

"PAD Characterization Within A Healthcare System"

Duke Heart Center

**RAPID Face-to-Face Meeting
Schuyler Jones, MD
September 14, 2016**





Disclosures

- **Research Grants:**
 - Agency for Healthcare Research and Quality
 - American Heart Association
 - AstraZeneca
 - Bristol Myers Squibb
 - Daiichi Sankyo
 - Doris Duke Charitable Foundation
 - Patient-Centered Outcomes Research Institute
- **Honoraria:**
 - American College of Radiology
 - Mondopoint



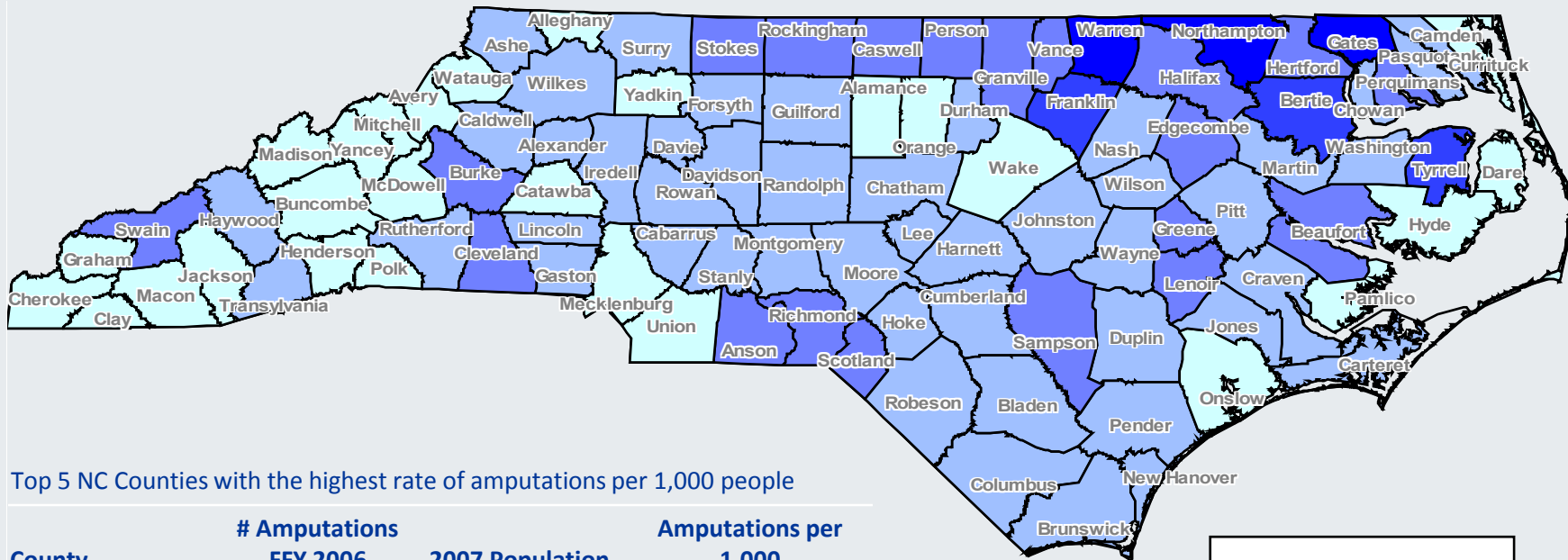
Outline

- **Background data and research approach**
- **Issues**
- **Possible solutions**
 - **Vascular registries (SVS-VQI, SIR, ACC-PVI)**
 - **BEST-CLI**
 - **RAPID**
- **How do we design “learning healthcare systems” that inform general practice (not specific to devices and procedures) in PAD patients?**



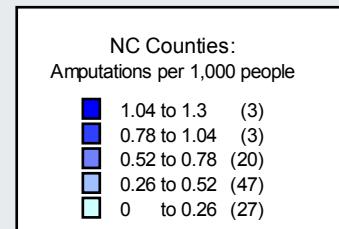
Lower Extremity Amputations in North Carolina

All Payors, 2006



Top 5 NC Counties with the highest rate of amputations per 1,000 people

| County | # Amputations | | Amputations per 1,000 |
|-----------------|---------------|-----------------|-----------------------|
| | FFY 2006 | 2007 Population | |
| Gates, NC | 15 | 11,569 | 1.30 |
| Warren, NC | 21 | 19,018 | 1.10 |
| Northampton, NC | 24 | 21,767 | 1.10 |
| Tyrrell, NC | 4 | 3,922 | 1.02 |
| Franklin, NC | 42 | 53,303 | 0.79 |

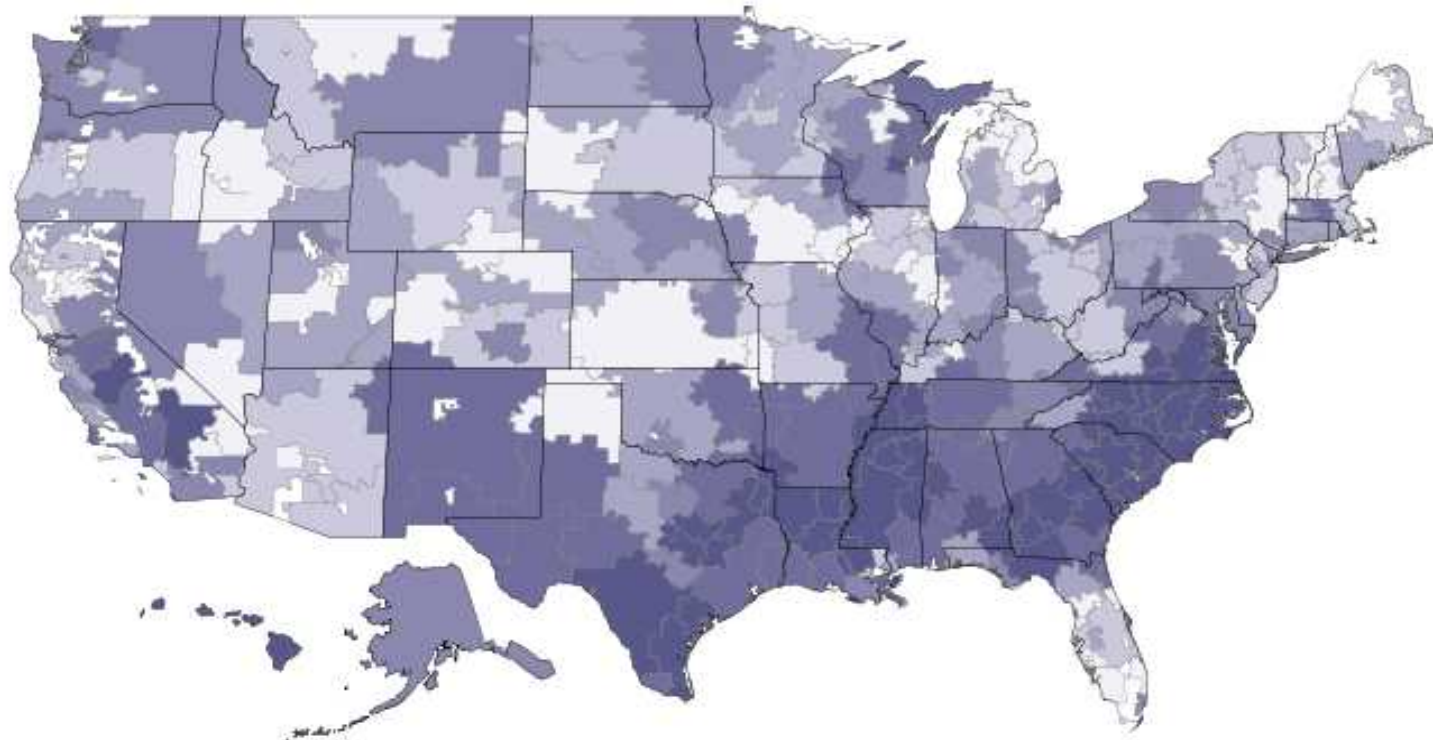


Note: Amputation defined as procedure codes 84.10, 84.12-84.18, 84.3

Data Source: Thompson Reuters



Geographic Variation in LE Amputation



■ 0.45-0.73 ■ 0.73-0.82 ■ 0.82-0.91 ■ 0.91-1.05 ■ 1.05-1.30 ■ 1.30-2.33

Jones WS, Patel MR, et al. J Am Coll Cardiol 2012



Clinical Investigation

Significant variation in P2Y₁₂ inhibitor use after peripheral vascular intervention in Medicare beneficiaries



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Am Heart J 2016



Retrospective Analysis

Baseline ABI
Baseline duplex U/S data

Follow up patency
Follow up ABI & duplex U/S

Angiographic
Data

Hemodynamic &
Ultrasound
Data

Fluoroscopy time
Contrast use
Procedure time
Supplies used
Procedure success
Complications

Duke Cardiovascular
Databank

Other resources:
Cost analysis (DCRI)
Follow up symptom status (chart review)

Baseline characteristics
Occurrence of clinical outcomes:
death
MI
stroke
re-hospitalization



Manuscript on SFA Recanalization

- Rejected at J Am Coll Cardiol CV Interv (5/27/2015) due to “priority”

Reviewer #1 (Comments for the Author (Required)):

Non randomized

- Rejected at Catheter Cardiovasc Interv (7/21/2015) due to “priority”

No outcomes data

- Rejected at Clin Cardiol (9/2015)
- Rejected at Vasc Med (11/2015)
- Rejected at J Endovasc Therapy (1/2016)
- Rejected at J Interv Cardiol (3/2016)
- Submitted to Ann Vasc Surg (6/2016) – minor revisions



What's the Problem?

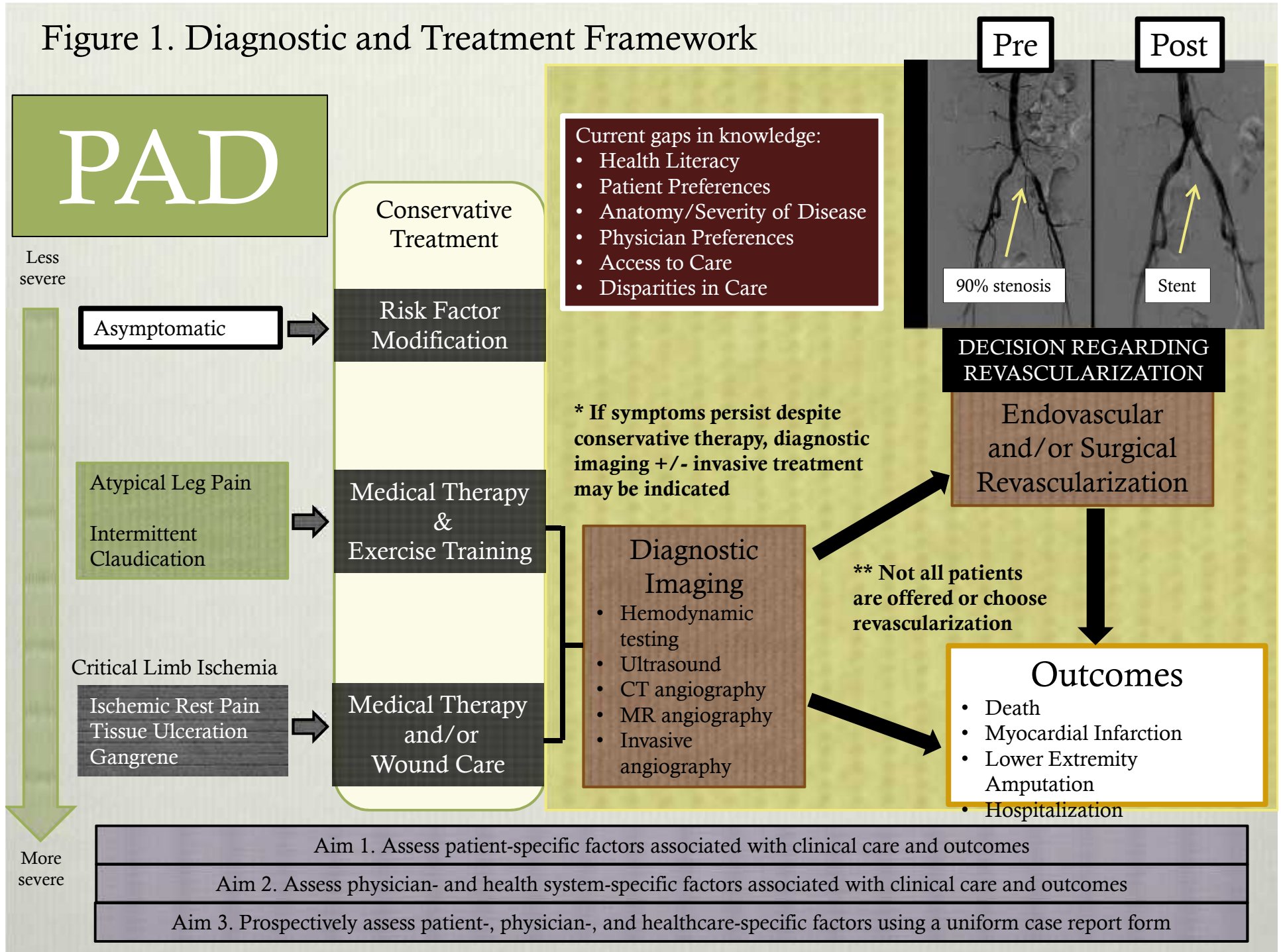
- Current data sources are inadequate
- Heterogeneity complicates our understanding of PAD treatment
 - Anatomy and disease severity varies
 - Multiple specialties with different training, experience, bias
 - Multiple devices available for treating similar lesions:
- Lack of clinical outcomes in electronic health records
- Many single-center studies, very few large heterogeneous datasets
- Need data about real-world treatment from multiple sources



Possible Solutions

- **3 Major U.S. Societies / Registries**
 - Society for Vascular Surgery (SVS)
 - Vascular Quality Initiative (VQI)
 - American College of Cardiology (ACC)
 - National Cardiovascular Disease Registry (NCDR)
 - Society of Interventional Radiology (SIR)
 - National Interventional Radiology Quality Registry (NIRQR)
- **BEST-CLI**
- **RAPID (Registry Assessment of Peripheral Interventional Devices)**

Figure 1. Diagnostic and Treatment Framework

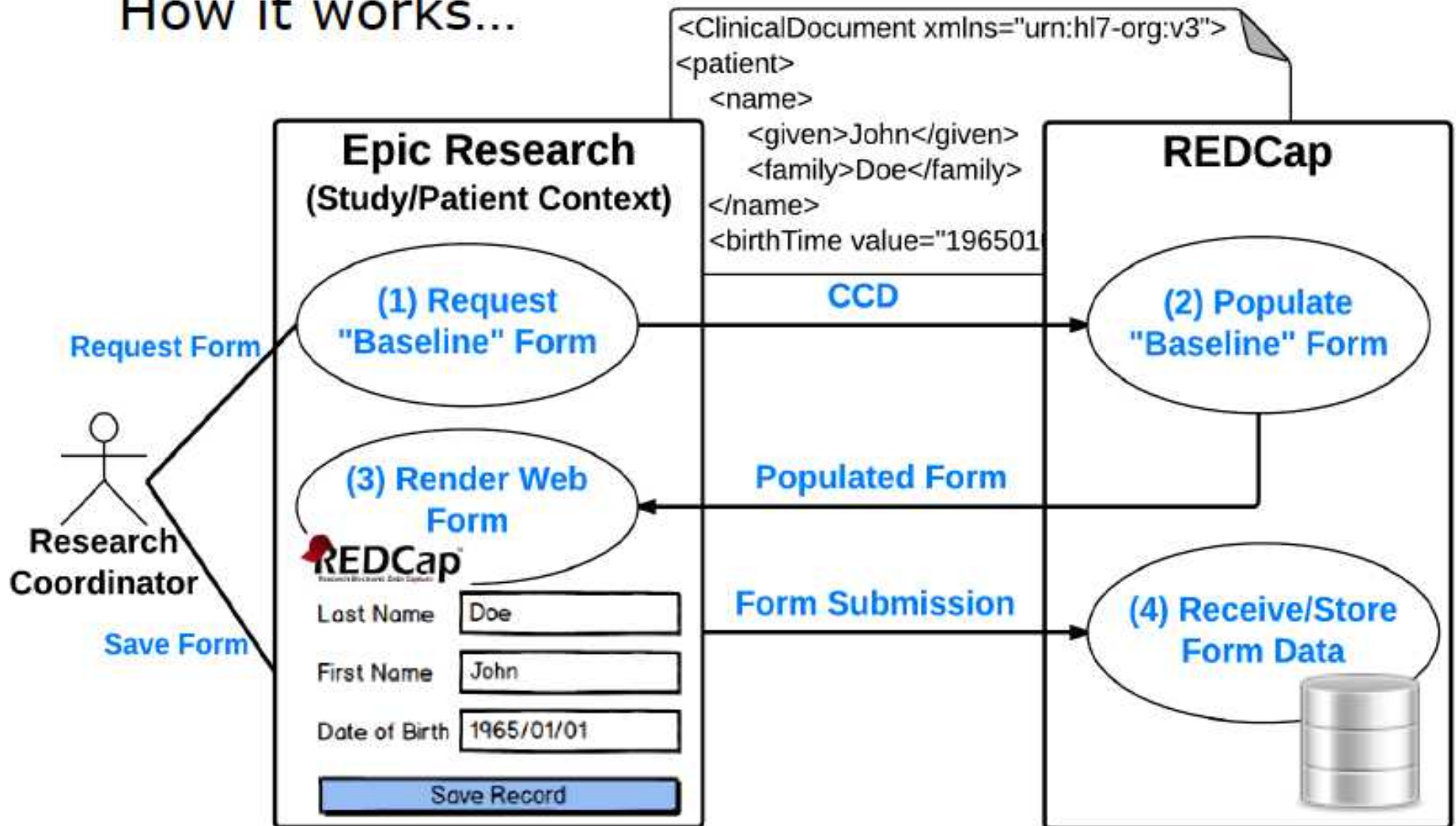


Duke University & Duke Lifepoint Health Systems



Figure 2

How it works...



Duke University Hospitals

Duke Lifepoint Hospitals

Computable Phenotype

- History of PAD
- History of Endovascular Revascularization
- History of Surgical Revascularization

** via clinical information or administrative claims data

Data Extraction using Retrieve Form for Data Capture (RFD)

Source Document Review and Data Abstraction by Clinical Experts

REDCAP Database

ICD-10 Diagnosis Codes for PAD:

| | |
|-----------------|------------------------------------|
| I70.2x | Atherosclerosis of native arteries |
| I70.3x - I70.7x | Atherosclerosis of bypass graft(s) |
| I73.9 | PVD, unspecified |

ICD-9 Diagnosis Codes for PAD:

| | |
|--------|--------|
| 440.2x | 444.8x |
| 440.3x | 445.0x |
| 440.9x | 447.1 |
| 443.9 | 707.1 |
| 444.2x | |

ICD-9 Procedure Codes:

Angioplasty: 00.40-00.44, 39.50
Atherectomy: 39.50
Stenting: 00.45-00.48, 39.90

CPT Codes:

Angioplasty: 35450, 35470, 35473, 35474
Atherectomy: 35492, 35493, 35495
Stenting: 37205-37208

Medicare Outcomes Dataset

All Patients with ICD-9 and/or ICD-10 codes for PAD in North Carolina

Outcomes of interest include: Death, Myocardial Infarction, Stroke, Lower Extremity Amputation

*** linkage of REDCAP and Medicare datasets

Combined Analytic File



THANKS

- Questions?