimes.com/2018/04/13/health/elderly-clinical-trials.html
4. Dhruva S. S., et al. Gender Bias in Studies for Food and Drug Administration Premarket Approval of Cardiovascular Devices. *Circulation: Cardiovascular Quality and Outcomes*. 2011 Mar 1; 4(2):165-71.

CLINICAL TRIALS ≠ U.S. DEMOGRAPHICS CKD/ESRD PTS

Slide courtesy of Wayne Batchelor M.D.

SOME PHARMACEUTICAL THERAPIES ARE PROTECTIV AGAINST AMPUTATION IN PAD PATIENTS

Statins (EUCLID Trial)

Xa Inhibitor Rivaroxaban + Aspirin

- Reduced Total Amputations by 58% (COMPASS Trial)
- Reduced Amputations After Revascularization (VOYAGER Trial)

PCSK9 Inhibitor Evolocumab + Statins

- Reduced MA (FOURIER Trial)

Long CA. Circ Cardiovasc Qual Outcomes. 2020;13:e006399., Anand SS. J Am Coll Cardiol 2018;71:2306–15, Anand SS. Lancet 2018; 391: 219–29, Bonaca MP. N Engl J Med 2020;382:1994-2004 and Bonaca MP. Circulation. 2018;137:338–350.

Table 1. Baseline Characteristics of the Participants.*

Characteristic	Rivaroxaban plus Aspirin (N=9152)	Rivaroxaban Alone (N=9117)	Aspirin Alone (N=9126)
Age — yr	68.3±7.9	68.2±7.9	68.2±8.0
Female sex — no. (%)	2059 (22.5)	1972 (21.6)	1989 (21.8)
Body-mass index†	28.3±4.8	28.3±4.6	28.4±4.7
Blood pressure — mm Hg			
Systolic	136±17	136±18	136±18
Diastolic	77±10	78±10	78±10
Cholesterol — mmol/liter	4.2±1.1	4.2±1.1	4.2±1.1
Tobacco use — no. (%)	1944 (21.2)	1951 (21.4)	1972 (21.6)
Hypertension — no. (%)	6907 (75.5)	6848 (75.1)	6877 (75.4)
Diabetes — no. (%)	3448 (37.7)	3419 (37.5)	3474 (38.1)
Previous stroke — no. (%)	351 (3.8)	346 (3.8)	335 (3.7)
Previous myocardial infarction — no. (%)	5654 (61.8)	5653 (62.0)	5721 (62.7)
Heart failure — no. (%)	1963 (21.4)	1960 (21.5)	1979 (21.7)
Coronary artery disease — no. (%)‡	8313 (90.8)	8250 (90.5)	8261 (90.5)
Peripheral arterial disease — no. (%)§	2492 (27.2)	2474 (27.1)	2504 (27.4)
Estimated GFR — no. (%)¶			
<30 ml/min	77 (0.8)	80 (0.9)	86 (0.9)
30 to <60 ml/min	1977 (21.6)	2028 (22.2)	2028 (22.2)
≥60 ml/min	7094 (77.5)	7005 (76.8)	7012 (76.8)
Race — no. (%)‖			
White	5673 (62.0)	5672 (62.2)	5682 (62.3)
Black	76 (0.8)	94 (1.0)	92 (1.0)
Asian	1451 (15.9)	1421 (15.6)	1397 (15.3)
Other	1952 (21.3)	1930 (21.2)	1955 (21.4)
Geographic region — no. (%)			
North America	1304 (14.2)	1305 (14.3)	1309 (14.3)
South America	2054 (22.4)	2036 (22.3)	2054 (22.5)
Western Europe, Israel, Australia, or South Africa	2855 (31.2)	2845 (31.2)	2855 (31.3)
Eastern Europe	1607 (17.6)	1612 (17.7)	1604 (17.6)
Asia–Pacific	1332 (14.6)	1319 (14.5)	1304 (14.3)
Medication — no. (%)			
ACE inhibitor or ARB	6475 (70.7)	6581 (72.2)	6462 (70.8)
Calcium-channel blocker	2413 (26.4)	2374 (26.0)	2482 (27.2)
Diuretic	2727 (29.8)	2666 (29.2)	2746 (30.1)
Beta-blocker	6389 (69.8)	6401 (70.2)	6394 (70.1)
Lipid-lowering agent	8239 (90.0)	8204 (90.0)	8158 (89.4)
NSAID	531 (5.8)	466 (5.1)	473 (5.2)
Nontrial PPI	3268 (35.7)	3266 (35.8)	3264 (35.8)

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Other	1952 (21.3)	1930 (21.2)	1955 (21.4)

The NEW ENGLAND JOURNAL of MEDICINE

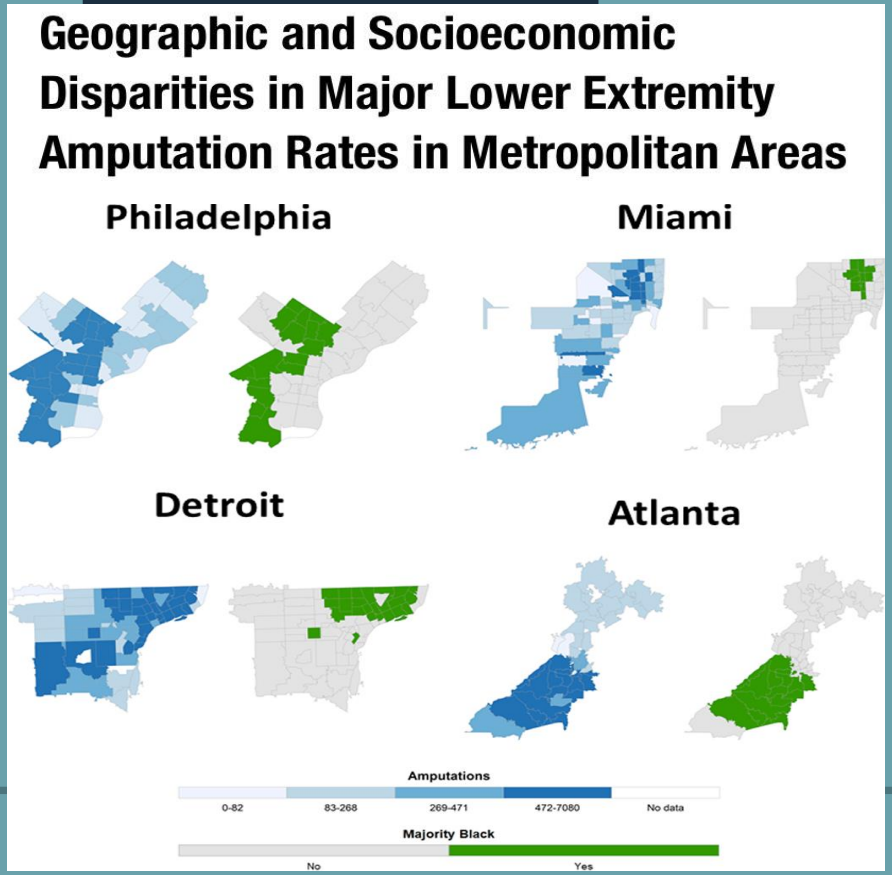
Disproportionately Higher Amputation Rates in Minorities

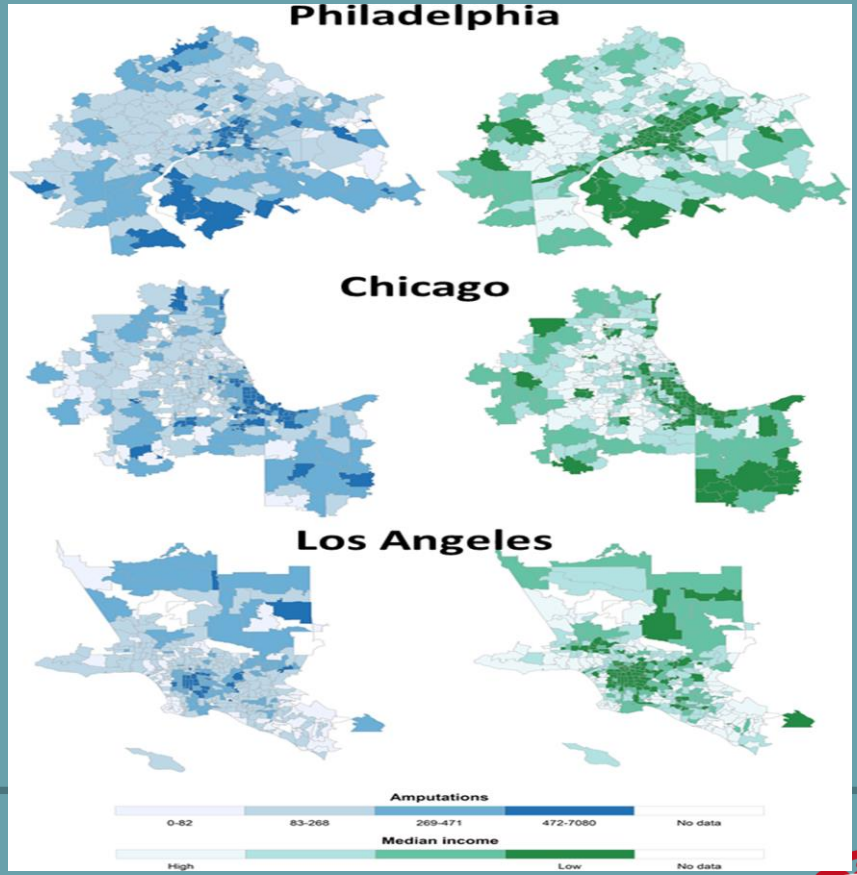
Author, Year	Title	Study Design	Conclusions
Mathlouthi et al., 2020 ***Abstract of SVS Online 2020***	Racial Disparity in Major Amputation in Patients With Critical Limb Ischemia	▪ Vascular Quality Initiative (VQI) ▪ 2012-2019 ▪ 6,077 amputees due to CLI	Black patients are less likely to undergo limb salvage revascularization before amputation and more likely to undergo higher level of amputation compared to white patients.
Eid et al., 2020 ***Abstract of SVS Online 2020***	Racial and Regional Disparities in the Prevalence of Peripheral Artery Disease and Diabetes and Amputation Rates Among Medicare Patients	▪ Centers for Medicare and Medicaid Services (CMS) ▪ 2007-2016 ▪ 10,506,254 patients with PAD and diabetes	Black patients in areas with the lowest rates PAD and diabetes are at disproportionally higher risk for amputation.
Tan et al., 2020	Association Between Race/Ethnicity and the Risk of Amputation of Lower Extremities Among Medicare Beneficiaries with Diabetic Foot Ulcers and Diabetic Foot Infections	▪ Data of a 5% sample of fee-for-service Medicare beneficiaries ▪ 2011-2015 ▪ 92,929 Medicare beneficiaries newly diagnosed with DFUs and/or DFIs	Racial and ethnic disparities in diabetes-related amputation and access to care exist among fee-for-Service Medicare beneficiaries. Adjusting for socioeconomic factors and pre-existing medical comorbidities, African-Americans and Native Americans experienced 1.8–1.9 times higher risk of major amputation for diabetic foot ulcerations and/or diabetic foot infections than White Medicare beneficiaries.
O'Donnell et al., 2018	Regional Variation in Racial Disparities Among Patients with Peripheral Artery Disease	▪ Vascular Quality Initiative (VQI) ▪ 2003-2017 ▪ 90,418 PAD patients	In adjusted analyses, compared with white patients, black patients experienced consistently lower long-term mortality and higher rates of MALEs and amputation.
Barshes et al., 2018	Racial and Geographic Variation in Leg Amputations Among Texans	▪ De-identified Texas state admission data ▪ 2004-2009 ▪ 21,273 PAD-related procedures	Disparately-high rates of leg amputations are still seen among Texans categorized as black or Hispanic.

Disproportionately Higher Amputation Rates in Minorities

Author, Year	Title	Study Design	Conclusions
Arya et al., 2018	Race and Socioeconomic Status Independently Affect Risk of Major Amputation in Peripheral Artery Disease	▪ Veterans Affairs Corporate Data Warehouse ▪ 2003-2014 ▪ 155,647 PAD patients	Black race significantly increases the risk of amputation within the same SES stratum compared with white race and has an independent effect on limb loss after controlling for comorbidities, severity of PAD at presentation, and use of medications.
Mustapha et al., 2017	Explaining Racial Disparities in Amputation Rates for the Treatment of Peripheral Artery Disease (PAD) Using Decomposition Methods	▪ Healthcare Cost and Utilization Project (HCUP) ▪ 2006-2013 ▪ 193,882 PAD patients	Substantial disparities in PAD-related treatment patterns between African-Americans and Hispanics compared to Caucasians: AA are amputated at twice the rate of Caucasians; Hispanics are amputated at a rate 50% higher than are Caucasians.
Goodney et al., 2013	Regional Intensity of Vascular Care and Lower Extremity Amputation Rates	▪ Medicare Physician/Supplier file & Medicare Denominator file ▪ 2003-2009 ▪ Patients who underwent any vascular procedure in the year before amputation/94,873 amputees due to PAD	African Americans, especially those with diabetes, have a very high risk for lower extremity amputation.
Jones et al., 2012	Temporal Trends and Geographic Variation of Lower Extremity Amputation in Patients with Peripheral Artery Disease: Results from U.S. Medicare 2000–2008	▪ Centers for Medicare & Medicaid Services (CMS) ▪ 2000-2008 ▪ 2,730,742 PAD patients	Black race was an independent predictor of lower extremity amputation.
Holman et al., 2011	Racial Disparities in the Use of Revascularization Before Leg Amputation in Medicare Patients	▪ Medicare Provider Analysis and Review (MEDPAR) files ▪ 2003-2006 ▪ 90,481 amputees due to PAD	After adjusting for differences in individual patient characteristics, black amputees remained significantly less likely than whites to undergo revascularization, limb-related admission, or wound debridement prior to amputation.

Low SES & Black race associated with higher rates MA.



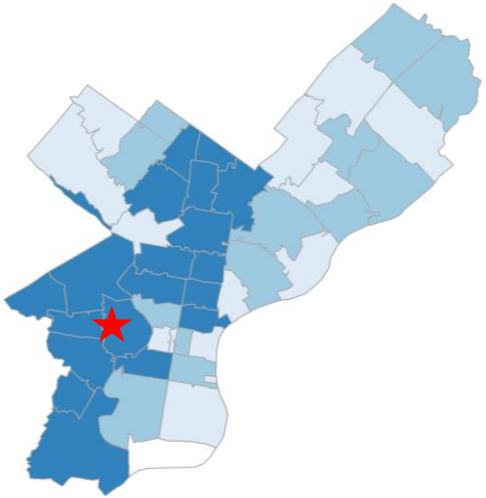


Alexander C. Fanaroff. Journal of the American Heart Association. Geographic and Socioeconomic Disparities in Major Lower Extremity Amputation Rates in Metropolitan Areas, DOI: (10.1161/JAHA.121.021456)

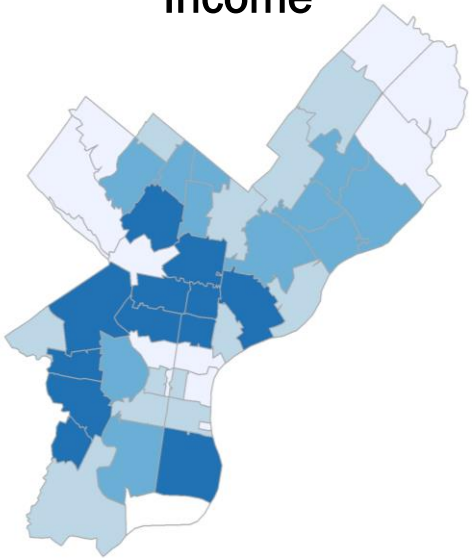
Not just a problem in rural areas

Penn Medicine

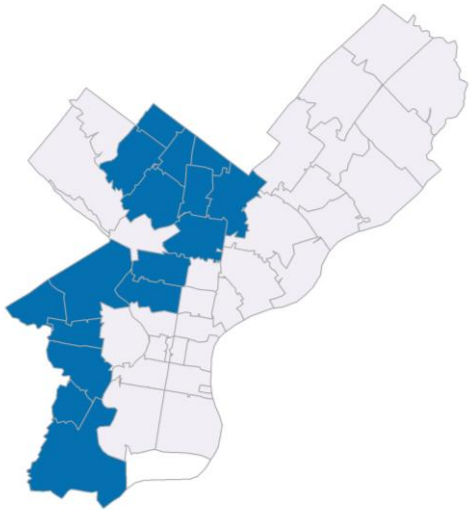
Amputations



Income



Black race



Fanaroff et al. J Am Heart Assoc 2021;10:e021456

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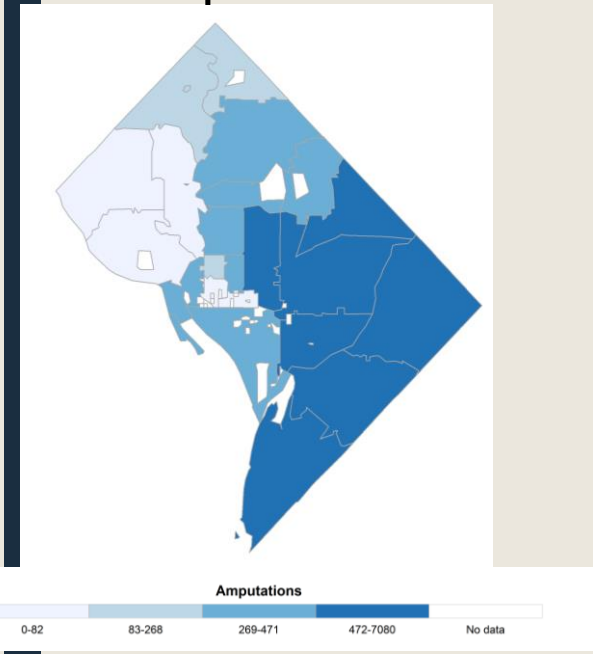

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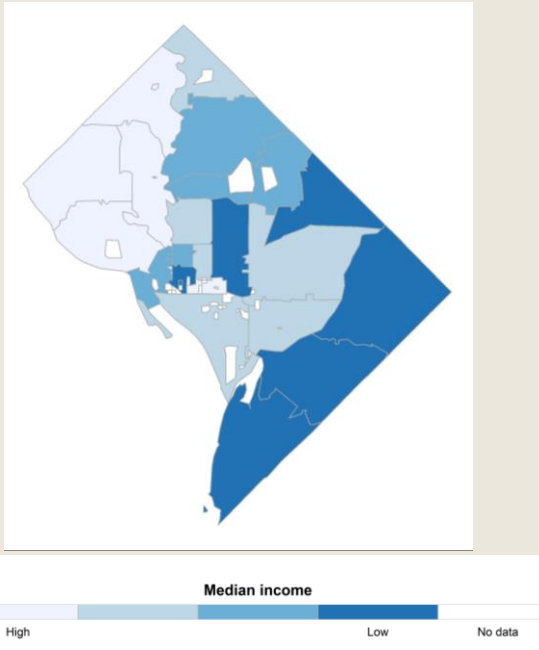

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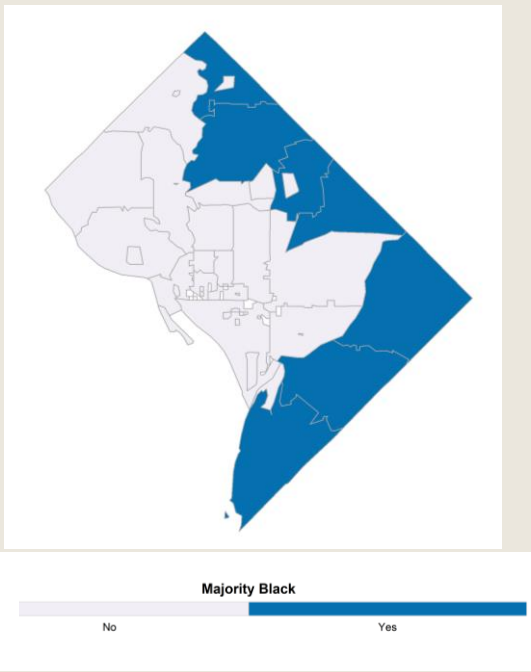

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Amputation vs Revascularization by Socioeconomic Status

Probability of major amputation depends on:

1. Who you are and where you live
2. Race/Ethnicity/Age/Sex
3. SES, Hospital Vascular Program

Hospital-related costs account for the majority of total costs

Majority undergoing amputations are Medicaid/Medicare recipients

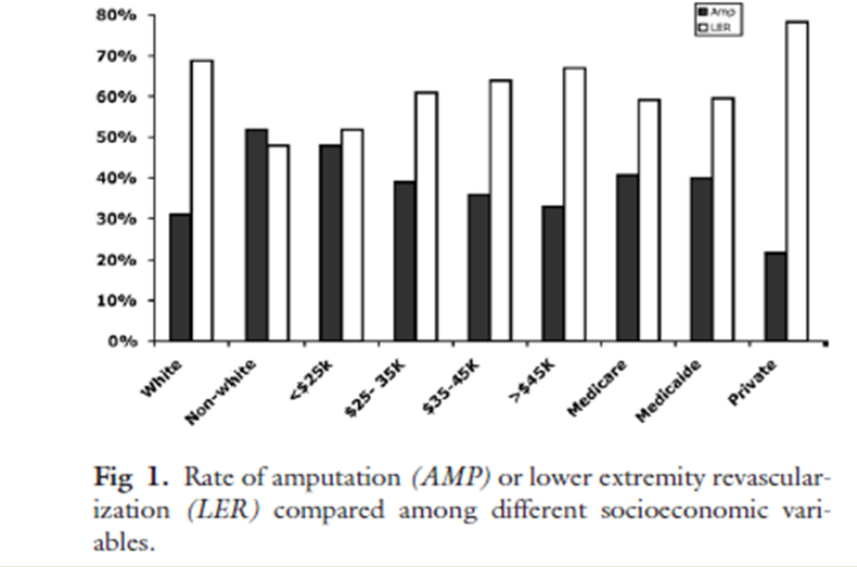


Fig 1. Rate of amputation *(AMP)* or lower extremity revascularization *(LER)* compared among different socioeconomic variables.

Eslami. H Mohammad, MD; Zayaruzny, maksim, MD; Fitgerald, Corgon, PhD; The adverse effect of race, insurance status, and low income on the rate of amputation in patients present with lower extremity ischemia; the New England Society for Vascular Surgery; January 2007.

What is Statistical Discrimination

STATISTICAL DISCRIMINATION?

- Physicians and patients preconception on a course of treatment based on their opinion of an individual patient's likely candidacy for that treatment and the past course of treatment for patients sharing similar characteristics such as race

Rx IMPLICIT BIAS TRAINING

EVILS OF AMPUTATION

60%-80% of amputees cannot walk

- Medicaid does not cover for prosthesis in the state of Mississippi

Significantly Reduced Quality of Life

- Impairment in Ambulation, Body Care, Movement and Mobility

High In-Hospital Mortality
5%-10% for BKA
15%-20% for AKA

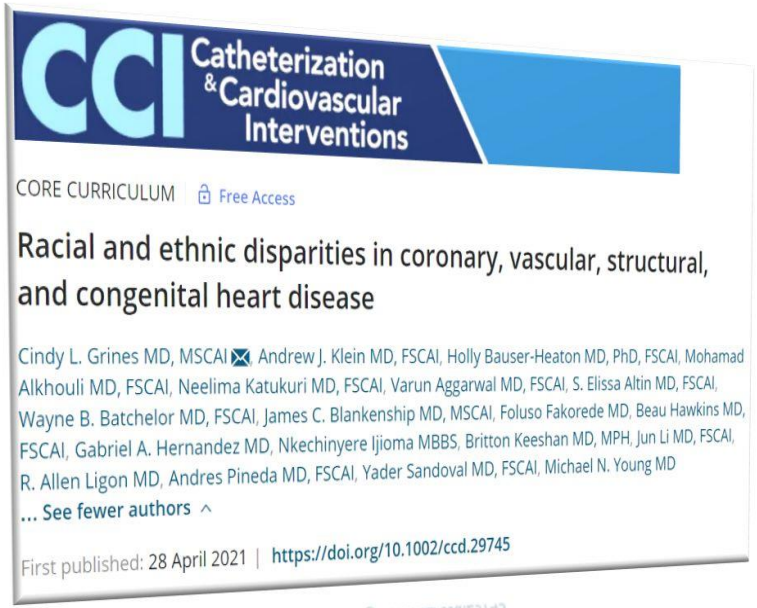
- Perioperative mortality is among the 5 highest for all surgical procedures

Majority of Amputees Not Discharged Home

- Less than 25% go Home Routinely, Over 70% Discharged to Another Institution such as a Nursing Home or Rehab Facility
- Note Medicare only pays for 100 days in a NH

Yost ML. Real cost of PAD 2011 THE SAGE GROUP.

Solutions



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- Professional Society
- Regional/State
- Healthcare System
- Community
- Provider