

**Discussant: Ten-Year Clinical Outcomes
from a Trial of Three Limus-Eluting Stents With
Different Polymer Coatings
in Patients with Coronary Artery Disease**

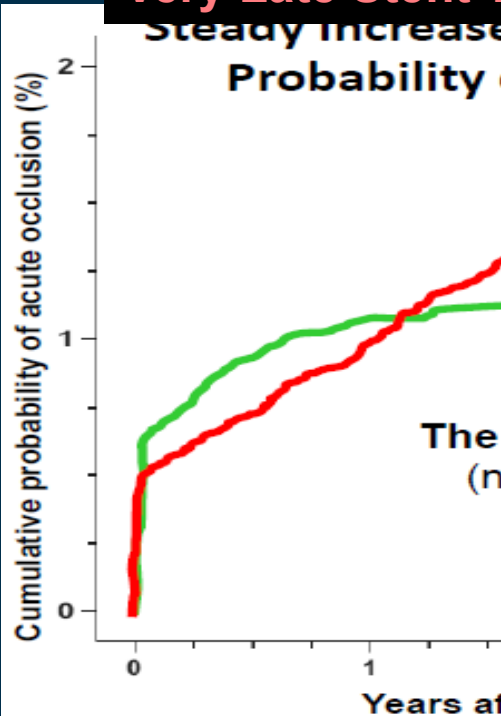
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New York University School of Medicine**

1st Generation DES: Problems

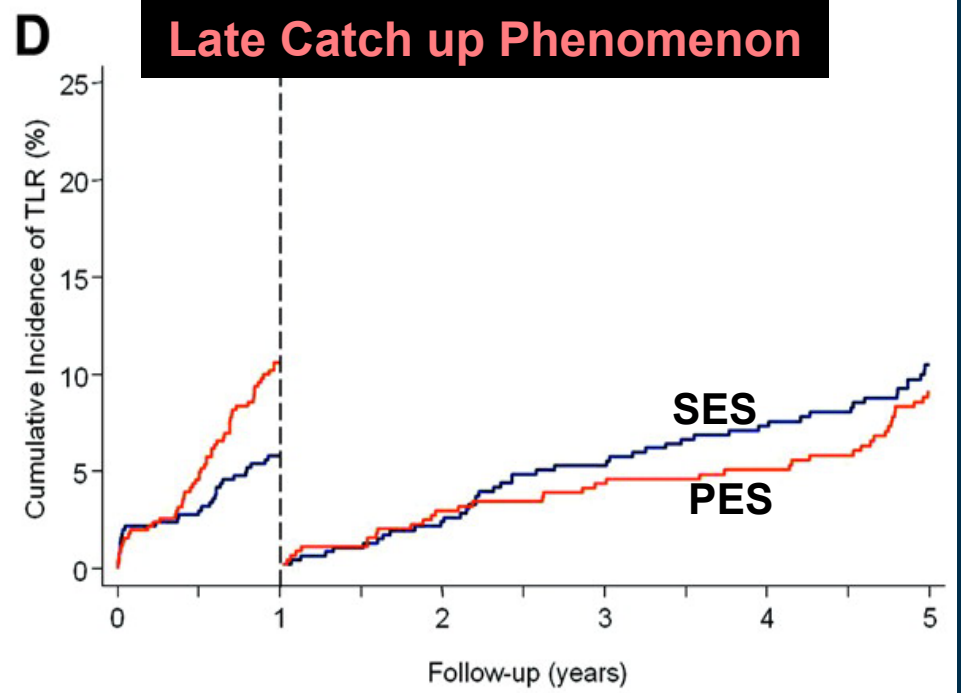
Very Late Stent Thrombosis



Late Acquired Stent Malapposition



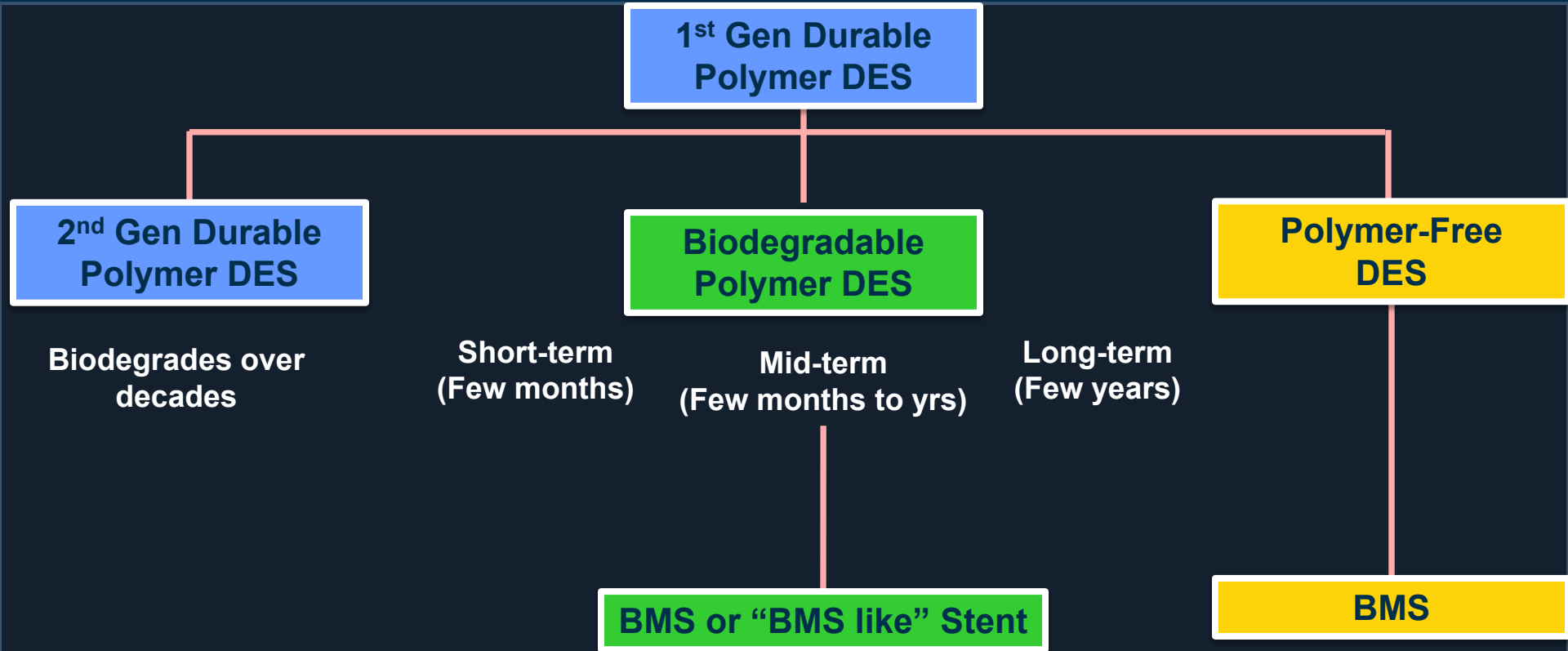
Late Catch up Phenomenon



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Lagerqvist, et al. Circ Cardiovasc Intervent 2009
Rathore S et al. J Invasive Cardiol 2009;21:666-667
Räber L et al. Circulation 2011;123:2819-2828

Polymer Related Problems and Solutions



ISAR-TEST-4: 1-year Outcomes

- 2603 patients (~40% ACS, 28% diabetes, 86% MVD)

Conclusions:

These results provide a framework for testing the **potential clinical advantage** of biodegradable polymer DES over the medium to long term

- BP-DES non-inferior to DP-DES (combined) for the 1 year primary endpoint of TLF

ISAR-TEST-4: 10-year Outcomes

Take Home Message #1

Improvement in stent design can have meaningful impact on hard outcomes including death and/or MI

Implications for interpretation of trials that used older generation DES/BMS (such as COURAGE/BARI-2D/FREEDOM etc)

¹ Bangalore et al. *BMJ* 2013; 347:f6625

² Raber et al. *Circulation*. 2012;125:1110-1121

ISAR-TEST-4: 10-year Outcomes

Take Home Message #2

The late clinical benefit of biodegradable polymer DES over 2nd gen DP-DES remains elusive

Is a higher price tag (in certain health system) for these stents justified?

ISAR-TEST-4: 10-year Outcomes

Take Home Message #3

Although improved, MACE rates continue to accrue beyond 1 year ($\sim 3.3\%/year$) even with 2nd generation DES

Continued progress in stent or scaffold technology perhaps beyond focus on polymer is warranted

% 70

0

2

4

6

8

10

Years after procedure

Persistent Problems with Current Generation DES

2nd Gen Durable Polymer DES

- **Polymer**- Low grade inflammation
- **Drug**- Promotion of neo-atherosclerosis
- **Metal**- Caging of artery

Biodegradable Polymer DES

BMS or “BMS like” Stent

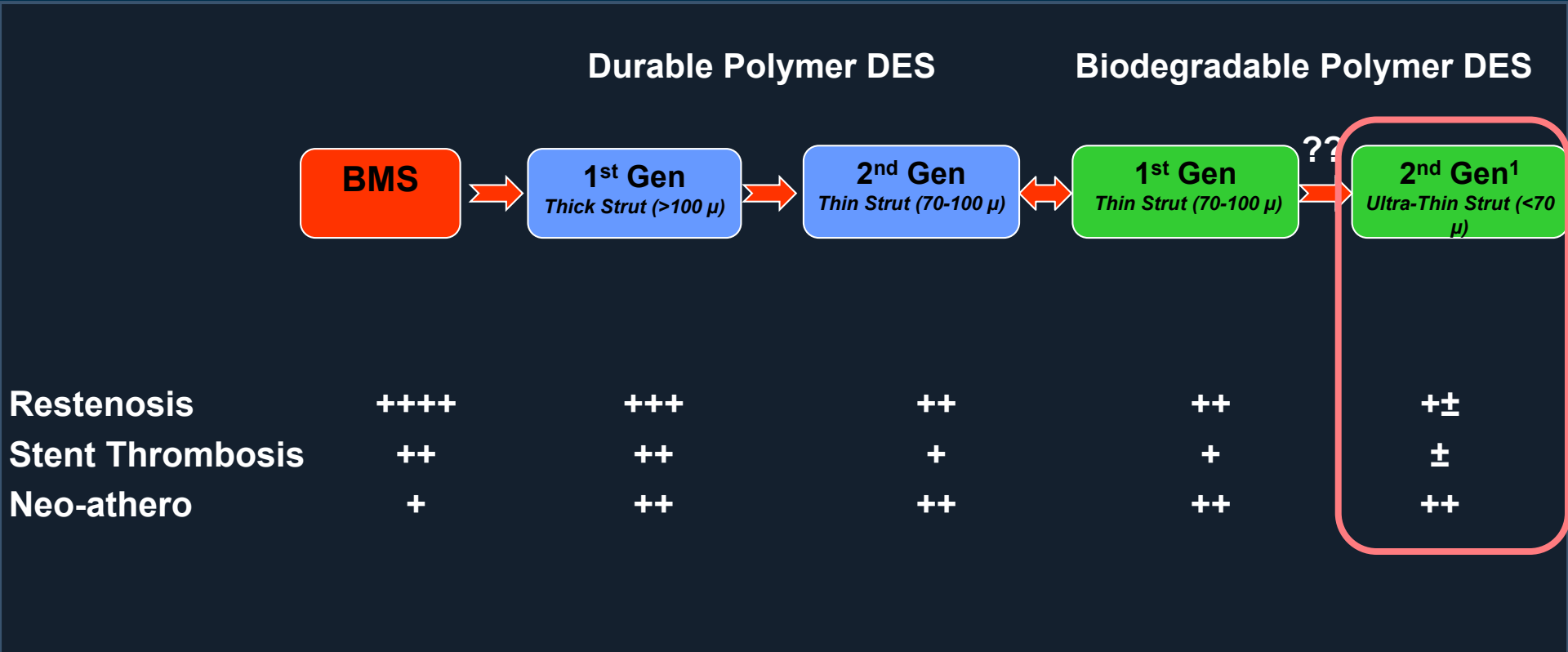
- **Polymer**- Inflammation at the time of biodegradation
- **Drug**- Promotion of neo-atherosclerosis
- **Metal**- Caging of artery
- **Metal**- Inflammation due to ion/metal leak

Polymer-Free DES

BMS

- **Drug**- Promotion of neo-atherosclerosis
- **Metal**- Caging of artery
- **Metal**- Inflammation due to ion/metal leak

Three Decades of Progress in PCI



¹ Bangalore et al. *Circulation*. 2018 Jun 26. pii: CIRCULATIONAHA.118.034456

Circulation

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10.1161/CIRCULATIONAHA.118.038378

The Elusive Late Benefit of Biodegradable Polymer Drug Eluting Stents

Running Title: *Bangalore et al.; Biodegradable Polymer DES*

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