

# **Fate of Deferred Lesion**

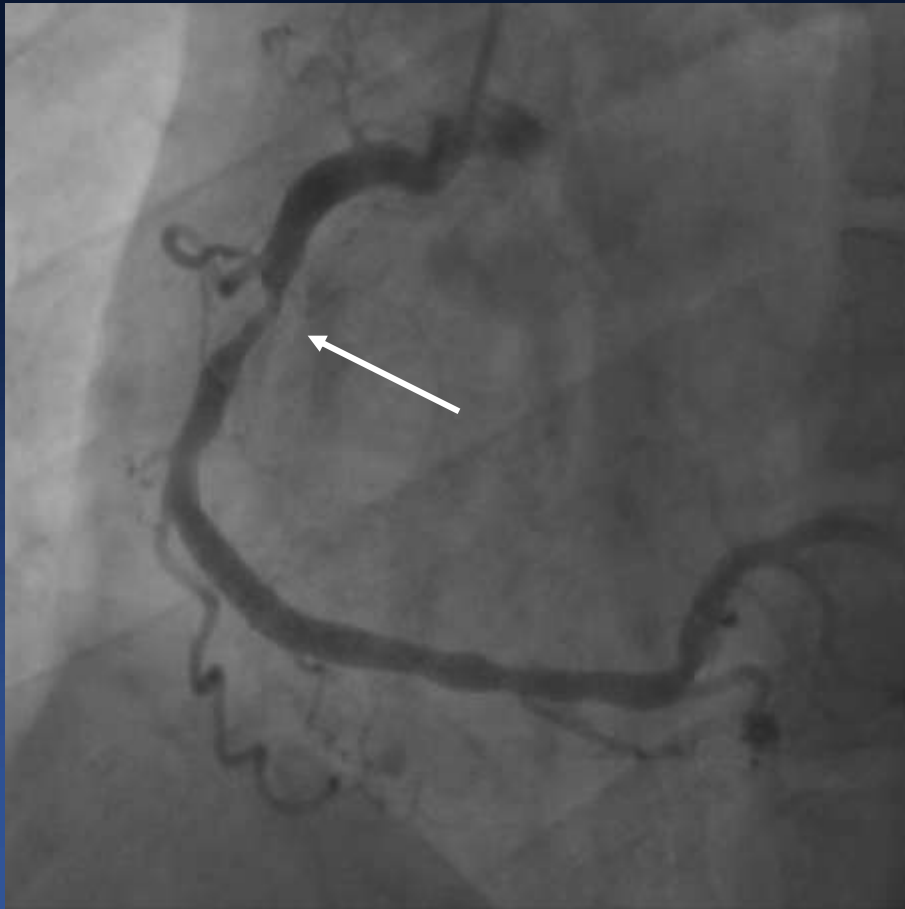
## **Insight from IRIS FFR Registry**

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Heart Institute, Asan Medical Center, Seoul, Korea

**M/72,**

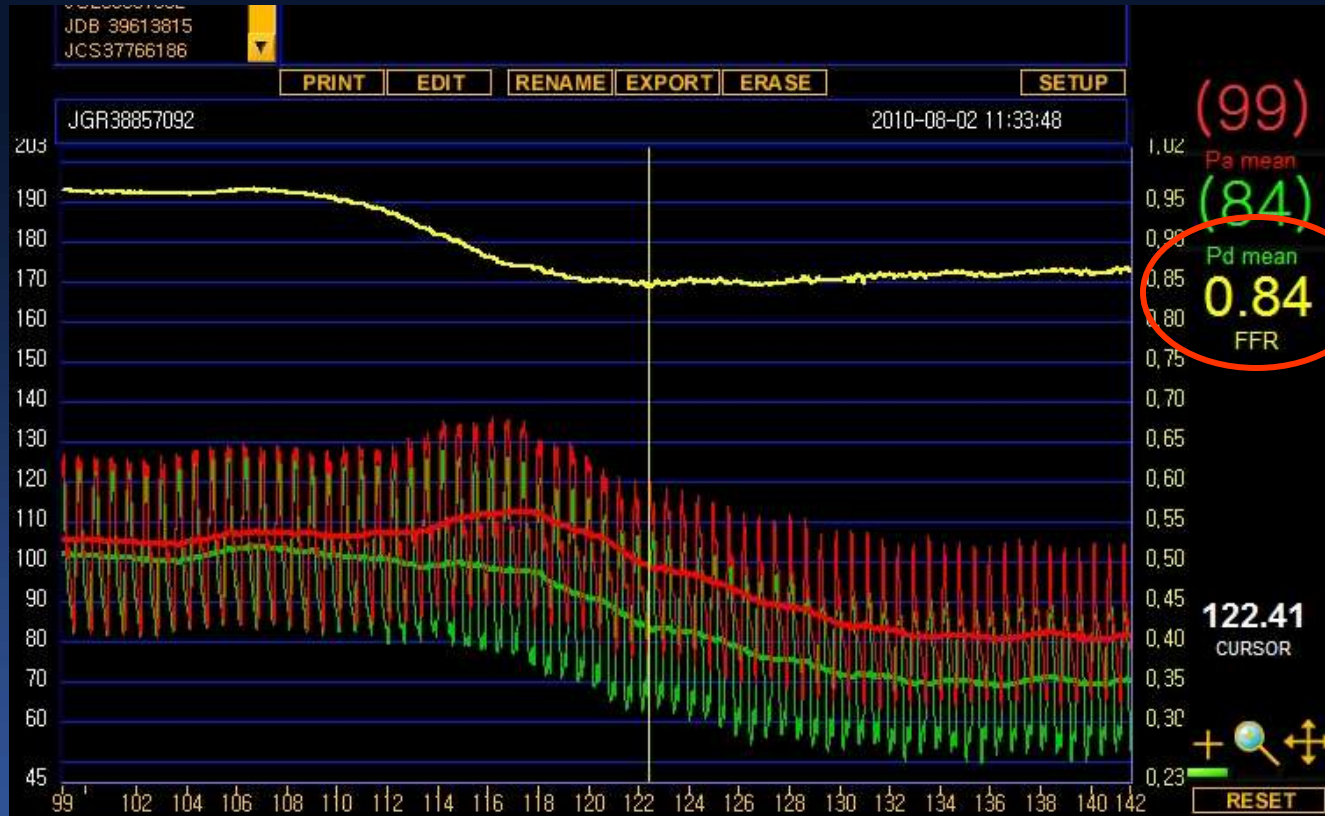
Recent developed Effort chest pain, Hyperlipidemia, Smoker  
We took a coronary angiogram first,



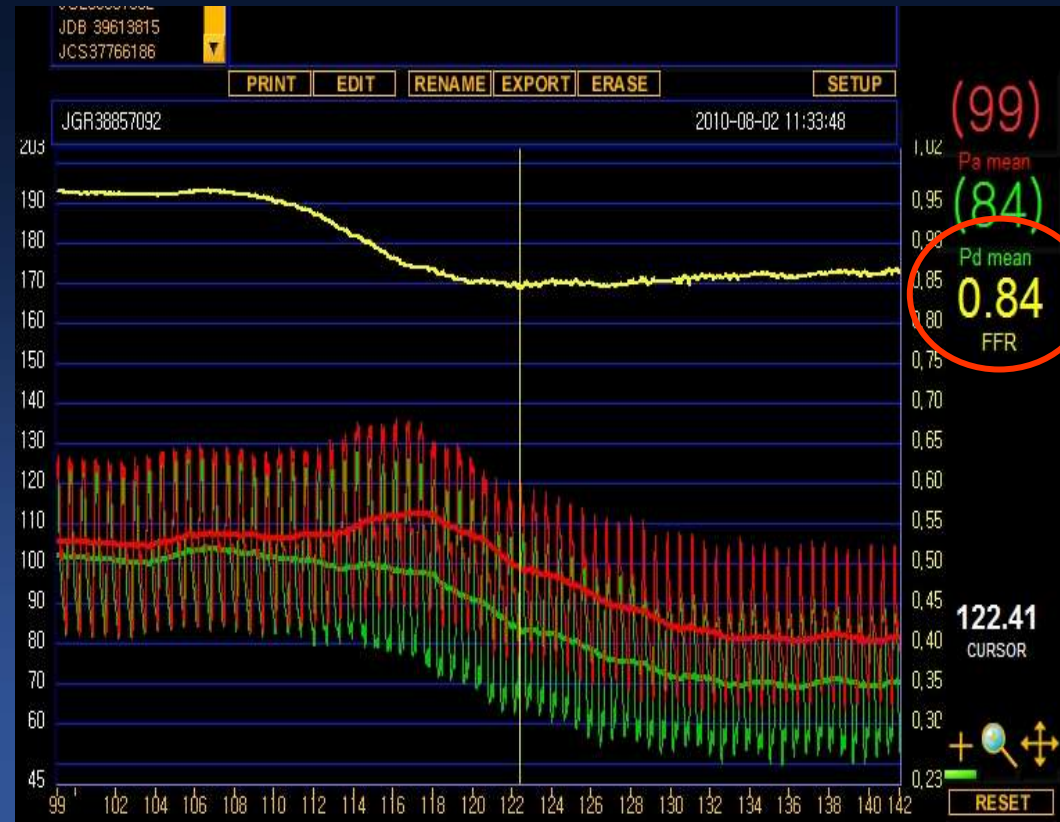
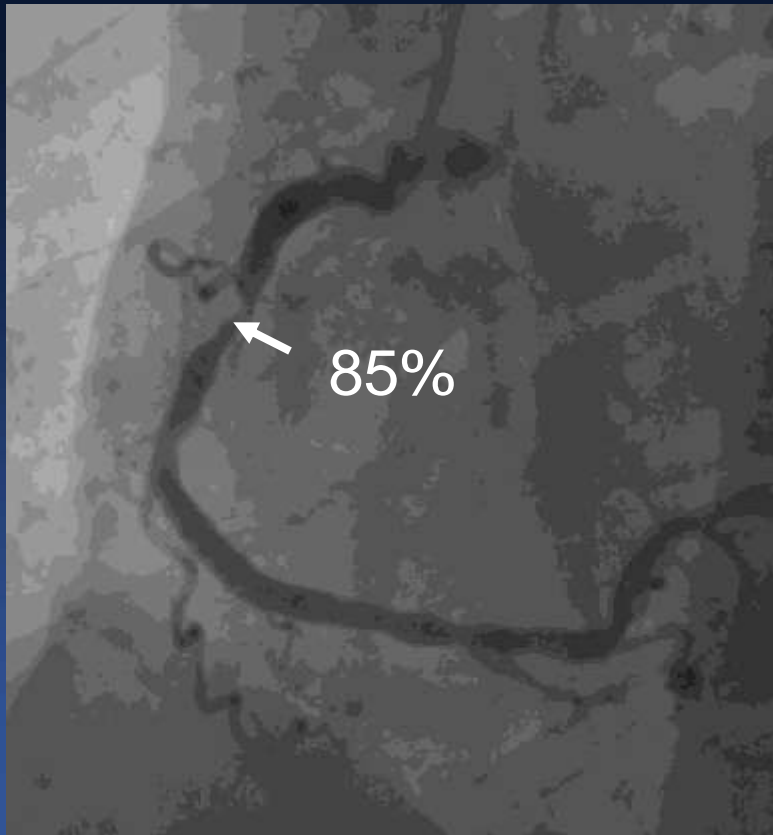
**Visual  
Estimation  
85%**

# FFR

Intravenous adenosine, 160  $\mu\text{g}/\text{kg}/\text{min}$

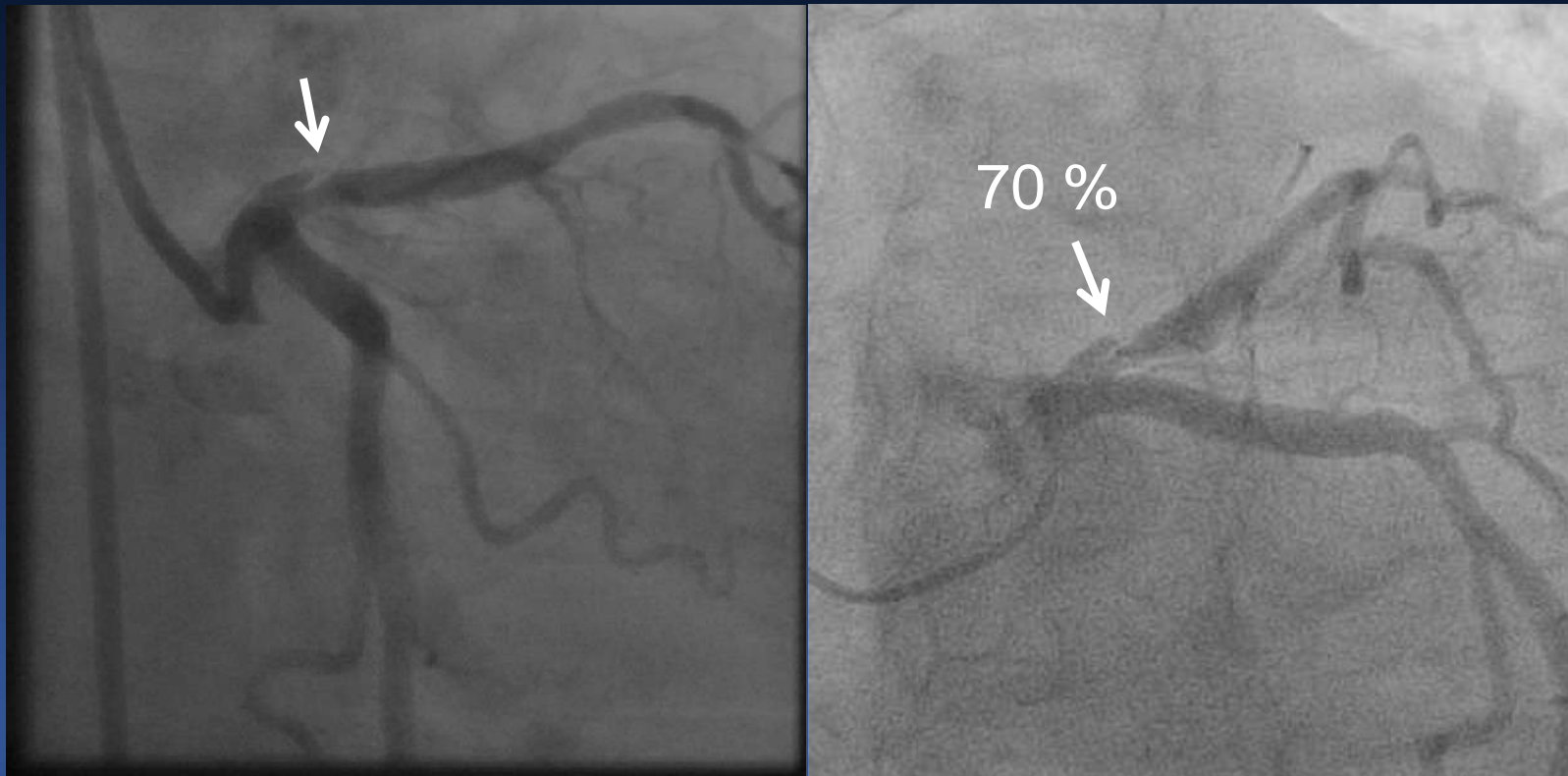


# Tight Stenosis, Negative FFR, *Defer*



**M/74,**  
**Asymptomatic Plaque Rupture**

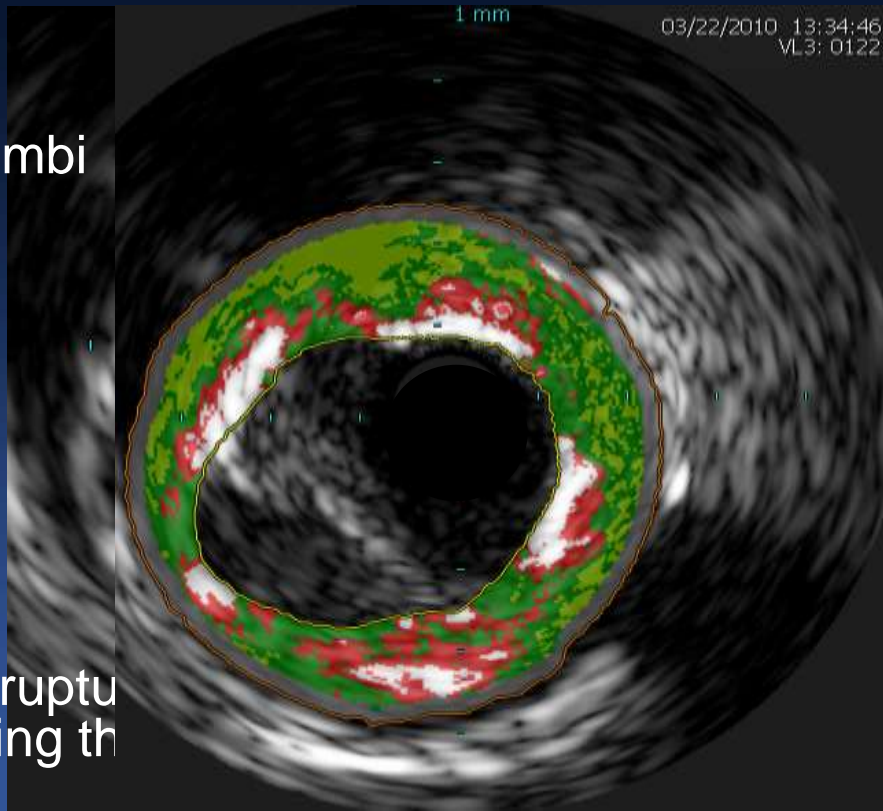
Proximal LAD Stenosis on Coronary CT,  
Hypertension, DM, Hyperlipidemia, Ex-smoker



# IVUS, VH-IVUS

## LAD, Culprit

Thrombi



PB: 71.3%

FI : 41.4%

FF: 20.0%

NC: 23.0%

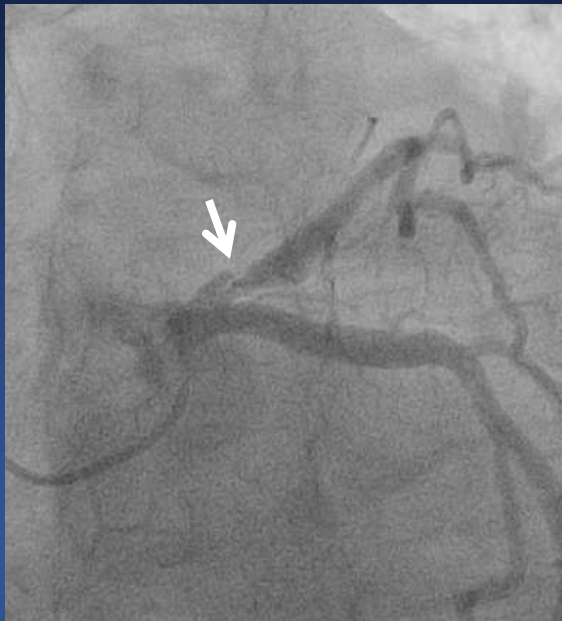
DC: 15.6%

***Vulnerable Plaque !***



# Vulnerable Plaque, Negative FFR, *Defer*

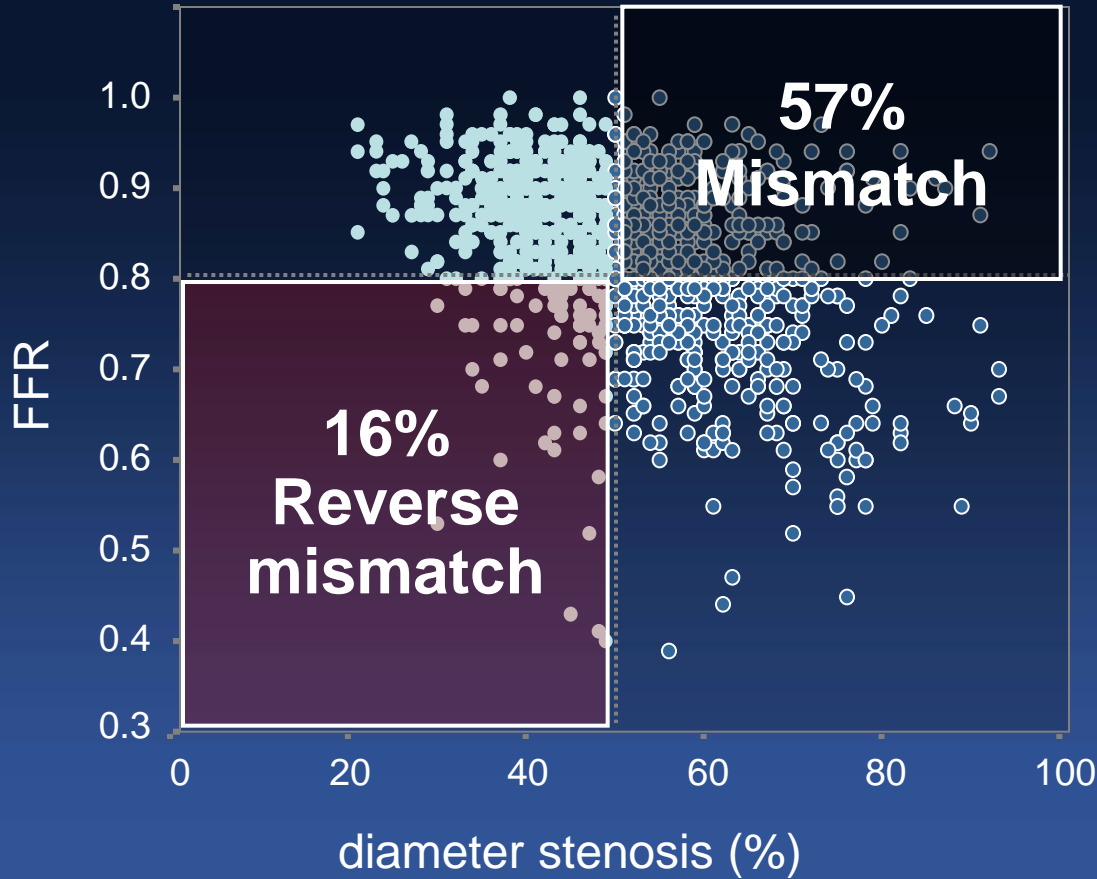
Ruptured  
Vulnerable Plaque



Negative FFR  
0.89



# 1066 Non-LM lesions, AMC data





**Is Deferral *Safe* ?**

**For Visually Tight Stenosis and  
Vulnerable Plaque.**

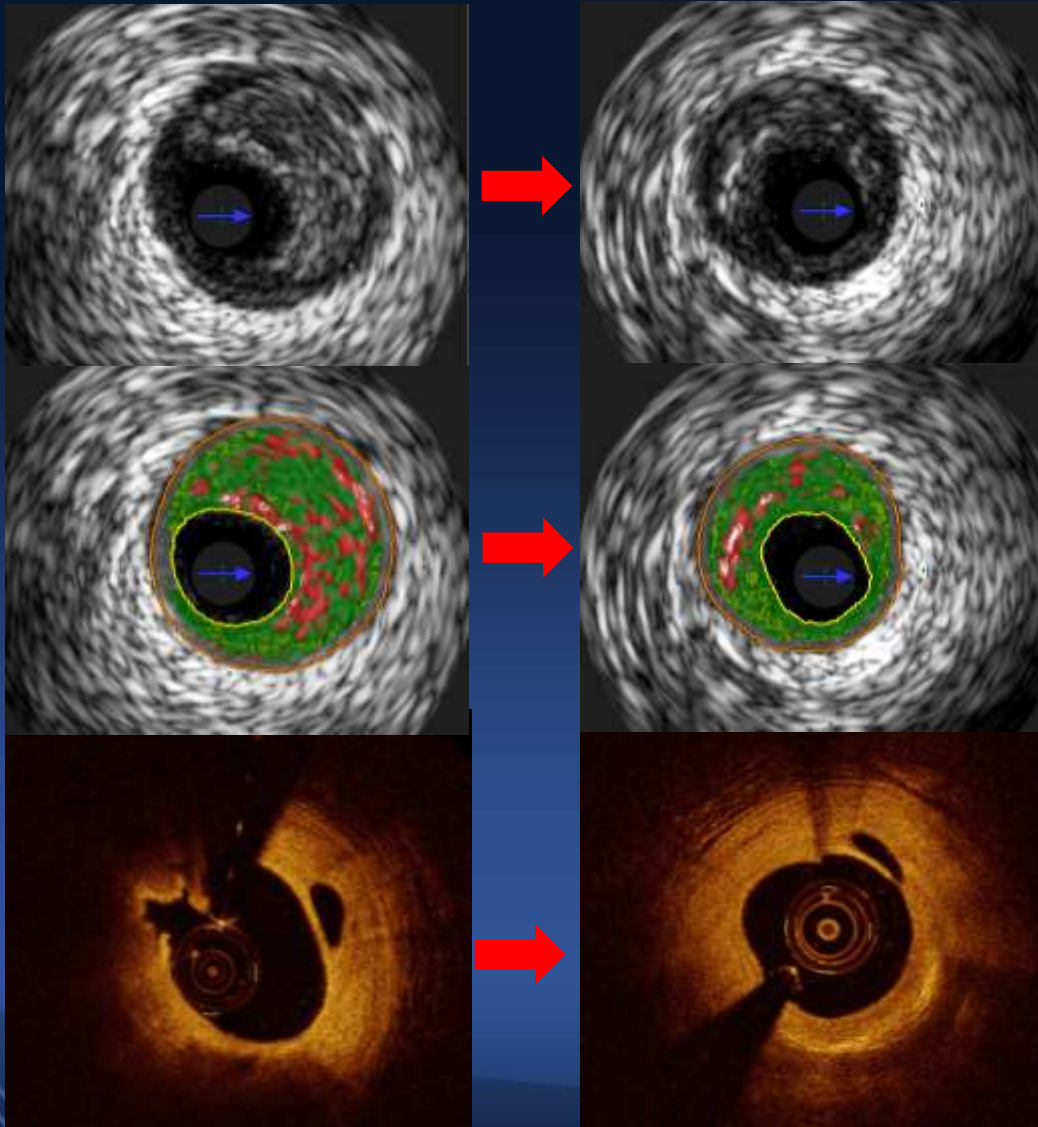
# **Normal, Non-Invasive Stress Testing** **Whatever Angiographic Stenosis Is,**

## **Death/MI**

Imaging Modality	n	NPV(%)	Event Rate (%)
MPI	8,008	98.8	0.45
Thallium	868	96.9	0.70
Sestamibi	1,802	98.7	0.34
Thallium/Sestamibi	4,938	99.2	0.45
Tetrofosmin	400	98.5	0.42
Echo	3,021	98.4	0.54

Shaw LJ, J Nucl Cardiol 2004;11:171-85 ,  
Prognostic value of gated myocardial perfusion SPECT.  
Very large meta-analysis. (n=39,173 patients)  
Metz MD et al JACC 2007;49:227

# Statin Therapy Can Make Plaque Regression and Stabilization



	Baseline	1 year
Lumen, mm <sup>2</sup>	4.4	3.7
EEM, mm <sup>2</sup>	19.0	14.0
Plaque, mm <sup>2</sup>	14.6	10.3
VH-%NC	30%	15%
VH-TCFA	+	-
OCT-TCFA	+	-

STABLE Study (*ST*atin and *A*theroma *V*ulnera*Bi*Lity *E*valuation) Double-blinded, Randomized Trial, 2015 New Data



# Death and MI /yr

Negative FFR ( $>0.80$  or  $0.75$ ) or  
Negative Non-Invasive Stress Tests:  
(NUCLEAR studies, DEFER, FAME)

**< 1 %**

Stented Segment :  
(DEFER, FAME, SYNTAX, and registries)

**2-3 %**

Untreated Positive FFR ( $<0.75$  or  $0.80$ ) or  
Positive Non-invasive Stress Tests:  
(Registries, ACIP, etc)

**5-10 %**

Multicenter, Prospective Registry to Evaluate  
The Natural History of FFR-Guided Coronary Intervention

# IRIS **FFR** Registry

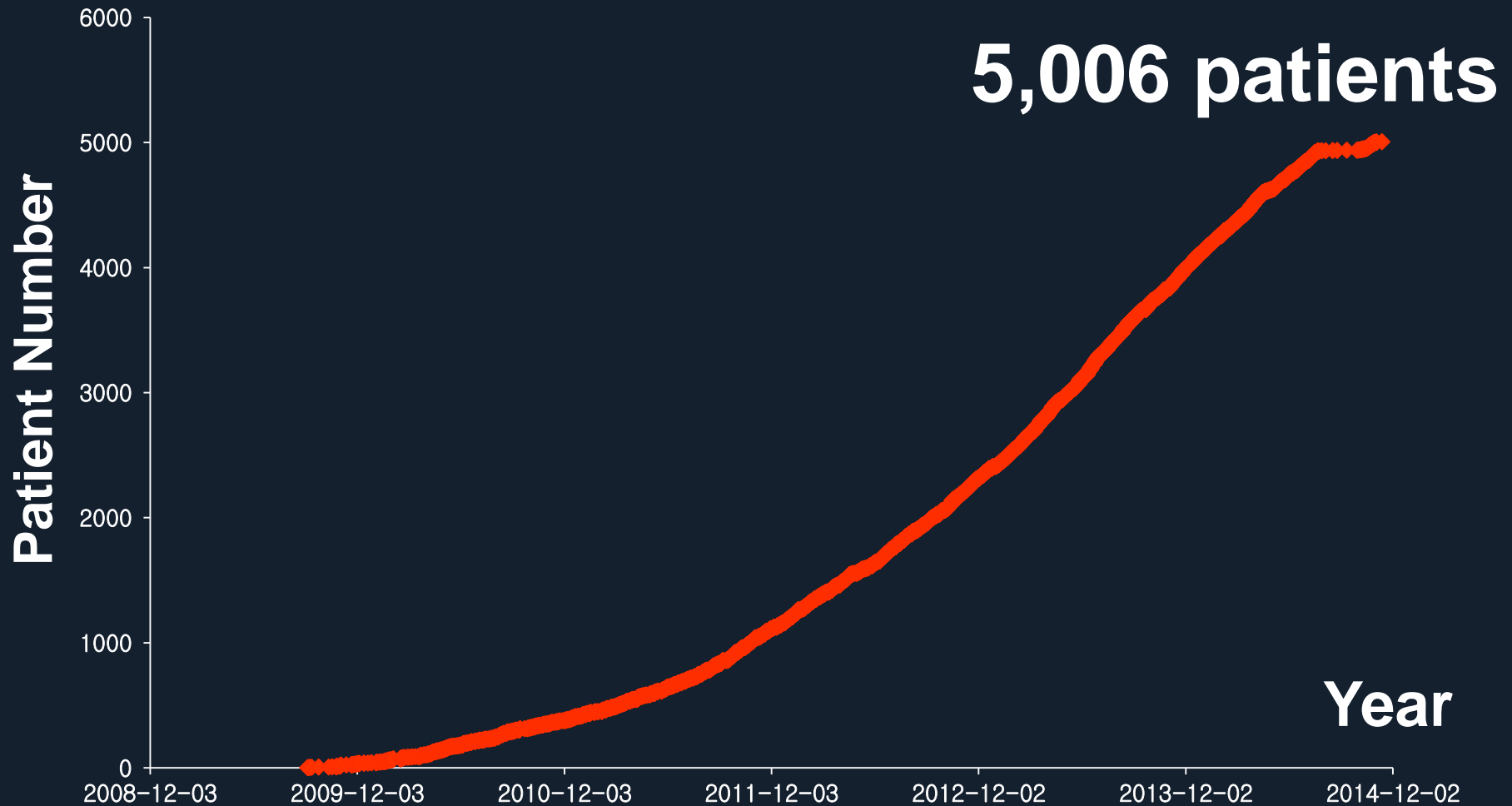
Patients (N=5,000) with  $\geq 1$  FFR evaluated Lesions  
(DS>30% by visual estimation and FFR>0.80)

Primary Endpoint : TVF at 2 year  
Target vessel related Cardiac Death, MI,  
and Clinical driven TVR

\* 2-year CAG & Imaging FU will be conducted after Completion of 2-year Clinical FU

# Patient Enrollment

**Preliminary Analysis on 3639 Patients  
With at Least 6 Months Follow-Up.**



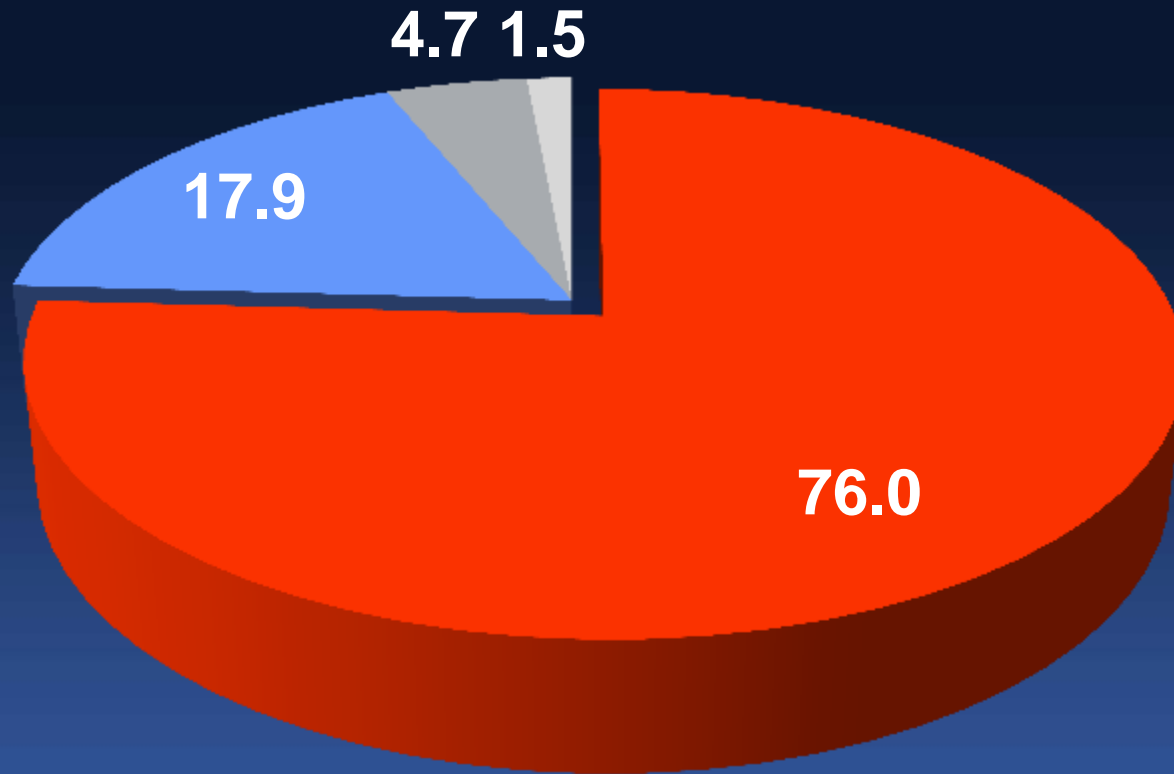


# Patient Characteristics

<b>Variables</b>	<b>N=3639</b>
Age	63.9±9.7
Sex (men)	2591 (71%)
Body mass index, kg/m <sup>2</sup>	24.8±2.9
Diabetes	1130 (31%)
Hypertension	2300 (63%)
Current smoker	890 (25%)
Hyperlipidemia	1679 (46%)
Previous myocardial infarction	233 (6%)
Previous stroke	212 (6%)
Chronic renal failiure	69 (2%)
Chronic lung disease	81 (2%)
Peripheral artery disease	110 (3%)
Family history	38 (1%)

# Clinical Presentation

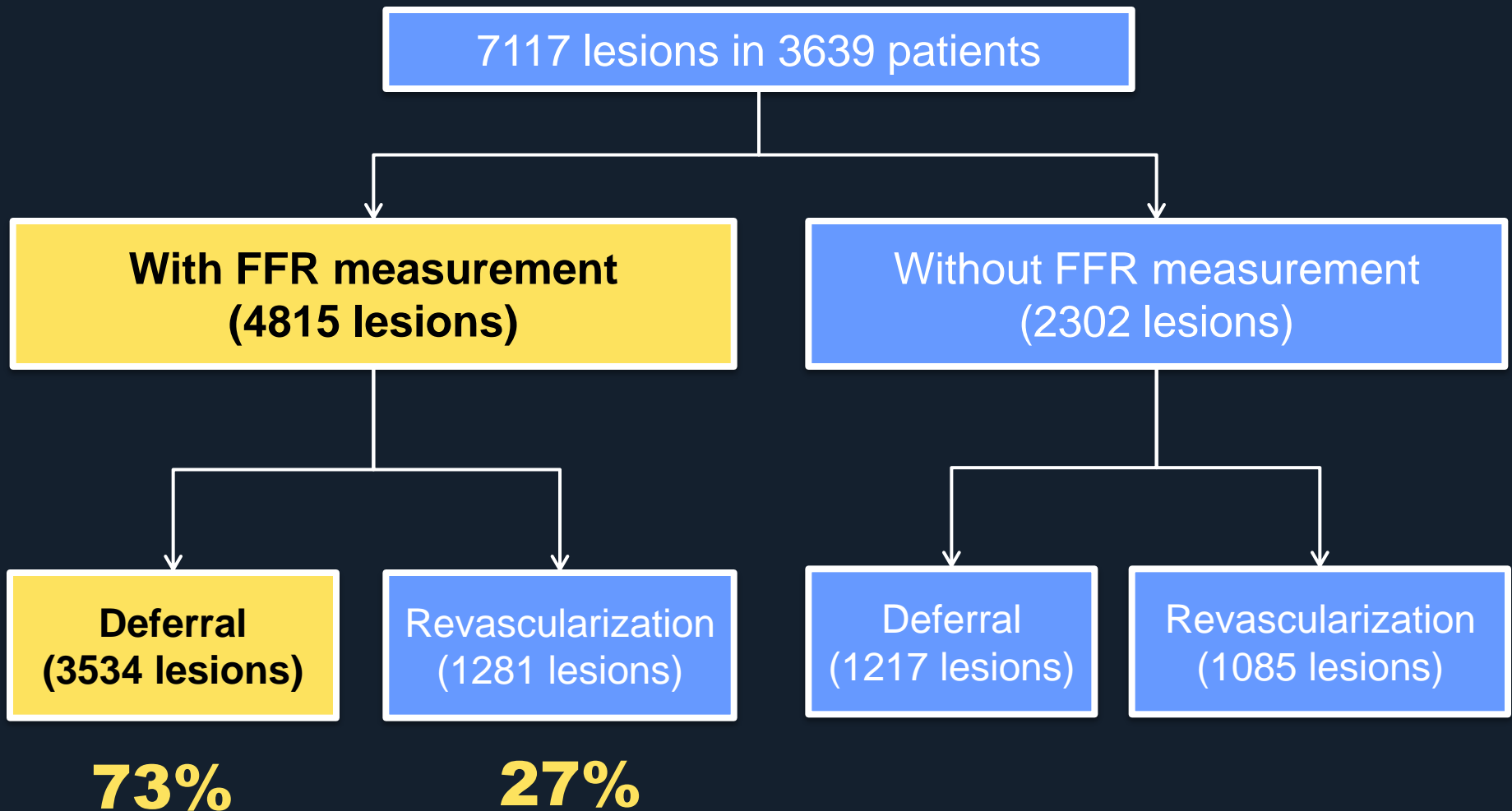
■ sAP or No symptom   ■ uAP   ■ NSTEMI   ■ STEMI



# Lesion Characteristics: All lesion

Variables	N=7117
Lesion territory	
Left main	276 (3.9%)
Left anterior descending artery	3154 (44%)
Left circumflex artery	1641 (23%)
Right coronary artery	1989 (28%)
ACC/AHA B2C lesion	4419 (62%)
Long lesion (>20mm)	3120 (44%)
Moderate to severe calcification	285 (4%)
Diameter stenosis	
30-50%	1244 (18%)
50-70%	3176 (45%)
70-99%	2285 (32%)
Total occlusion	353 (5%)

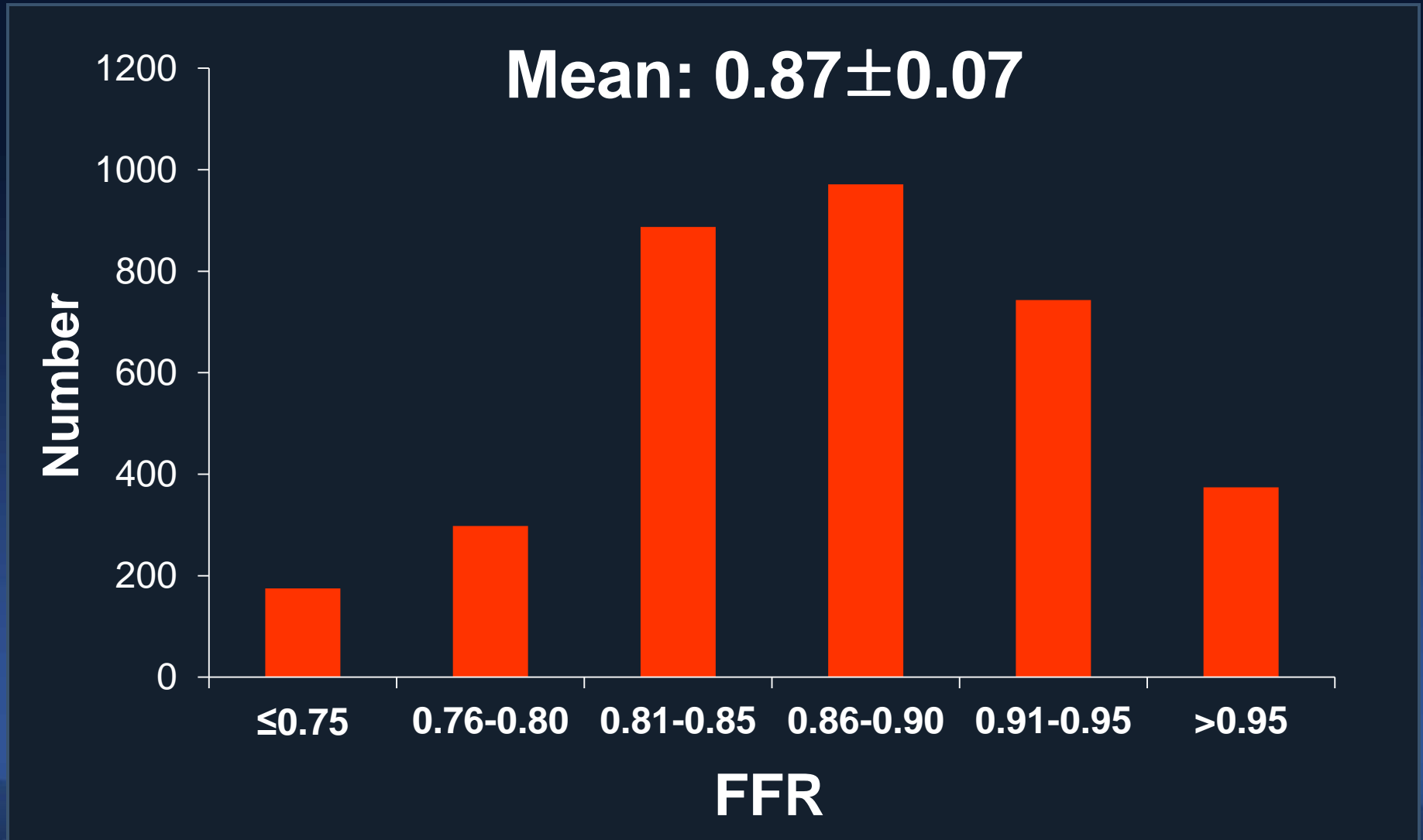
# Lesion Treatment



# FFR guided DEFERred Lesion

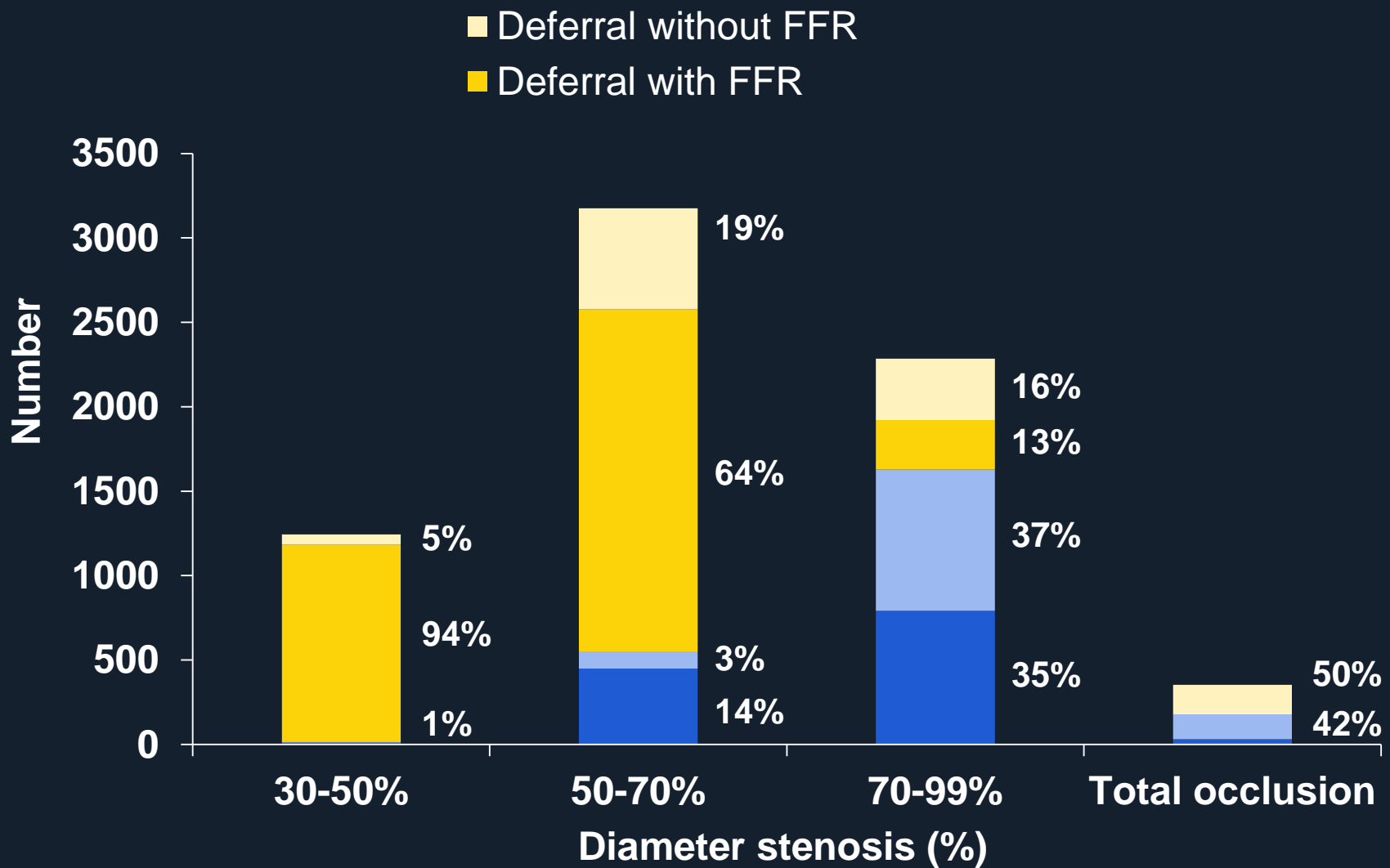
Variables	3534 lesions
Lesion territory	
Left main	84 (2%)
Left anterior descending artery	1768 (50%)
Left circumflex artery	653 (19%)
Right coronary artery	1002 (28%)
Route of adenosine	
Intravenous	3205 (91%)
Intracoronary	311 (9%)
Fractional flow reserve	
Mean	0.87±0.07
<0.75	136 (4%)
0.75-0.80	337 (10%)
>0.80	2975 (84%)

# FFR Distribution of Deferred Lesions





# Lesion Treatment



# Cardiac Death, MI, and Revascularization at 2 Years (2857 patients, 3534 DFERred lesions )

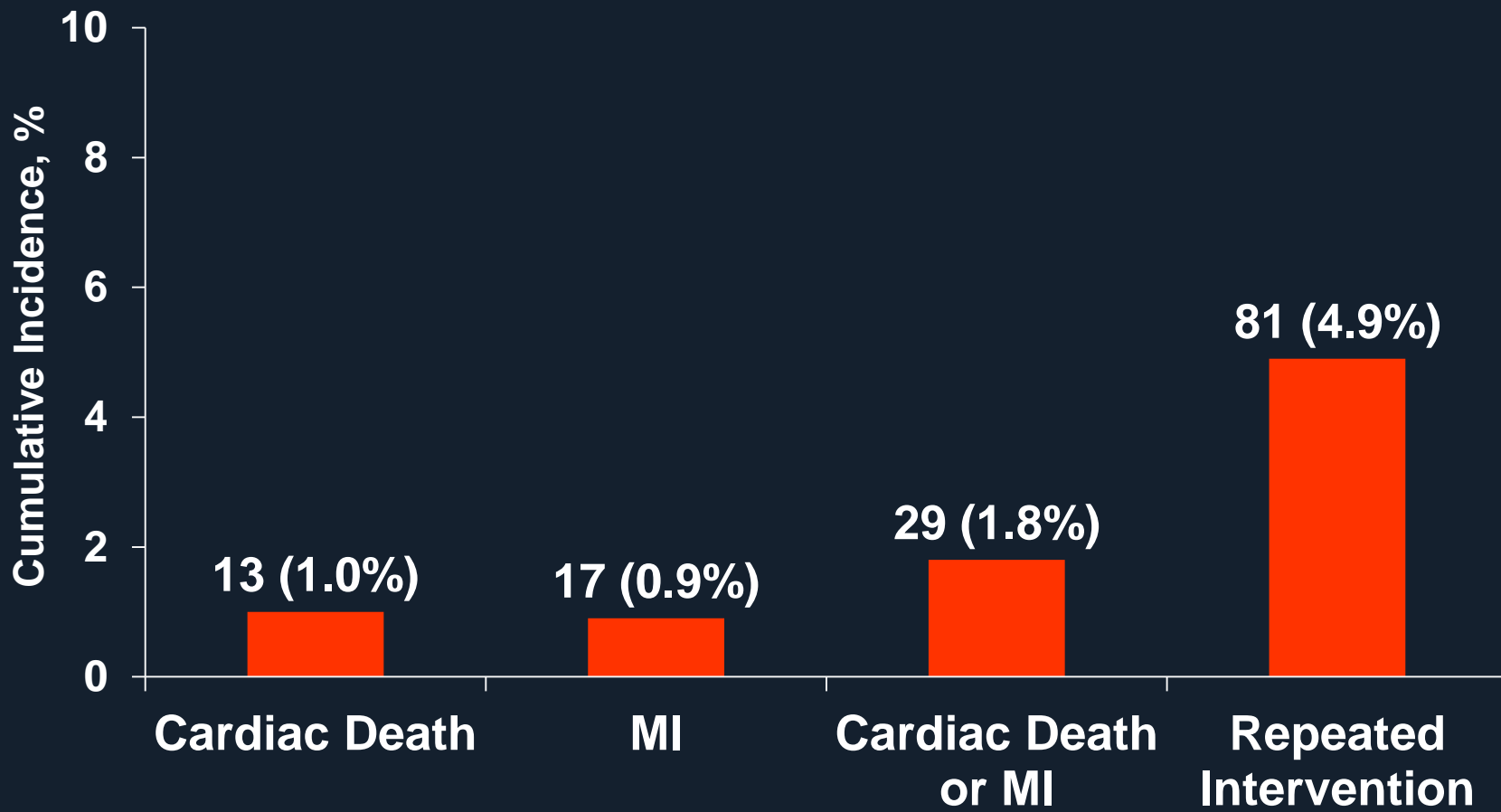


# Cardiac Death and MI at 2 Years (2857 patients, 3534 DFERred lesions )



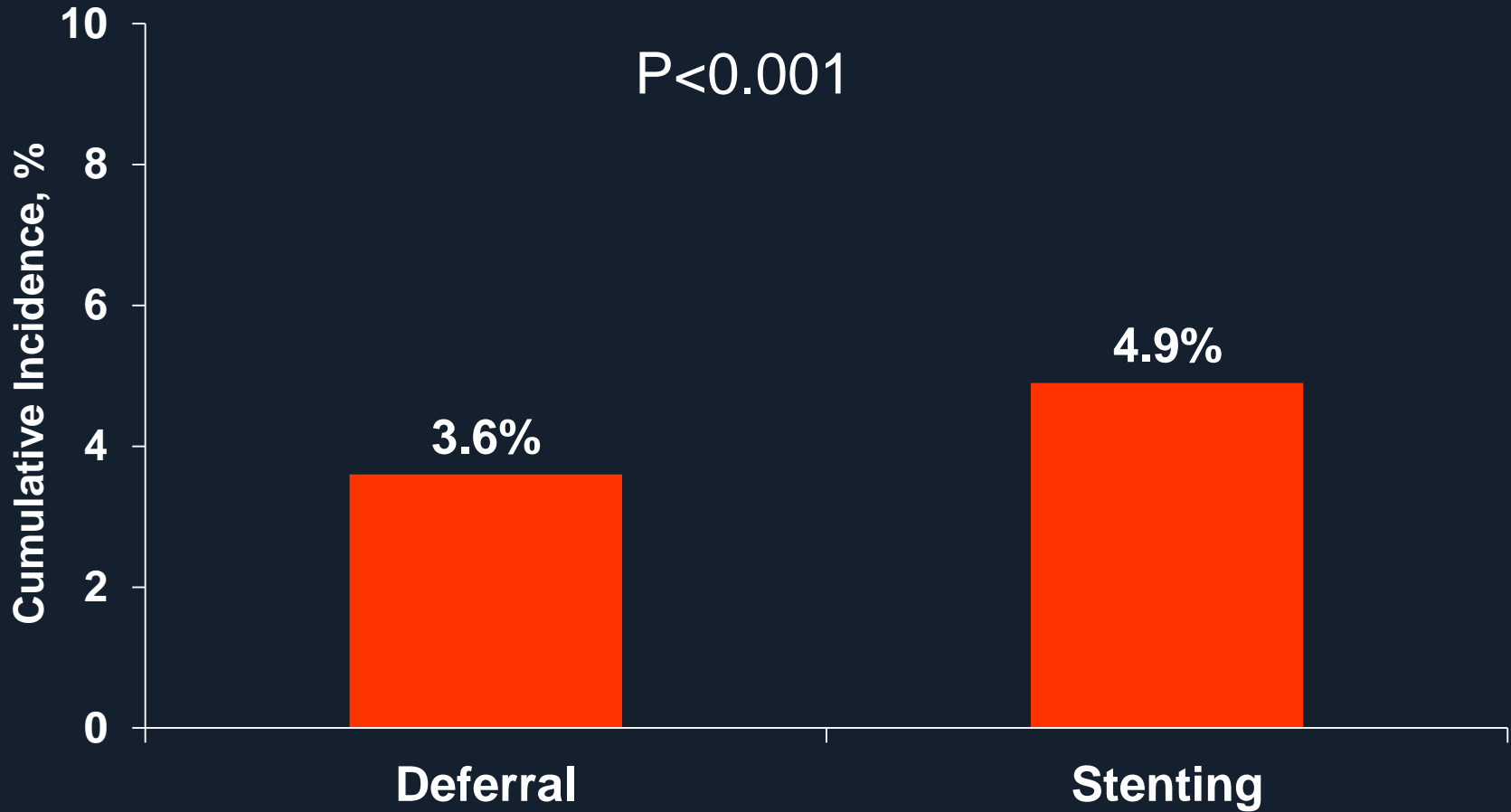
# Outcomes at 2 Years

(2857 patients, 3534 DFERred lesions )



% from K-M estimates

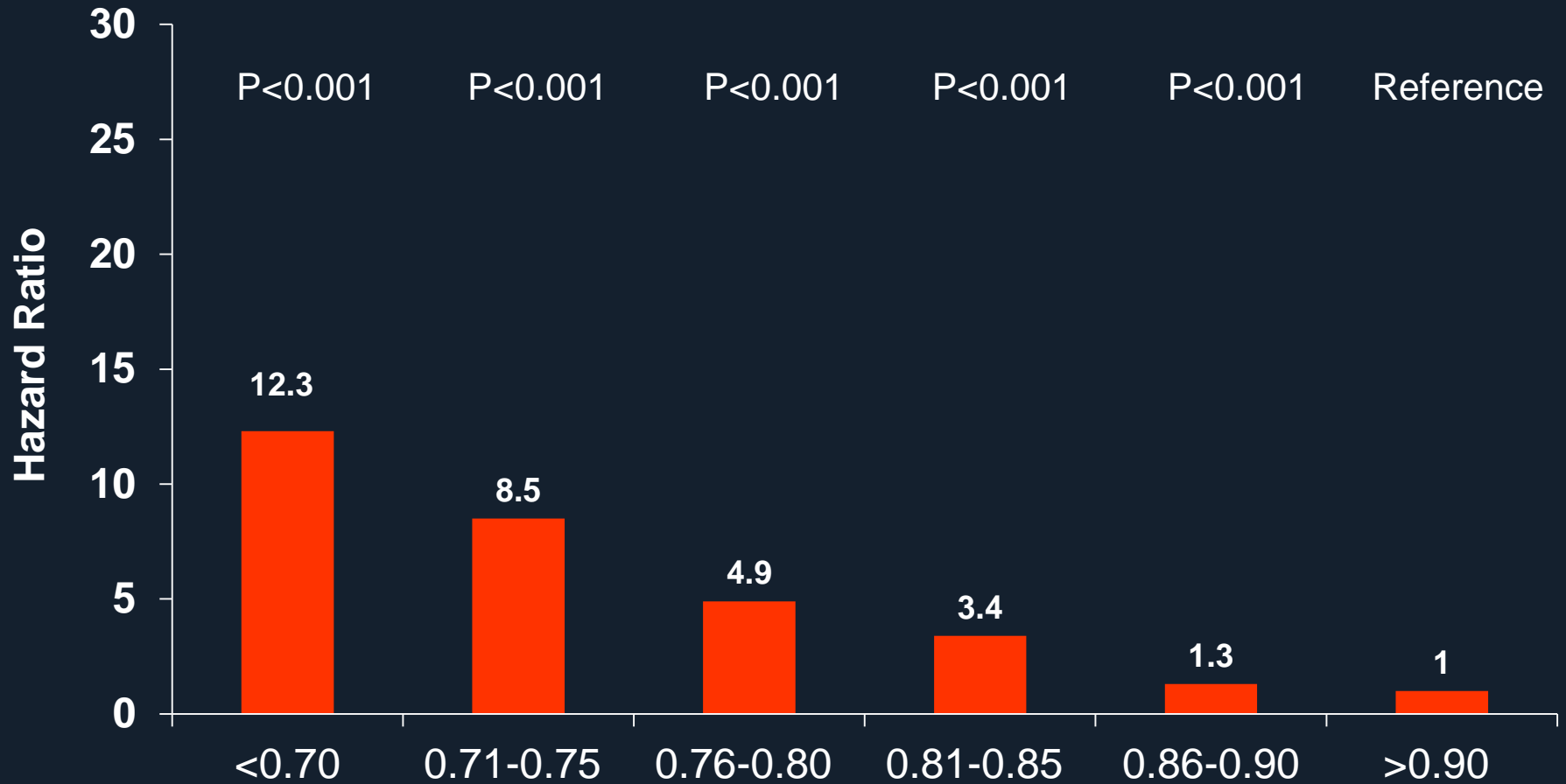
# Repeated Intervention at 2 Years (per vessel)



% from K-M estimates

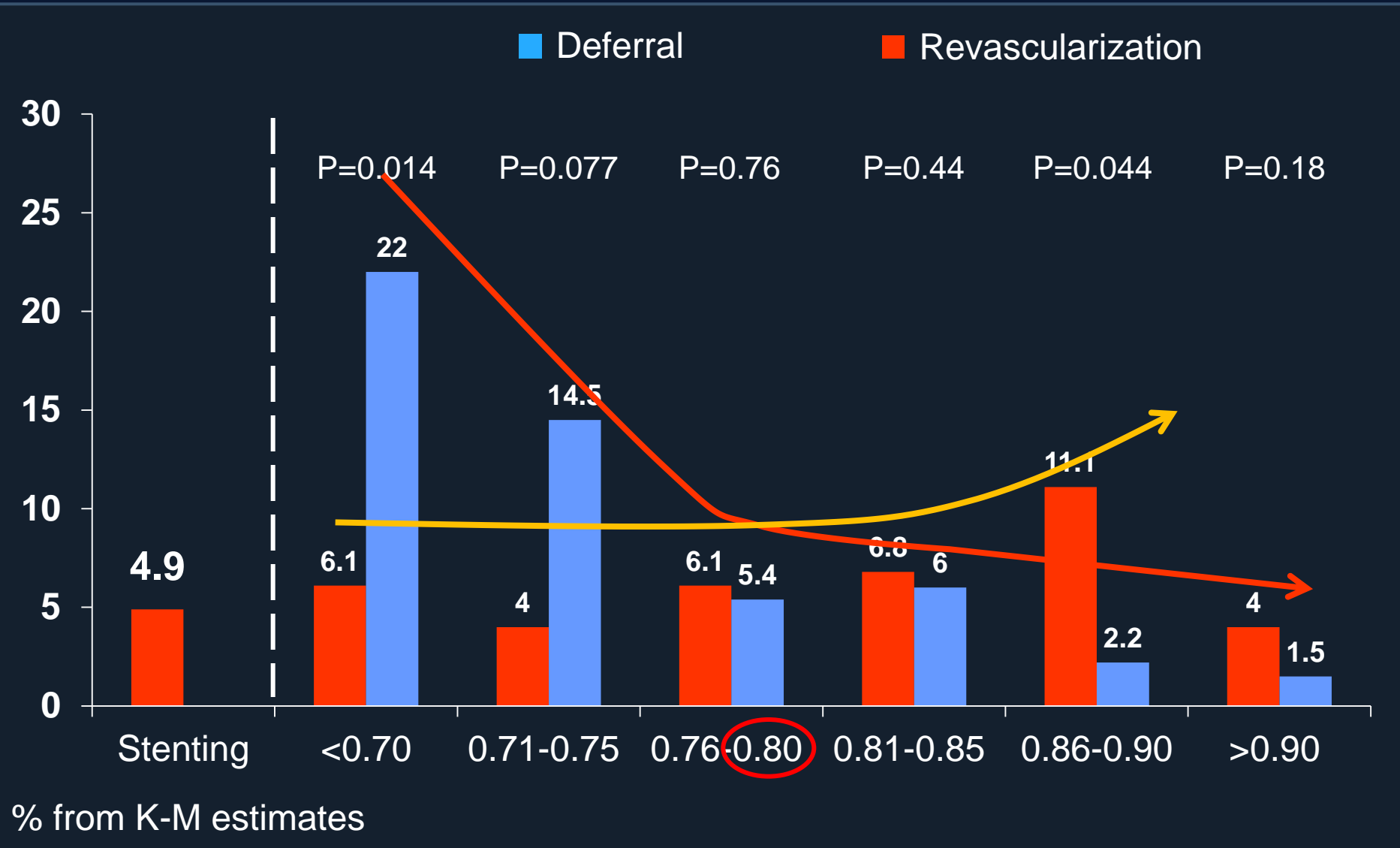
# Repeated Intervention at 2 Years (per vessel)

## Hazard Ratio

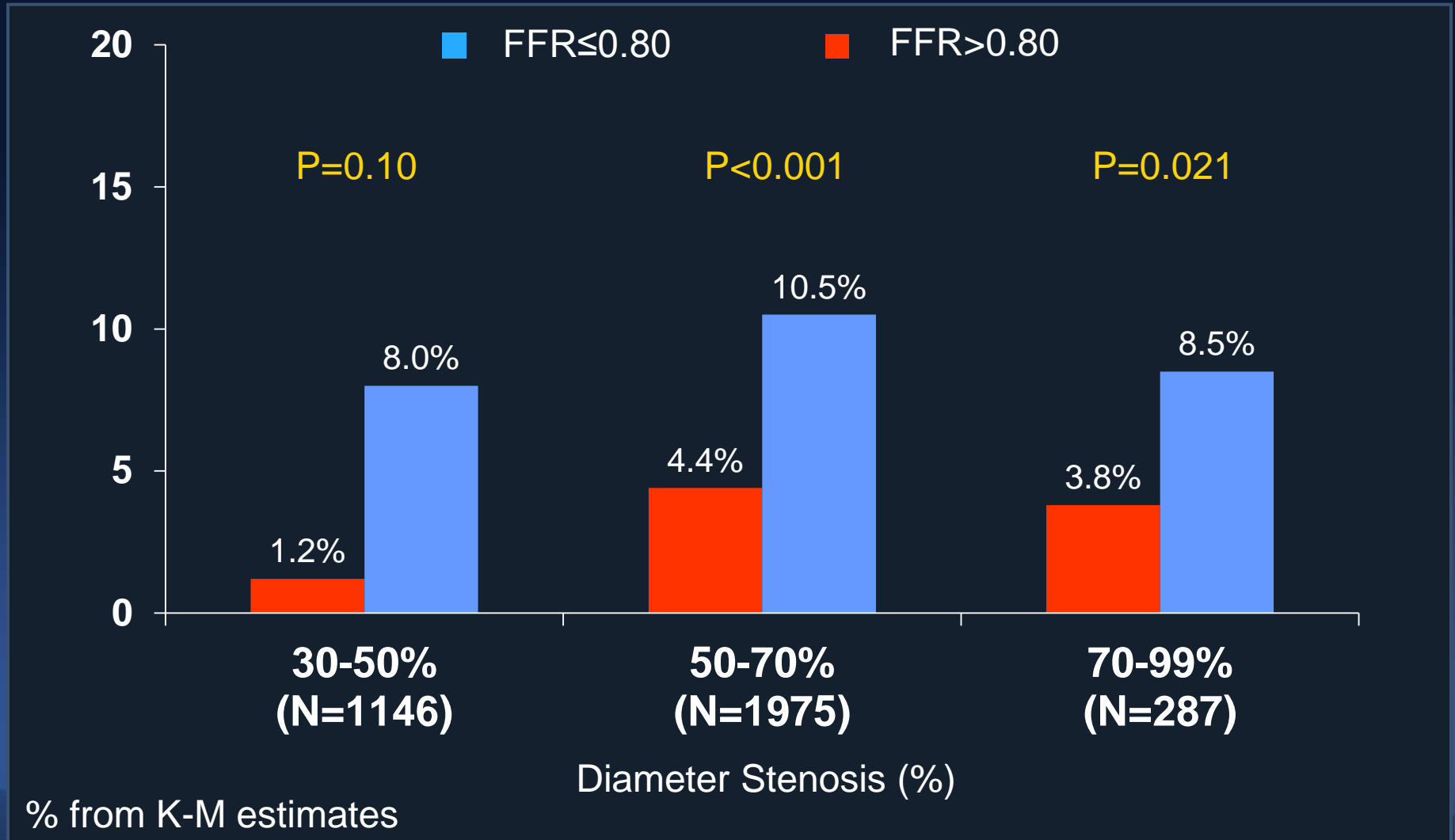




# Repeated Intervention at 2 Years (per vessel)



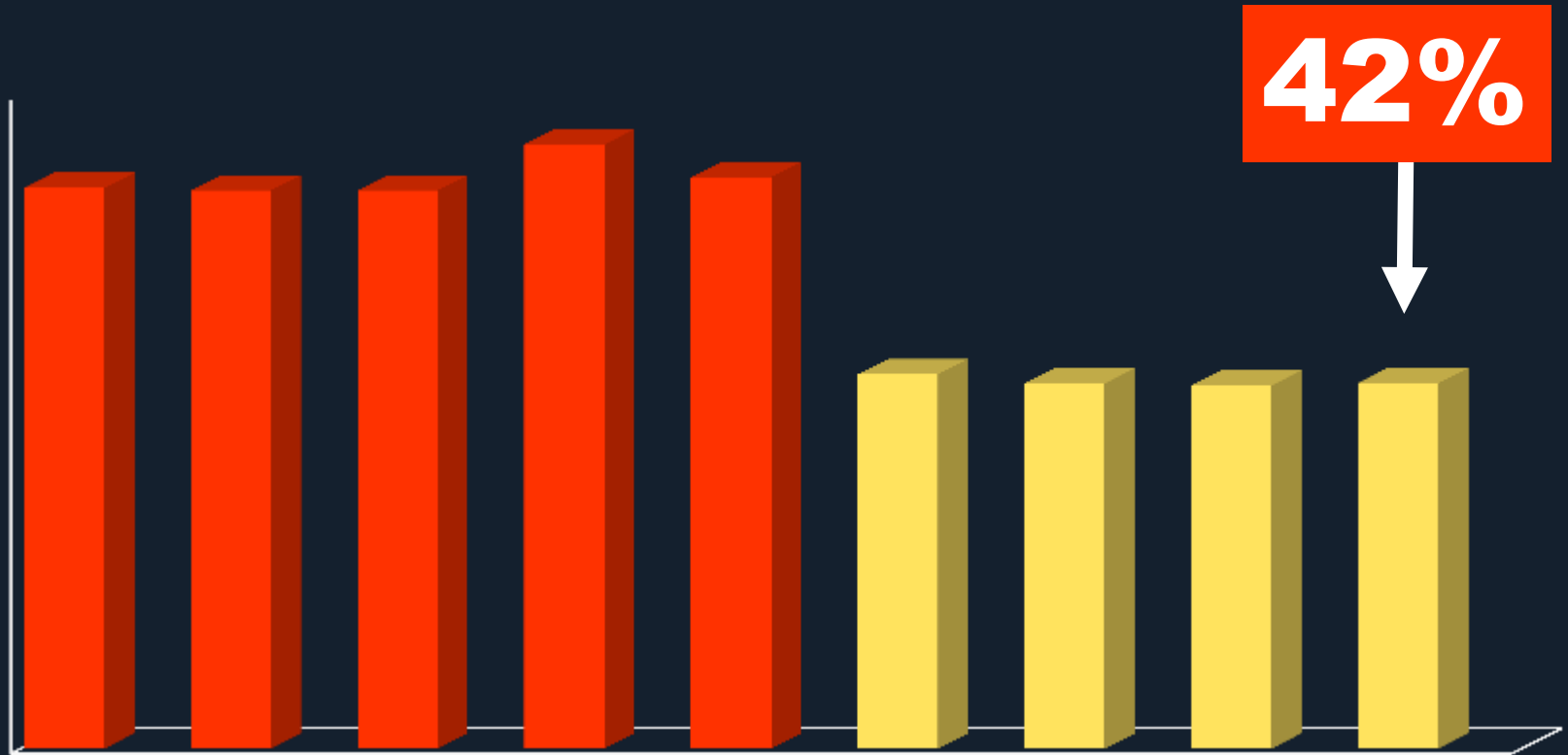
# Deferred Lesion Intervention at 2 Years (per vessel)



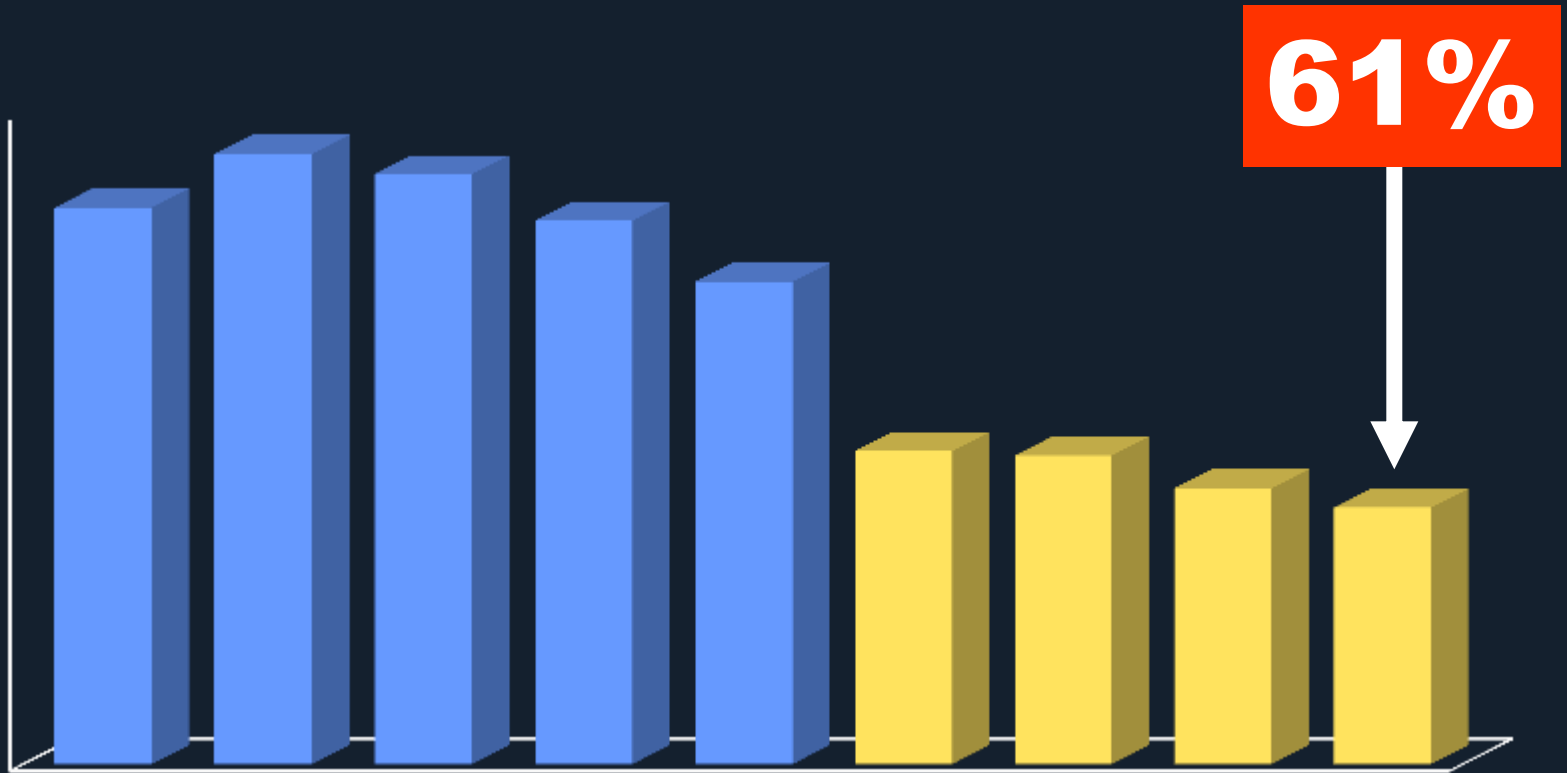
**My Thought,**

**Any FFR  $>0.80$ ,**  
***Just Defer !***

# Number of Stent Decreased

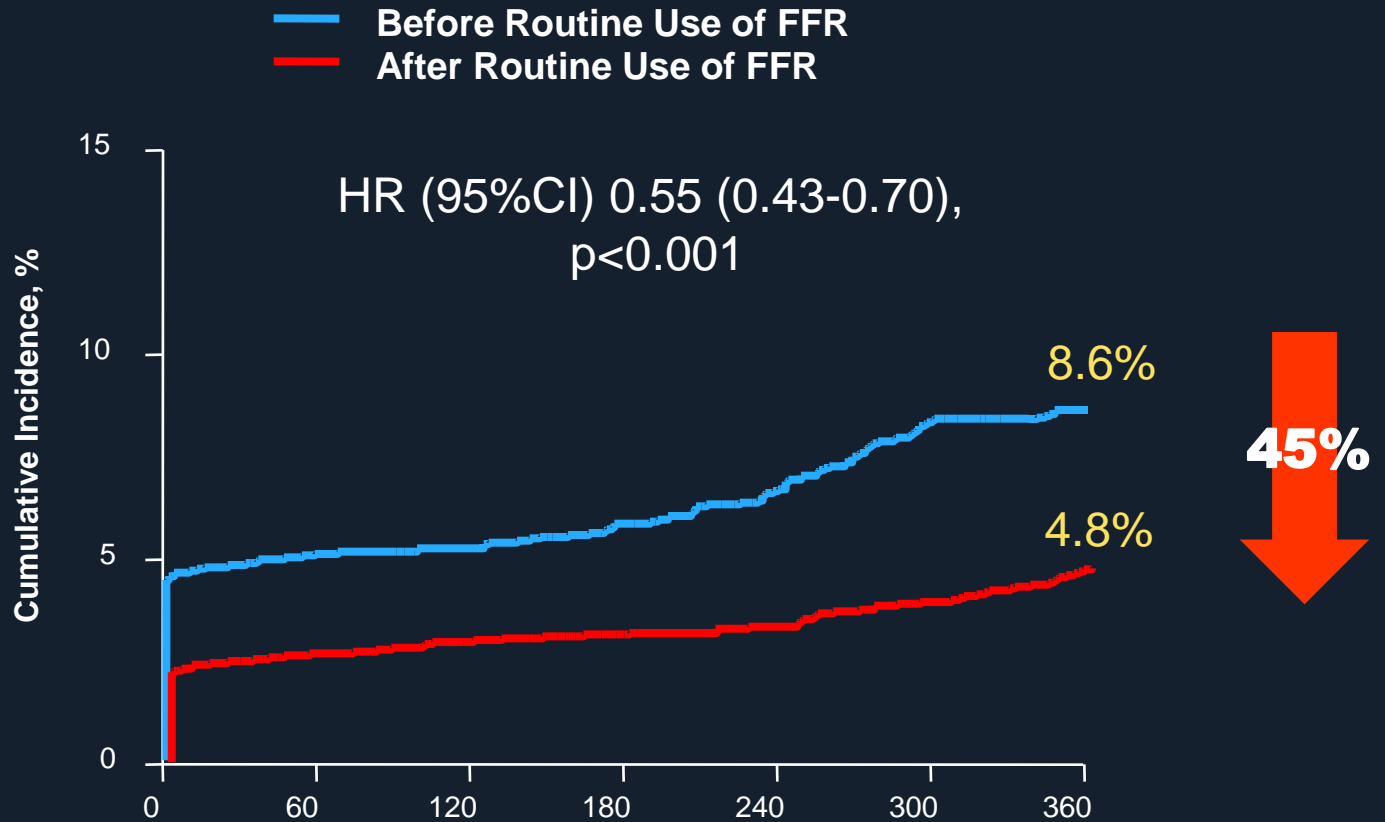


# Number of CABG Decreased



# Improved Outcome of PCI

## Death, MI, or Repeat Revascularization



### No. at Risk

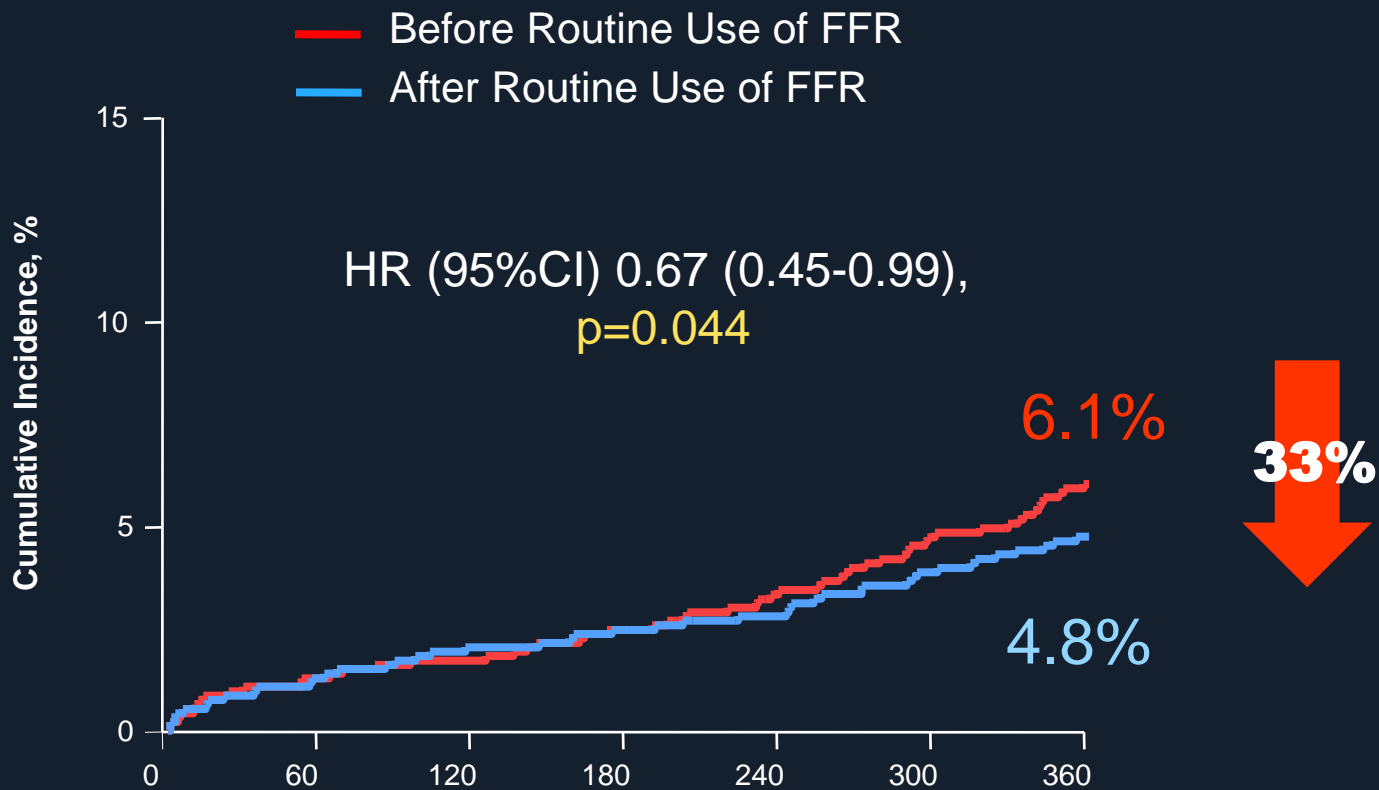
	0	60	180	360
Before Routine Use	2178	2066	2011	1960
After Routine Use	2178	2092	2067	2037

Propensity Score Matched Population



# Improved Outcome of LM and 3-VD Treatment

## Death, MI, Stroke or Repeat Revascularization



### No. at Risk

	0	60	120	180	240	300	360
Before Routine Use	917	901	883	857			
After Routine Use	917	898	886	869			

**My Thought,**

**Any Defer Is,  
*Safe and Good !***