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2026 SYMPOSIUM

Comparative Effectiveness of Drug-coated & Plain Balloon Angioplasty in Dysfunctional Hemodialysis Circuits among Medicare Beneficiaries

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Disclosures

Helena Smith, MD, Siling Li, MSc, Brett Salomon, MD
- No disclosures.

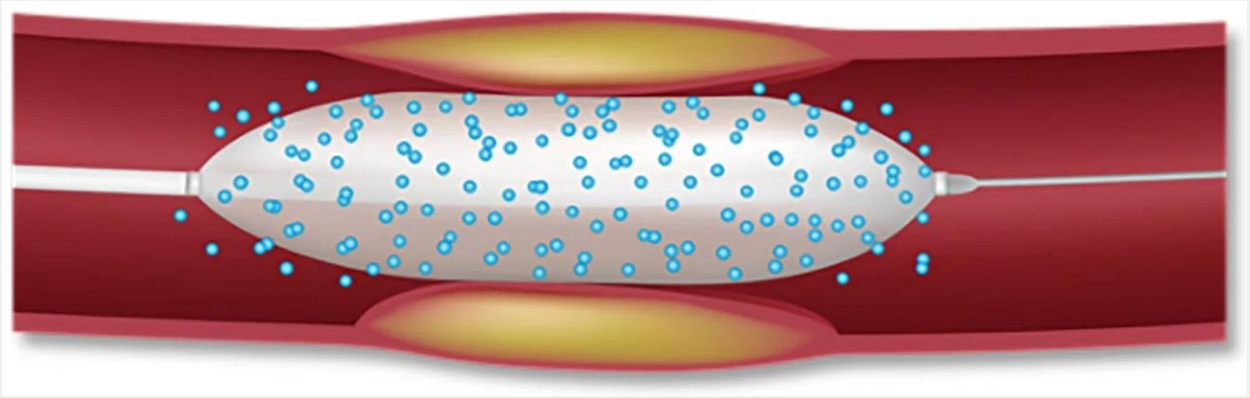
Mohamad Anas Hussain, MD, PhD
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Eric Alexander Secemsky, MD, MSc
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Background

Plain balloon angioplasty is first line for AV access stenosis, but durability is short-lived.

Drug-coated balloons improve patency in RCTs.



Lookstein R, Haruguchi H, Suemitsu K, et al. IN.PACT AV Access Randomized Trial of Drug-Coated Balloons for Dysfunctional Arteriovenous Fistulae: Clinical Outcomes through 36 Months. J Vasc Interv Radiol. 2023;34(12):2093-2102.e7.

Objectives

Describe **real-world patterns** of drug-coated balloon use.

and

Compare **real-world outcomes** of drug-coated balloon vs. plain balloon angioplasty for arteriovenous fistulas.

Methods

Retrospective observational study.

100% sample CMS Fee-for-Service database.

Aims:

1. **Temporal trends** in drug-coated balloon use.

2. **Practice variation** in drug-coated balloon use.

3. **Comparative effectiveness of drug-coated vs. plain balloon angioplasty for AVFs**

Study Population

Analysis	Time Period	Inclusion	N
1. Temporal trends	2018-2024	Any outpatient access angioplasty	**349,521 procedures** **DCB 35,644** POBA 313,877

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2. Practice variation	2023-2024 (stabilized practice)	Any outpatient center performing access angioplasty	814 centers
3. Comparative effectiveness	2021-2024 (post-COVID)	Any outpatient access angioplasty (AVFs only)	**64,140 procedures** **DCB 7,813** POBA 56,327

Study Endpoints

Primary Endpoint

Reintervention (a composite of angioplasty, stenting, or thrombectomy) through 12 months.

Secondary endpoints:

- Reintervention (6, 24 months)
- Angioplasty, stenting, or thrombectomy (6, 12, 24 months)
- All-cause mortality (6, 12, 24 months)

Statistical Methods

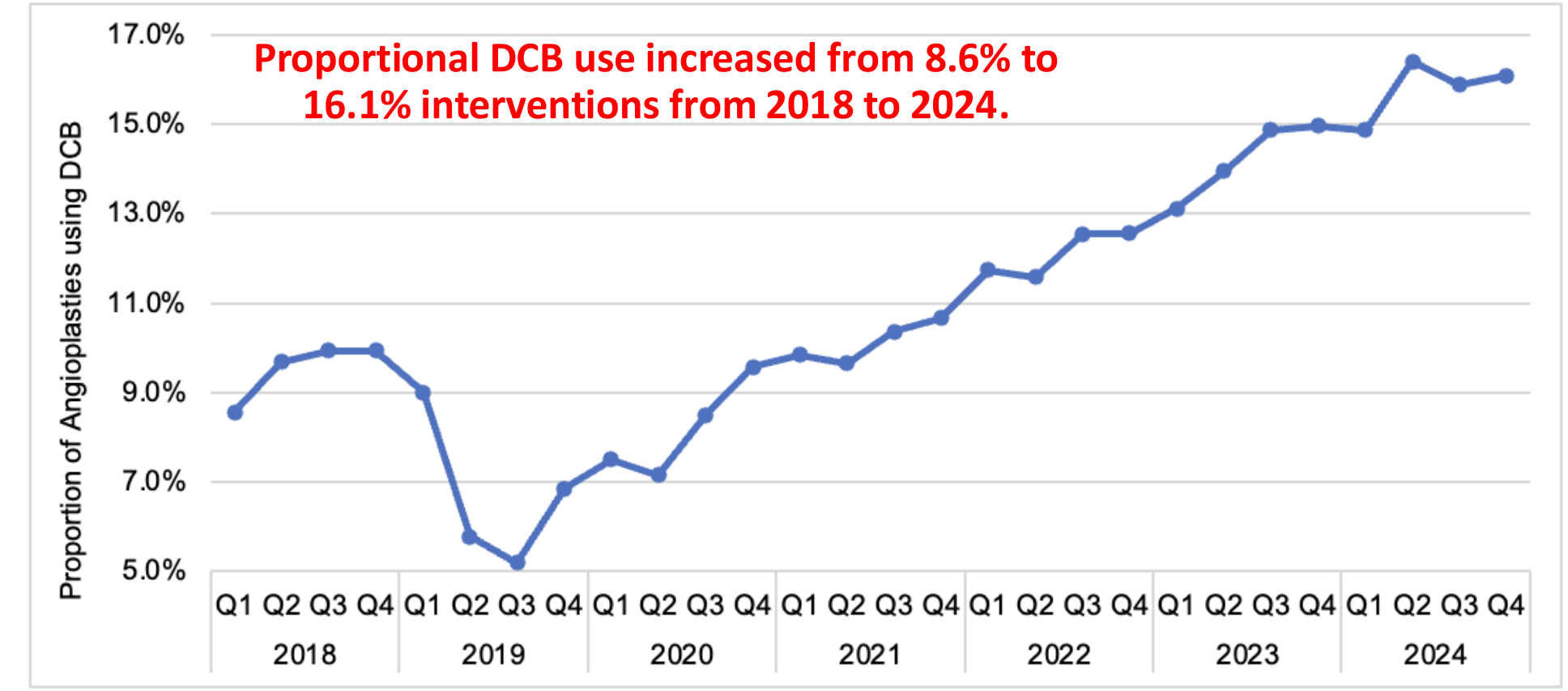
Inverse probability of treatment weighting.

Standardized mean differences (<10% adequate balance) for baseline characteristics.

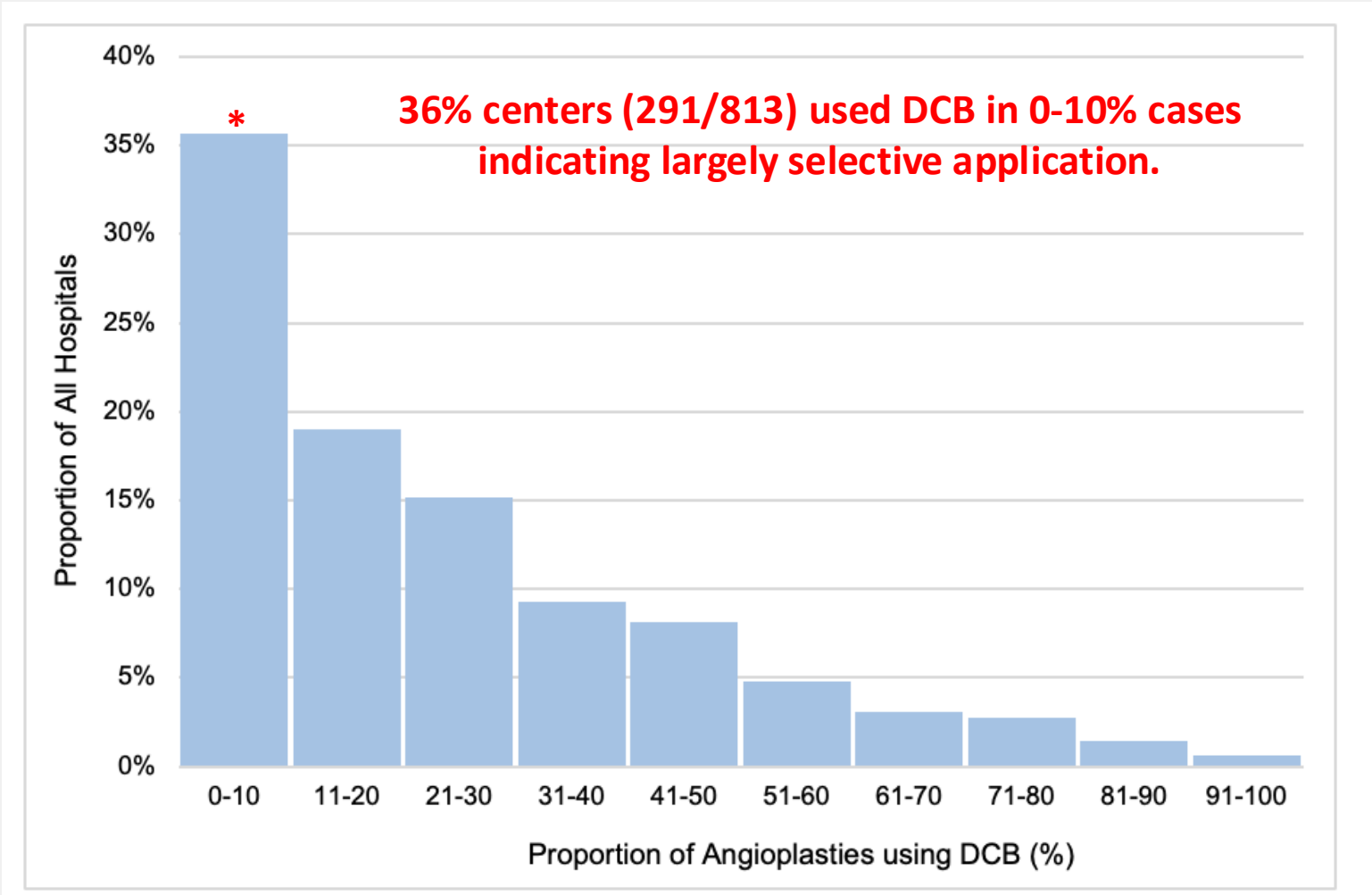
Logistic regression models: Fine-Gray (non-fatal), Cox (fatal), with death and kidney transplant as competing risks and center-level clustering. Adjustment for >40 covariates.

Cumulative incidence function (CIF) and restricted mean time lost (RMTL). Significance P<.005, 95% confidence intervals.

Results: Temporal Trends



Results: Practice Variation



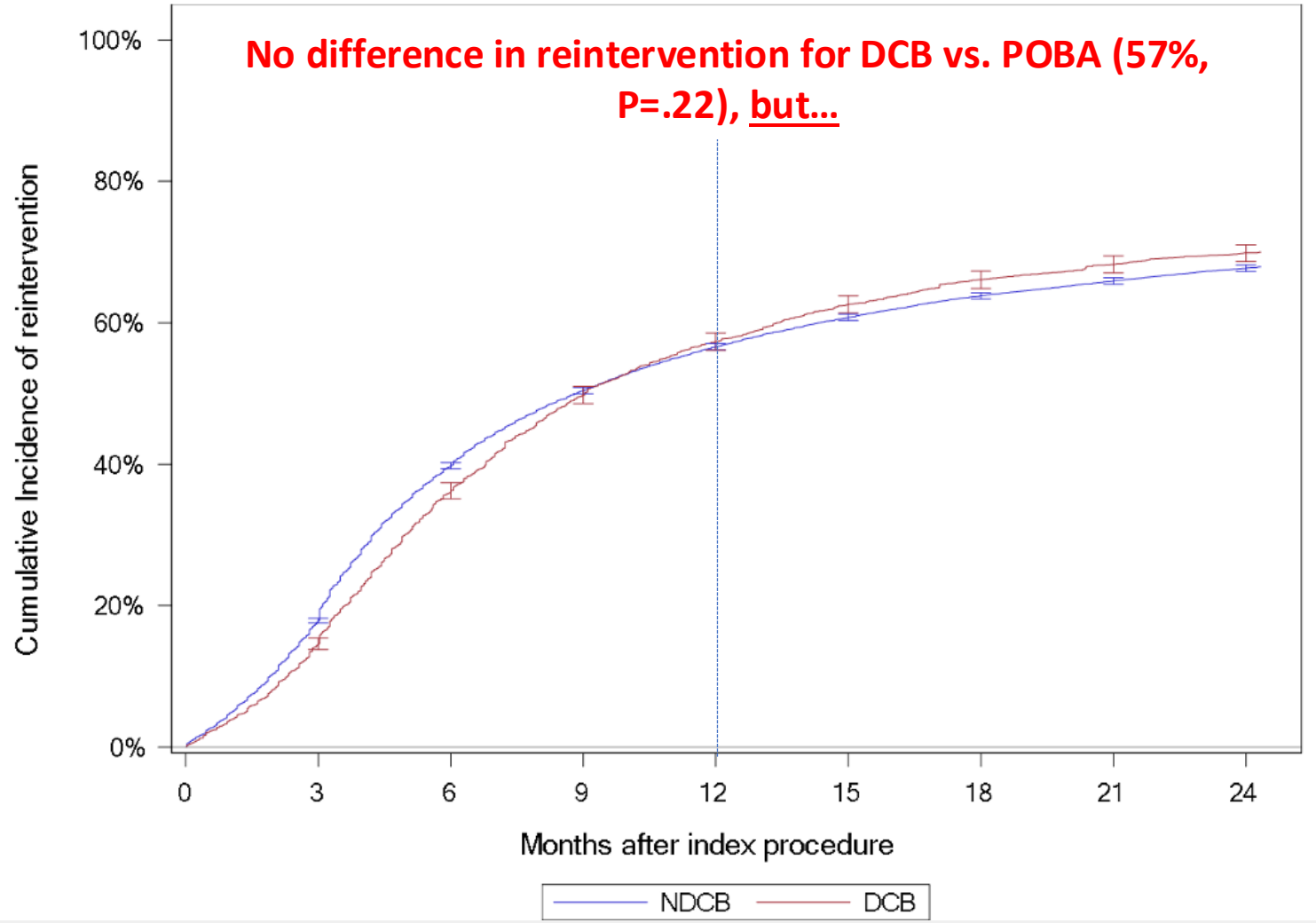
Results: Comparative Analysis Baseline Characteristics

All baseline characteristics (>40 assessed) were comparable for DCB vs. plain balloon

Characteristic	Weighted SMD (%)
Age, years	**0.7**
Sex, female	**0.1**
Black	**-0.0**
Diabetes	**-0.2**
Prior access angioplasty	**-0.8**

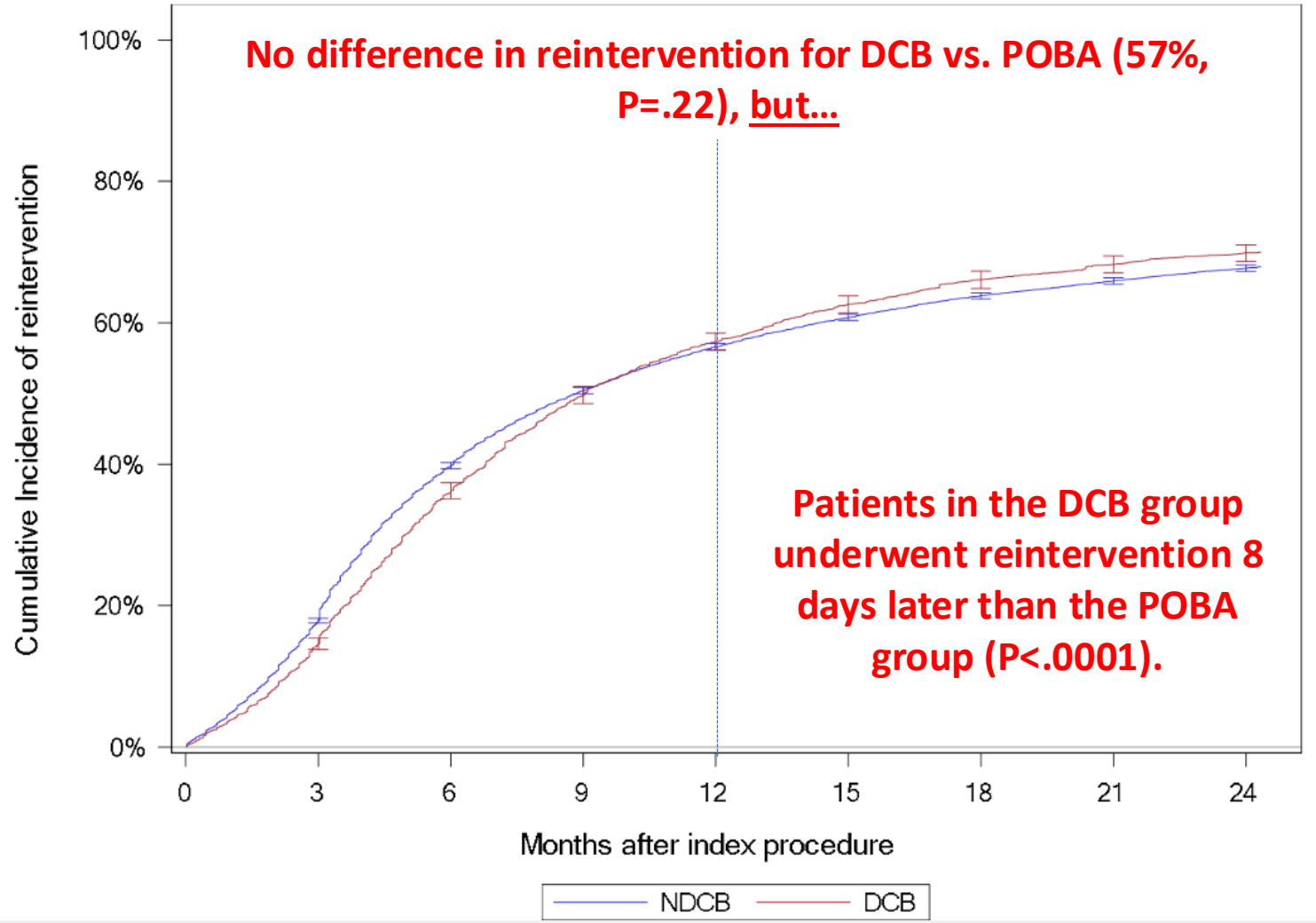
Results: Primary Endpoint

Composite of repeat angioplasty, stenting, or thrombectomy through 12 months

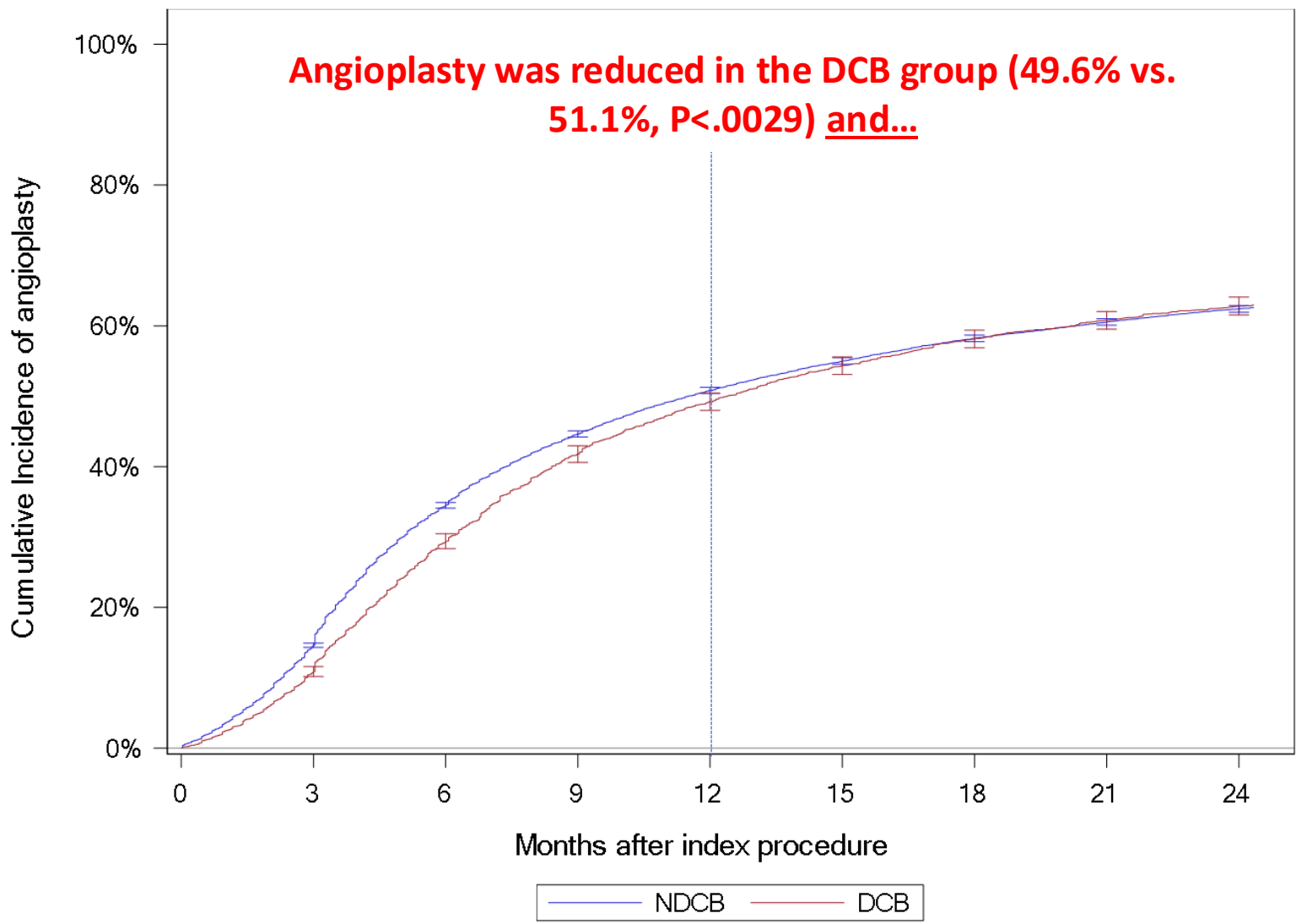


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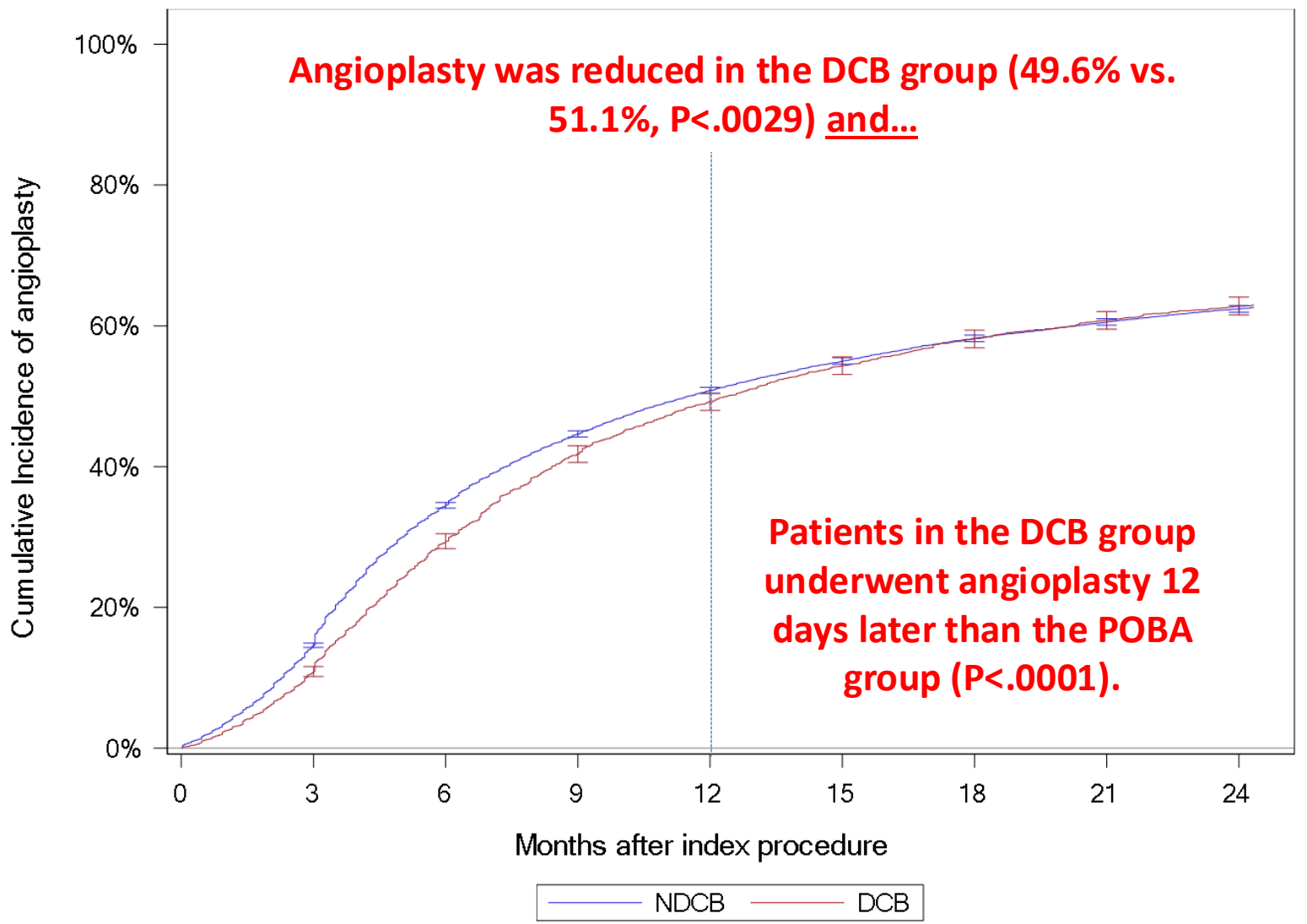
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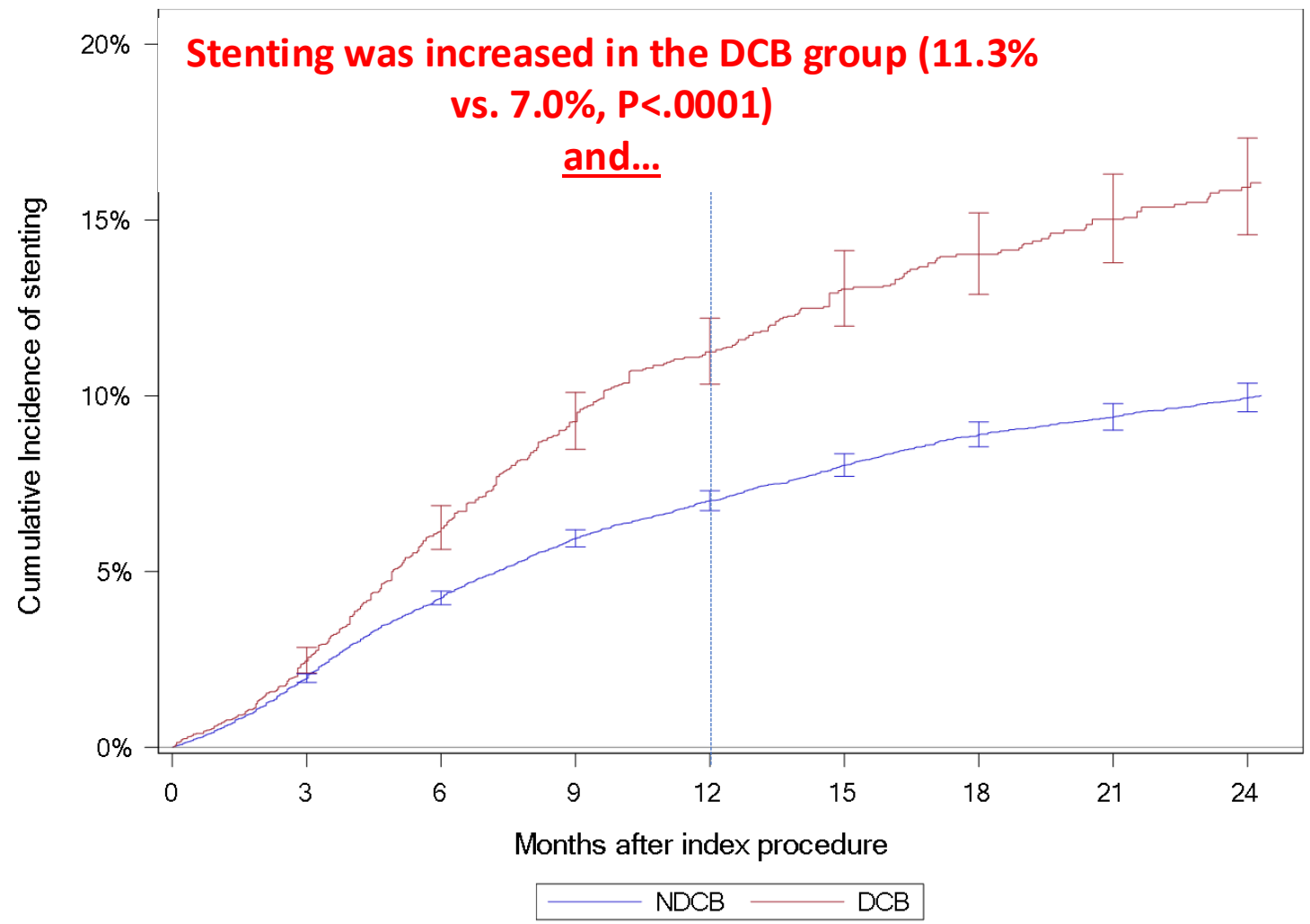
Secondary Endpoint: Repeat Angioplasty through 12 months



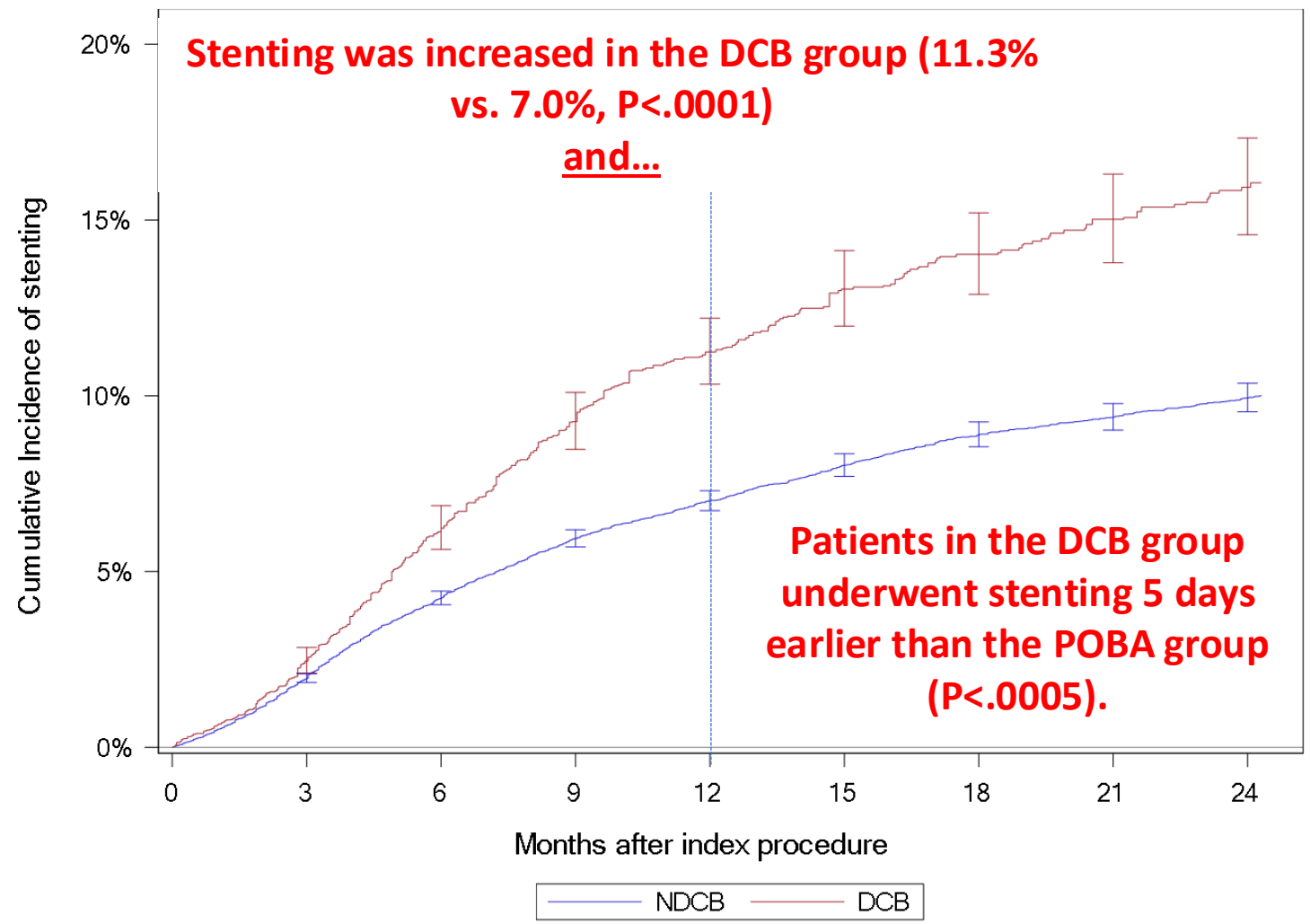
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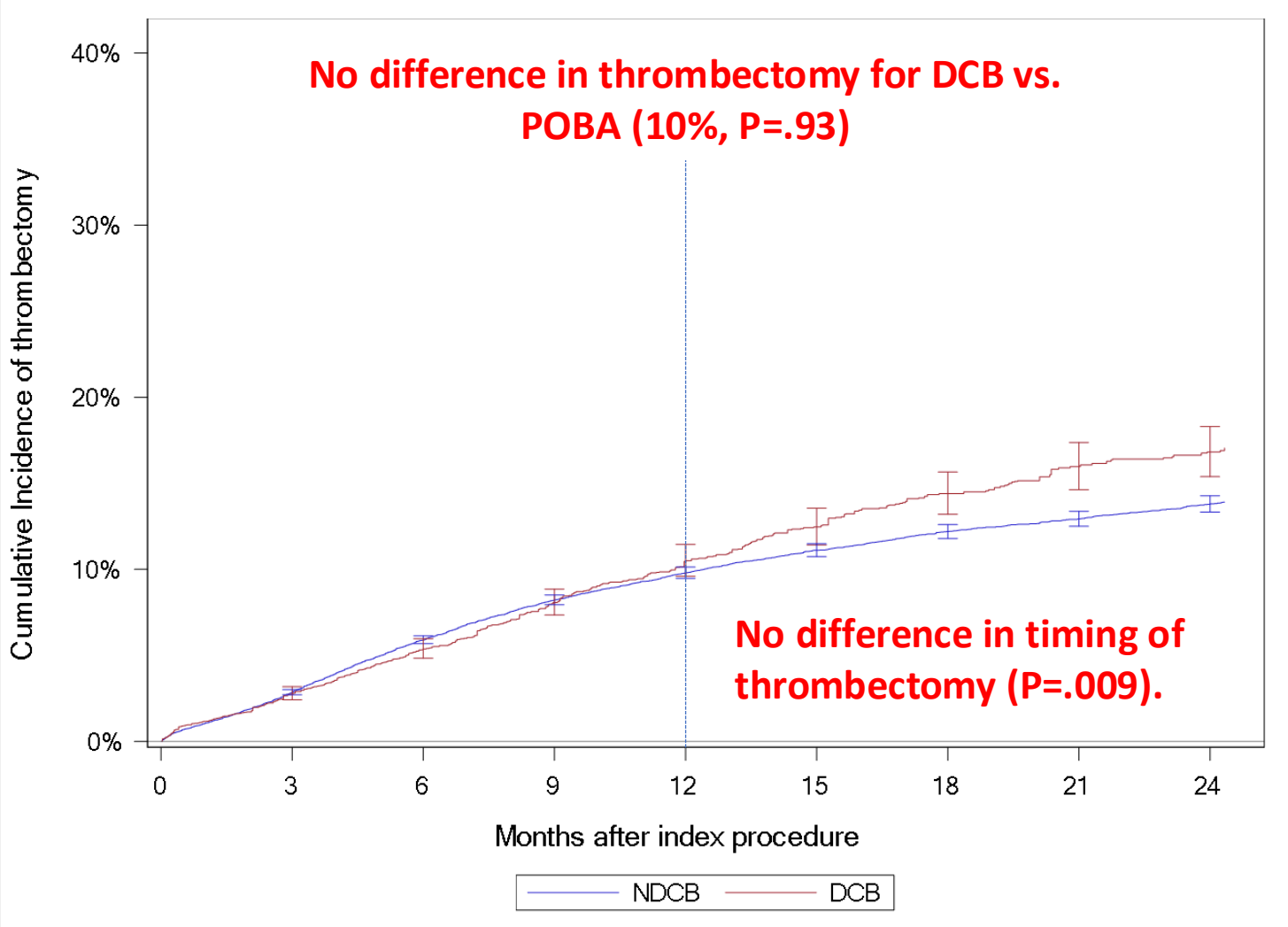
Secondary Endpoint: Stenting through 12 months



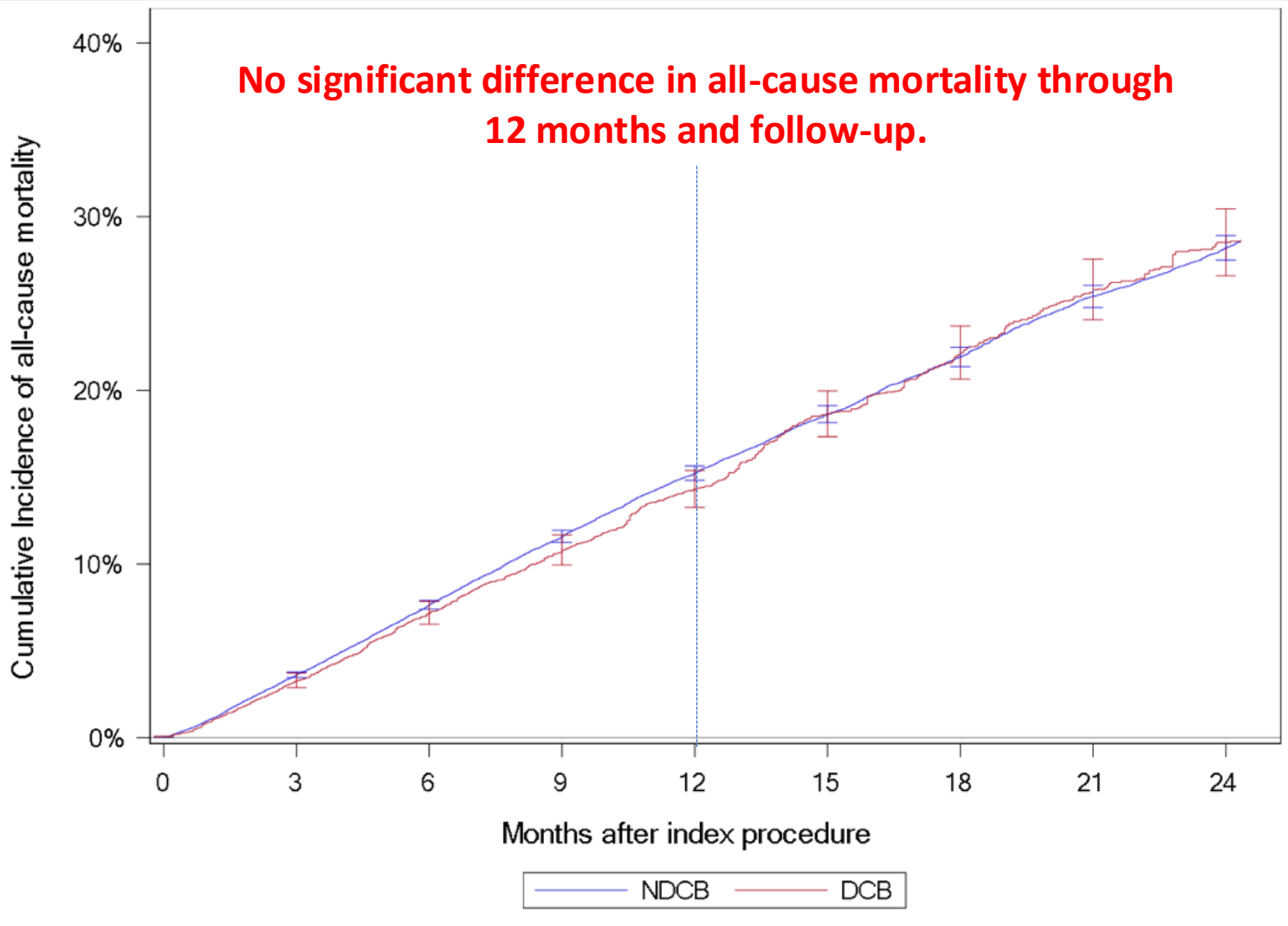
Secondary Endpoint: Stenting through 12 months



Secondary Endpoint: Thrombectomy through 12 months



Secondary Endpoint: All-Cause Mortality through 12 months



Discussion

Endpoint	Cumulative Incidence (CIF)	Timing (RMTL)
Reintervention	No difference	Delayed (8 days)
Angioplasty	Decreased	Delayed (12 days)
Stenting	Increased	Earlier (5 days)
Thrombectomy	No difference	No difference
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Real-world results contradict RCT results

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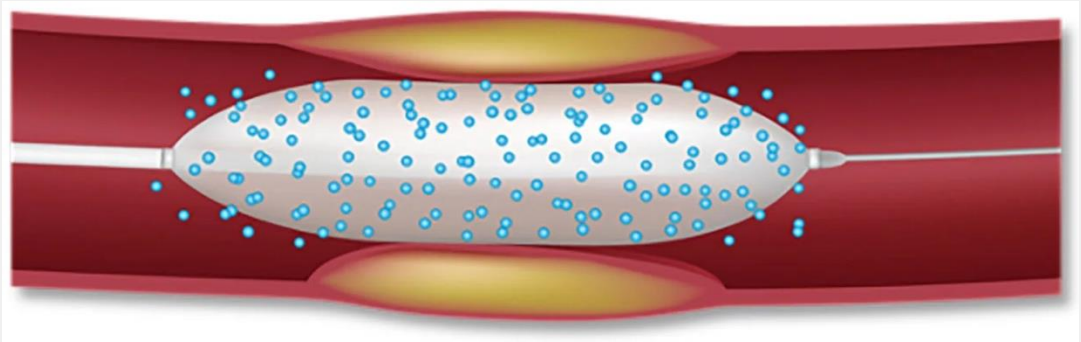
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Conclusions

1. **Increasing proportional use** of drug-coated balloons.
   - Doubling from 2018-2024.

2. **Pronounced hospital-level variation** in drug-coated balloon use.

3. **Attenuated real-world benefit of drug-coated balloons** vs. uncoated balloons compared to randomized controlled trials.
   - Notable increase in stenting.



Thank you!