

# Data Linkage to Facilitate Comparative Effectiveness Research: PAD in NYC

**Andrew J. Meltzer, M.D.**

Assistant Professor of Surgery  
Assistant Professor of Healthcare Policy and Research in Surgery  
Co-Director, Center for Effectiveness and Surgical Outcomes Research (CESOR)



Vascular and Endovascular Surgery

# Background: Critical Limb Ischemia

“End stage” peripheral vascular disease

8-12 million Americans with PAD

At least 3 million with CLI → *6 million by 2030*

Annual healthcare costs over \$10 billion

“Optimal” treatment strategy remains unclear with increasing attention on effectiveness of endovascular therapy and role of devices (implantable stents, etc.)



Stony Brook University Medical Center  
Montefiore Medical Center  
New York Presbyterian/  
Weill Cornell Medical Center  
NYU Medical Center  
Maimonides Medical Center  
Winthrop University Hospital  
North Shore University Hospital / LIJ Medical Center  
Lenox Hill Hospital  
Mt. Sinai Medical Center & St. Luke's Roosevelt  
Beth Israel Medical Center  
Staten Island University Hospital-North Site  
Catholic Health-Kenmore Mercy Hospital  
Catholic Health-Mercy Hospital of Buffalo  
Catholic Health-Sisters of Charity Hospital  
Kaleda-Buffalo General Hospital  
Strong Memorial University  
SUNY-Upstate Medical University

# Pilot Study

We have previously used regional data from the VSGGNY to comparative effectiveness of endovascular therapy to surgical bypass in the treatment of critical limb ischemia

414 patients treated from 2011-2013 at VSGGNY charter centers

Outcome metrics for SAFETY and EFFECTIVENESS derived from SVS Objective Performance Goals

Propensity score matched cohorts

(In press, JVS)

# Pilot Study

Table II: 30-day safety outcomes (All)

Safety Outcome (30-Days)	Unmatched Cohort			Propensity Matched Cohort		
	PVI %(CI) n=268	BPG %(CI) n=146	P-Value	PVI %(CI) n=113	BPG %(CI) n=113	P-Value
Amputation	1.1% (0-2.4)	0% (0-0)	0.19947	0% (0-0)	0% (0-0)	0.98477
MALE	2.6% (0.7-4.5)	1.4% (0-3.3)	0.40766	0.9% (0-2.6)	1.8% (0-4.2)	0.56109
MACE	4.1% (1.7-6.5)	2.1% (0-4.4)	0.27029	0.9% (0-2.6)	2.7% (0-5.6)	0.31299

No significant differences in safety (30 days) in unmatched or matched comparisons

# Pilot Study

Table III: 12 month efficacy outcomes (All)

Efficacy Outcome (12-months)	Unmatched Cohort			Propensity Matched Cohort		
	PVI %(CI) n=268	BPG %(CI) n=146	P-Value	PVI %(CI) n=113	BPG %(CI) n=113	P-Value
LS	97% (95-99.1)	97.9% (95.6-100)	0.57388	99.1% (95.2-100)	98.2% (93.8-99.8)	0.56109
RAS	81.7% (77.1-86.3)	90.4% (85.6-95.2)	0.01861	84.1% (76-90.3)	89.4% (82.2-94.4)	0.23948
RAO	85.8% (81.6-90)	92.5% (88.2-96.7)	0.04552	88.5% (81.1-93.7)	91.2% (84.3-95.7)	0.50923
MALE + POD	89.6% (85.9-93.2)	90.4% (85.6-95.2)	0.78216	95.6% (90-98.5)	88.5% (81.1-93.7)	0.04935
AFS	87.7% (83.8-91.6)	91.1% (86.5-95.7)	0.29158	95.6% (90-98.5)	90.3% (83.2-95)	0.11969
OS	90.3% (86.8-93.8)	93.2% (89.1-97.2)	0.32508	96.5% (91.2-99)	92% (85.4-96.3)	0.15316

In unadjusted comparison, at 1 year, surgical bypass was less likely to require reintervention (RAS/RAO) than endovascular therapy.

However, after PS matching, endovascular therapy was associated with improved Freedom from major adverse limb events & death.

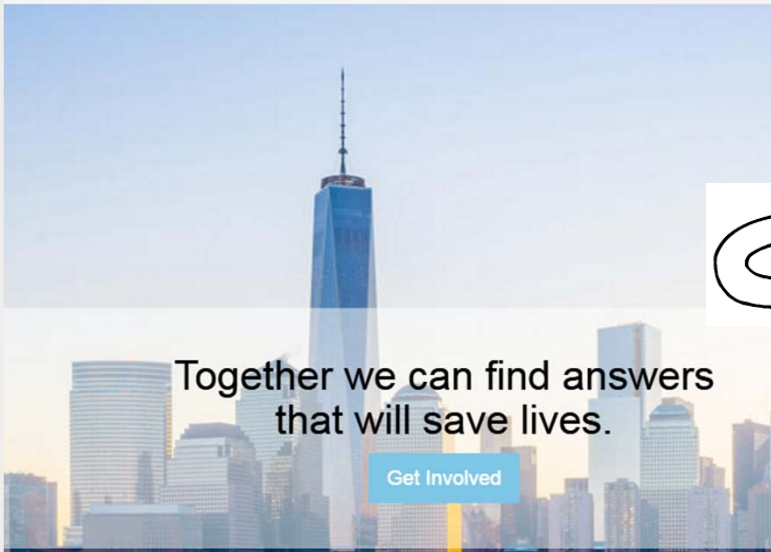
# Pilot Study

Feasibility of using regional (VQI) data to address fundamental questions in vascular disease... and assess the safety and effectiveness of emerging technology without the costs and equipoise constraints of RCT.

Data linkage to EHR could address fundamental limitations (e.g., follow-up) and further facilitate PCOR



Home About ▾ Patients Clinicians ▾ News Contact ▾

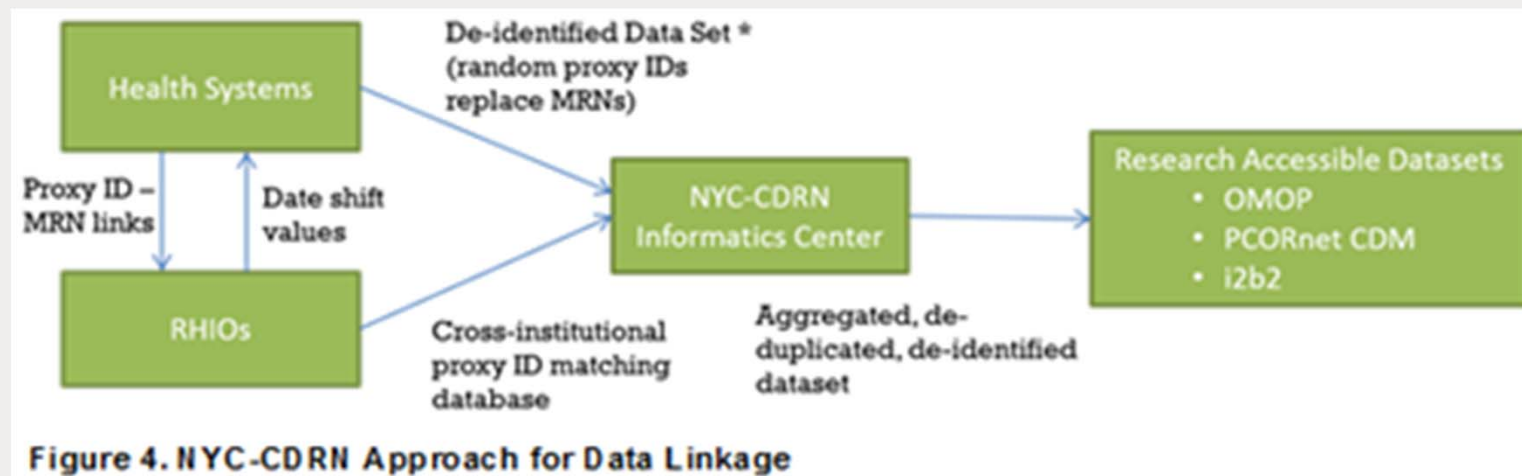


PCOR-Net Partner Network (~6m patients)



***Link regional VQI registry data to claims and electronic health data from the NY CDRN.***

**We will create enhanced regional cohorts of patients through linkage of NY regional VQI data with NY-CDRN that has EHRs from medical centers in New York.**



**Objective** – compare the long term safety and effectiveness of endovascular device-based therapy to surgical bypass in the treatment of PAD.

**Benefits of linkage to NYC CDRN:**

1. Expand and improve follow-up data collection, particularly for patients receiving care at non-index facility
2. Comprehensive device data (VQI and OR/Cath lab reports)
3. Circumvent “laterality” issues by accessing EHR data
4. Focus on patient centered outcomes – including functional status, ambulation, wound healing, etc, – by development of NLP algorithms
5. Potential to assess outcomes of conservative/medical treatment strategy

# Conclusions

VQI / VSGGGNY pooled data has proven potential for CER

Linkage to regional CDRN data will dramatically expand the potential for CER and PCOR

Regional (VSGGGNY – NYC-CDRN) linkage will serve as a template for larger (national) projects