

Peripheral Arterial Disease

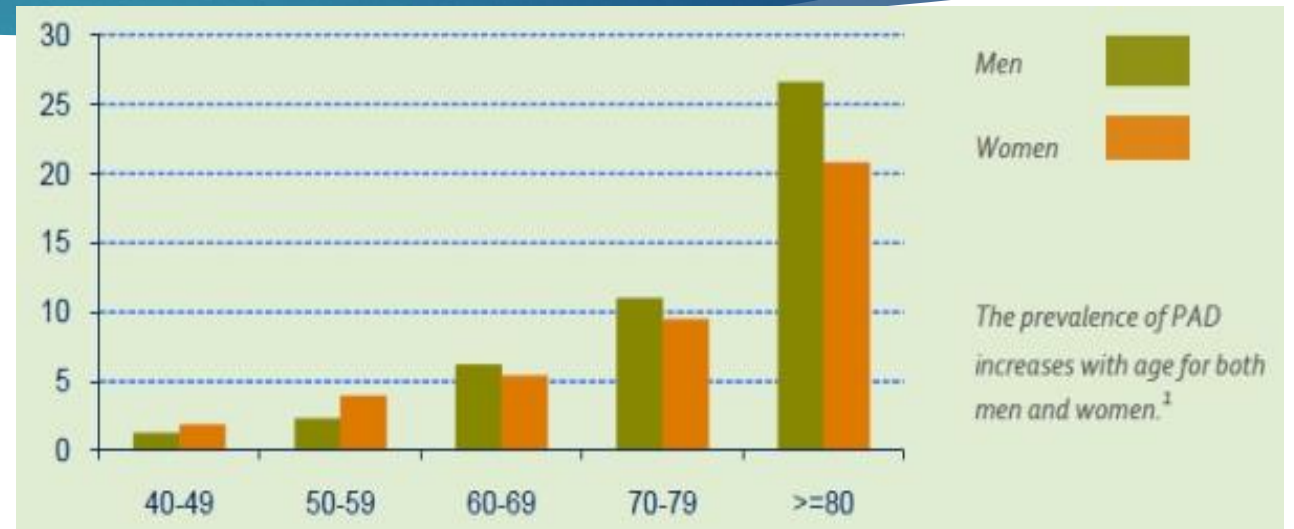
Save a Limb, Save a Life

BLAKE PARSONS, DO



How Prevalent is PAD?

- ▶ Up to 20 million in the US*
 - ▶ 1/3 of smokers over age 50
 - ▶ 1/3 of diabetics over age 50
 - ▶ 1/3 of Medicare Patients
- 75% of people with PAD have heart disease
- 30% 5-year mortality rate

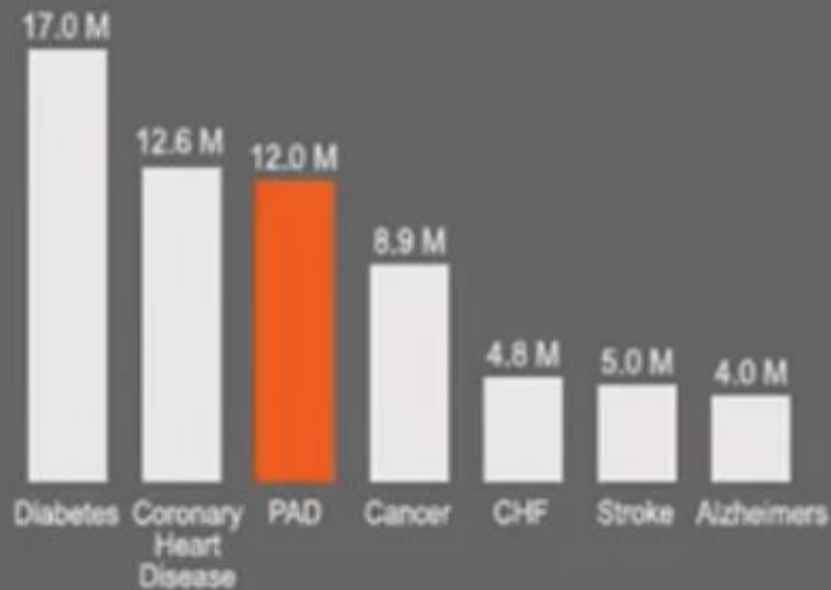


1. Allison MA, Ho E, Denenberg JO, et al. Ethnic-specific prevalence of peripheral arterial disease in the United States. *2007 American Journal of Preventive Medicine* 2007;32:328-333.

*Frequency of asymptomatic peripheral arterial disease in patients entering the department of general and internal medicine of a general-care hospital. Heidrich, Wenk, and Hesse. *Vasa* 2004 33:2, 63-67

PAD: More Prevalent and More Deadly Than Many Leading Diseases

Disease Prevalence (Millions)



Five-Year Mortality Rate




Source: American Cancer Society, American Heart Association, Alzheimers Disease Education / Referral Center, American Diabetes Association, SAGE Group

Risk Factors




- ▶ Lifestyle
 - ▶ **Smoking**
 - ▶ Obesity
- ▶ Health Conditions
 - ▶ **Diabetes**
 - ▶ CV disease
 - ▶ ESRD
 - ▶ HTN
 - ▶ Hyperlipidemia
- ▶ Demographics
 - ▶ Age
 - ▶ African-American

PAD FACTS
Peripheral Artery Disease




 **1 IN 20**
Americans over the age of 50 has PAD

Untreated PAD can increase a person's risk for heart attack or stroke.

RISK FACTORS

-  Smoke or used to smoke
-  High blood pressure
- >50** Over the age of 50
-  Have diabetes
-  High cholesterol

SIGNS and SYMPTOMS

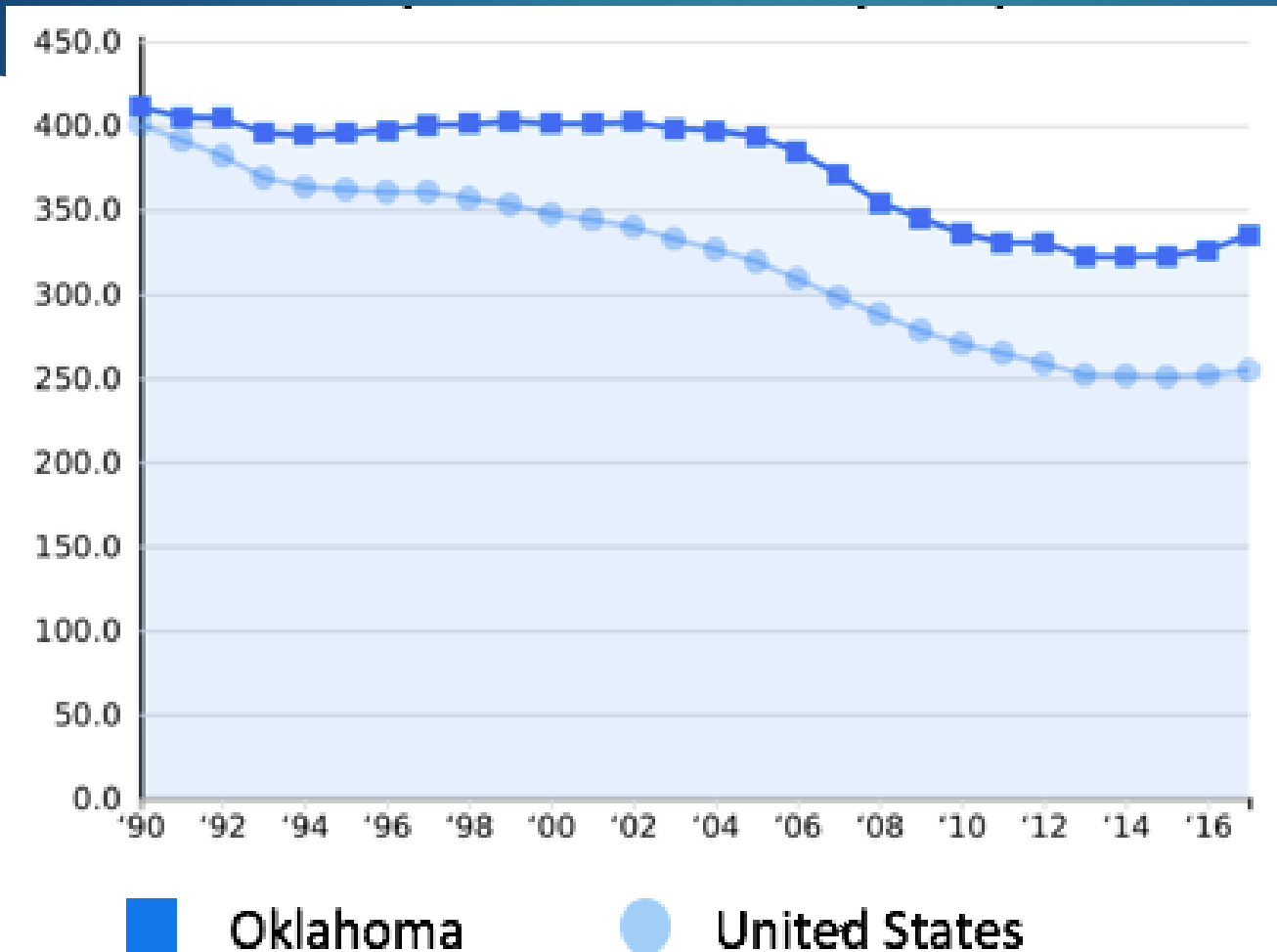
-  Poor wound healing
-  Cold legs
-  Pain during exercise, which is relieved during rest
-  Constant leg pain, tingling, burning or loss of sensation

Risk Factors

- ▶ 80% of patients with PAD are current or former smokers
- ▶ Smoking increases risk of PAD 4-fold
- ▶ PAD in smokers
 - ▶ Develops 10 years earlier
 - ▶ More likely to progress
 - ▶ Worse outcomes
 - ▶ Doubles risk of amputation
 - ▶ Poor survival rates



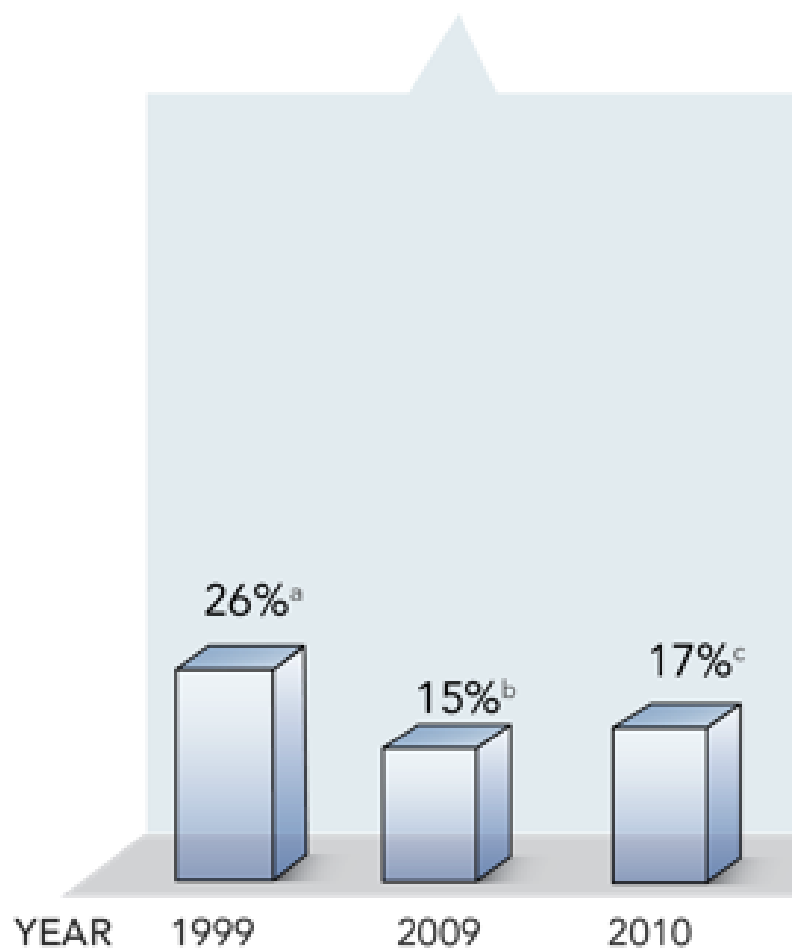
Deaths due to all cardiovascular disease per 100,000 people



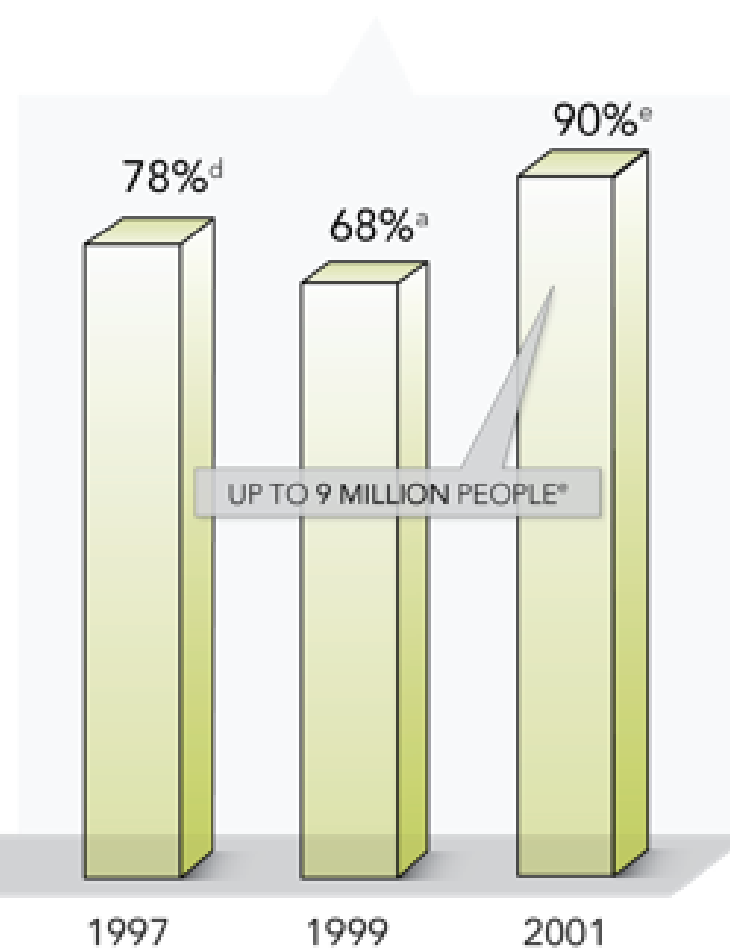
<https://www.americashealthrankings.org/explore/annual/measure/CHD/state/OK>

PAD & Heart Disease

HEART DISEASE†
PATIENTS WITH P.A.D.



P.A.D. PATIENTS WITH
HEART DISEASE†



Diabetes: A National Epidemic



- ▶ Roughly one in three adults are obese, and as of 2008 nearly 30 million Americans are diabetic.¹
- ▶ Diabetes and smoking are the strongest risk factors for PAD²
- ▶ In people with diabetes, the risk of PAD is increased by age, duration of diabetes, and presence of peripheral neuropathy.²
- ▶ Diabetes is the leading cause of kidney failure, non-traumatic lower limb amputations and is a major cause of heart disease and stroke.³

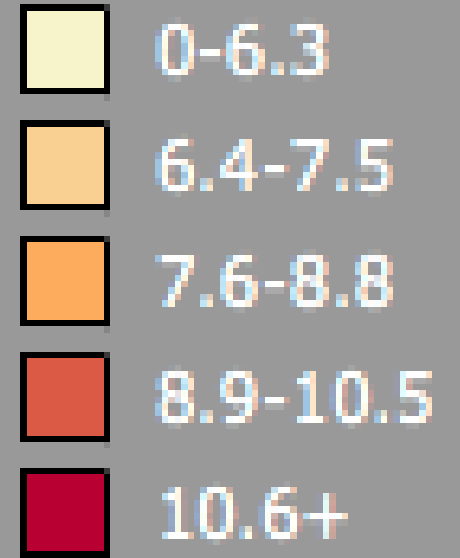
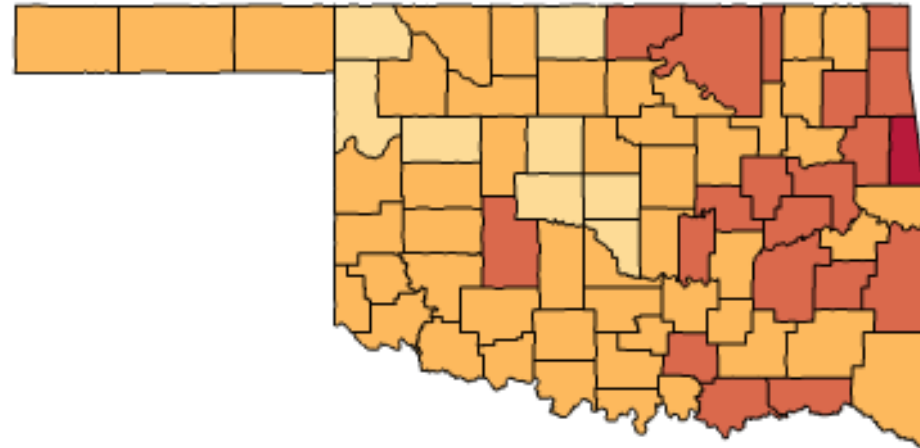
1. <https://www.healthline.com/health/type-2-diabetes/statistics>

2. American Diabetes Association. (2003). Peripheral arterial disease in people with diabetes. *Diabetes Care*, 26 (12), 3333-3341.

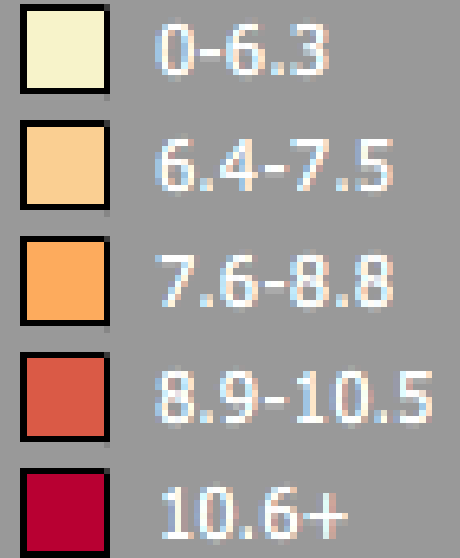
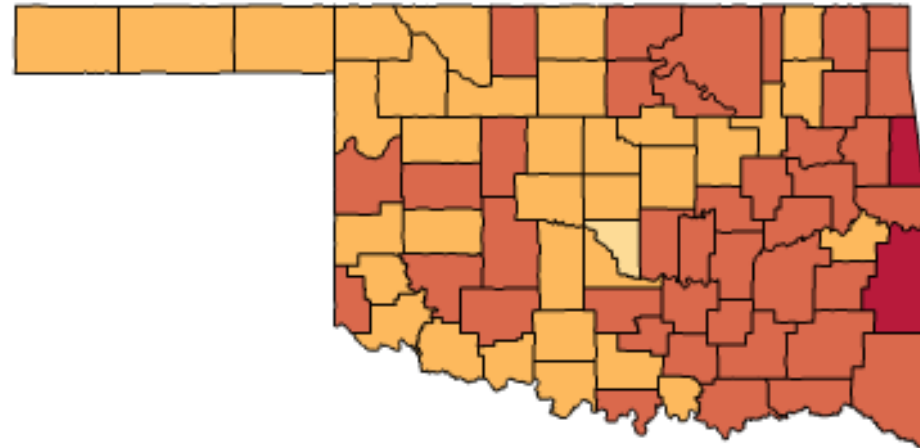
3. CDC. (2010). National diabetes fact sheet: national estimates and general information on diabetes and prediabetes in the united states, 2011. *Centers for Disease Control and Prevention*.

Retrieved from www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf.

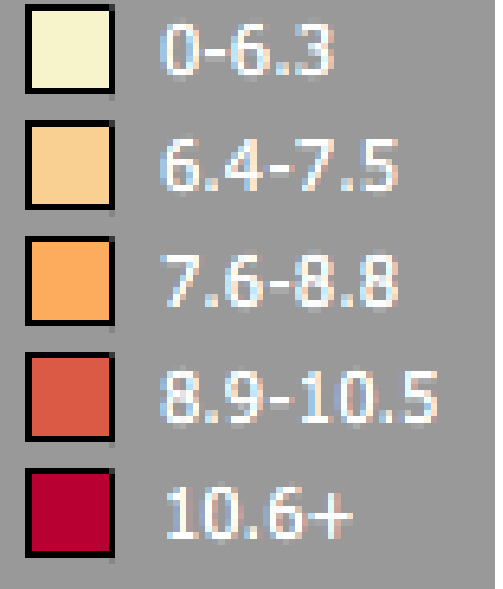
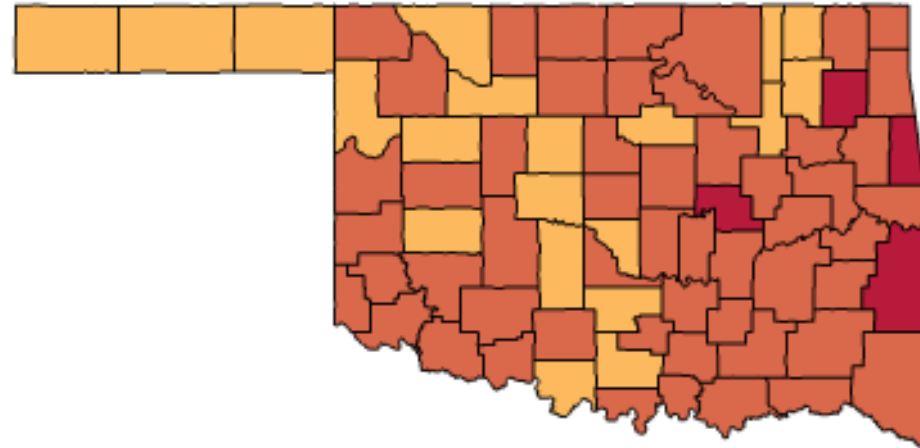
Oklahoma Adult Diabetes Prevalence %, 2004



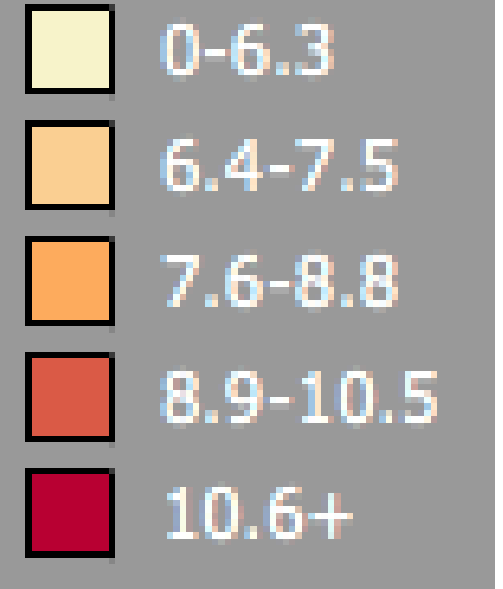
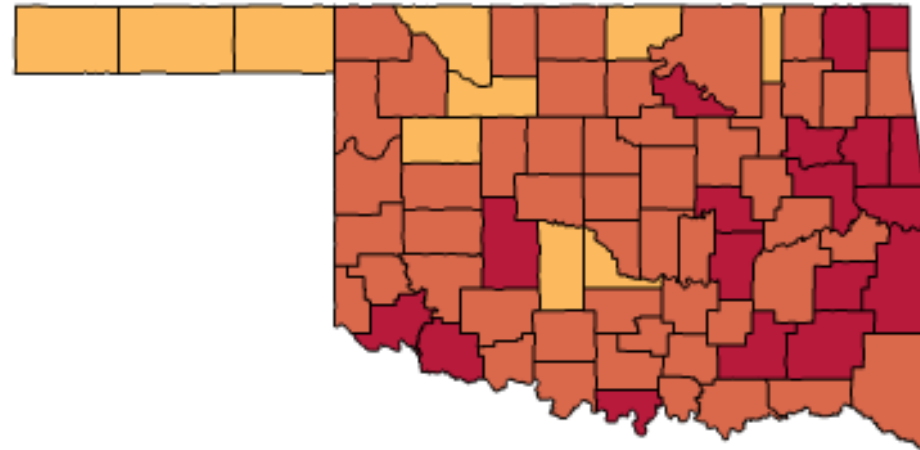
Oklahoma Adult Diabetes Prevalence %, 2005



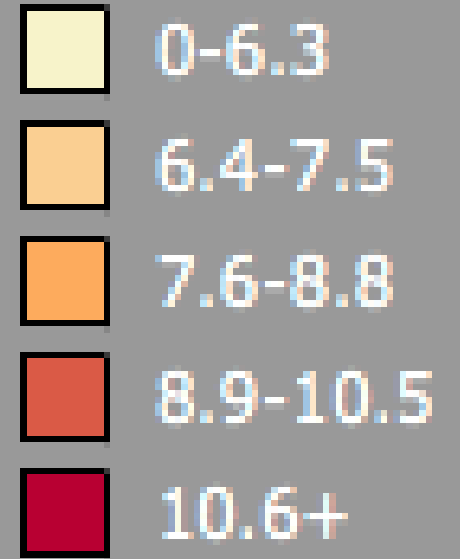
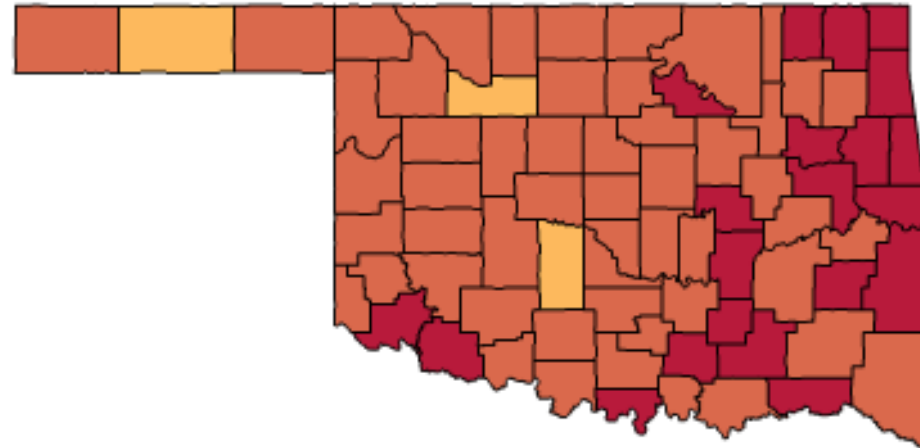
Oklahoma Adult Diabetes Prevalence %, 2006



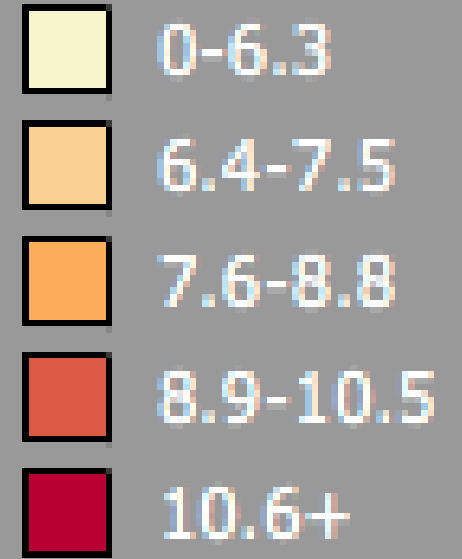
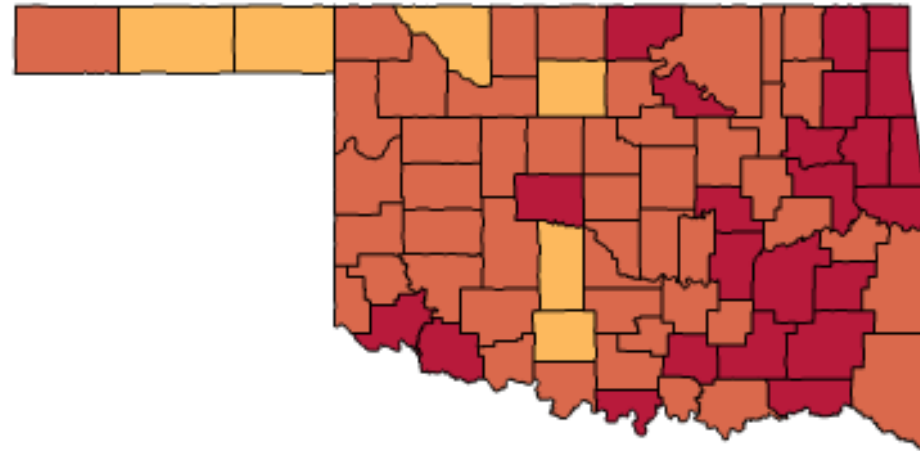
Oklahoma Adult Diabetes Prevalence %, 2007



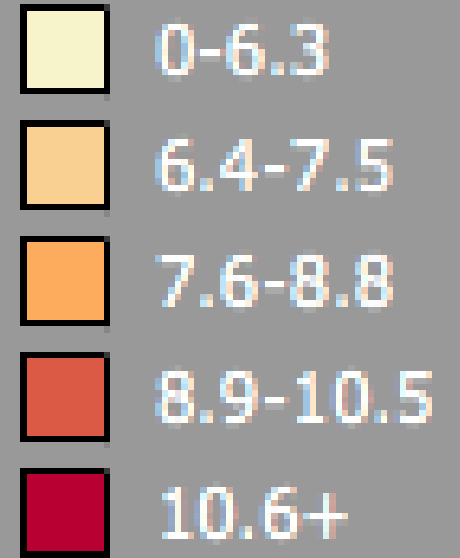
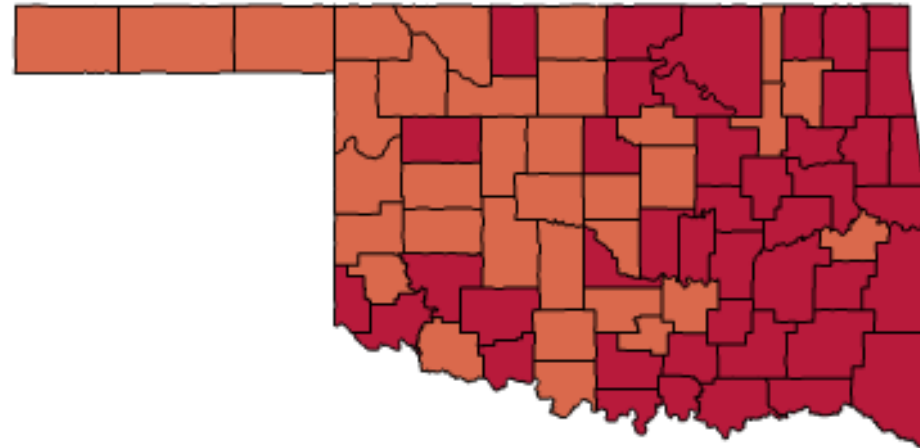
Oklahoma Adult Diabetes Prevalence %, 2008



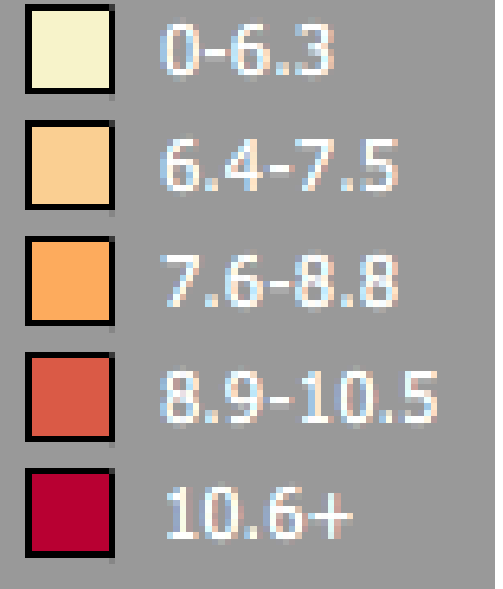
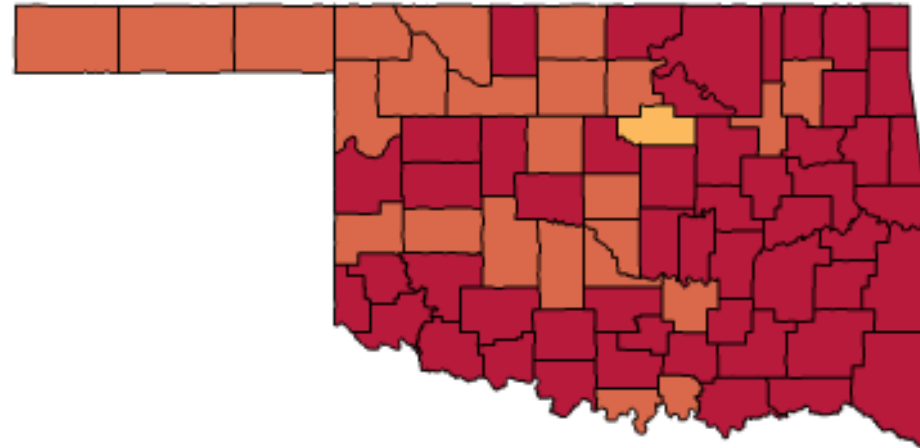
Oklahoma Adult Diabetes Prevalence %, 2009



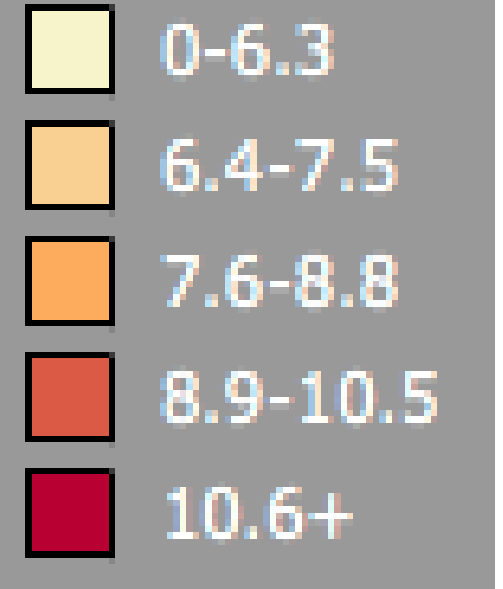
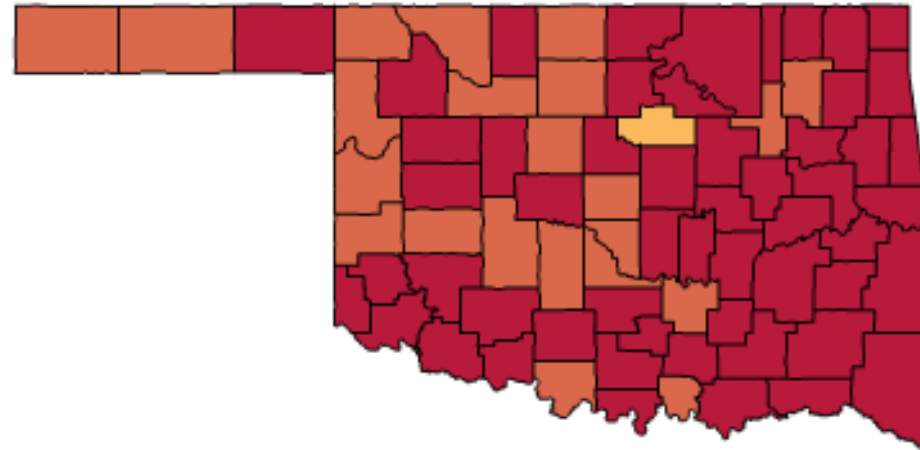
Oklahoma Adult Diabetes Prevalence %, 2010



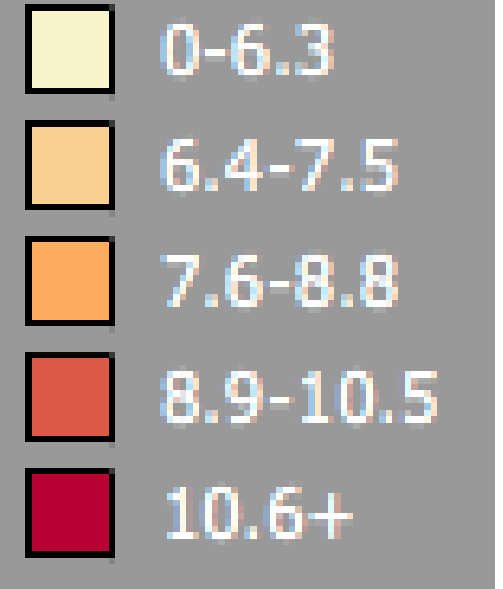
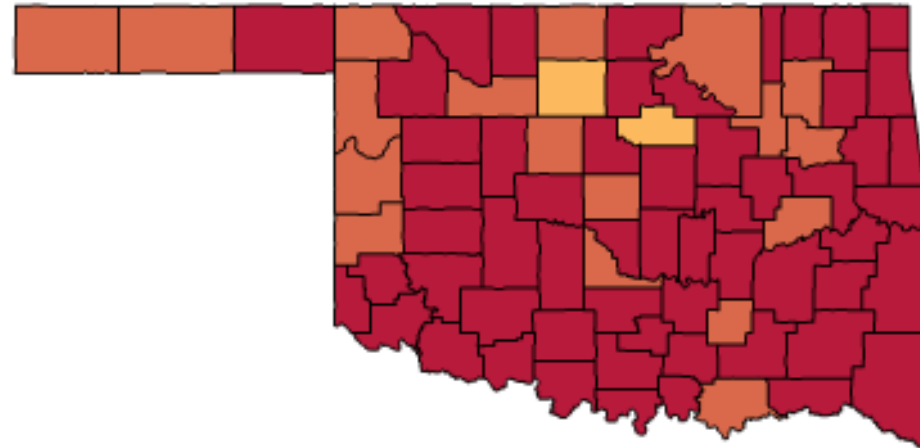
Oklahoma Adult Diabetes Prevalence %, 2011



Oklahoma Adult Diabetes Prevalence %, 2012



Oklahoma Adult Diabetes Prevalence %, 2013



Asymptomatic PAD

- ▶ More than 50% of patients do not have classic signs or symptoms
- ▶ Asymptomatic patients
 - ▶ Subtle impairments
- ▶ Symptoms may not occur in patients who do not perform sufficient activity

Claudication

- ▶ Most common symptom of PAD
 - ▶ Cramping, aching, fatigue, weakness, or pain
 - ▶ Involving the muscles of buttocks, legs or feet
 - ▶ Occurs with activity
 - ▶ Quickly relieved by rest
- ▶ Present in about 10% of PAD patients
- ▶ Claudication alone does not define presence or absence of PAD

Rest Pain

- ▶ Decrease blood flow to leg muscles
- ▶ Foot discomfort most common
- ▶ Pain relieved with lowering feet to floor
- ▶ Skin changes
 - ▶ Cool
 - ▶ Thinning of skin
 - ▶ Pale
 - ▶ Shiny
 - ▶ Thickening of nails

Critical Limb Ischemia

- ▶ Critical limb ischemia = tissue injury or loss
 - ▶ Emergency action needed to prevent
 - ▶ Amputation
 - ▶ Gangrene
 - ▶ Infection
 - ▶ Death

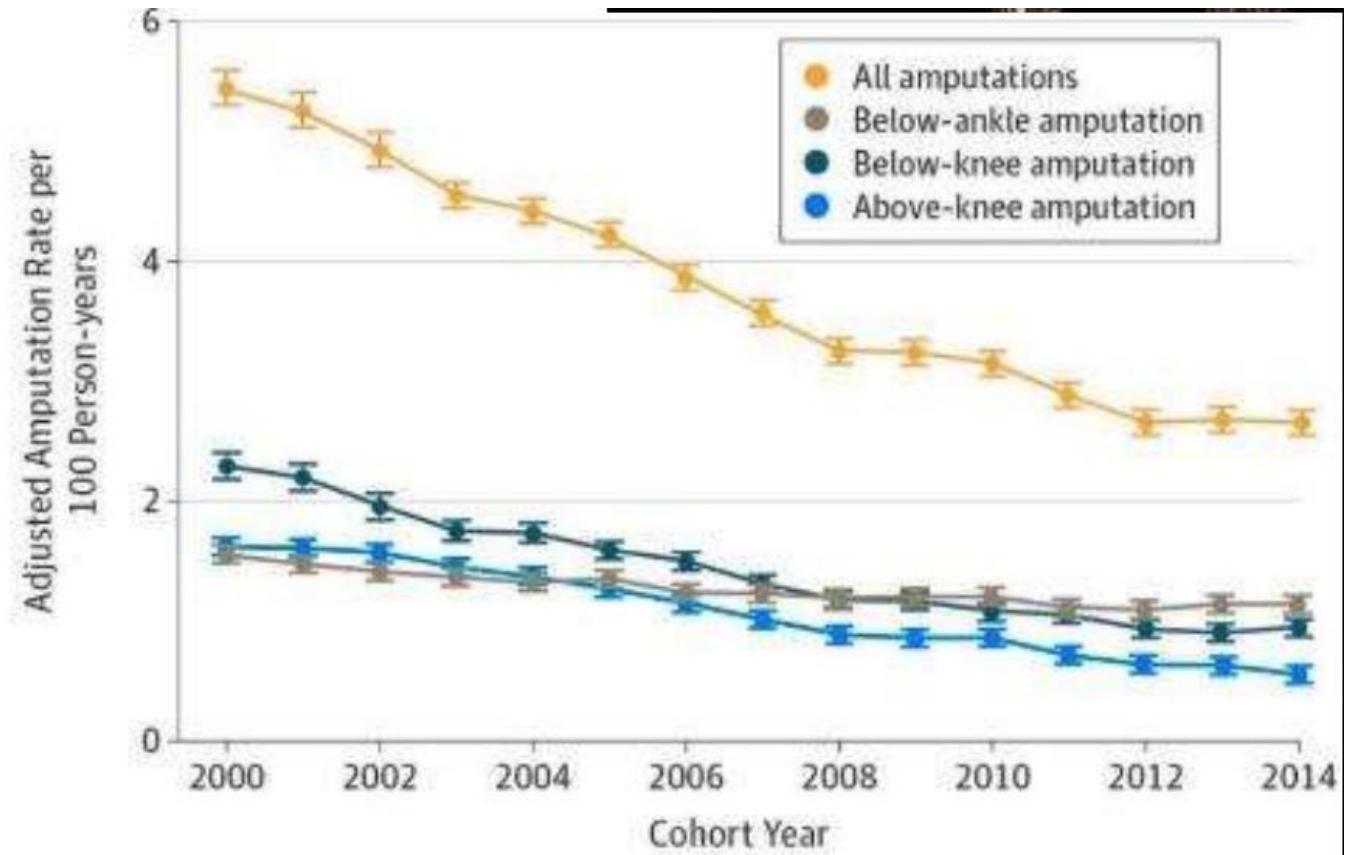


Background

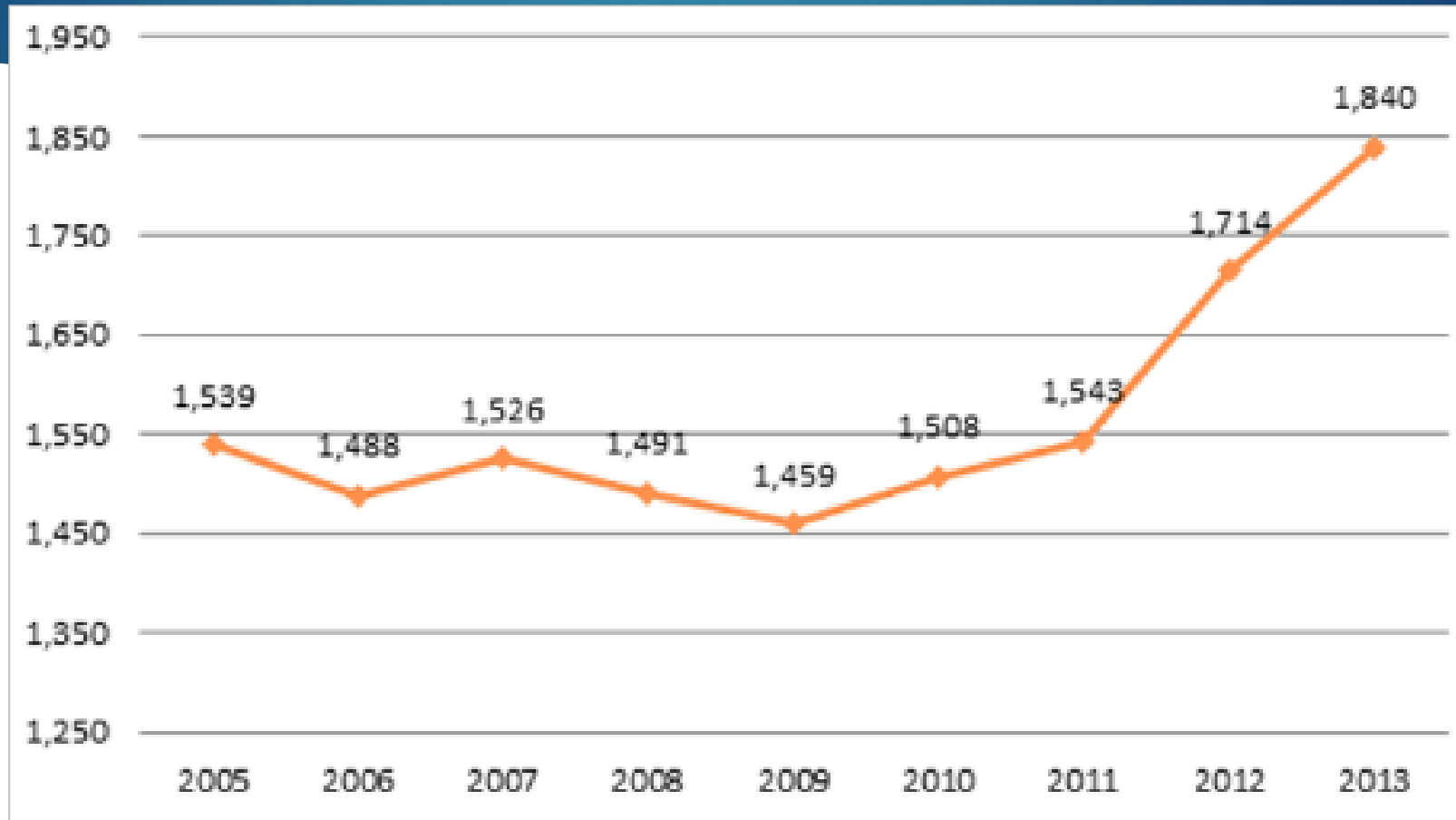
- ▶ Rate of progression from Peripheral arterial occlusive disease to CLI may approach 25%
- ▶ For patients with CLI,
 - ▶ $\frac{1}{4}$ Resolve
 - ▶ $\frac{1}{4}$ Undergo major amputation
 - ▶ $\frac{1}{4}$ Have persistent CLI
 - ▶ $\frac{1}{4}$ Die.

Amputation Rates

- ▶ Overall decrease nationally



Oklahoma Lower Extremity Amputations



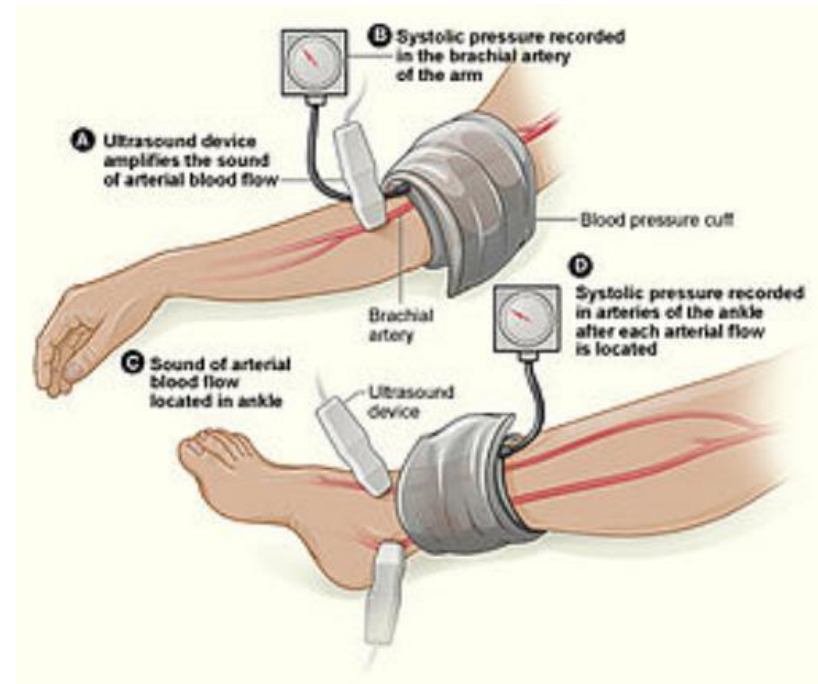
* <https://www.amputee-coalition.org/resources/oklahoma-2/>

Cost of amputation

- ▶ **Following amputation**
 - ▶ **1/2 of patients who undergo major amputation die within 1 year**
 - ▶ **1/2 of those that survive never go on to ambulate.**
 - ▶ **80% of patients who undergo major amputation fail to see a vascular specialist**
- ▶ Referrals for revascularization are often late
 - ▶ Pattern of disease at this point becomes challenging for reconstruction
 - ▶ High proportion of long segment multivessel tibial occlusion
 - ▶ Paucity of well formed collaterals
 - ▶ Densely calcified CTOs
 - ▶ Poorly delineated pedal outflow channels
 - ▶ Leads to high rate of failure of antegrade recanalation

Evaluation

- ▶ Who to screen?
 - ▶ Asymptomatic >65yo with risk factors, family history, other forms of atherosclerosis
- ▶ ABI
 - ▶ 1.0– 1.4 Normal
 - ▶ 0.7 – 0.9 Mild
 - ▶ 0.4 – 0.7 Moderate
 - ▶ < 0.4 Severe



Testing

- ▶ Segmental pressure measurements
- ▶ Pulse volume recordings
- ▶ Doppler waveform measurements
- ▶ Transcutaneous oxygen tension
- ▶ Exercise ABI testing
- ▶ Vascular imaging
 - ▶ Duplex US
 - ▶ Angiography



Medical Management

Symptomatic PAD

- ▶ Antiplatelet therapy (ASA 81mg daily or Clopidogrel 75mg daily)
- ▶ Statin therapy (Atorvastatin 80mg daily)
- ▶ Smoking cessation
- ▶ Diabetes management
- ▶ Supervised walking program

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

Walking Program

- ▶ Exercise program
 - ▶ Walking is most effective
 - ▶ Exercise – Rest – Exercise
- ▶ Sessions performed for:
 - ▶ Minimum of 30-40 minutes
 - ▶ At least 3 times per week
 - ▶ Minimum of 3 months

When To Intervene

- ▶ Failure of conservative management
- ▶ Severe life limiting claudication
- ▶ Rest Pain
- ▶ Tissue loss

New Techniques In Endovascular Treatment

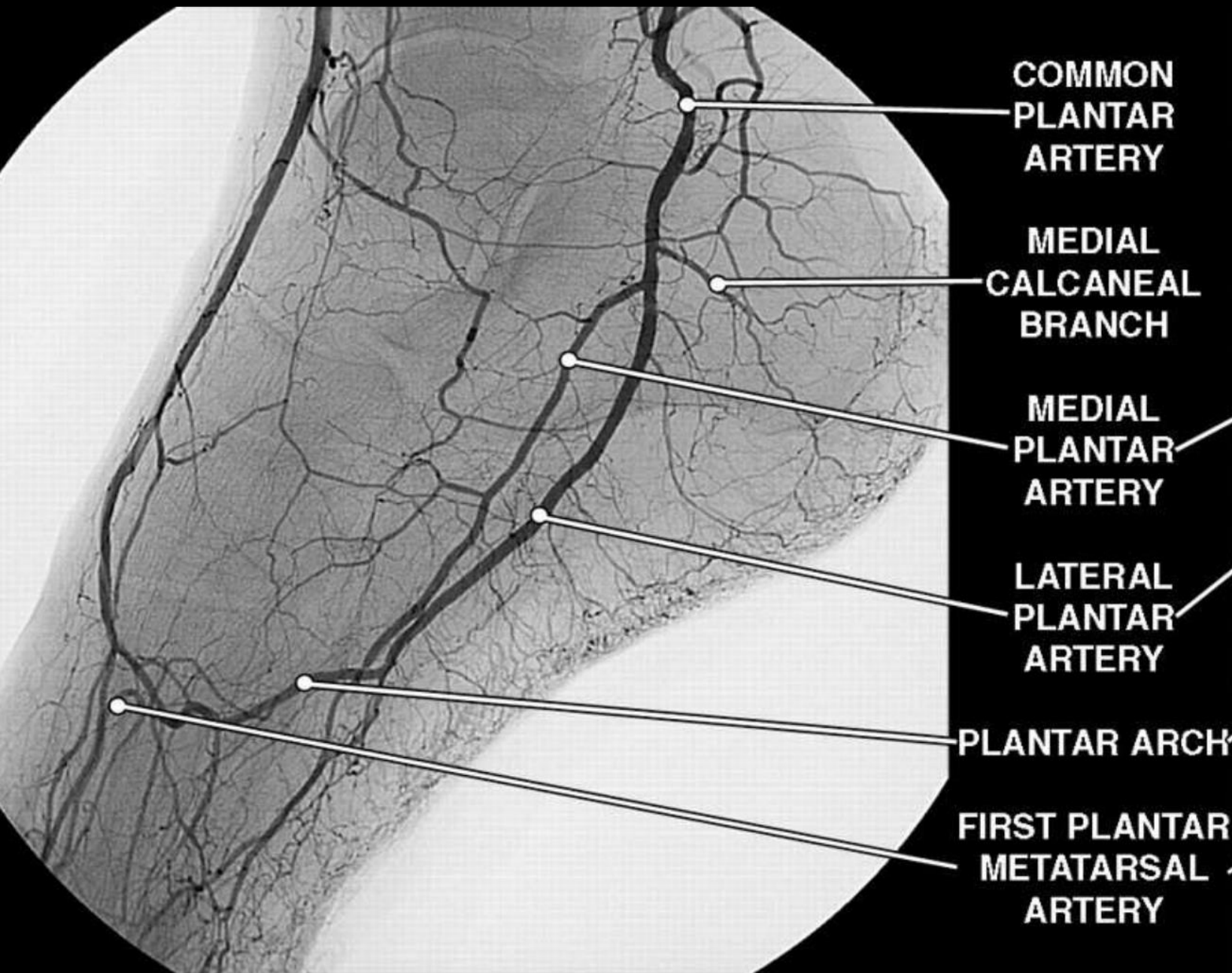
- ▶ Retropedal
- ▶ All access from distal tibial arteries
- ▶ Significant reduction in procedure time
- ▶ Ability to cross and successfully treat more lesions
- ▶ Decrease bleeding complications
- ▶ Patient can be discharged in 1-2 hours.



Tibiopedal disease

- ▶ Commonly seen in diabetics and ESRD





COMMON
PLANTAR
ARTERY

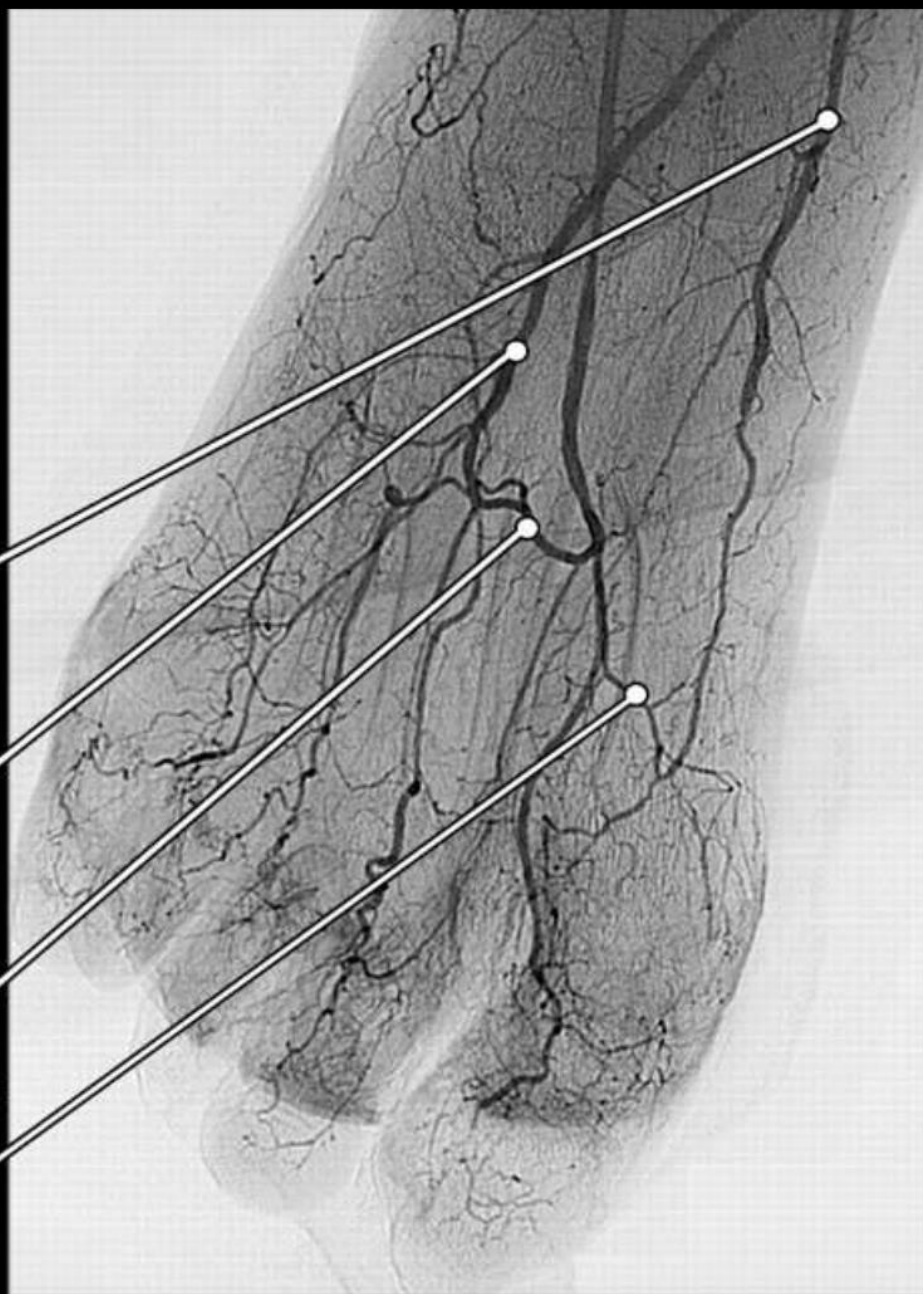
MEDIAL
CALCANEAL
BRANCH

MEDIAL
PLANTAR
ARTERY

LATERAL
PLANTAR
ARTERY

PLANTAR ARCH

FIRST PLANTAR
METATARSAL
ARTERY

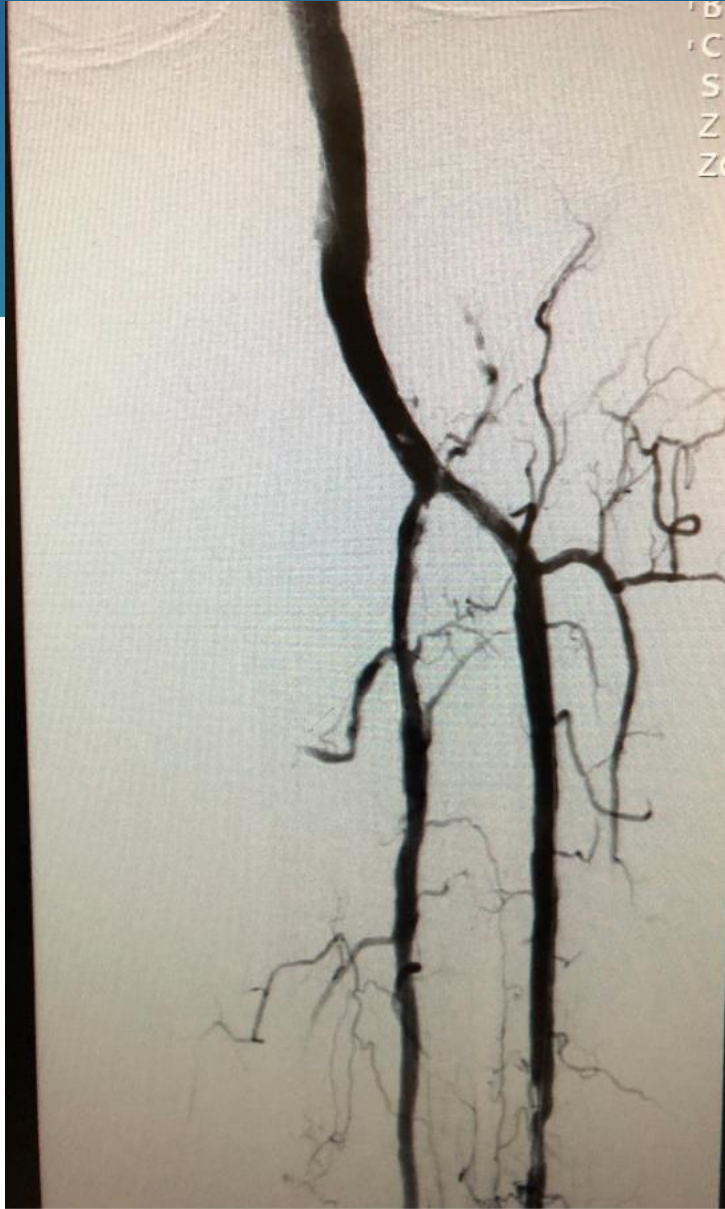




t
Intervention









Bleeding post intervention



62 y/o with Non-Healing Ulcer





S

0:02 / 0:02





Thank You

Blake Parsons, DO

Cardiovascular Health Clinic

405.241.3534

bparsons@cvhealthclinic.com