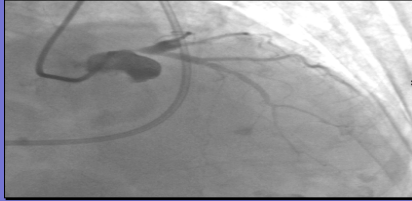


L-Main Coronary Artery Dz:
The "Gold Standard" is ...
Cold Hard Steel



Louis A Cannon MD, FCCP, FACC, FSCAI, FACP
Program Director, Heart & Vascular Institute
Northern Michigan Regional Hospital
Founder, President of
The Cardiac & Vascular Research Ctr of Northern Michigan



Why is CABG the current
"gold standard" for LM
revascularization?

UPLM PCI:
Historical
Perspectives

"We have not been too successful in dilating left main stems... although the procedure is relatively simple, the potential complications are both serious and sudden"
- A. Gruentzig, NEJM 1979

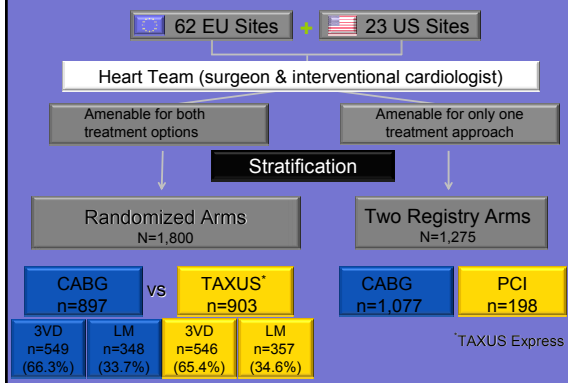


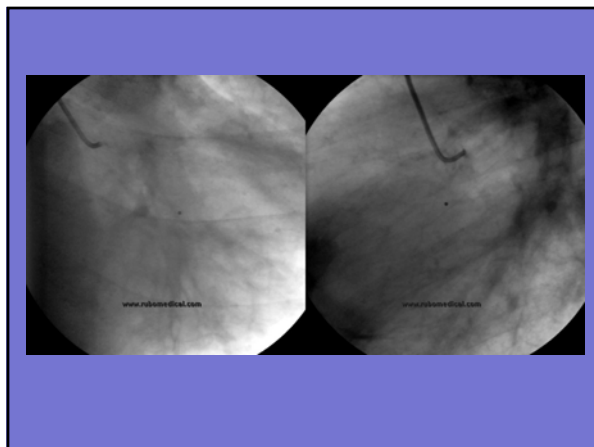
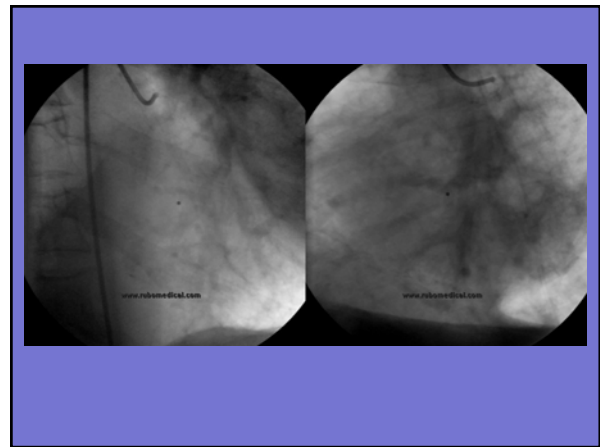
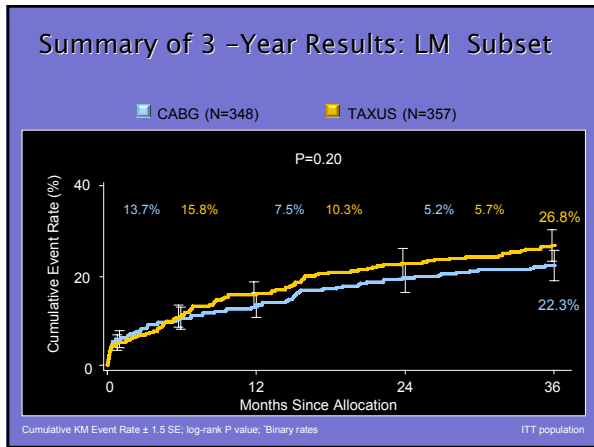
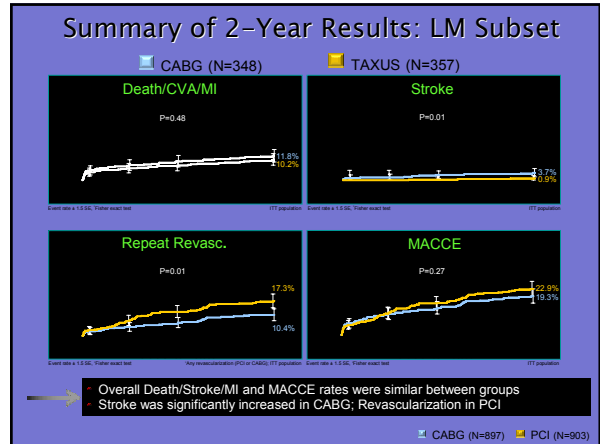
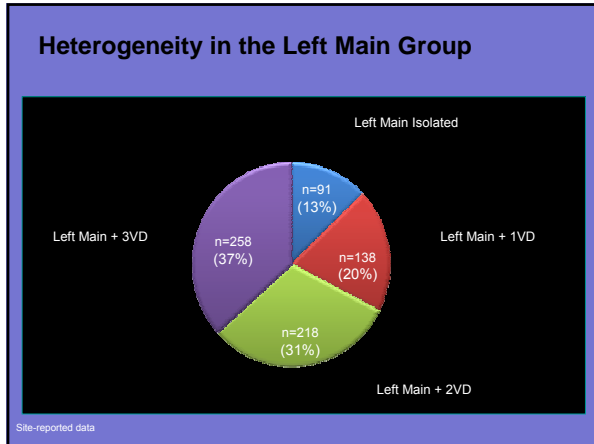
Background

- Left Main PCI has been around as long as PTCA:
 - Significant LM disease identified on ~5% of all diagnostic caths
 - Several of Gruentzig's first procedures were LM → abandoned because of high procedural complication and early mortality rate
- With Stents and Gp2b/3a inhibitors:
 - there was a resurgence of interest although enthusiasm remained low due to restenosis
- With DES, UPLM-PCI:
 - has gained enthusiasm. However, PCI for left main disease remains rare in contemporary U.S. practice (2-3% of PCI procedures)

SYNTAX
(SYnergy between PCI
with TAXUS and CABG)

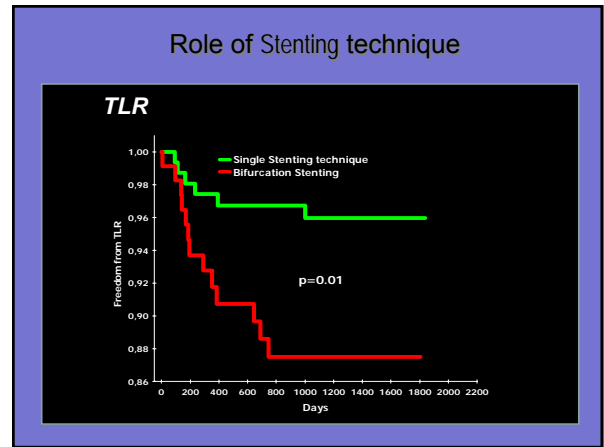
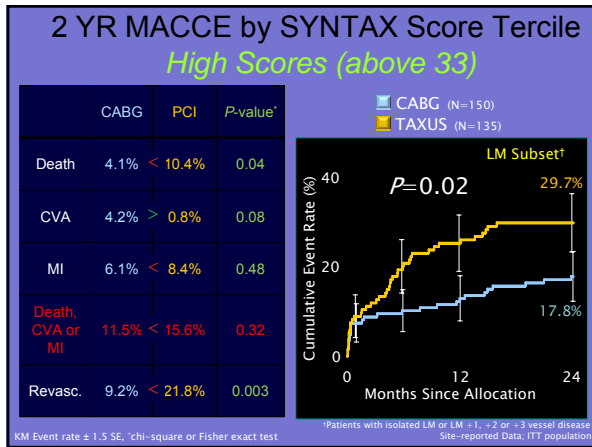
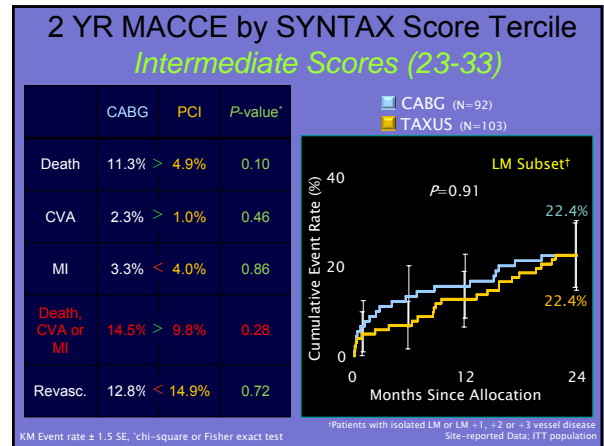
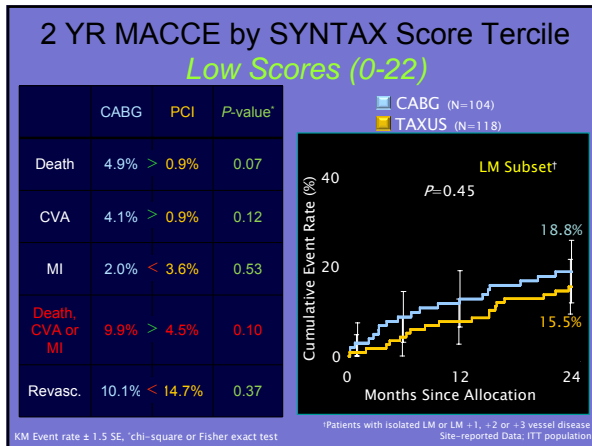
SYNTAX Trial Design





Summary of Syntax Score

Lesion 1	10	Lesion 4	17.5
(segment 5): 5x2=	7	segment number(s)	
(segment 6): 3.5x2=	3	(segment 6): 3.5x2=	5
(segment 11): 1.5x2=	2	(segment 7): 2.5x2=	2
(segment 12): 1x2=	5	(segment 9): 1x2=	1
T trifurcation 3 diseased segment(s) involved	2	Age T.O. is unknown	1
Heavy calcification	2	+ Blunt stump	1
Sub total lesion 1	29	+ Bridging	2
Lesion 2	2	Heavy calcification	2
(segment 12): 1x2=	2	Sub total lesion 4	29.5
Heavy calcification	2	Lesion 5	
Sub total lesion 2	4	(segment 2): 1x2=	2
Lesion 3	1	Heavy calcification	2
(segment 14): 0.5x2=	2	Sub total lesion 5	4
Heavy calcification	3	Diffuse disease/Small vessels	
Sub total lesion 3	3	Segment 7	1
		Segment 8	1
		Segment 13	1
		Segment 14	1
		Segment 14a	1
		Sub total diffuse dz/small vessels	5
		TOTAL:	74.5



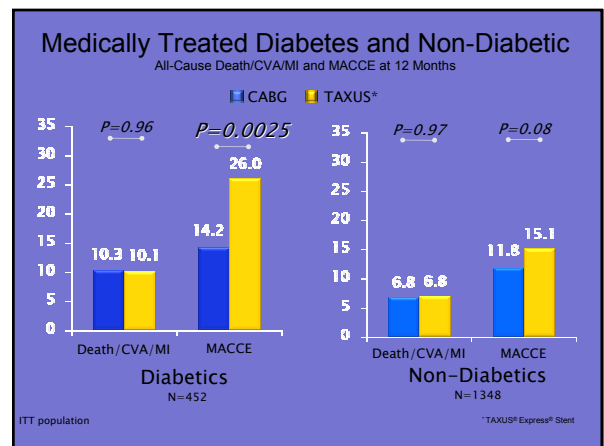
Now revised and updated!
The Bypassing guide to understanding and managing CABG

CABG FOR DUMMIES

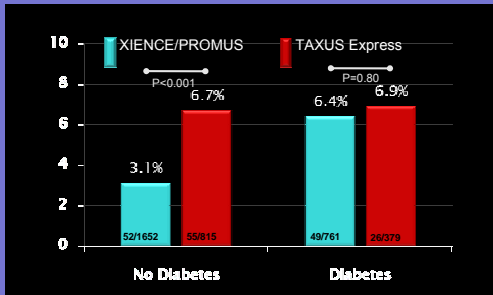
2nd Edition

A Reference for the Rest of Us!

LMCA:
Bifurcation ?
or Diabetes
= IMA keeps the
doctor away



SPIRIT IV: Impact of Diabetes (TLF 1-yr)



TLF=Cardiac Death, Target Vessel MI, or ischemia driven TLR
1 year = 365 ± 28 days

N Engl J Med 2010;362:1663-74

SYNTAX

Primary Endpoint: *Randomized trial*

The primary clinical endpoint is the 12-Month binary MACCE rate. MACCE* is defined as:

- All cause Death
- Cerebrovascular Event (Stroke)
- Documented Myocardial Infarction
- Repeat Revascularization (PCI and/or CABG)

*ARC MACCE definition: Circulation 2007; 115:2344-2351

In Conclusion:

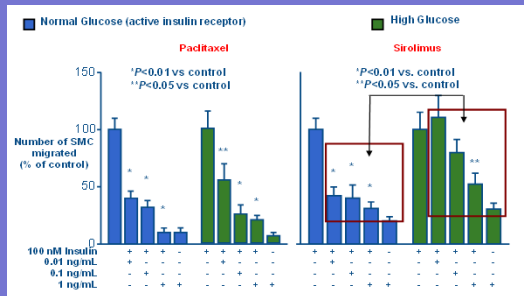
Steel Cures: Answer for patients

- Diabetes
- Bifurcation lesions
- LMCA and occluded RCA
- Patients with significantly impaired EF
- Patients that can receive an IMA Graft
- Patients at risk of not being able to afford DAPT
- Patients on coumadin that may need DAPT



In high glucose inhibition of SMC migration by Paclitaxel is preserved, but sirolimus loses efficacy

The IC50 for sirolimus on migration is < 0.01 ng/ml, but > 1 ng/ml under high glucose conditions. The effect of sirolimus to inhibit smooth muscle migration is thus reduced by at least 100-fold.



Reference: J. Atherosclerosis, Thrombosis, and Vascular Biology, 2000;10:1473-1480

Left Main PCI: Historical Perspectives

Left Main Coronary Angioplasty: Early and Late Results of 127 Acute and Elective Procedures

MAHI Series

"...although elective angioplasty of an unprotected LM coronary artery is technically feasible, the long-term prognosis in such patients is very poor. LM angioplasty in this subgroup should be reserved for patients in whom surgical revascularization is not an option"

- JH O'Keefe. Am J Cardiol 1989

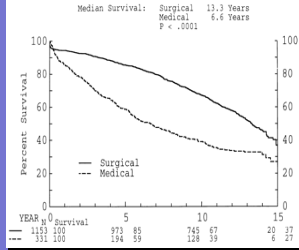
CABG for LM Disease: *Randomized Trial Data*

Disease Extent	N	Odds Ratio for Mortality	Median Survival Gain	P-value
1-vessel	271	0.54 (0.2-1.3)	2 months	0.18
2-vessel	859	0.84 (0.5-1.3)	2 months	0.45
3-vessel	1341	0.58 (0.4-0.8)	6 months	<0.001
Left Main	150	0.32 (0.2-0.7)	19 months	<0.004

Patient-level meta-analysis of data from VA Coop Study (n=686), European Coronary Surgery Study (n=767), CASS (n=780), and 4 small trials (n=416)

Yusuf S, et al. Lancet 1994;344:563-70

Long-Term Benefits of CABG for LM Disease



CASS Registry

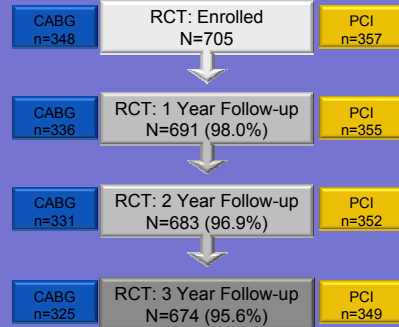
- 1484 pts with $\geq 50\%$ LM stenosis
- 331 managed medically by pt or MD preference
- Median survival
 - Surgery 13.3 yrs
 - Med Rx 6.6 yrs

Survival Advantage:

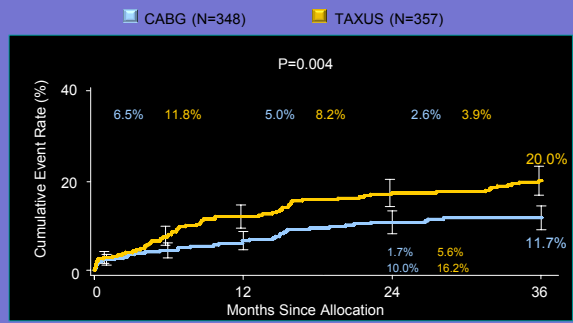
- LM > 60%,
- impaired LVEF or
- RCA stenosis > 70%

Caracciolo EA et al. Circulation 1995; 91: 2325-2334

Patients in SYNTAX Left Main (LM) Subset

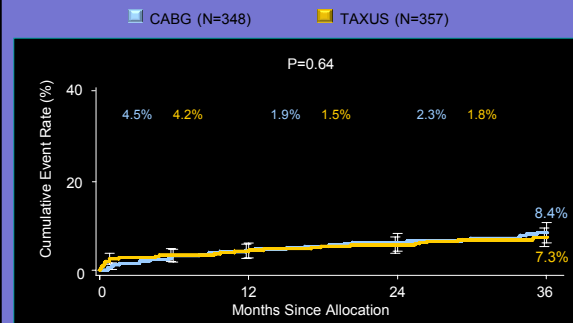


Repeat Revascularization to 3 Years LM Subset



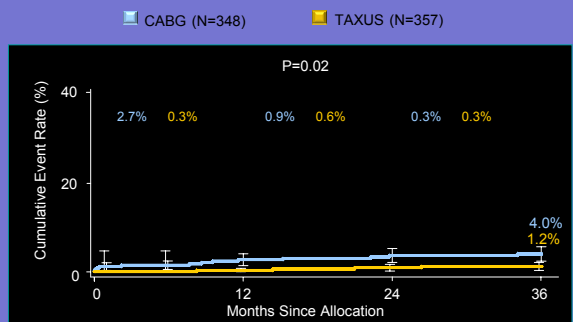
Cumulative KM Event Rate \pm 1.5 SE; log-rank P value; Binary rates ITT population

All-Cause Death to 3 Years LM Subset



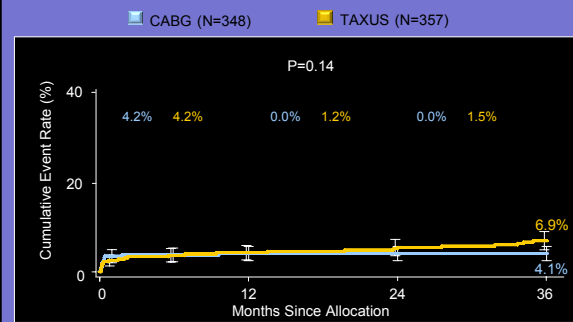
Cumulative KM Event Rate \pm 1.5 SE; log-rank P value; Binary rates ITT population

CVA to 3 Years LM Subset

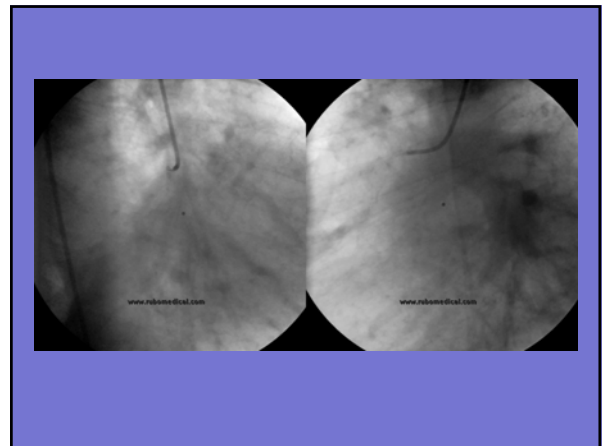
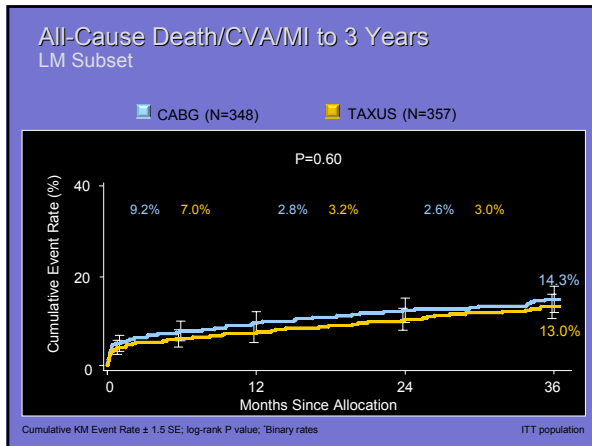


Cumulative KM Event Rate \pm 1.5 SE; log-rank P value; Binary rates ITT population

Myocardial Infarction to 3 Years LM Subset

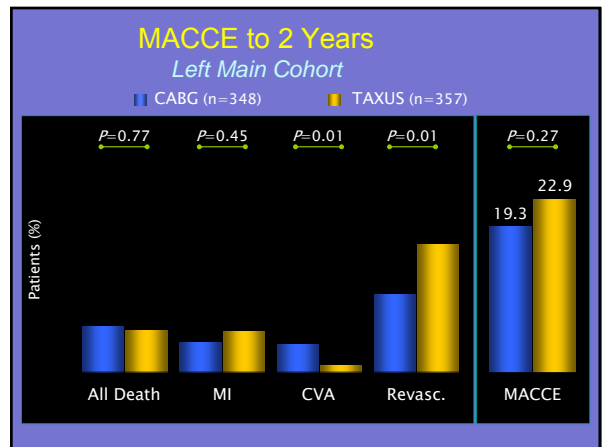
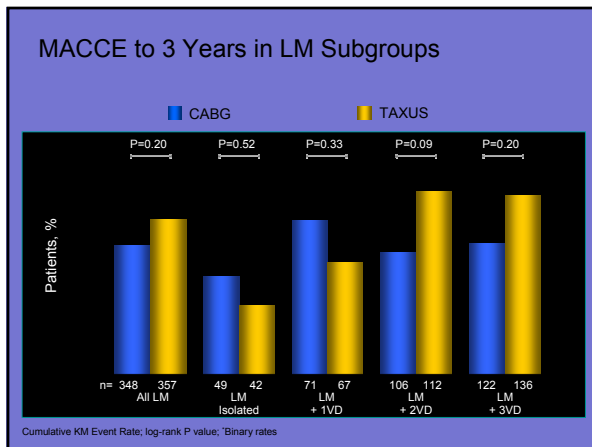
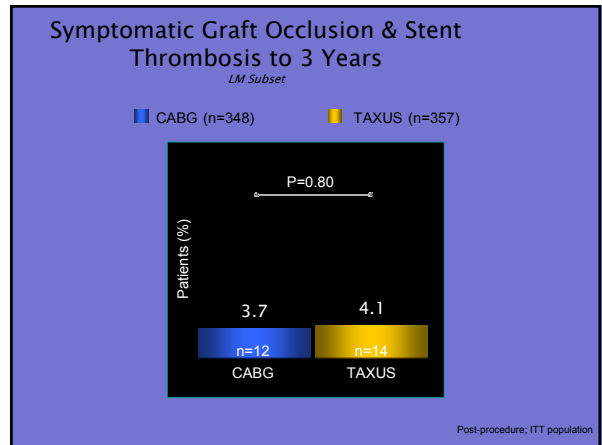


Cumulative KM Event Rate \pm 1.5 SE; log-rank P value; Binary rates ITT population

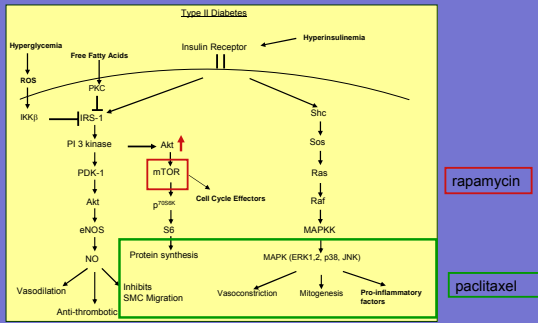


Why is the Gold Standard A Stainless Steel Blade

- Impaired EF
- Difficult Anatomy
- Bypasses Dz ...
- 5-10 yrs of lifestyle
- IMA to the LAD keeps the interventionalist away
- "Complex Anatomy"
- DES Thrombosis
- No DAPT
- Re-Stenosis
- Cure Angina \uparrow Life



Sites of action of rapamycin and paclitaxel



ACC/AHA Guidelines— 2009 Focused Update Revascularization of Left Main Disease



PCI may be considered in patients with anatomic conditions that are associated with a low risk of PCI complications and clinical conditions that predict an increased risk of adverse surgical outcomes (Level of Evidence = B)