

Prospective Registry of Israeli CTO Collaboration RISSC

Update
September 2022



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המרכז
הרפואי
שמיר



RISCC Timeline

2018

1st CTO Meeting

Hybrid CTO
Program launch

2019

2nd CTO Meeting

Jerusalem CTO
Summit

Shamir Pilot CTO
Registry

2020

3rd CTO Meeting

Multicenter CTO
Registry - RISCC



2021

4th CTO Meeting

Prospective CTO
Registry Kick-off

Reported:
IHS-68;
ICI-2021



2022

5th CTO Meeting

@20 months 228
Prospective
Entries

2023

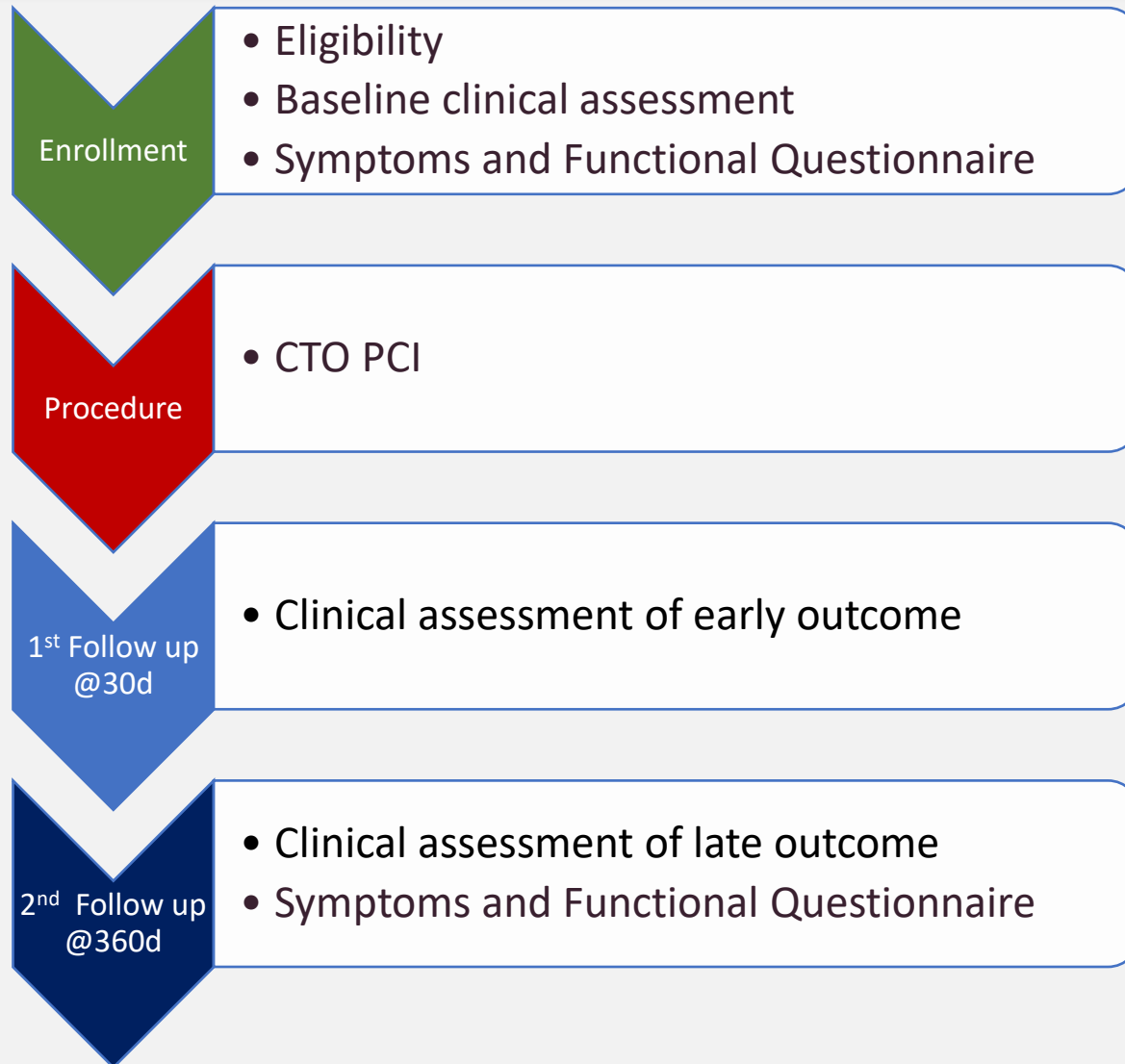




CTO
Program
Growth
2018
2022
(August)



Prospective Registry Protocol 2021



Dedicated CTO operator, 12 procedures/year at least.

CTO hybrid approach implementation.

All consecutive CTO attempts to be reported.

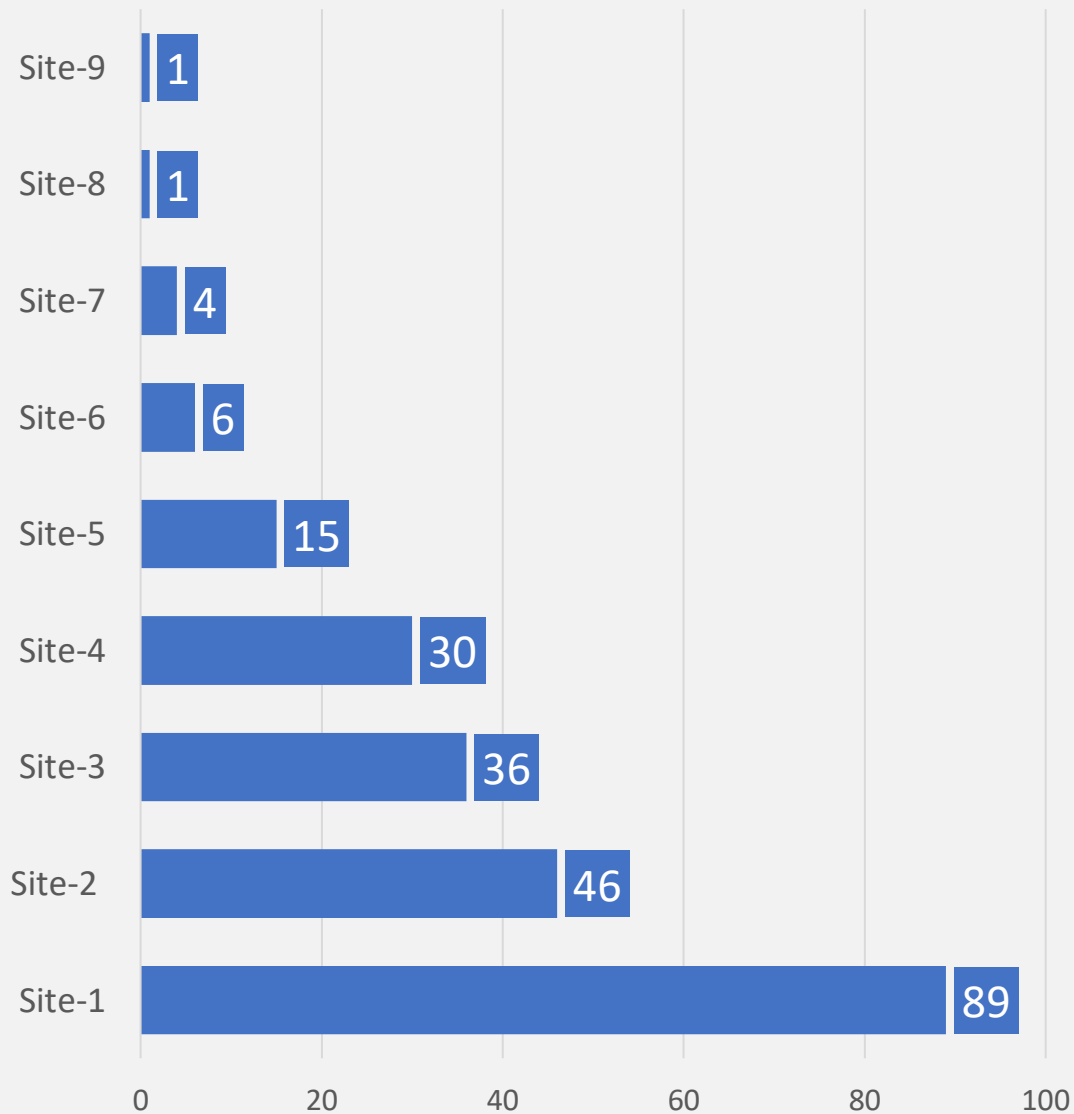
All patients will be evaluated in CTO Clinic.

Baseline CAG, Echo and ischemia assessment is mandatory.

Twelve months' follow up for efficacy and safety outcome.



Prospective Registry Entries 2021-2022



- Carmel
- Rambam
- Poriah
- Meir
- Belinson
- Hasharon
- Shamir
- Shaare Zedek
- Soroka

228



CTO Registries

	Period	Procedure n	JCTO Score	Success rate, %	Retro, %	ADR, %	MACE, %	Death, %	Acute MI, %	Stroke, %	TVR, %	Tamponade, %
EURO-CTO	2008-2015	17 626	1.9 →2.1	79.7 →89.3	10.1 →29.9	5.5	0.7	0.2				0.4
RECHARGE	2014-2015	1,253	2.0 →3.0	86	34	23	2.6	0.2	0.2	2.2	0.1	1.3
OPEN-CTO expert	2014-2015	1000	2.3	86	34.9	24.3	7.0	0.9	2.6	0.0	0.1	
PROGRESS	2012-2018	3,122	2.4	87	38.5	31.9	3.0	0.3	0.7	0.2	0.2	0.5
PROGRESS USA expert	2012-2015	1301	2.5	90	41	24.6	2.4	0.4	1.0	0.3	0.3	0.7

Konstantinidis, Circ Cardiovasc Interv. 2018; Maeremans, J Am Coll Cardiol 2016; Christopoulos, J Am Coll Cardiol Intv 2016; Karpaliotis, Circ Cardiovasc Interv. 2016; Brilakis et al., Circulation. 2019;



Demography and Previous Cardiac History

Age, years 64.5 ± 11.5



Prior MI
58.6%



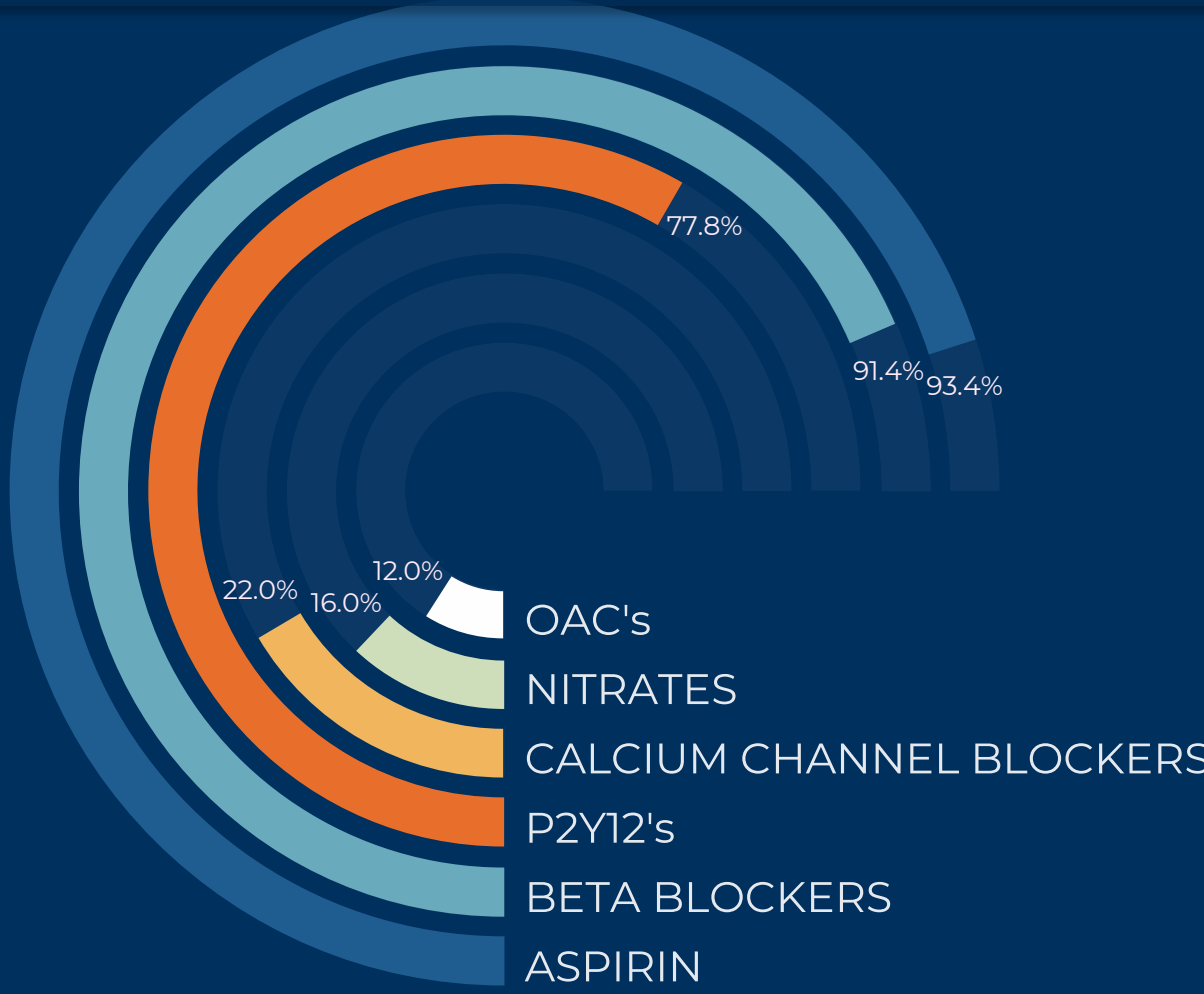
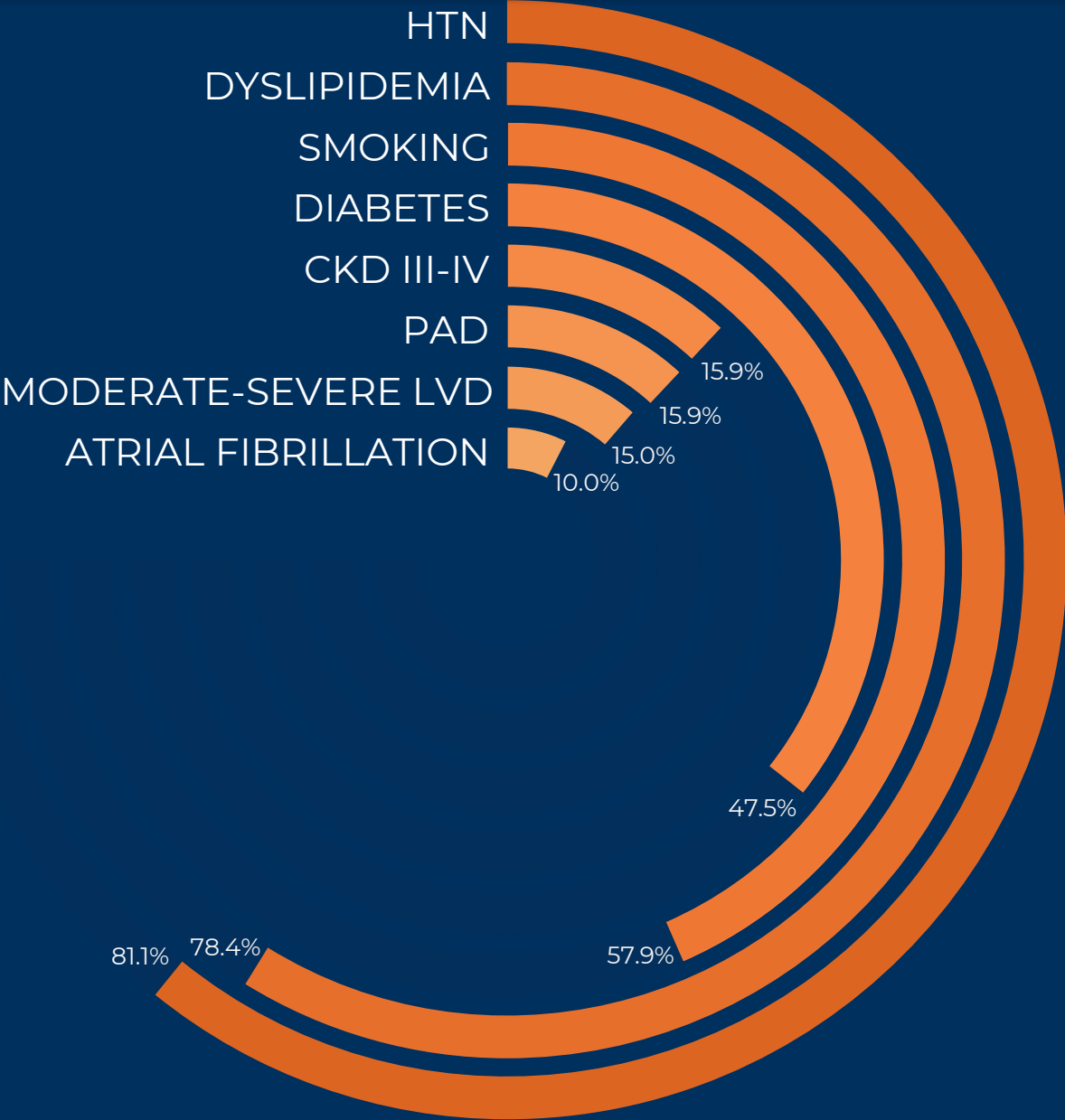
Prior PCI
51.0%



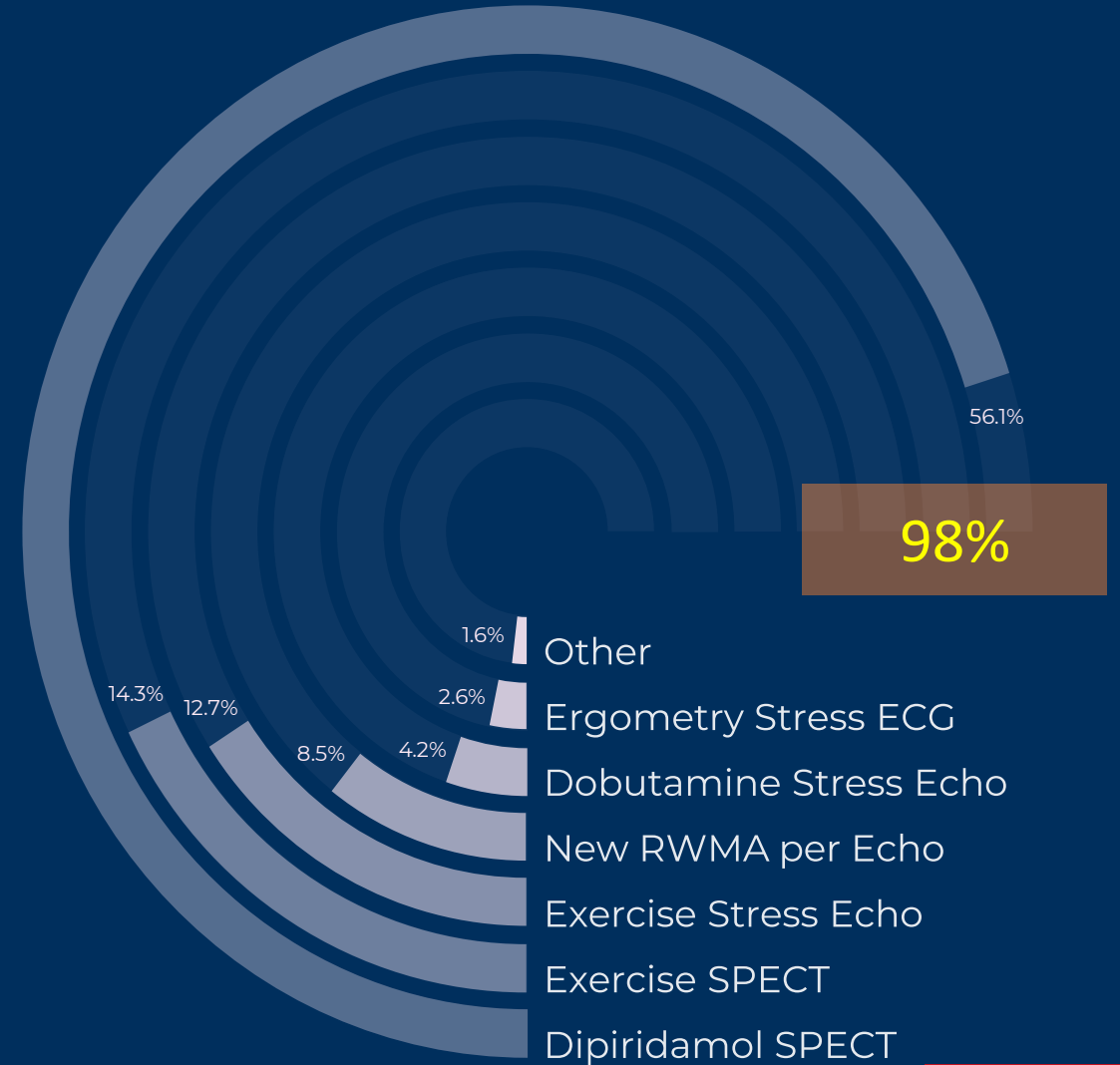
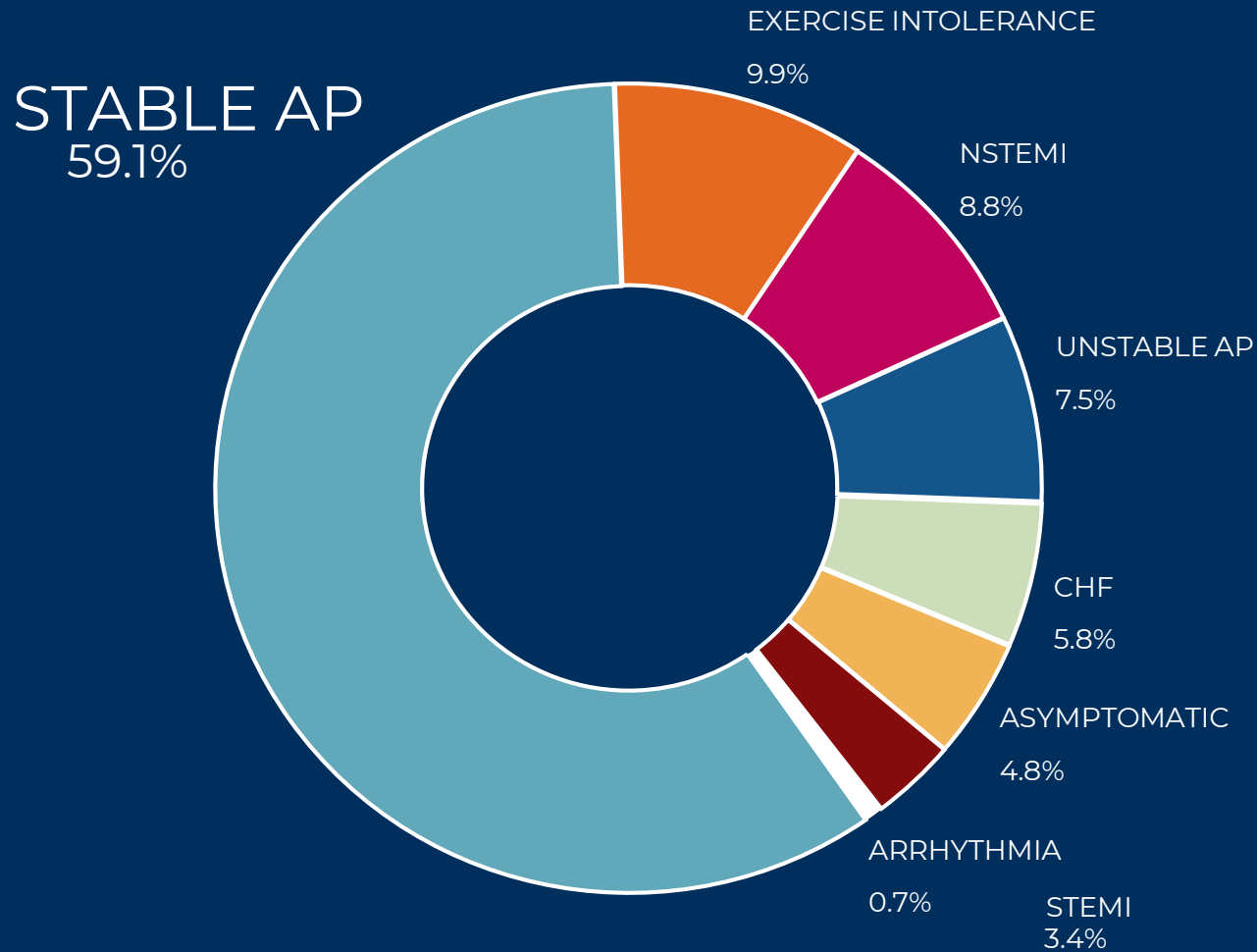
Prior CABG
64.0%



Co-morbidities and Medical Therapy



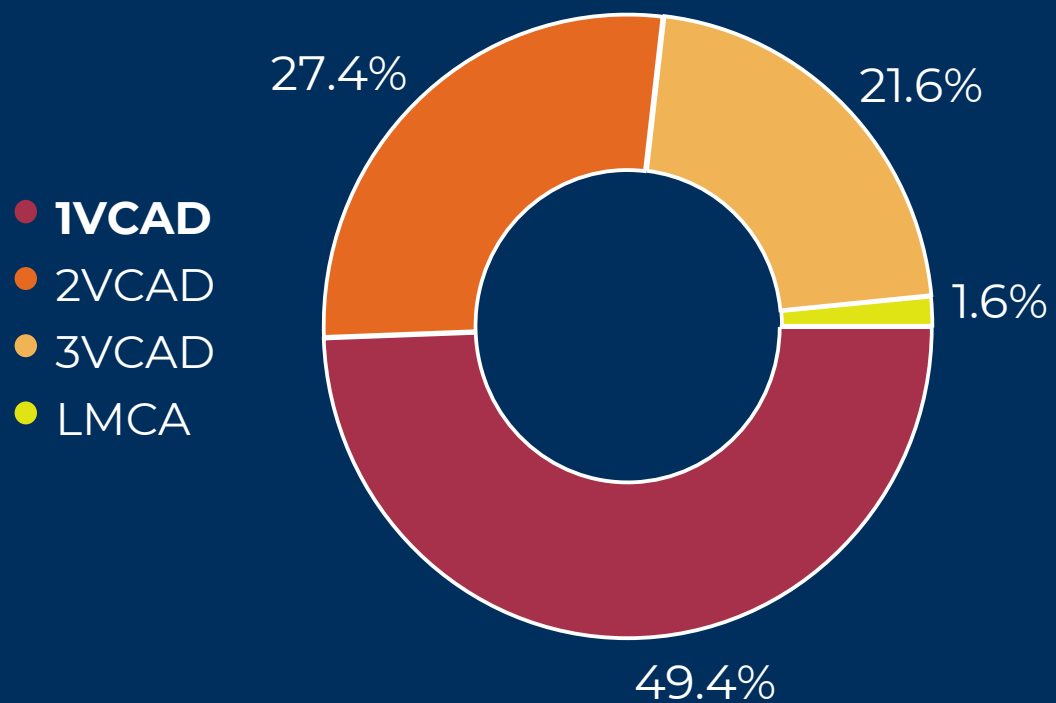
Clinical Presentation and Ischemia Assessment



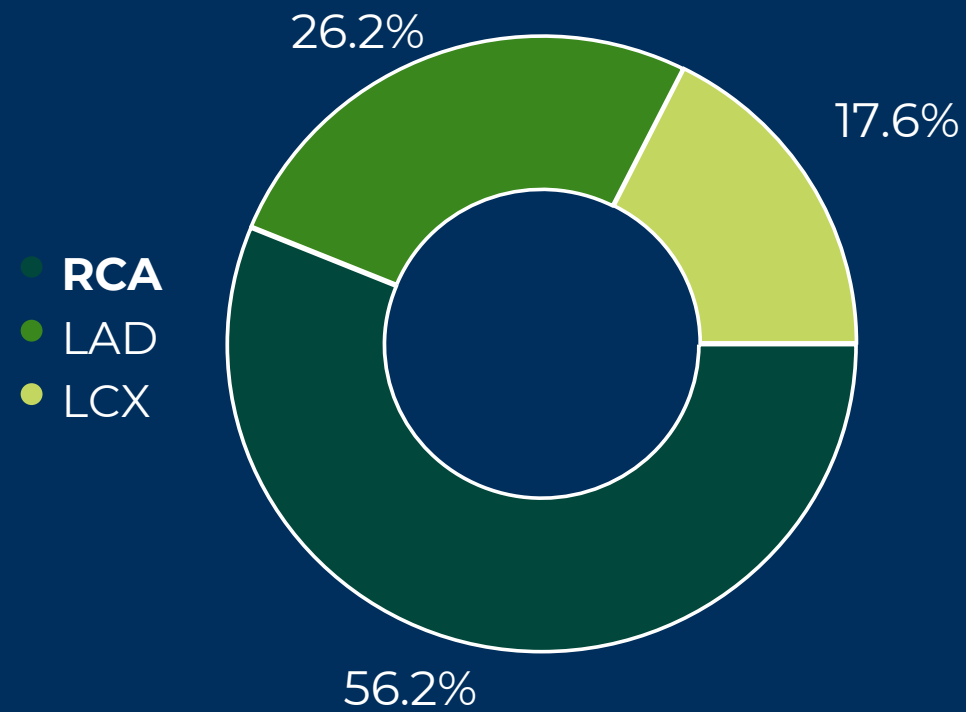
98%

CORONARY ANGIOGRAPHY

CAD EXTENT



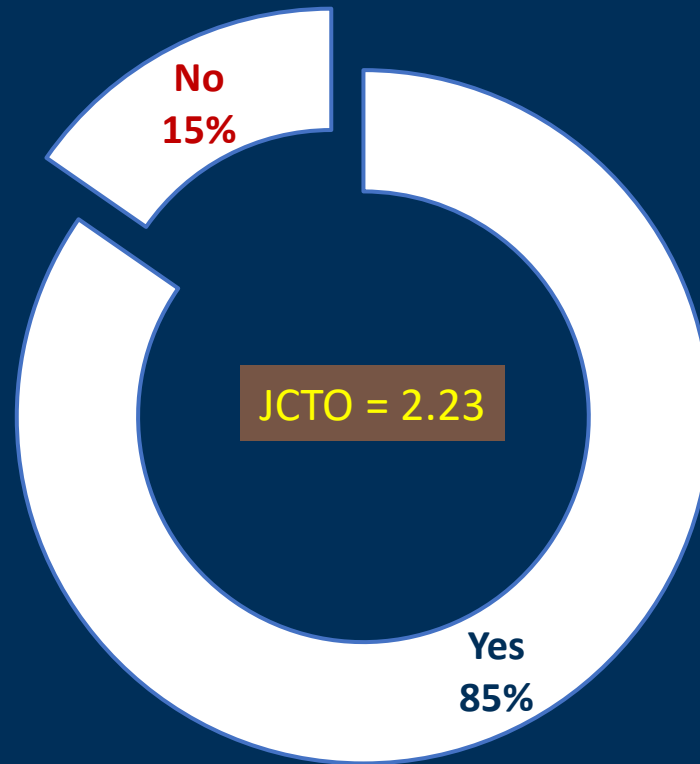
CTO ARTERY



Overall Success Rate

n=228

WAS CTO SUCCESSFULLY RECANALIZED?



Overall Success Rate in CTO Registries:

Euro-CTO	79,7%
RECHARGE	86%
OPEN	86%
PROGRESS	90 %

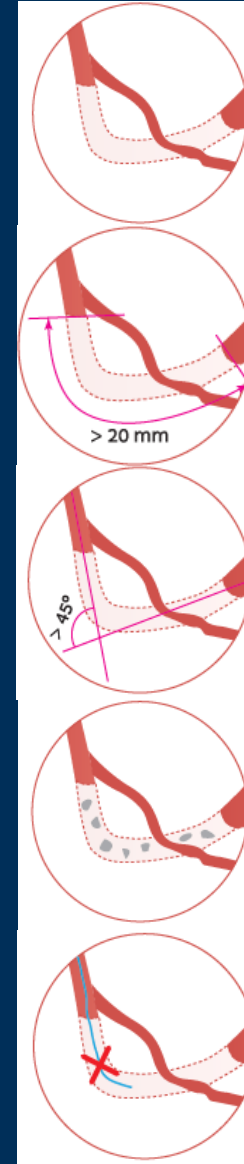
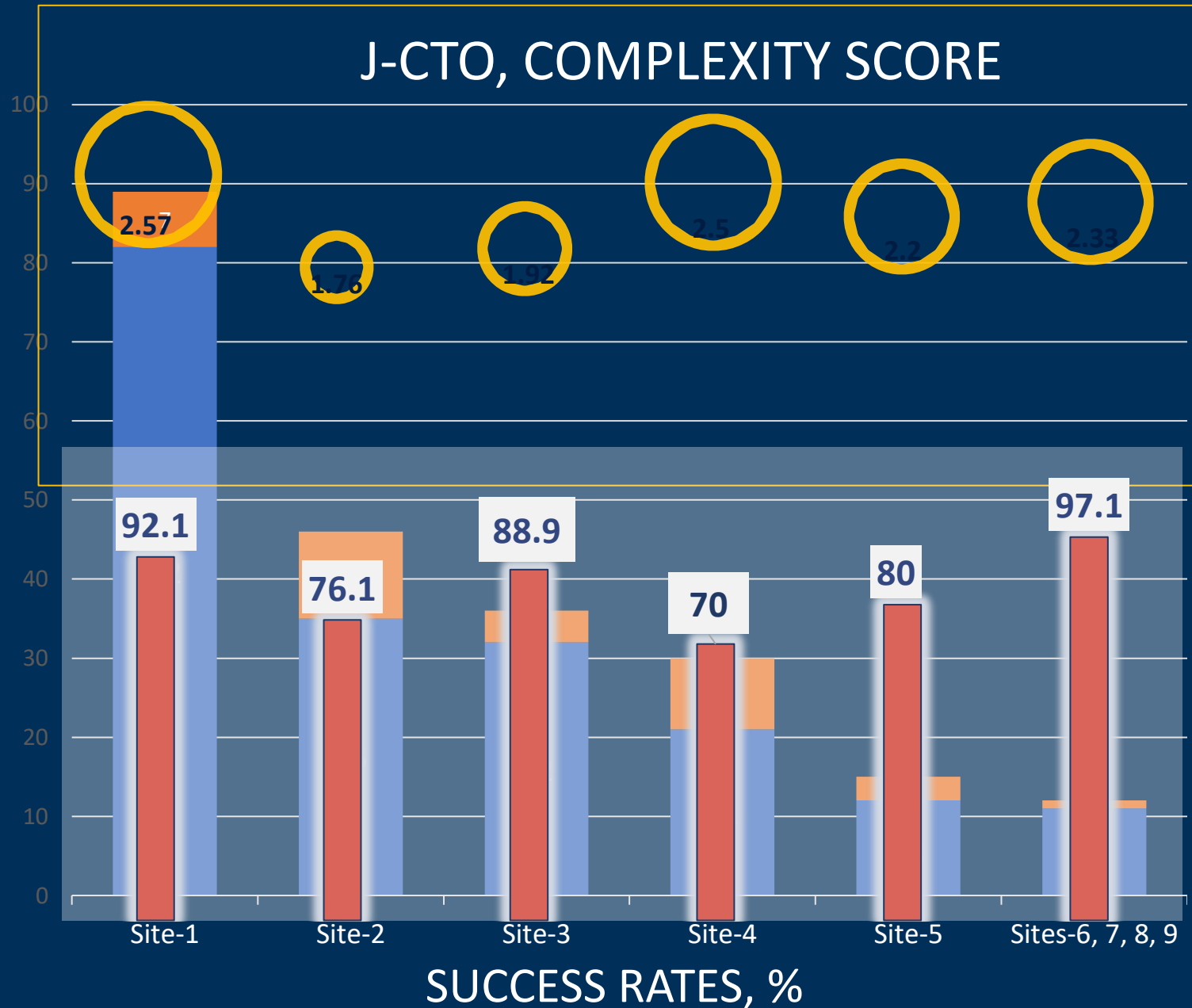
JCTO Score in CTO Registries

Euro-CTO	2,1
RECHARGE	3,0
OPEN	2,3
PROGRESS	2,4

Konstantinidis, Circ Cardiovasc Interv. 2018
Maeremans, J Am Coll Cardiol 2016
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Brilakis et al., Circulation. 2019



J-CTO, COMPLEXITY SCORE

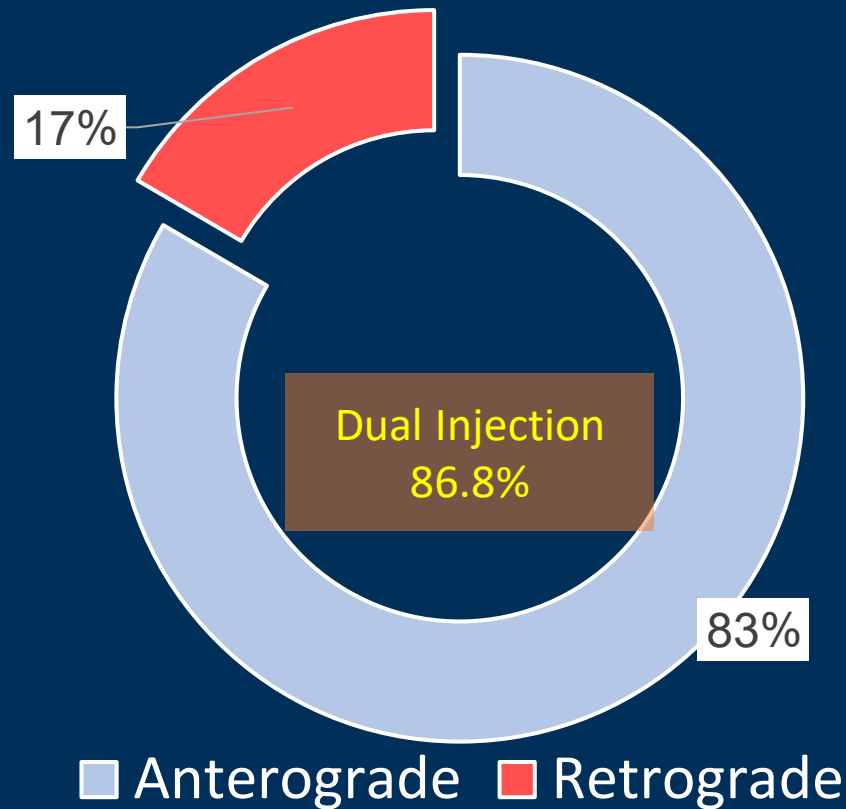


JCTO 5 points

1. Blunt cap
2. Length
3. Angle
4. Calcium
5. Previous failure

Hybrid Approach

Final Recanalization Strategy



Retro recanalization In CTO Registries:

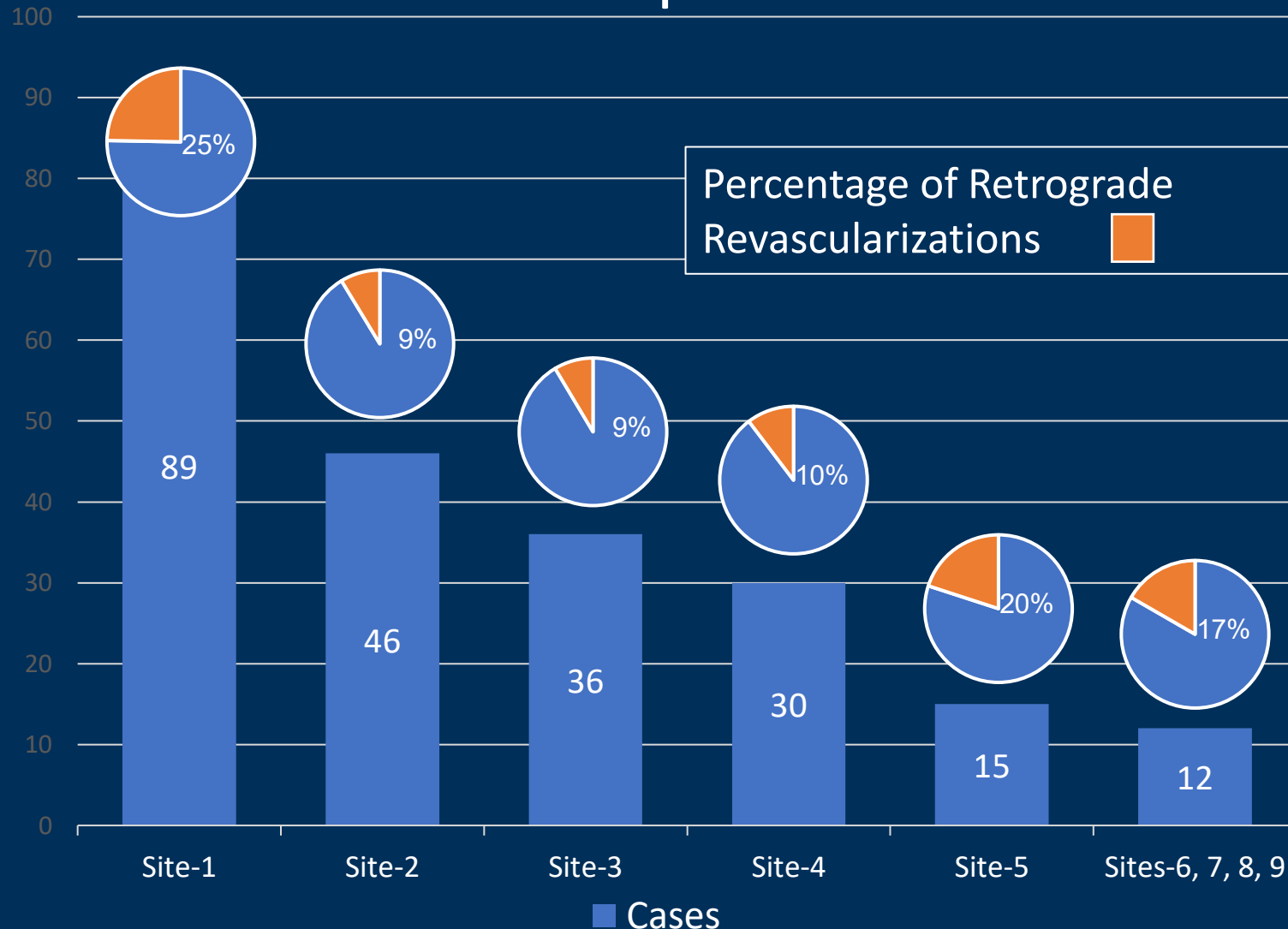
Euro-CTO	29,9%
RECHARGE	34%
OPEN	35%
PROGRESS	41%

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Maeremans, J Am Coll Cardiol 2016
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Brilakis et al., Circulation. 2019



Hybrid Approach per Site

Volume per Site

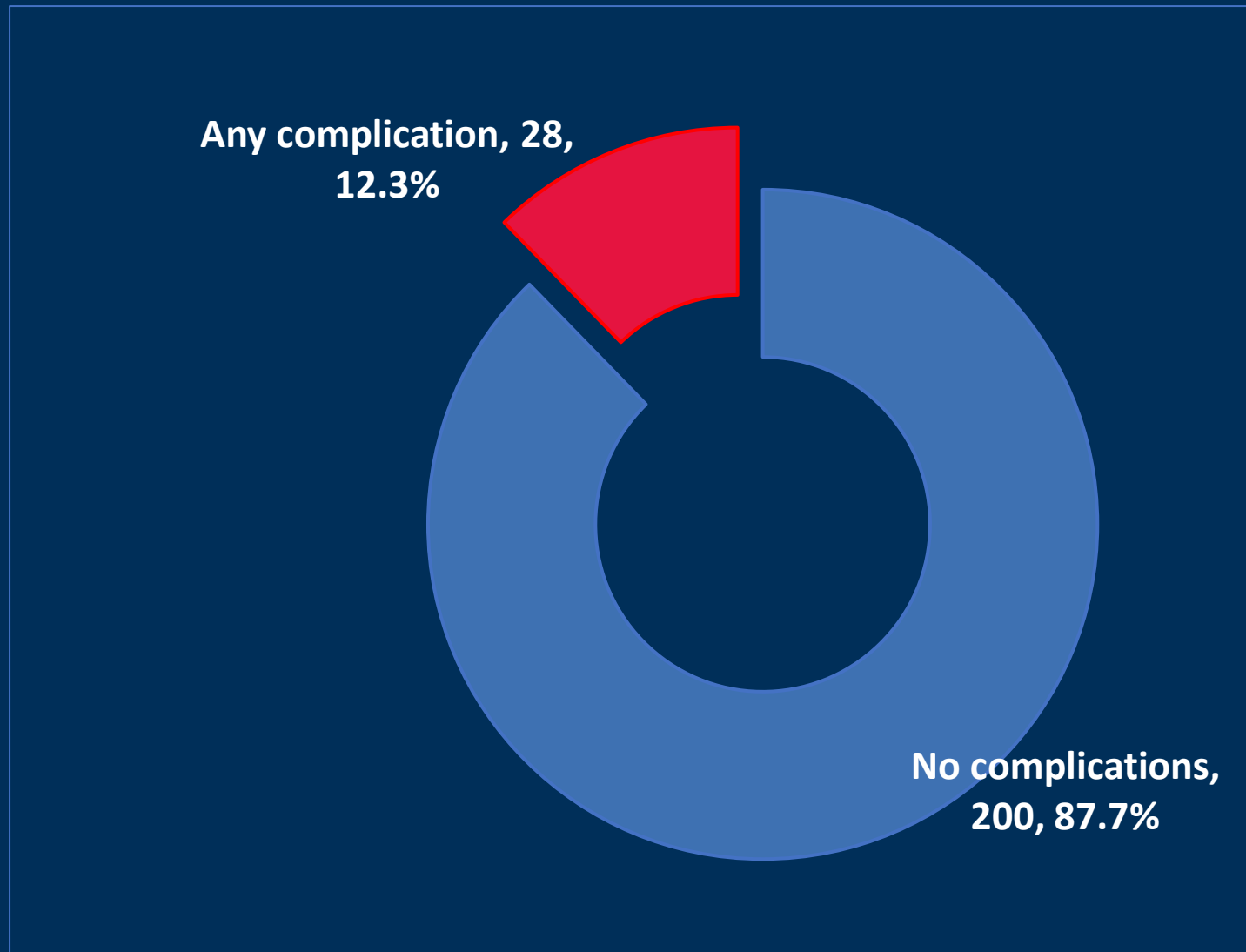


Retro recanalization In CTO Registries:

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Any Procedure Related Complications



Intraprocedural Complications

Reported cases n=222

Missing 2,6%

Case termination d/t complication 3

In CTO Registries:

Tamponade 0,4...1,3%

Death 0,2...0,9%

MACE 0,7...7,0%

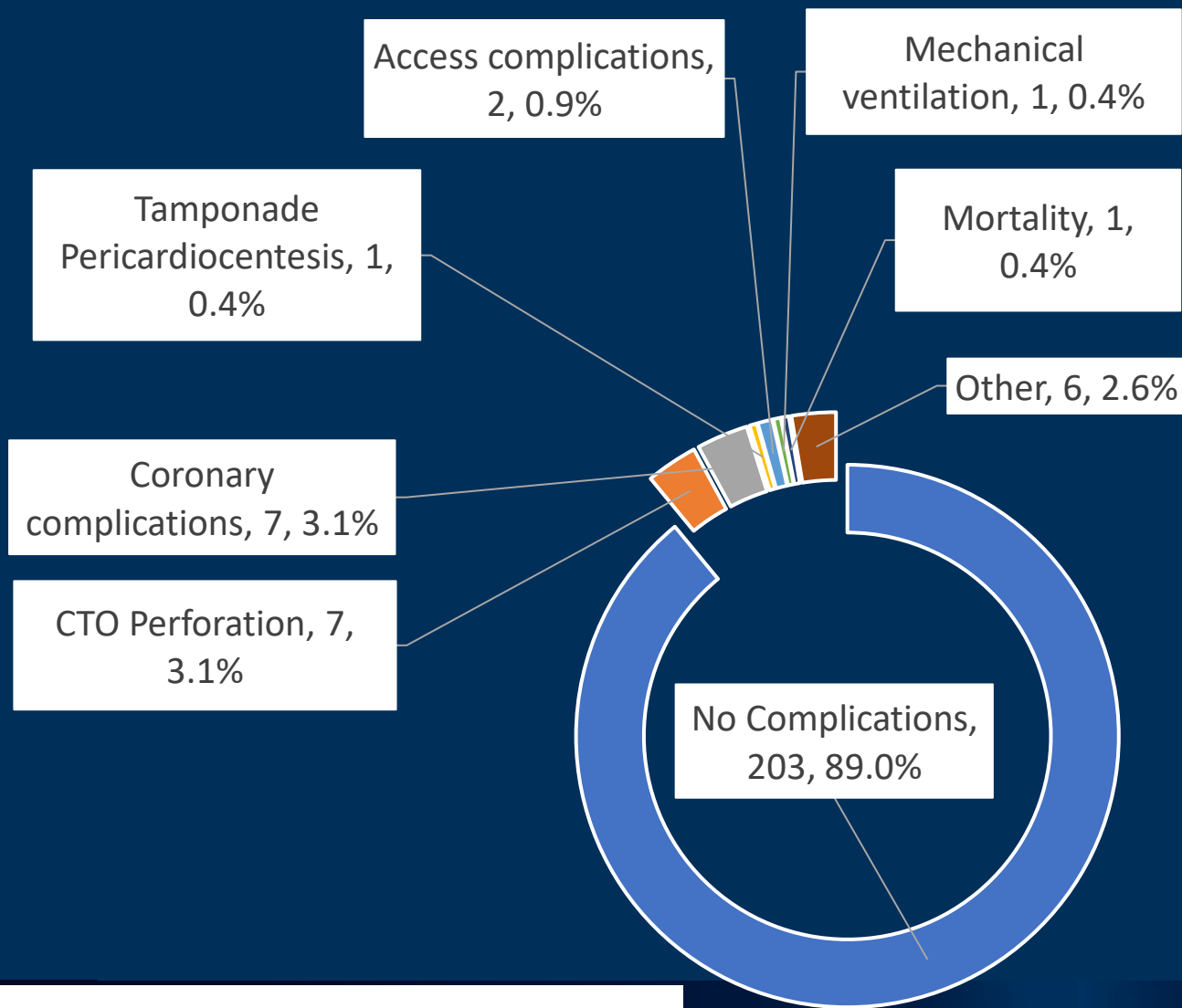
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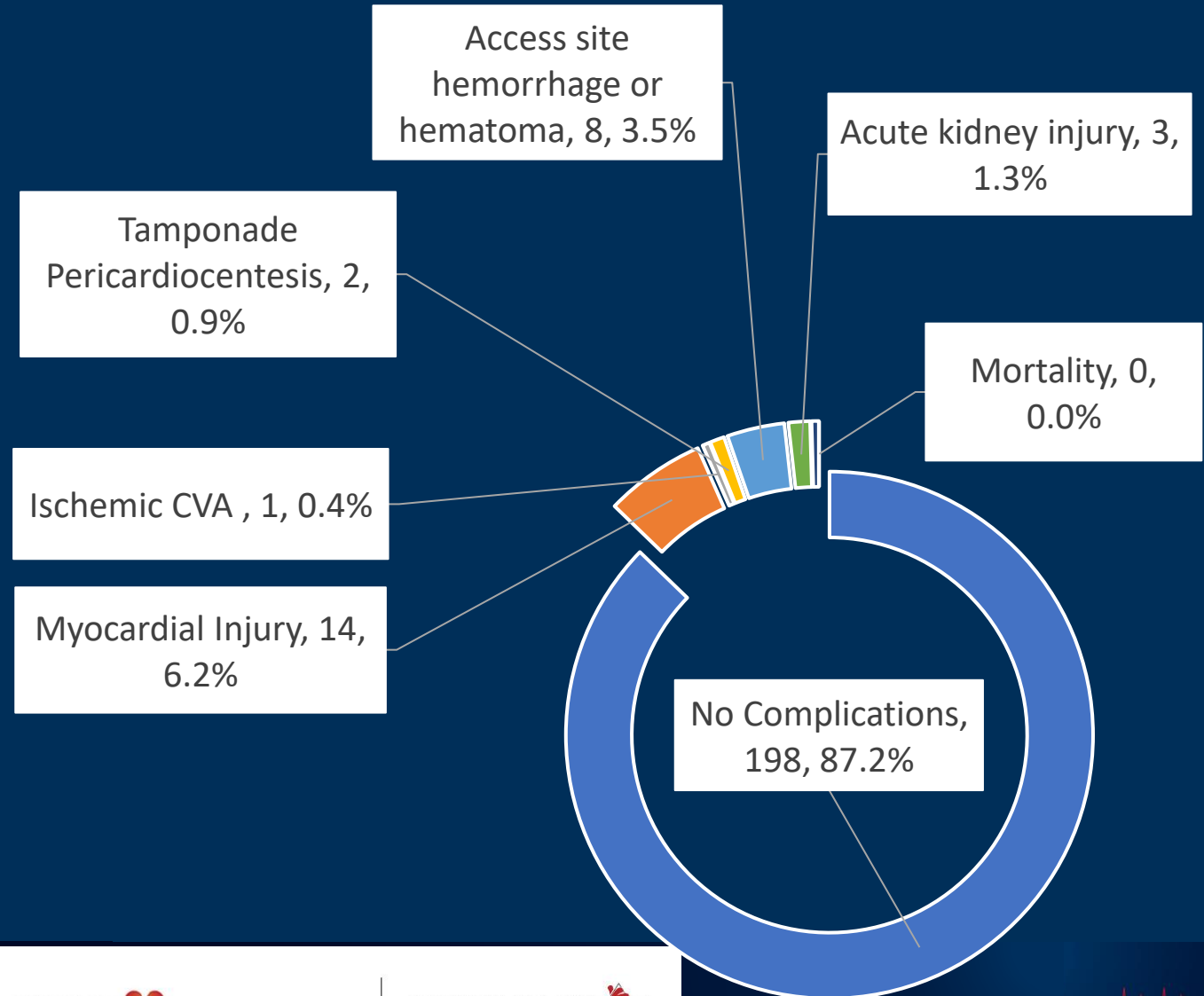
Brilakis et al., Circulation. 2019



Periprocedural Complications

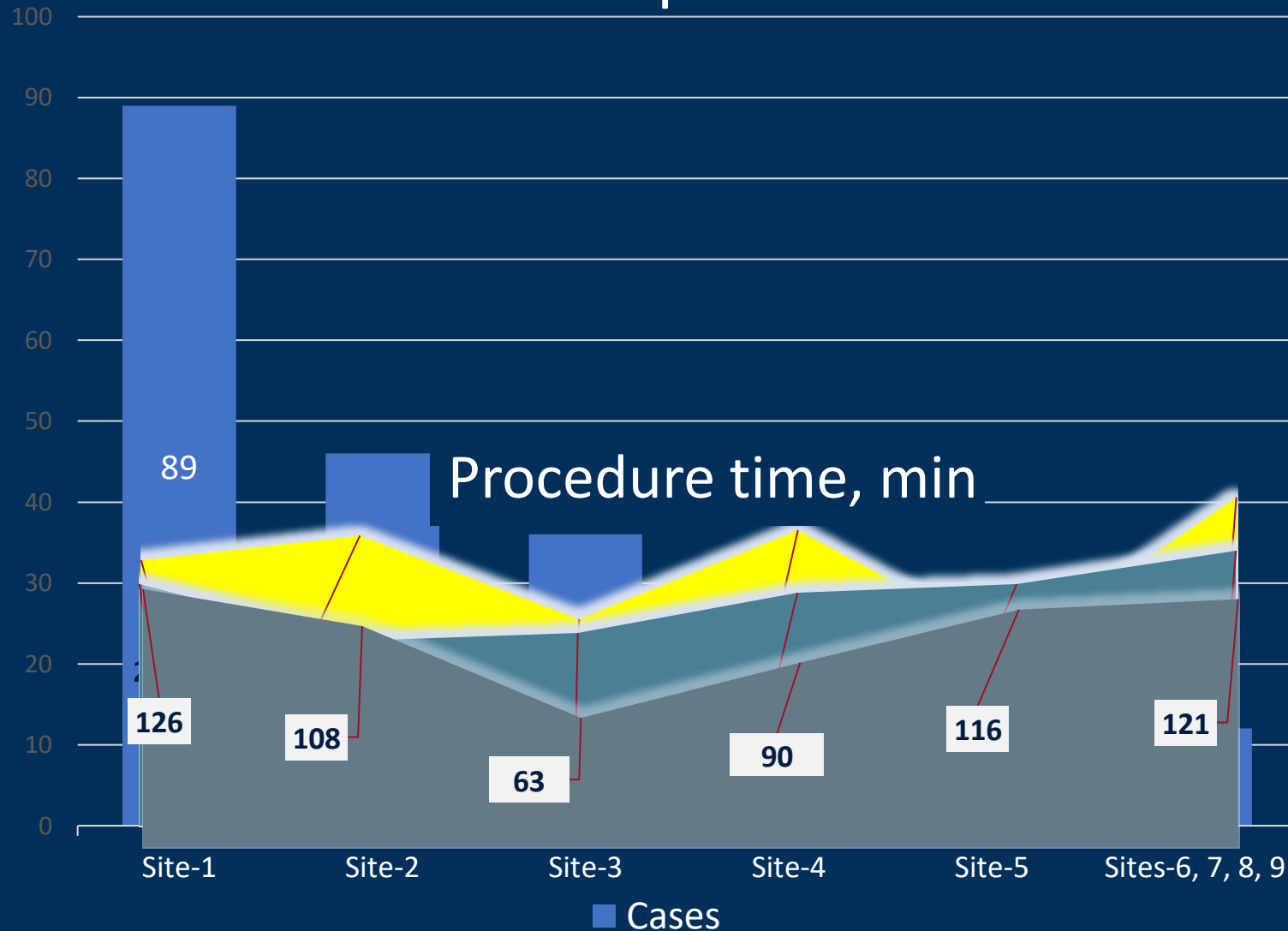
Reported cases n=223
Missing 2,2%

Missing Values
Troponin missing (23%) 15%...80%
Creatinin missing (15%) 4.5% ...60%



Procedure Metrics

Volume per Site



Air Kerma, mGy
2798 [IQR 1171 - 3814]



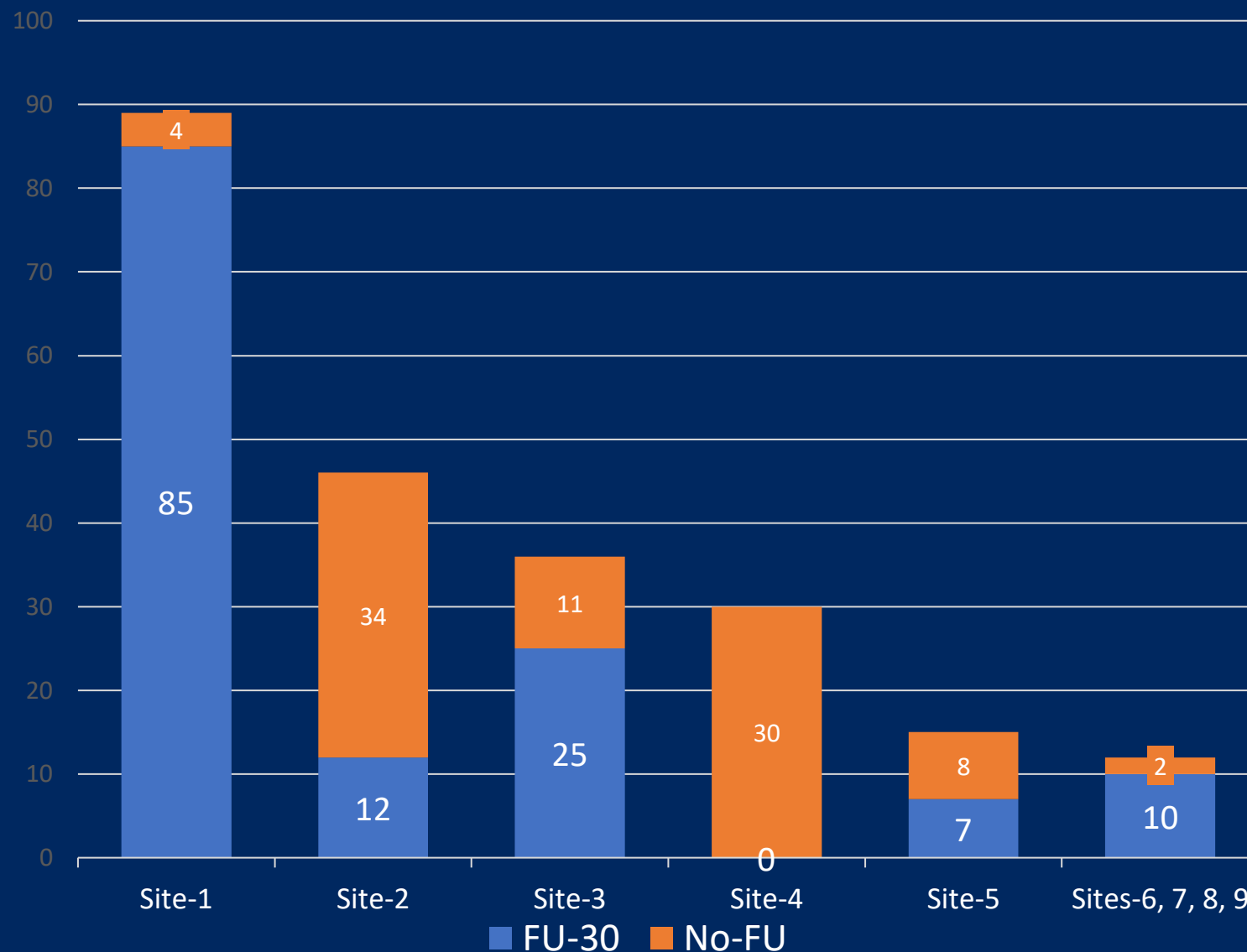
Contrast media, ml
229 (± 92)



Procedure duration, min
107 (± 57)



Follow-up visits @30 Days

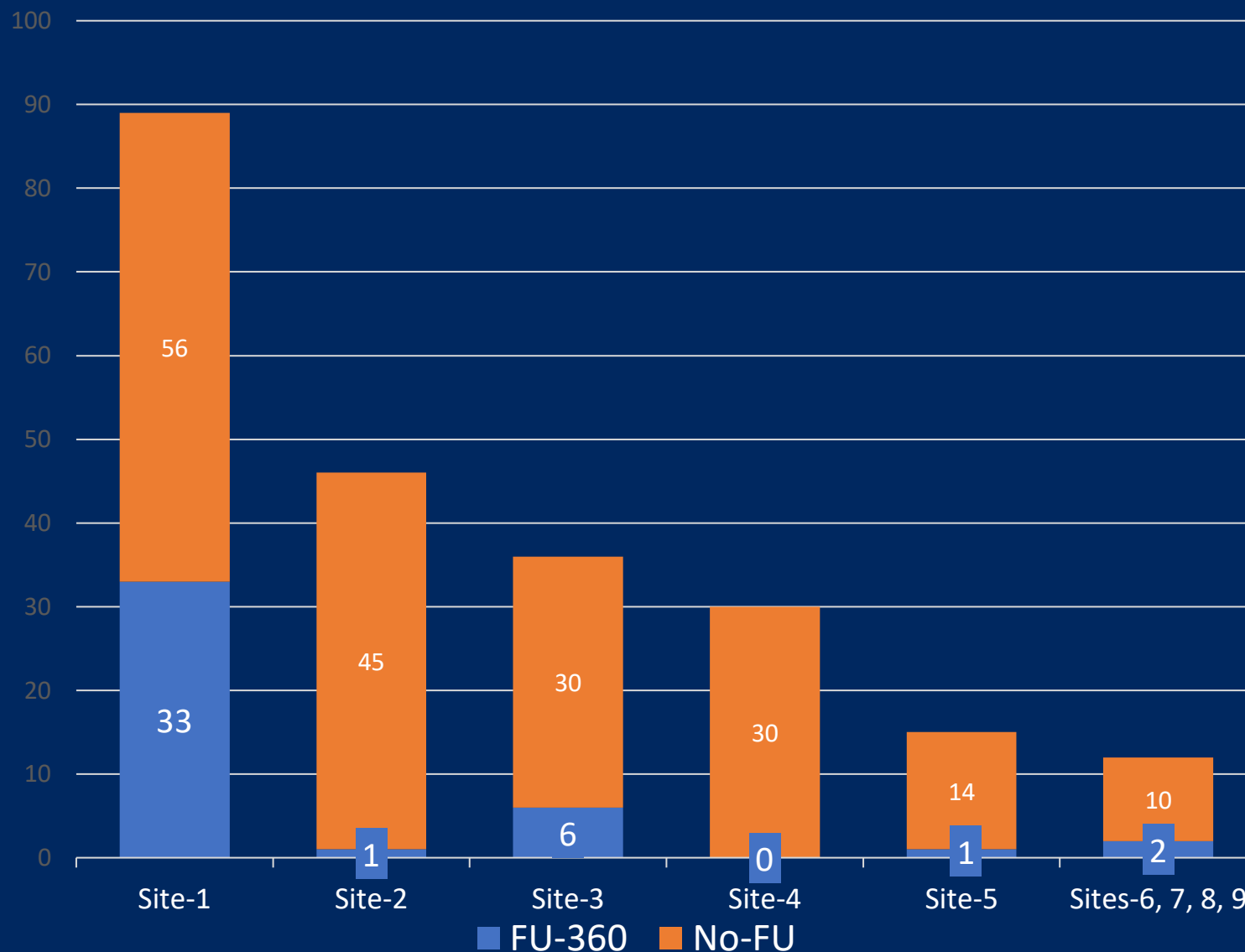


Expected FU >90%

Missing 39%

Cases (n, %)	228 (100%)
FU Visits	179 (61%)
Office visits	130 (72%)
Recovery	127 (71%)
Recurrent Hospitalization	7 (4%)
Recurrent Hospitalization (Cardiac)	2 (1,2%)
Unplanned Revascularization	1 (0,5%)
Angina Assessment	134 (58,8%)
NYHA Assessment	133 (58,3%)

Follow-up visits @360 Days

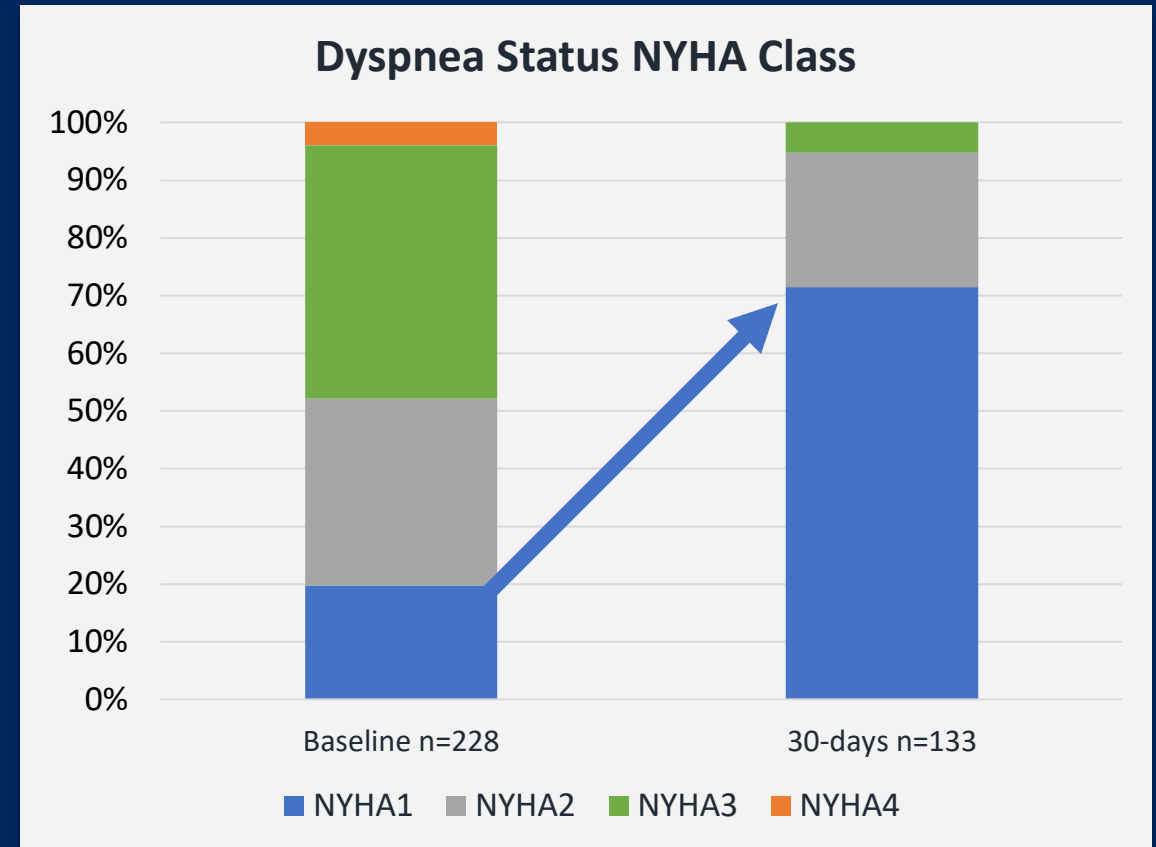
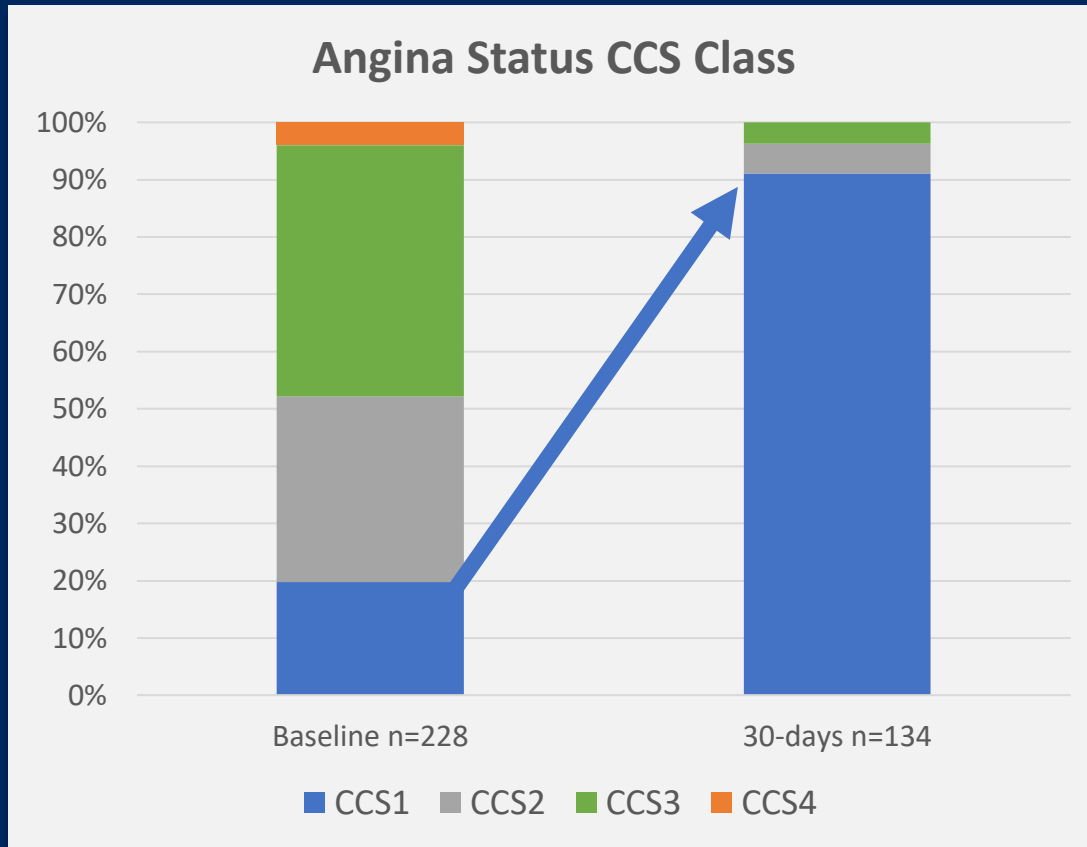


Expected FU >40%

Missing 81%

Cases (n, %)	228 (100%)
FU Visits	43 (18,9%)
Office visits	37 (86%)
Recovery	34
Recurrent Hospitalization (Cardiac)	6
Unplanned Revascularization (TVF)	3
Angina Assessment	39 (17,1%)
NYHA Assessment	39 (17,1%)

Symptomatic Improvement After Successful CTO Revascularization @30 Days



Summary of RISCC Initiative 2022

- Established RISCC Community
 - *Four independent CTO centers/operators, 5 centers developing CTO programs*
- At 20 months, 228 cases have been enrolled in a prospective registry
- Procedural results are reported continuously
- Diverse performance:
 - volumes, complexity, approaches and success rates.
- **Protocol adherence varies**
 - Under-reporting of labs and complications
 - Missing Follow up visits



THANK YOU

