

# Complex Coronary Intervention Programs

## Dedication for Advancement

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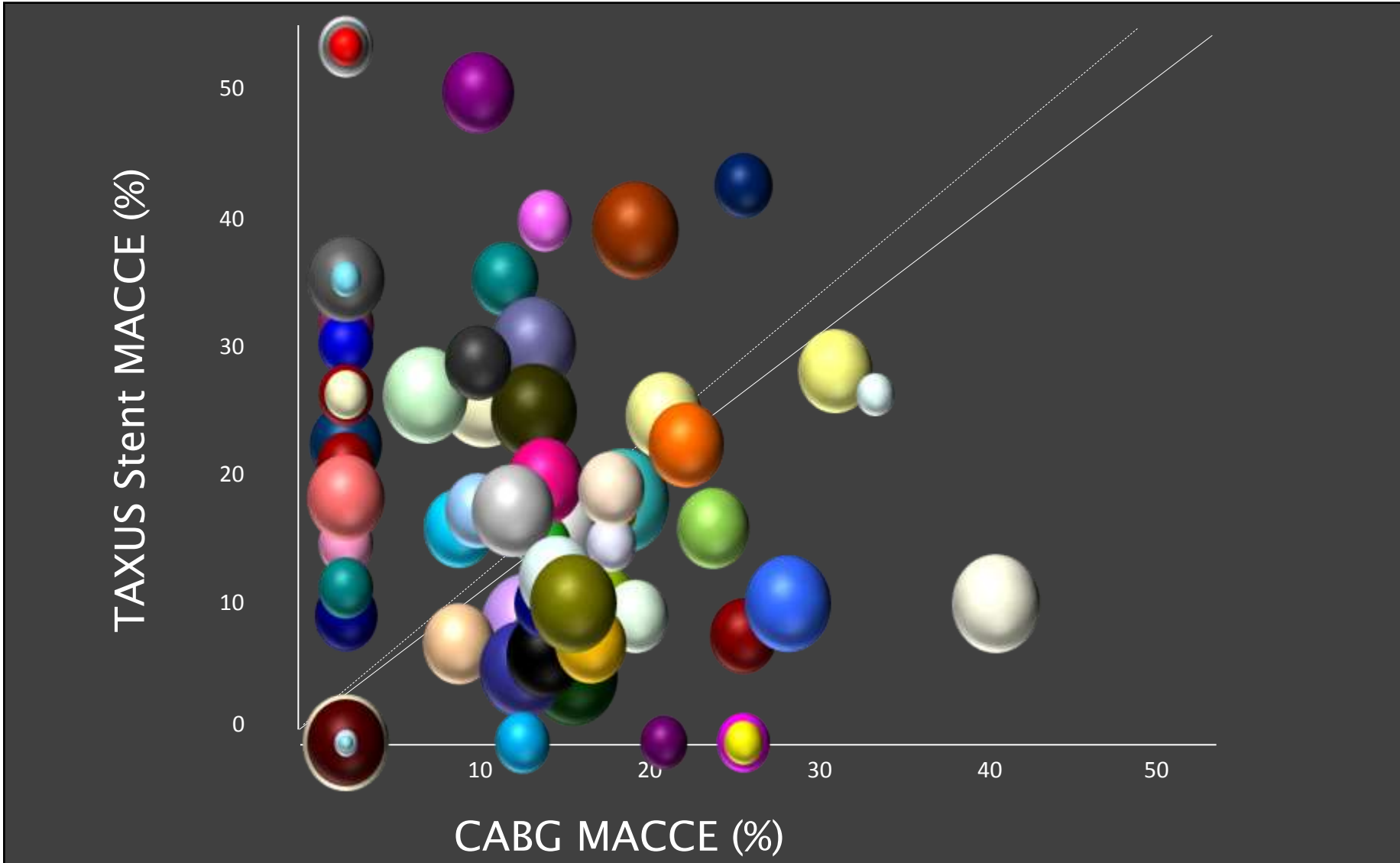
# Evolution of Interventional Cardiology

Anything But Chance



# Procedural Success Does Not Occur By Intent to Treat

CABG vs PCI in SYNTAX, 1-year MACCE Rates Per Site



Size of bubble represents relative enrollment contribution

# Evolution of Patient Selection and Technique to a Standard of Care

## 'CHIP' Complex High Risk and Indicated Patients

- Unprotected Left Main Disease
- Chronic Total Occlusions
- Bifurcation Disease
- Calcific Disease
- In-stent restenosis
- Imaging, Non-invasive and invasive
- Acute Myocardial Infarction and Shock
- Hemodynamic Support
- Completeness of Revascularization
- The Surgical Turndown Patient

# Development of a Complex Coronary Interventional Program

## Piedmont Heart Institute Example: Physician/Operator

- Core group of interventional cardiologists with shared interest in development of center of excellence (and referral) for high-risk percutaneous revascularization
  - Pooled individual strengths and shared experience
  - ‘CHIP’ didn’t exist, but the patients, indications and need did
- Dedicated time and expense to training and education, proctoring and best-practice sharing as needed
- Focus on quality rather than quantity; volume will follow quality
- Ambition to develop practice identity at regional, national and international perspective; ‘Destination Center’

# Development of a Complex Coronary Interventional Program

## Piedmont Heart Institute Example: Physician/Operator

### What interventionalists can learn from the aviation industry



Mistakes more likely result of accumulation of minor errors or seemingly trivial malfunctions

High performance technology and preparedness prevent adverse events, but minimizing human error factor is critical

‘Mitigated speech’ and high power-distance index promotes high risk culture

Structured work processes in part reduce error

# Development of a Complex Coronary Interventional Program

## Piedmont Heart Institute Example: Patients

- Tertiary/quaternary destination center for high-risk patients
  - FY 2018 #10 rank for highest case mix index among high volume hospitals in United States
  - Only center in top 30 not university-affiliated
  - Highest acuity hospital in Georgia, ranking above all academic and level 1 trauma centers



# Development of a Complex Coronary Interventional Program

## Piedmont Heart Institute Example: Collaboration

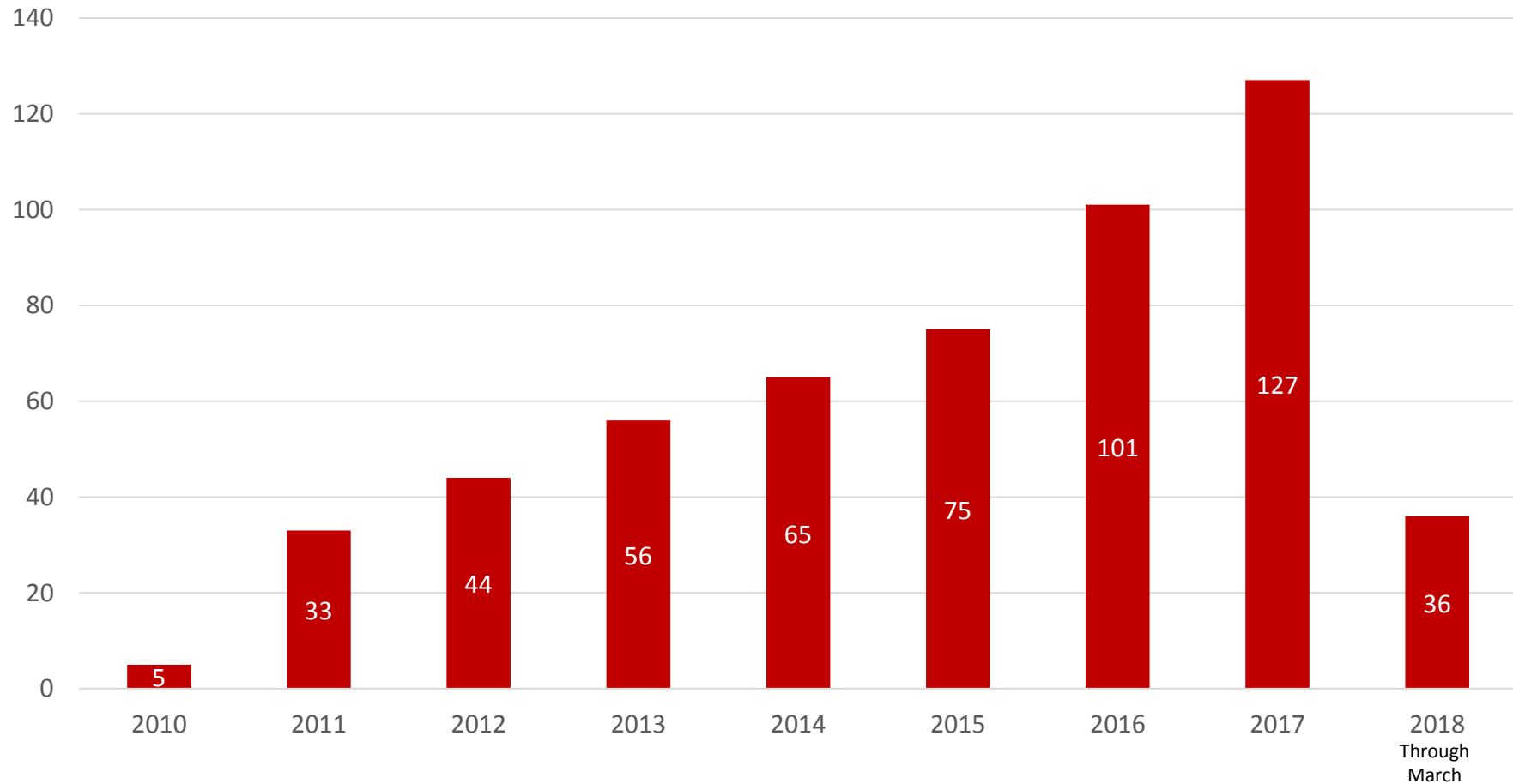
- Multidisciplinary support
  - Heart Team with cardiothoracic surgery and cardiovascular imaging
  - Informed and educated nursing and advanced providers
  - Critical care intensivists and development of shock team



# Development of a Complex Coronary Interventional Program

## Piedmont Heart Institute Example

Annualized ECMO Volume, Piedmont Hospital, 2010 to Present

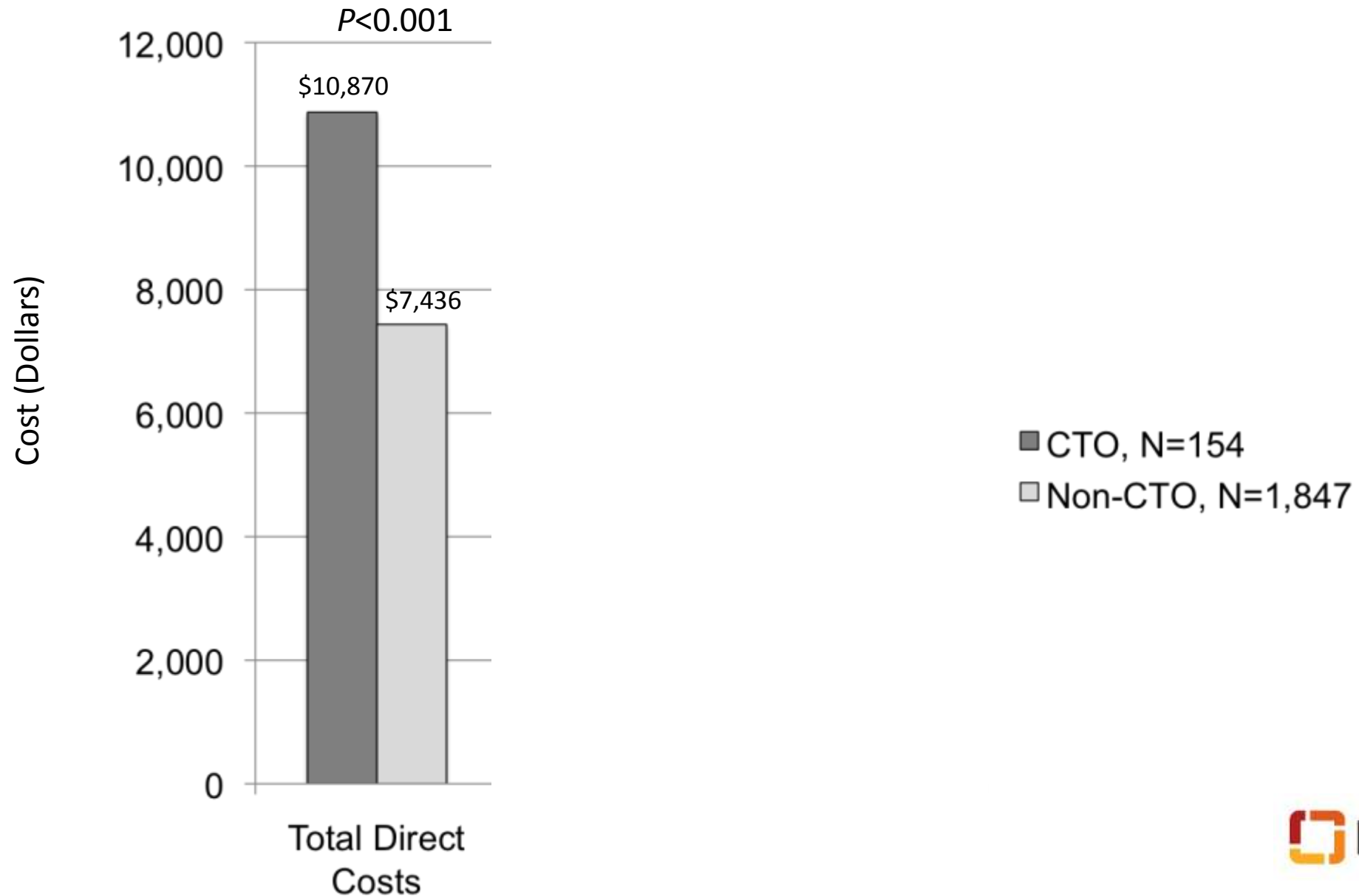


# Development of a Complex Coronary Interventional Program

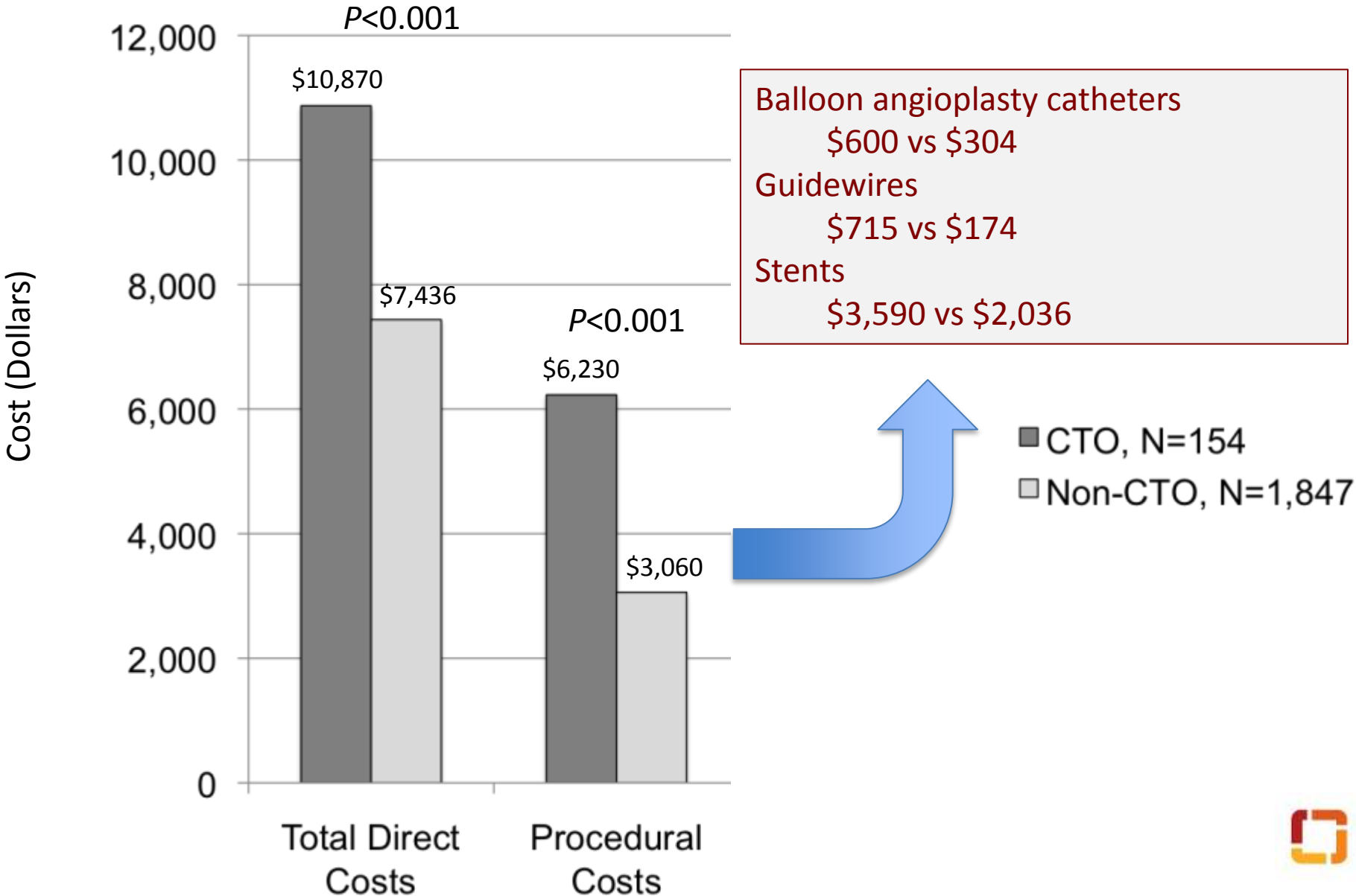
## Piedmont Heart Institute Example

- Multidisciplinary support
  - Heart Team with cardiothoracic surgery and cardiovascular imaging
  - Informed and educated nursing and advanced providers
  - Critical care intensivists and development of shock team
- Administrative support
  - Enabling physicians with particular skillsets
  - Physician education and CHIP fellowship
  - Attention to costs and reimbursement

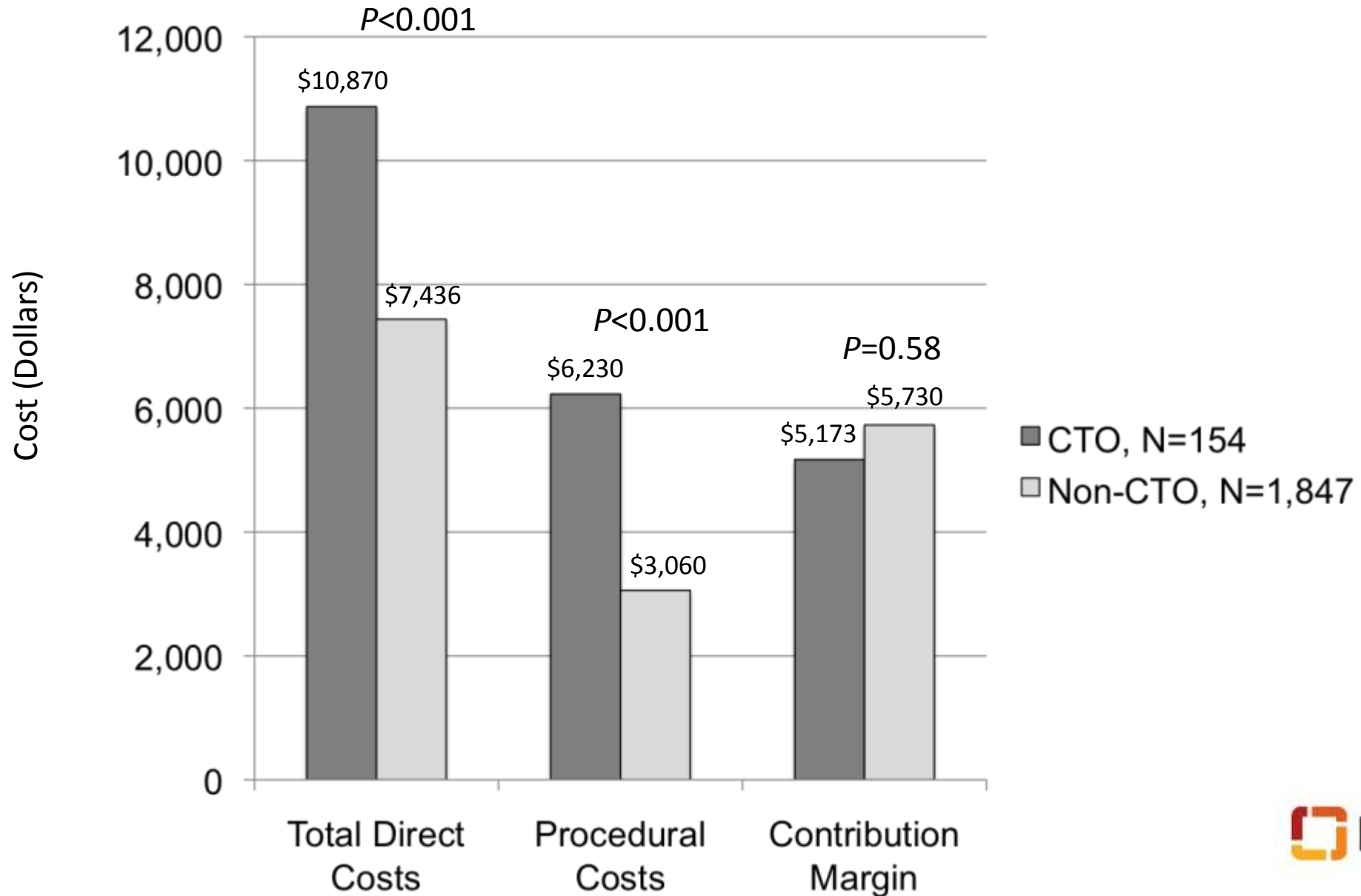
# CTO Revascularization: Economic Outcomes



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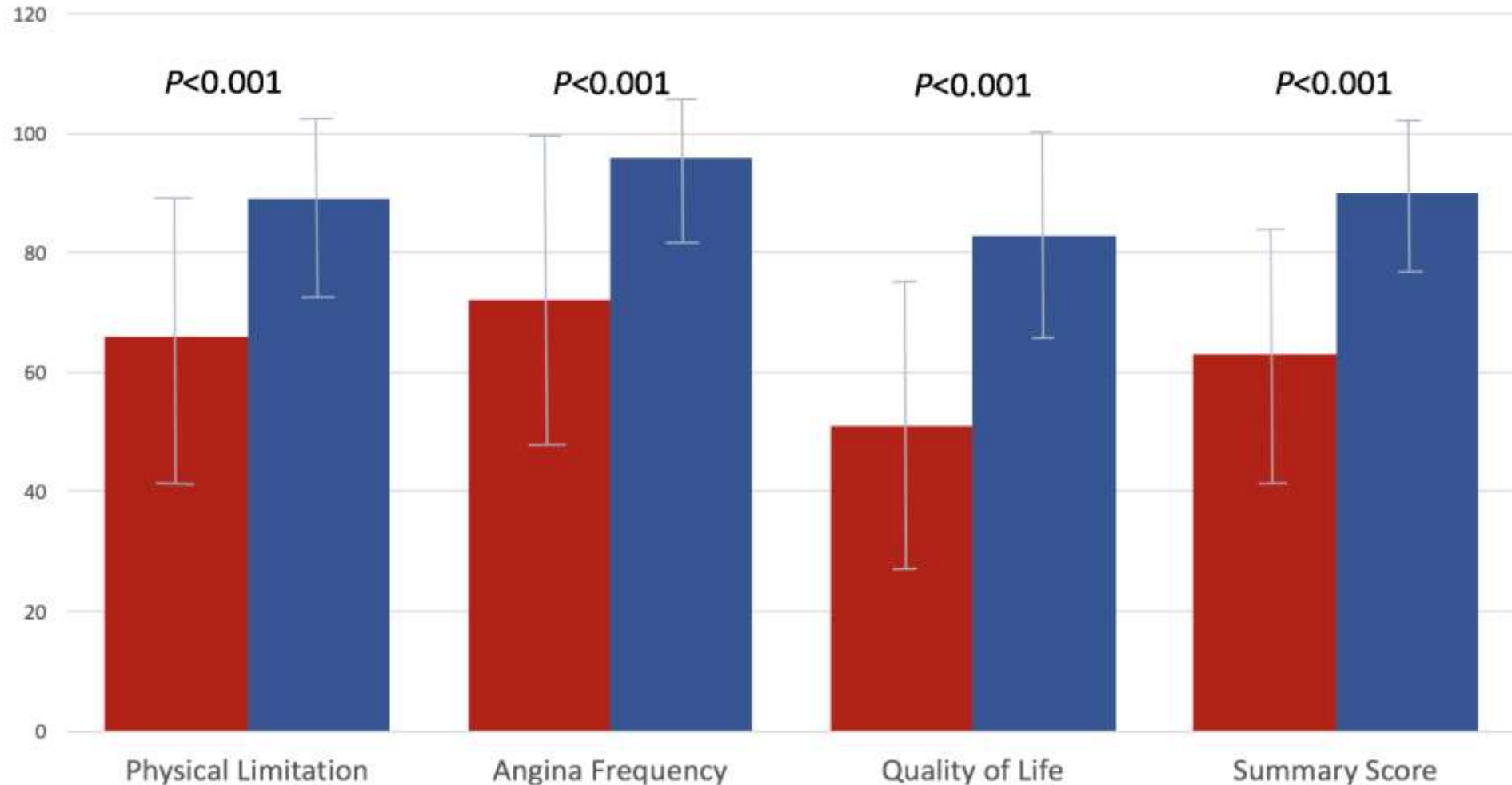


“Not everything that counts can be counted,  
and not everything that can be counted counts.”

— Albert Einstein

# PERSPECTIVE

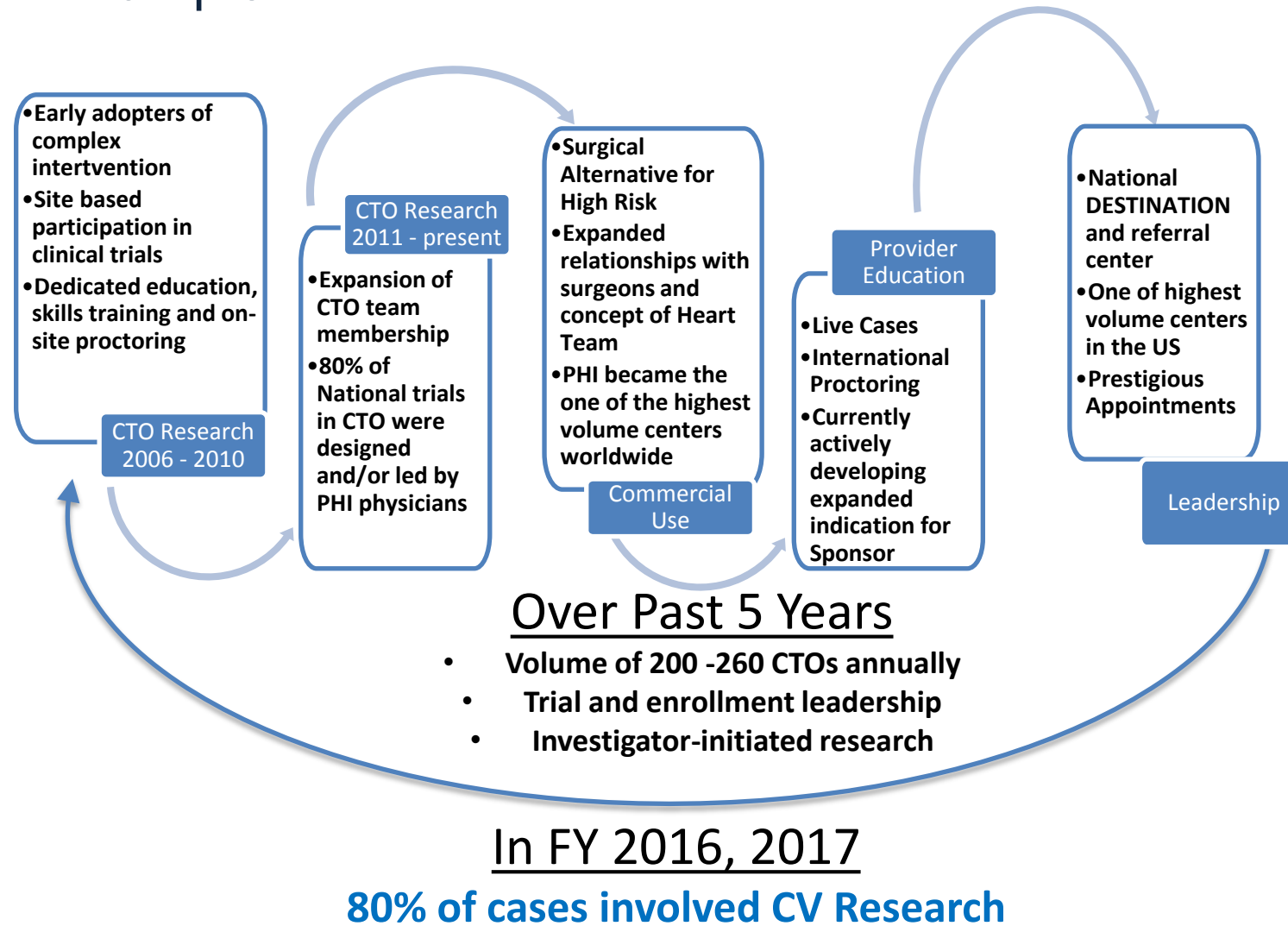
## Patient as the Focus: Self-Reported Outcomes following CTO Revascularization, Baseline and 1 Year





# Intersection of Research and Program Development

## Piedmont Heart Example



# PHI Clinical Research Program

## Clinical Trial Performance Achievements

### Complex Coronary Revascularization

- **EXCEL: Left Main PCI vs CABG**
  - PHI: International recognition with US trial leadership
  - #1 Enrolling center worldwide
- **EXPERT CTO: Chronic Total Coronary Occlusion Revascularization**
  - PHI: National recognition with trial national PI
  - PHI: First trial designed for 3 novel FDA-approved indications as an investigator designed and initiated trial
  - #1 Enrolling center in United States
- **PERSPECTIVE CTO: Chronic Total Coronary Occlusion Revascularization**
  - First IIS/single center trial to lead to expanded FDA indication
- **BIONICS: Drug Eluting Stent**
  - PHI: International recognition with US trial leadership
- **BIOFLOW V: Drug Eluting Stent**
  - PHI: International recognition with US trial leadership
- **ECLIPSE: Atherectomy**
  - PHI: International recognition with US trial leadership
  - 2nd highest enrolling center
- **OPTIMUM: Surgical Ineligible**
  - PHI: International recognition with US trial leadership
  - #1 Enrolling center in United States
- **SHIELD II: Percutaneous Left Ventricular Support in Complex PCI**
  - PHI: National recognition with trial national PI
  - 2nd highest enrolling center

# Development of a High-Risk, Complex Interventional Program

## *Summary*

- Evolution of complex, high-risk PCI is inherent to interventional cardiology; an entrepreneurial spirit and passion for experimental research and evidence-based practice
- The learning curve for complex intervention has never been more abbreviated
- Complex PCI enables program identity, is financially solvent and most importantly benefits our patients
  - Not dependent upon an individual operator but a collective effort about patients
  - Therapy- rather than device-based
- Incorporating high risk, complex PCI into a program
  - Is independent of hospital or practice type
  - Permits a more complete offering of treatment options for the patient
  - Offers treatment of the patient rather than just the angiogram
- Most importantly benefits patients often with limited therapeutic options
  - Documented benefits of symptom relief, improved LV function, avoidance of CABG and possibly improved survival
  - Most complex pts have potential for greatest absolute benefit but also commonly least desirable to treat