

SUPPLEMENTAL MATERIAL

Supplemental Table 1: Lists of codes (listed in the primary procedure field) for identifying procedures of interest

TAVR		
Ontario (ICD10 CCI)	Description	NY (ICD9 CM)
1.HV.90.GP-XX-L ¹	Excision total with reconstruction, aortic valve, replacement of valve alone with xenograft tissue valve [e.g. bovine or porcine tissue] using percutaneous transluminal (arterial) (retrograde) approach.	35.05, 35.06 ²
1.HV.90.GR-XX-L	Excision total with reconstruction, aortic valve replacement of valve alone with xenograft tissue valve [e.g. bovine or porcine tissue] using percutaneous transluminal transeptal approach.	
1.HV.90.ST-XX-L	Excision total with reconstruction, aortic valve, replacement of valve alone with xenograft tissue valve [e.g. bovine or porcine tissue] using open approach with closed heart technique [transventricular].	

LVAD		
Ontario (ICD10 CCI)	Description	NY (ICD9 CM)
1HP53LAQP ¹	Implantation of internal device, ventricle of ventricular assist pump using open approach	37.66 ³

EVAR		
Ontario (ICD10 CCI)	Description	NY (ICD9 CM)
1.KA.80.GQ-NRN ⁴ Can be stratified into I71.3 (ruptured) or I71.4 (intact) for subgroup analysis		39.71 ⁵ (can be stratified into intact 441.4 or ruptured 441.3) for subgroup analysis

References

1. Interprovincial Health Insurance Agreements Coordinating Committee *Interprovincial Billing Rates for High Cost Procedures Effective for discharges on or after April 1, 2016 FINAL* 2016. Available at: http://www.health.gov.on.ca/en/pro/programs/ohip/bulletins/na_69/na_69_2.pdf [Accessed December 4, 2019].
2. Kolte D, Khera S, Sardar MR, Gheewala N, Gupta T, Chatterjee S, Goldsweig A, Aronow WS, Fonarow GC, Bhatt DL, Greenbaum AB, Gordon PC, Sharaf B, Abbott JD. Thirty-Day Readmissions After Transcatheter Aortic Valve Replacement in the United States: Insights From the Nationwide Readmissions Database. *Circulation Cardiovascular interventions*. 2017;10: e004472.
3. Khazanie P, Hammill BG, Patel CB, Eapen ZJ, Peterson ED, Rogers JG, Milano CA, Curtis LH, Hernandez AF. Trends in the use and outcomes of ventricular assist devices among medicare beneficiaries, 2006 through 2011. *J Am Coll Cardiol*. 2014;63:1395-1404.
4. Jetty P, Hebert P, van Walraven C. Long-term outcomes and resource utilization of endovascular versus open repair of abdominal aortic aneurysms in Ontario. *J Vasc Surg*. 2010;51:577-583, 583.e571-573.
5. Schermerhorn ML, Bensley RP, Giles KA, Hurks R, O'malley AJ, Cotterill P, Chaikof E, Landon BE. Changes in abdominal aortic aneurysm rupture and short-term mortality, 1995-2008: a retrospective observational study. *Ann Surg*. 2012;256:651-658.

Supplemental Table 2: EVAR, LVAD, and TAVR annual volumes in Ontario and New York 2012-2015

(red= Ontario, blue= New York)

Procedure	Calendar year				
	2012	2013	2014	2015 (Jan to Sept)	Total
EVAR	897	900	859	666	3322
	1716	1702	1740	1202	6360
LVAD	33	34	32	40	139
	179	179	197	141	696
TAVR	245	427	564	486	1722
	599	1139	1596	1528	4853

Supplemental Table 3: Age and sex standardized EVAR, LVAD, and TAVR utilization (procedures per-100,000 population per-year) Ontario and New York 2012-2015 (Ontario red, New York Blue)

Procedure	Calendar year			
	2012	2013	2014	2015*
EVAR	13.0	13.0	12.4	12.8
	20.3	20.2	20.7	19.0
LVAD	0.3	0.3	0.3	0.5
	1.3	1.3	1.4	1.3
TAVR	3.5	6.2	8.2	9.0
	6.6	12.4	17.7	22.7

* Data from January-September 2015, annualized

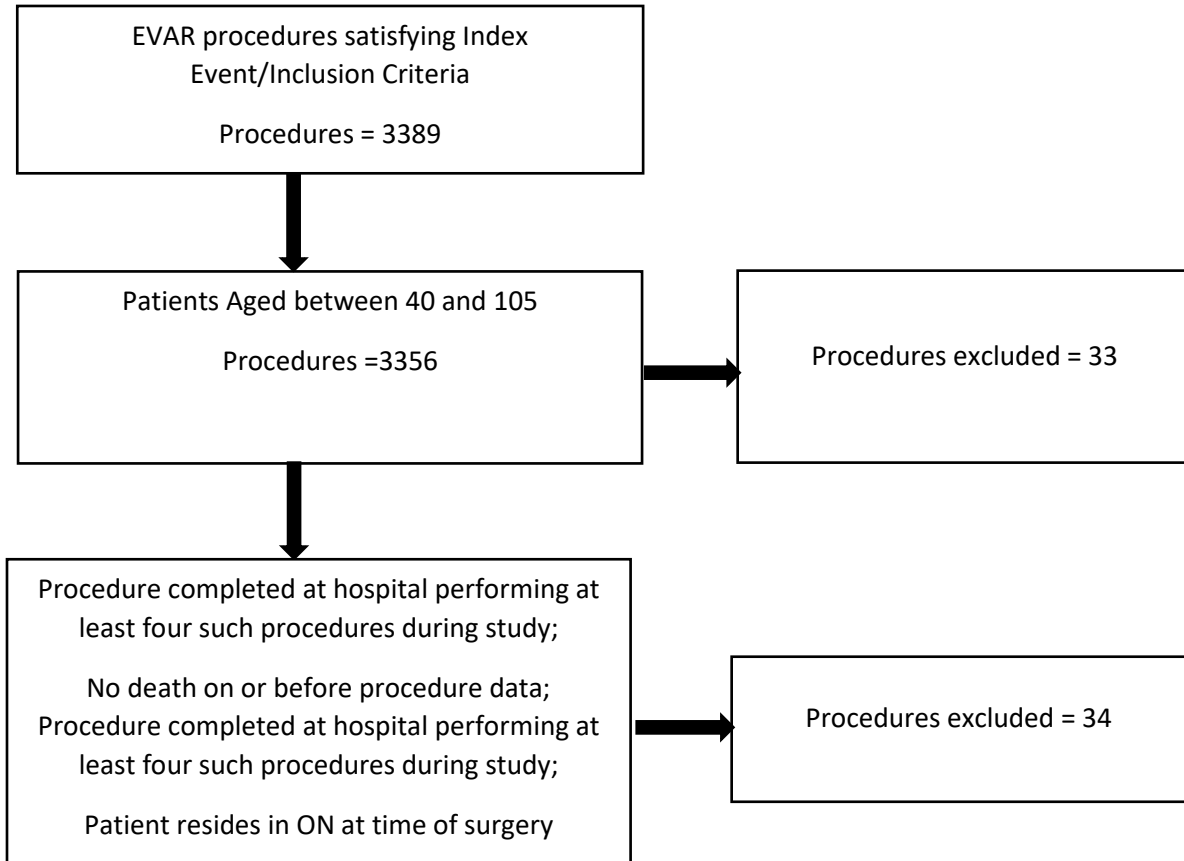
Supplemental Table 4: Insurance coverage of EVAR, LVAD and TAVR recipients in New York State

	EVAR (N=6360)	LVAD (N=696)	TAVR (N=4853)
Medicare, number (%)	5096 (80.1)	316 (45.4)	4523 (93.2)
Private, number (%)	967 (15.2)	255 (36.6)	236 (4.9)
Medicaid, number (%)	182 (2.9)	117 (16.8)	50 (1.0)
Uninsured/self-pay, number (%)	51 (0.8)	SC*	20 (0.4)
Other, number (%)	64 (1.0)	SC*	24 (0.5)

*SC = small cells, cells <6 for Ontario and <10 for NY can not be identified due to privacy regulations

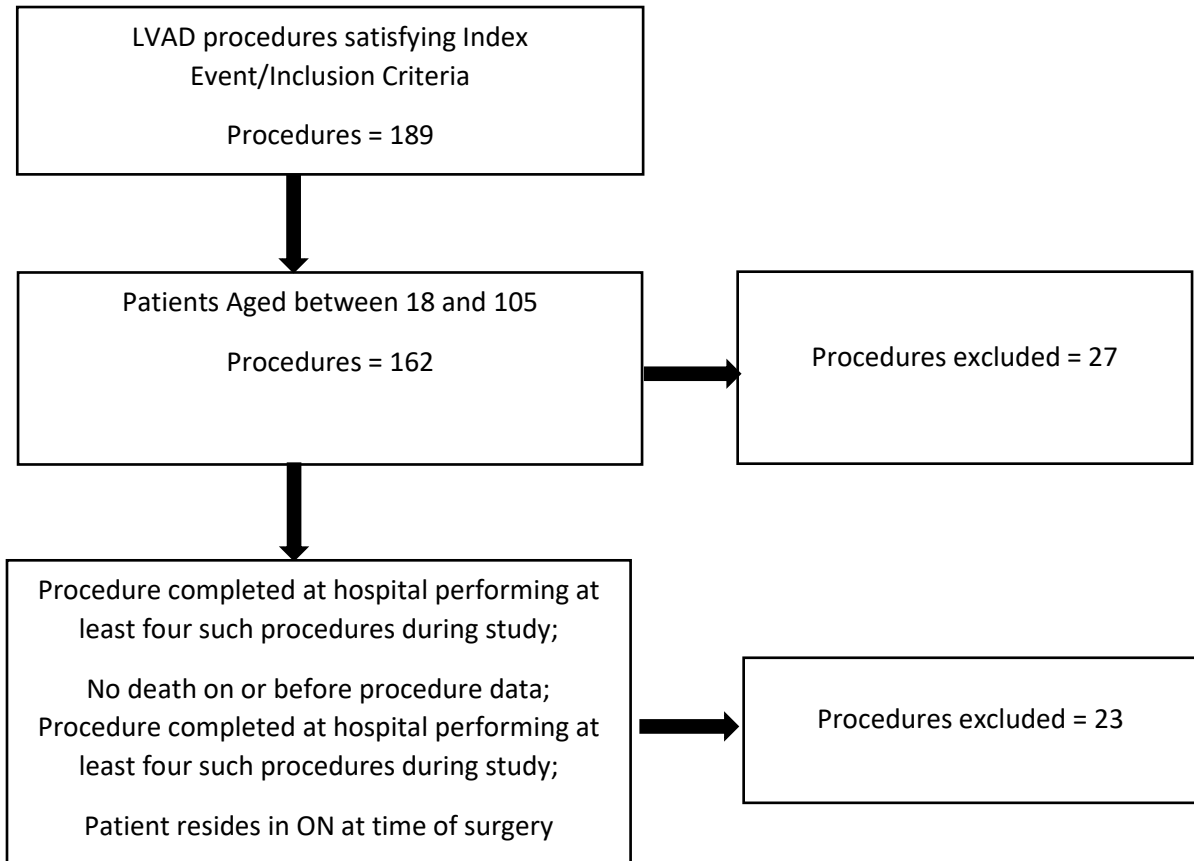
Supplemental Figure 1: Flow diagrams for creation of Ontario cohorts for

a) EVAR Ontario



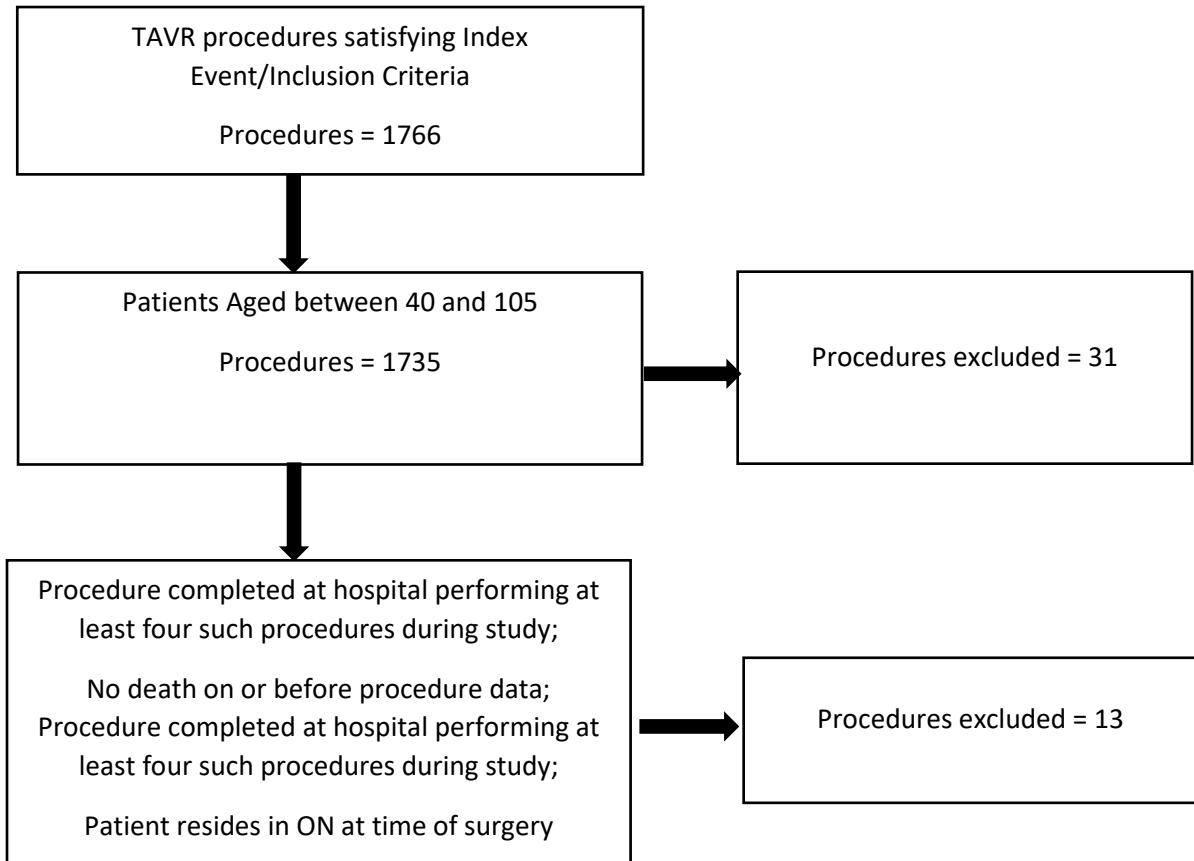
Final Cohort: 3295 patients contributing 3322 procedures

b) LVAD Ontario



Final Cohort: 136 patients contributing 139 procedures

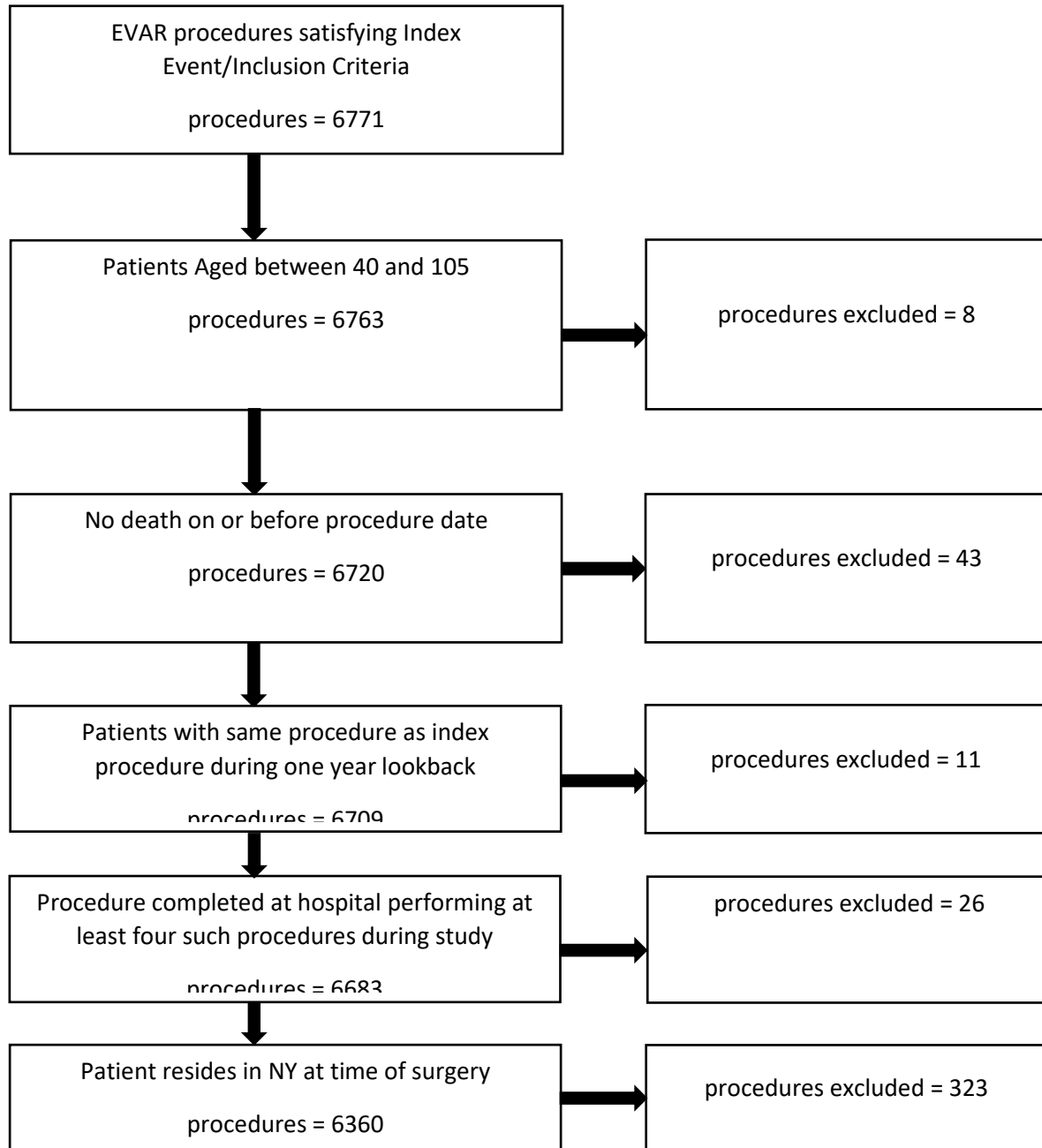
c) TAVR Ontario



Final Cohort: 1708 patients contributing 1722 procedures

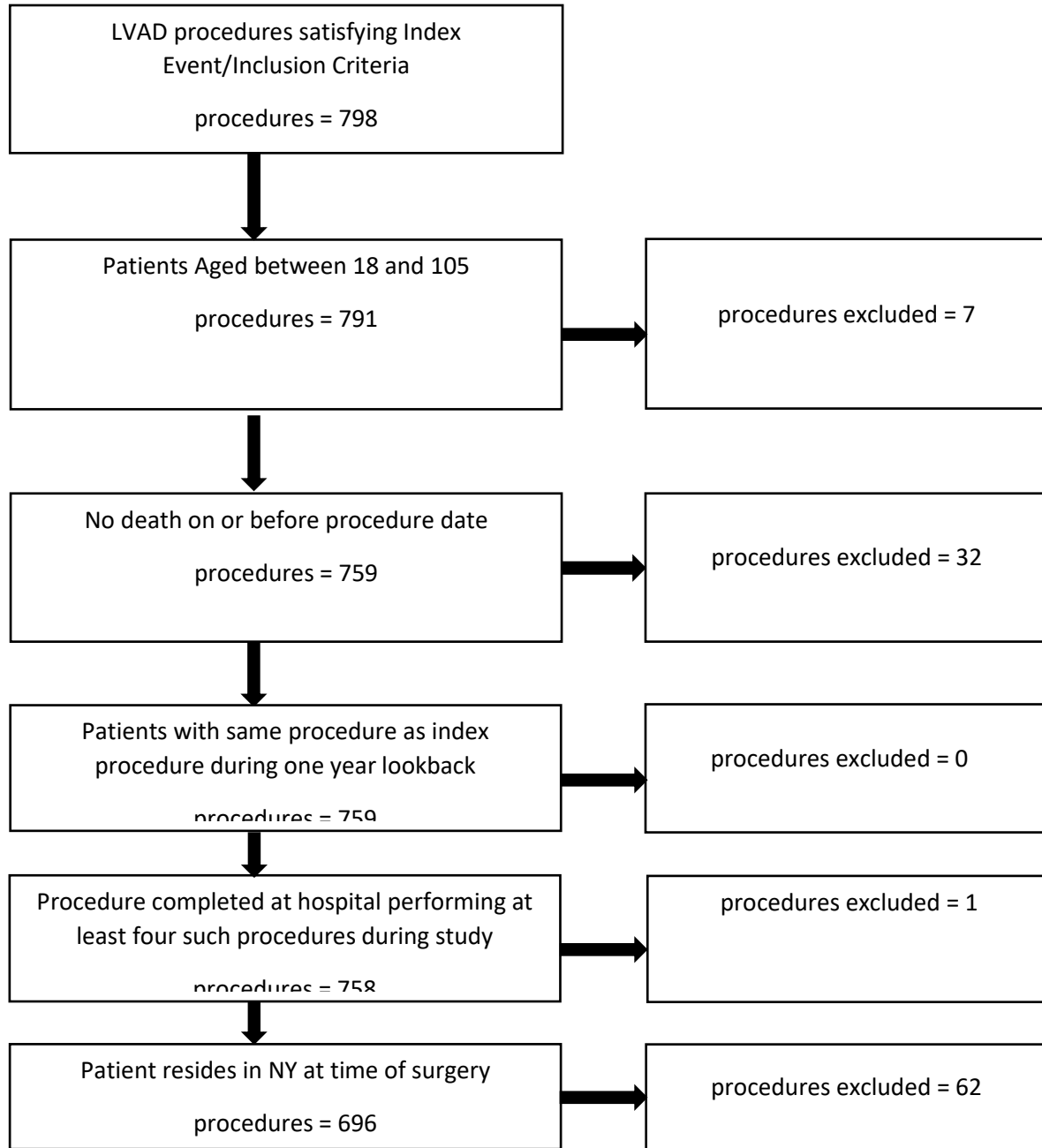
Supplemental Figure 2: Flow diagrams for creation of NY cohorts for

a) EVAR NY



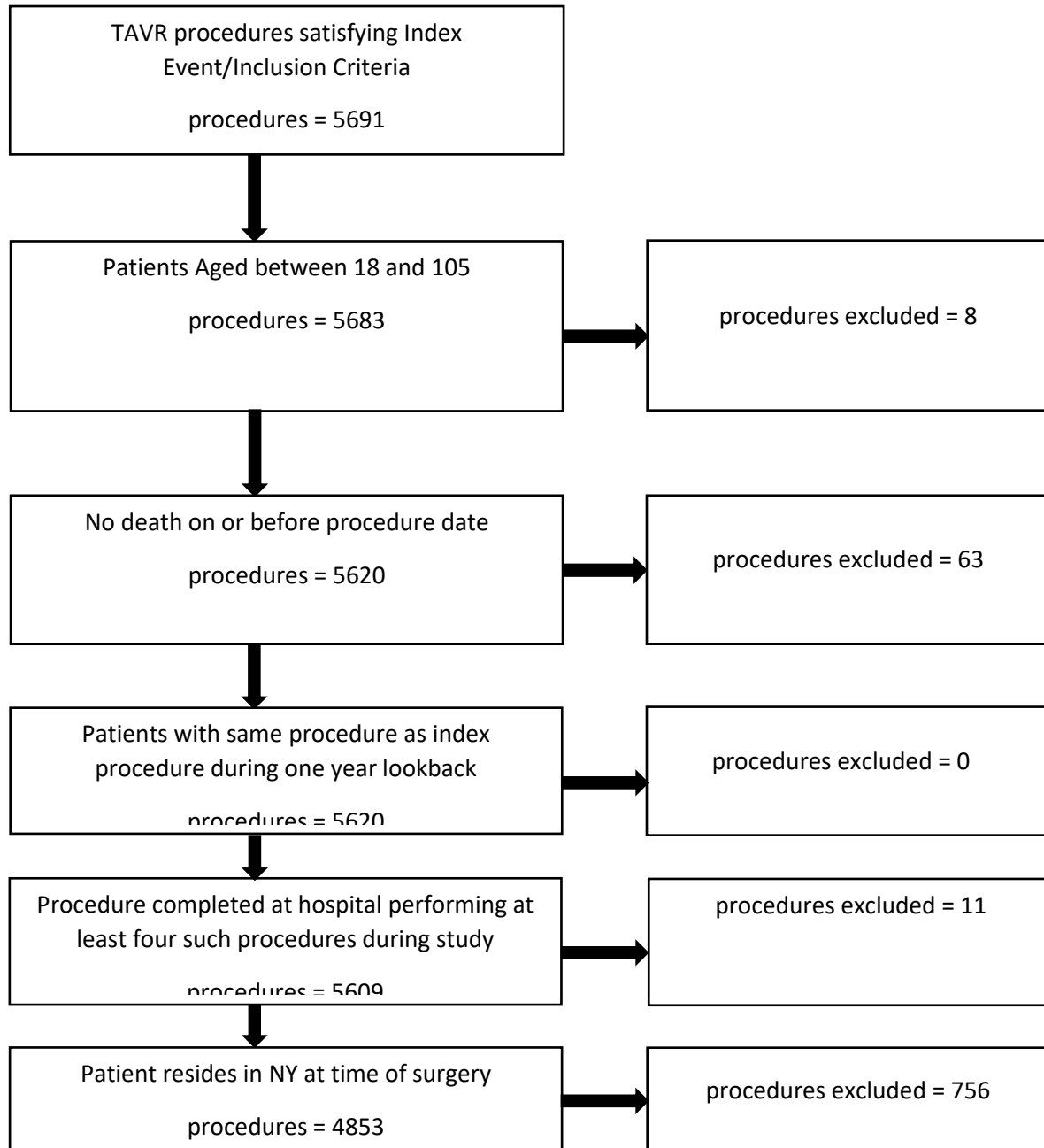
Final Cohort: 6236 patients contributing 6360 procedures

b) LVAD NY



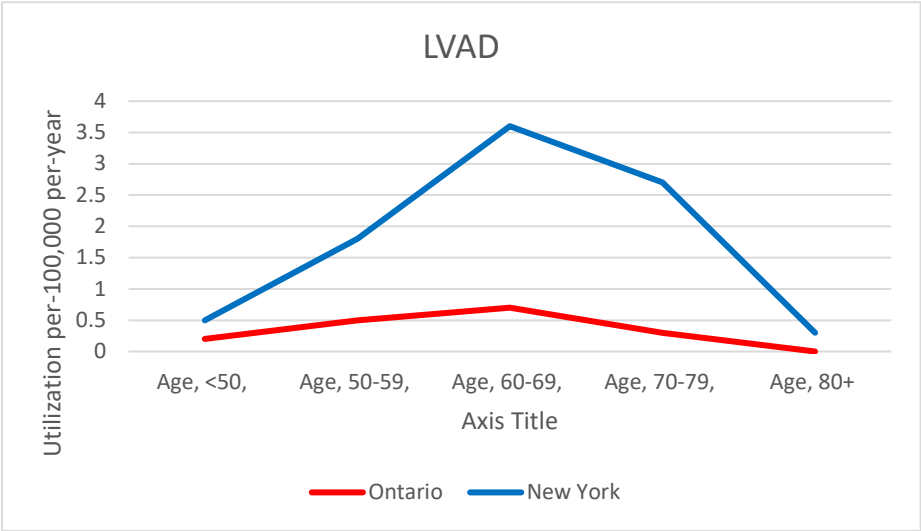
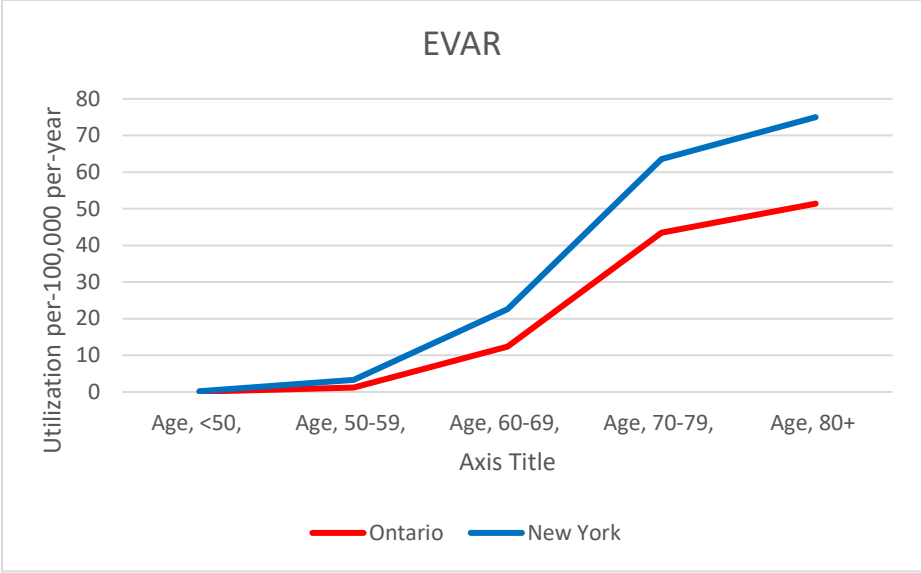
Final Cohort: 686 patients contributing 696 procedures

c) TAVR NY

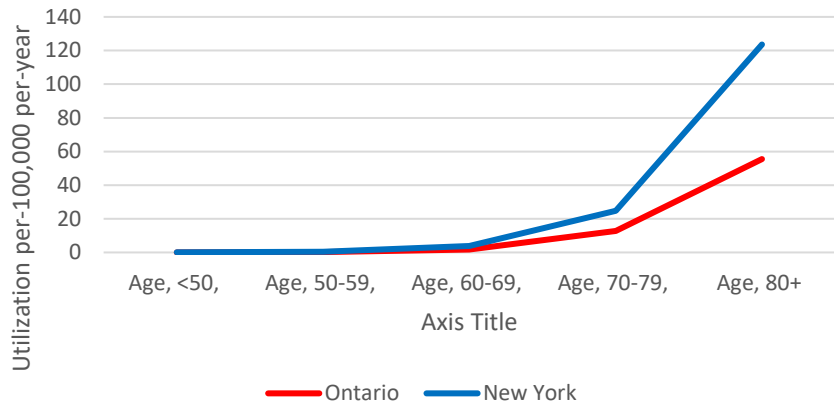


Final Cohort: 4838 patients contributing 4853 procedures

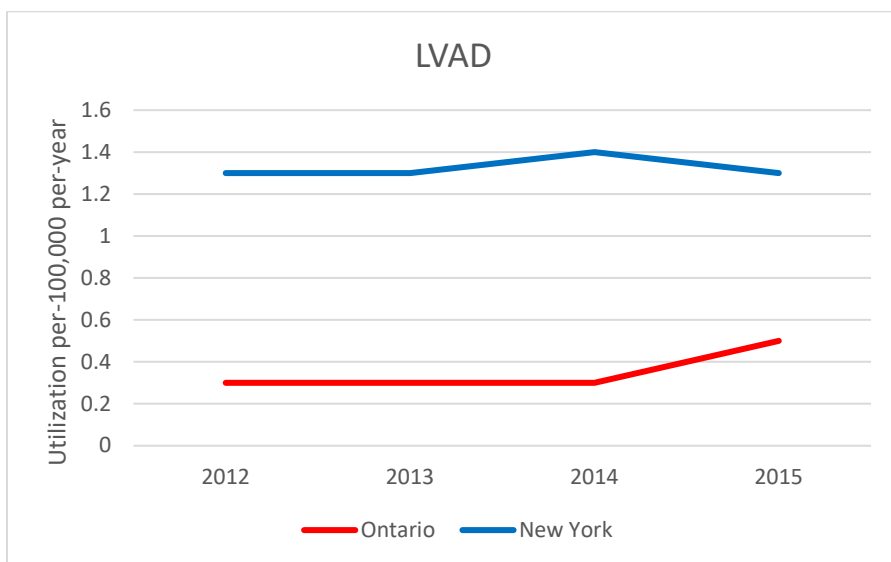
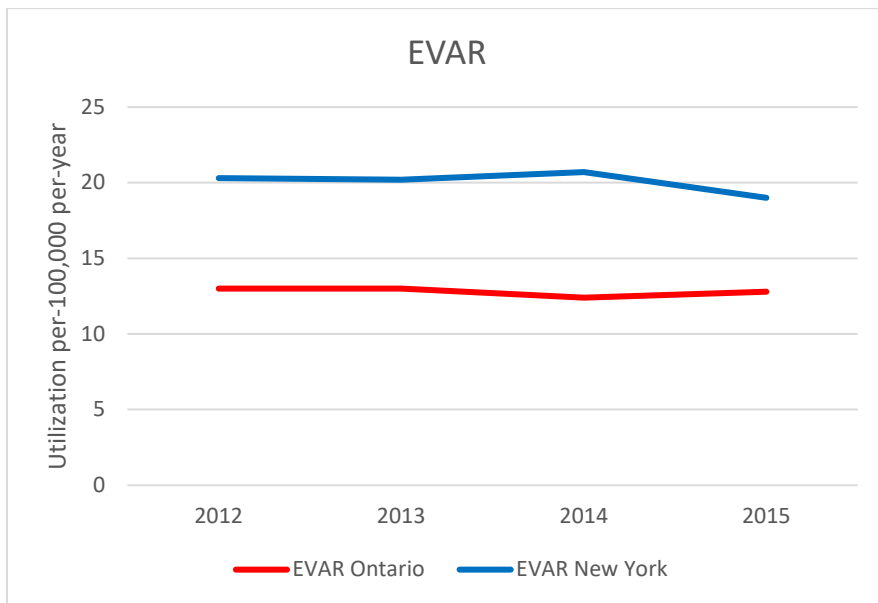
Supplemental Figure 3: Standardized utilization of EVAR, LVAD, and TAVR stratified by patient age



TAVR



Supplemental Figure 4: Standardized utilization of EVAR, LVAD, and TAVR by calendar year



TAVR

