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**Both Views Are Wrong: Severe Carotid Stenosis Has Declined As A Cause Of Ischemic Stroke To <1% Per Year: So <5% Of ACS Patients Should Be Treated Invasively**

Presenter:  
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KAISER PERMANENTE

**No Disclosures**

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**MY PLATFORM**

Despite **excellent interventional outcomes** to prevent stroke in patients with asymptomatic stenosis, the modern-day stroke risk in unoperated patients is low enough that it **diminishes the overall benefit of intervention**.

There will be patients that have net harm done with intervention. However, the unoperated risk is not zero, so **there are some patients who might benefit from a well-done intervention**.

Can we identify this high-risk cohort of patients?

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**What do we want to know?**

- What is the untreated stroke risk?
- What are the operative outcomes?
- Can we compare CEA and medical therapy outside of a clinical trial?

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JAMA | Original Investigation

**Incidence of Ischemic Stroke in Patients With Asymptomatic Severe Carotid Stenosis Without Surgical Intervention**

Robert W. Chang, MD; Lue-Yen Tucker, BA; Kara A. Rothenberg, MD; Elizabeth Lancaster, MD, MAS; Rishad M. Faruqi, MD; Hai C. Kuang, NP; Alexander C. Flint, MD, PhD; Andrew L. Avins, MD; Mai N. Nguyen-Huyth, MD

JAMA. 2022;327(20):1916-1982. doi:10.1001/jama.2022.4835

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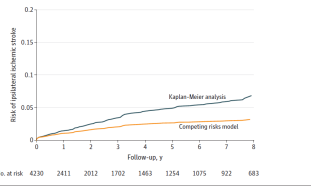
**ISCHEMIC STROKE OUTCOMES**

Outcomes	Cohort, % (95% CI)
Unadjusted overall crude rates, No. (%)	16 (42.0)
Isolated carotid-related stroke	133 (3.1)
All-cause mortality	755 (18.5)
Mean yearly crude rates	
Isolated carotid-related stroke	0.9 (0.1-1.3)
All-cause mortality	13.6 (12.6-14.7)
Kaplan-Meier unadjusted cumulative probabilities at 5 y	
Risk of ipsilateral carotid-related stroke	4.7 (3.9-5.5)
All-cause mortality	35.2 (33.7-36.9)
Unadjusted cumulative incidence of ipsilateral stroke (competing risk analysis), %	
1	1.0 (0.8-1.4)
2	1.6 (1.3-2.0)
3	2.1 (1.7-2.5)
4	2.6 (2.1-3.0)
5	3.2 (2.7-3.7)
6	3.8 (3.3-4.4)
7	4.4 (3.9-5.0)
8	5.0 (4.5-5.6)

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## COMPETING RISK ANALYSIS

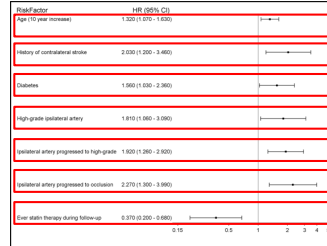
Figure 2. Cumulative Risk of Ipsilateral Ischemic Stroke per Unique Artery After Initial Diagnosis of Asymptomatic Severe Carotid Stenosis



JAMA. 2022;327(20):1974-1982. doi:10.1001/jama.2022.4835

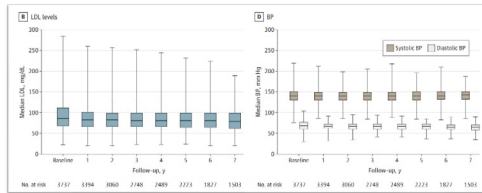
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## FOREST PLOT COX MODEL: STROKE



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## RISK FACTOR CONTROL



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## CONCLUSIONS

- Stroke rate in this cohort is lower than previously reported
- Progression to high grade disease or occlusion may be associated with stroke (but this number is small)
- Statin use during follow-up has beneficial effect on ipsilateral stroke prevention

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## What do we want to know?

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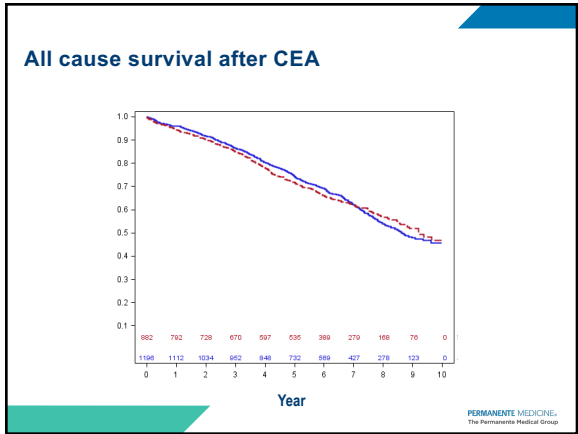
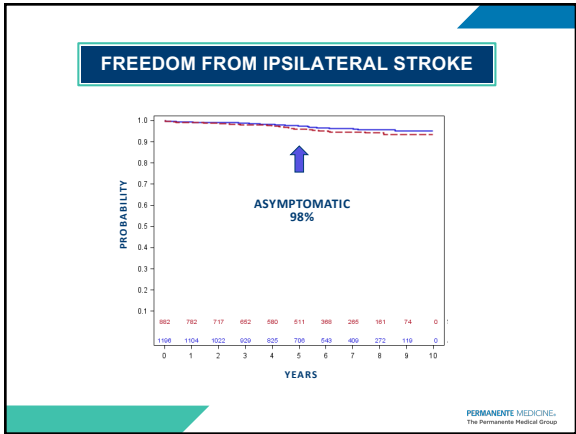
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## Long-term stroke risk with carotid endarterectomy in patients with severe carotid stenosis

Kara A. Rothenberg, MD<sup>1</sup>, Lue-Yen Tucker, BA<sup>1</sup>, Rebecca C. Gologorsky, MD<sup>1</sup>, Andrew L. Avins, MD<sup>1</sup>, Hui C. Kuang, NP<sup>2</sup>, Rishad M. Faruqi, MD<sup>3</sup>, Alexander C. Flint, MD<sup>4</sup>, Mai N. Nguyen-Huyh, MD<sup>1</sup>, and Robert W. Chang, MD<sup>1,5</sup> Oakland, San Francisco, Santa Clara, Redwood City, Walnut Creek, and South San Francisco, Calif

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- ### What do we want to know?
- What are the operative outcomes?
  - What is the untreated stroke risk?
  - Can we compare CEA and medical therapy outside of a clinical trial?
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### WHAT IS THE OPTIMAL TREATMENT OF ASYMPTOMATIC CAROTID STENOSIS?

TRIAL	NNT	STROKES PREVENTED PER 100 CEA
ACAS (5 YEAR)	17	5.9
ACST (5 YEAR)	19	5.3
ACST (10 YEAR)	22	4.6

*Naylor Nat Rev Cardiol 2011*

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**Editors' Choice** Check for updates

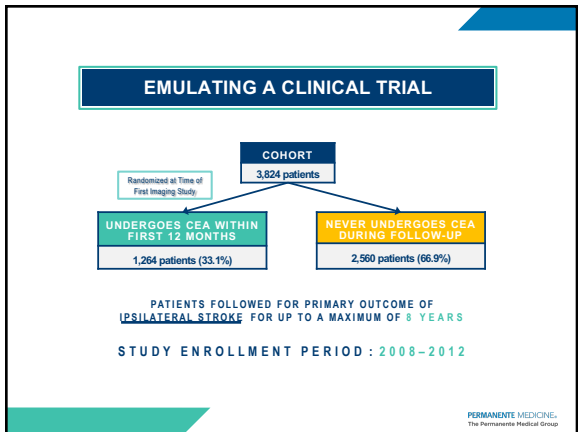
From the Society for Vascular Surgery

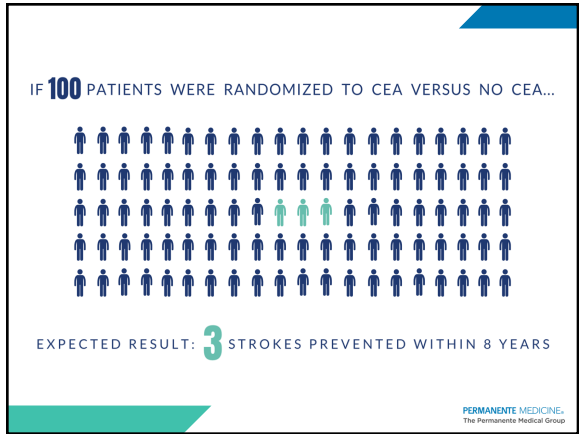
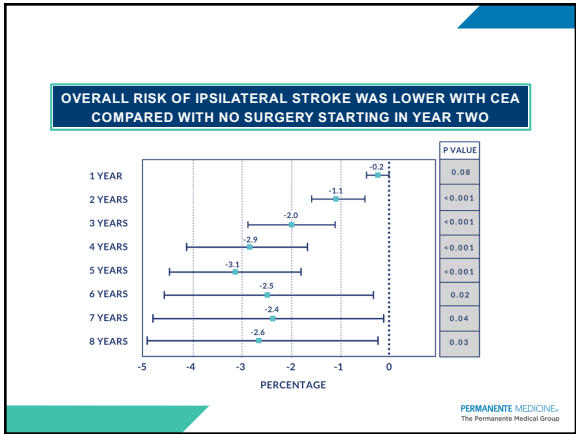
**A comparative effectiveness study of carotid intervention for long-term stroke prevention in patients with severe asymptomatic stenosis from a large integrated health system**

Robert W. Chang MD<sup>1,2</sup>, Noel Pimentel BA<sup>3</sup>, Lue Yen Tucker BA<sup>4</sup>, Kara A. Rothenberg MD<sup>1</sup>, Andrew L. Avins MD<sup>1,2</sup>, Alexander C. Flint MD, PhD<sup>1</sup>, Rishad M. Faruqi MD<sup>1</sup>, Mai N. Nguyen-Huynh MD<sup>1,2</sup>, and Romain Neugebauer, PhD<sup>1,2</sup>. *South San Francisco, Oakland, San Francisco, Redwood City, Santa Clara, Walnut Creek, and Pasadena, CA*

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**WHAT IS THE OPTIMAL TREATMENT OF ASYMPTOMATIC CAROTID STENOSIS?**

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**34**      **3**

*Hayler Hal Row Cardio 2011*

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- What have we learned**
- Stroke rate lower than we thought in severe asymptomatic stenosis
    - Identified predictors of stroke
    - Long-term survival after surgery is crucial
  - Outcomes after CEA are excellent
  - Decreased but persistent benefit of CEA vs medical therapy compared to trials
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