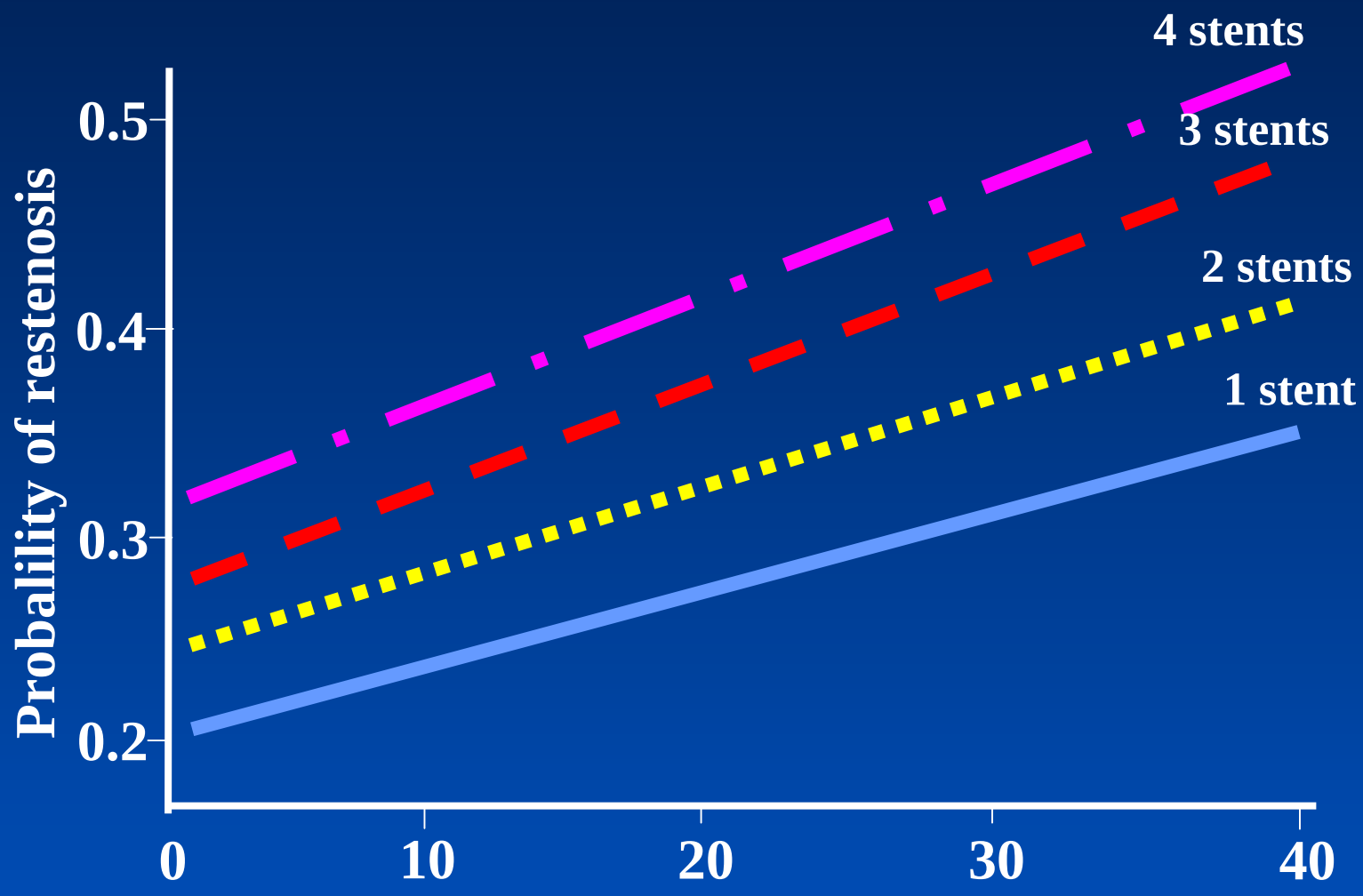
# PCI for Long Coronary Lesion

# Problems of PCI for Long Coronary Lesion

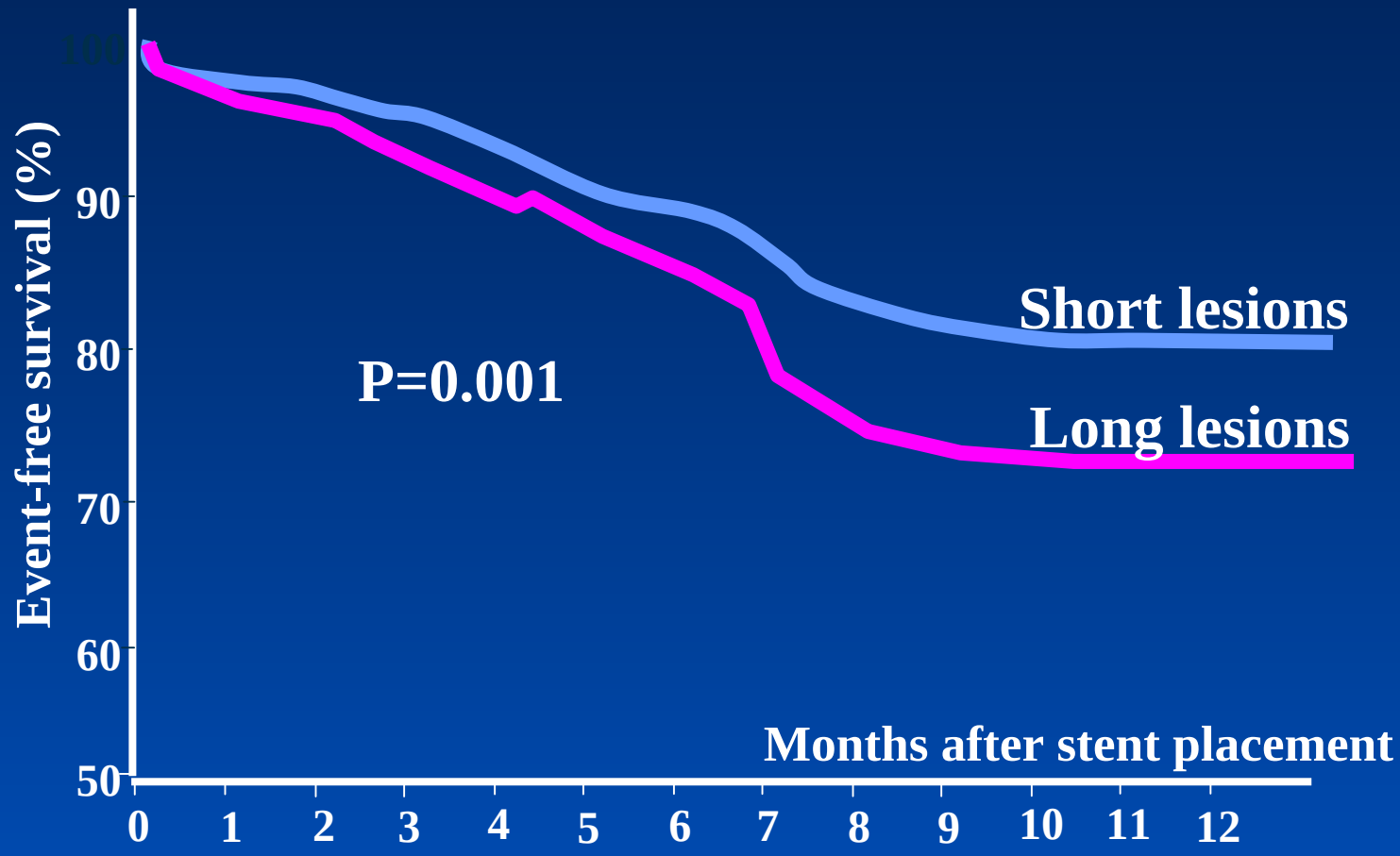
- Low procedural success rate
- High complication rate
- High restenosis rate

# Higher Restenosis Rate With Long Lesion and Multiple Stents




*Kastrati A, AJC 1999:83:1617-22*

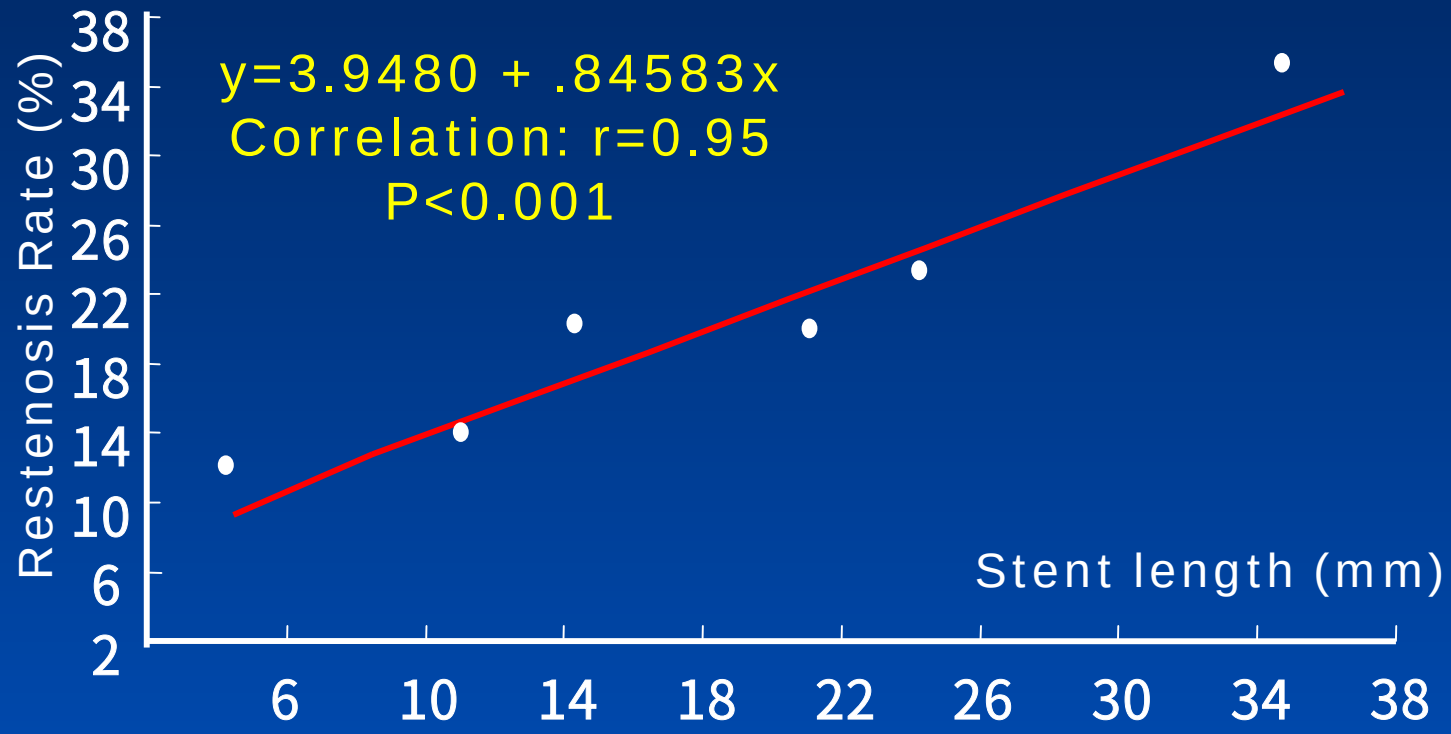
# Worse Clinical Outcome With Increasing Lesion Length




*Kastrati A, AJC 1999:83:1617-22*

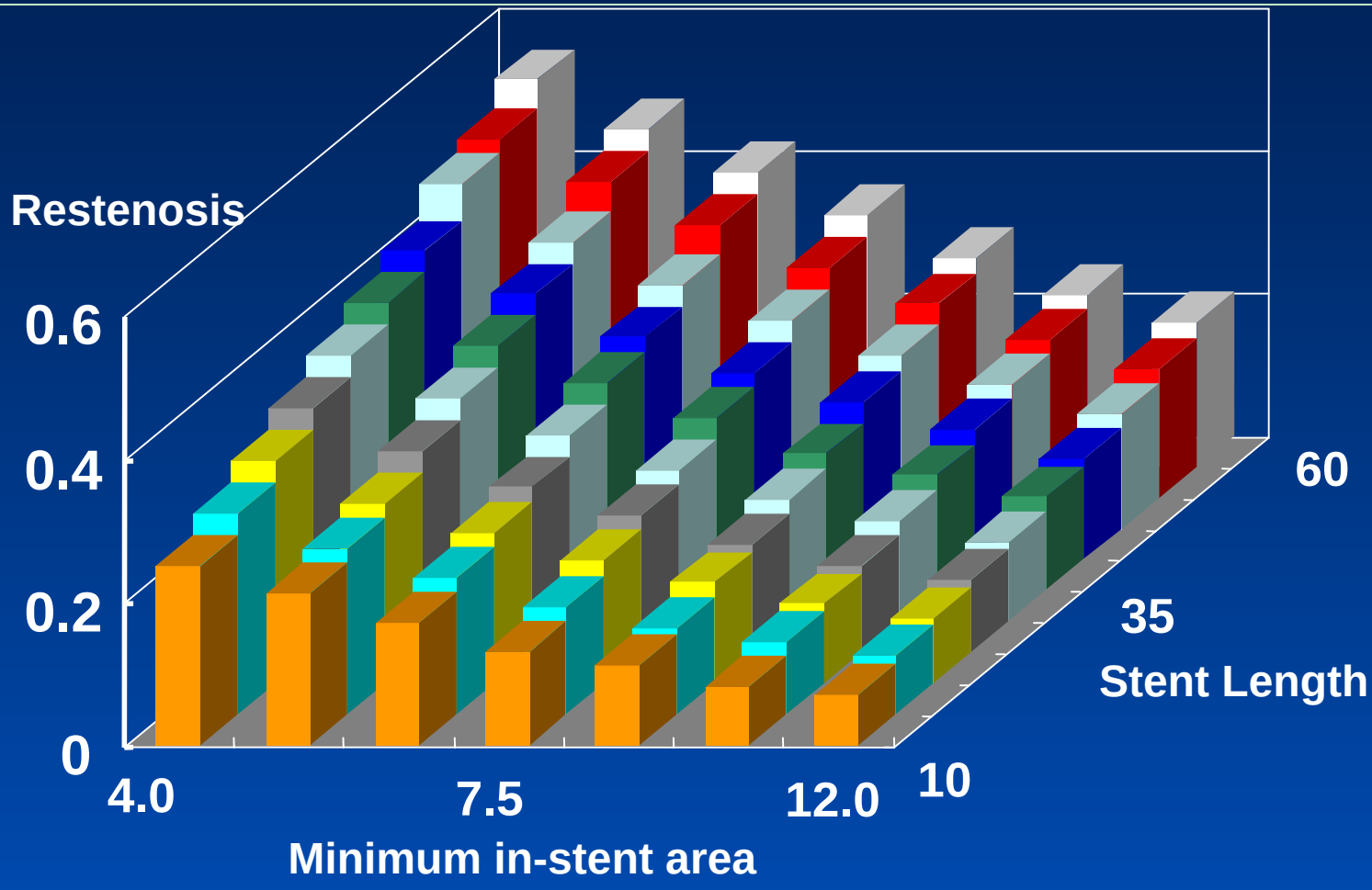
# Higher Restenosis Rate With Increasing Stent Length

## (The Multi-link Stent Trials)




*Kereiakes D, et al. AJC 2000;86:336-341*

# Higher Restenosis Rate With Increasing Stent Length and Decreasing Stent Area

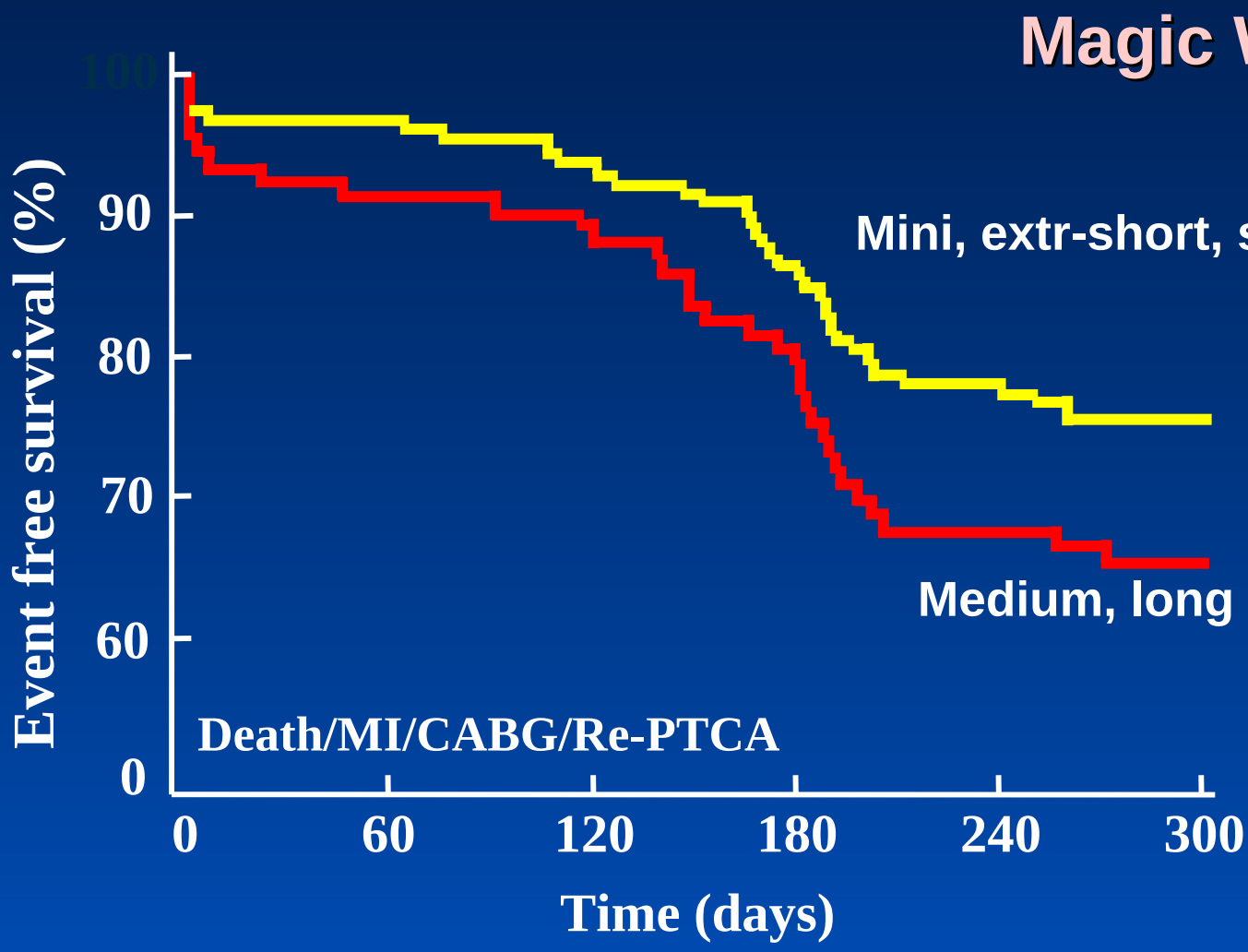



*De Feyter. Circulation 1999; 100:1777-83*

# *Full Lesion Coverage Vs. Spot Stenting*

# Event Free Survival

MAGIC 5L

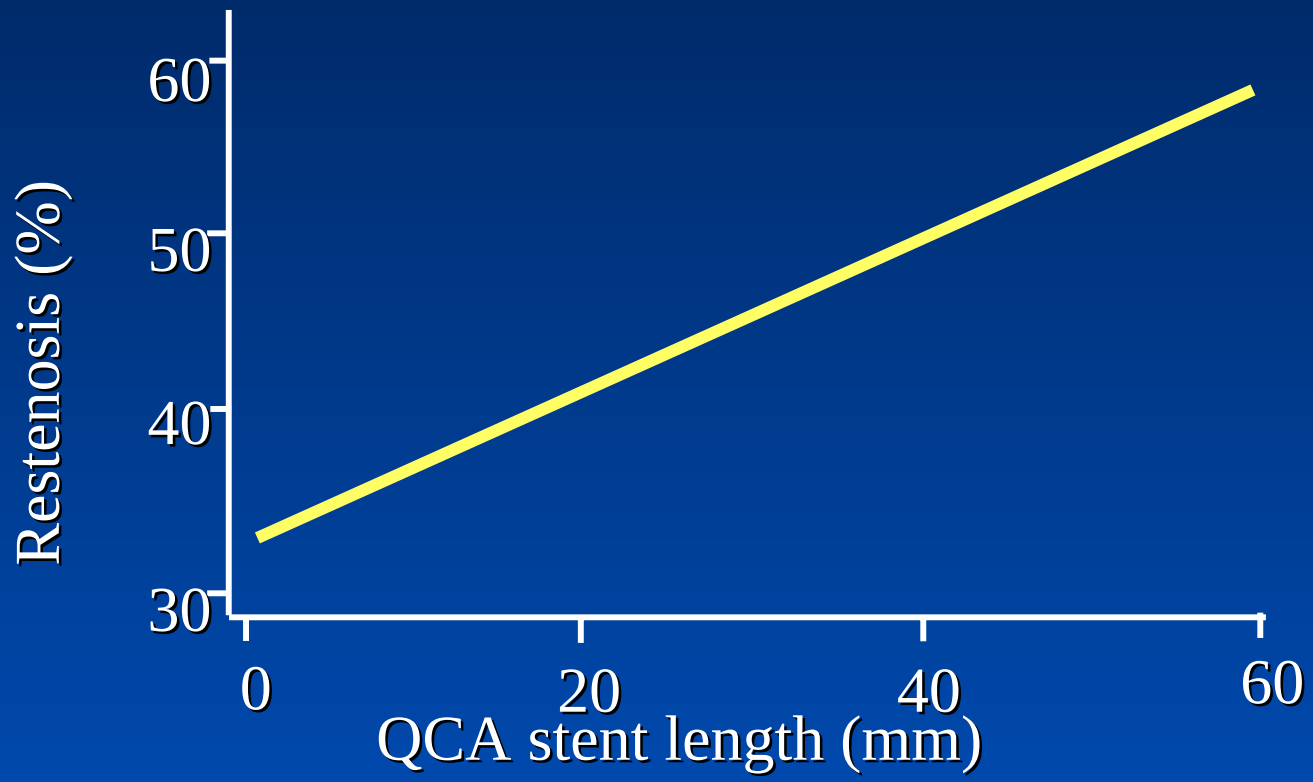



*Foley DP et al, Eur Heart J 2001;22:1585-93*

# Restenosis Rate



**Restenosis Rate= 32.1+0.435$^0$ stent length**

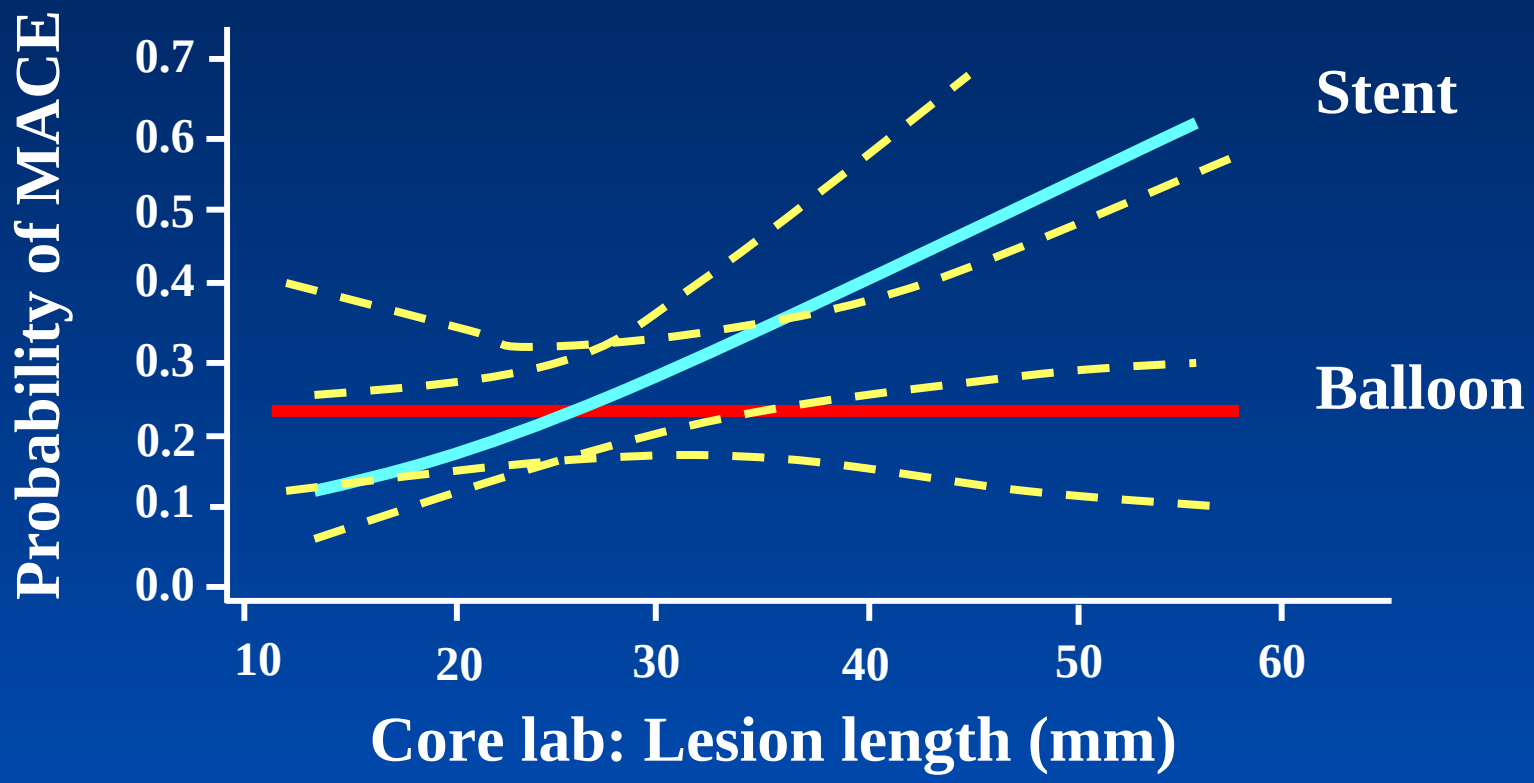



*Foley DP et al, Eur Heart J 2001;22:1585-93*

# Probability of MACE

ADVANCE

**Stent is better than balloon PTCA in lesions with length ≤ 30 mm**

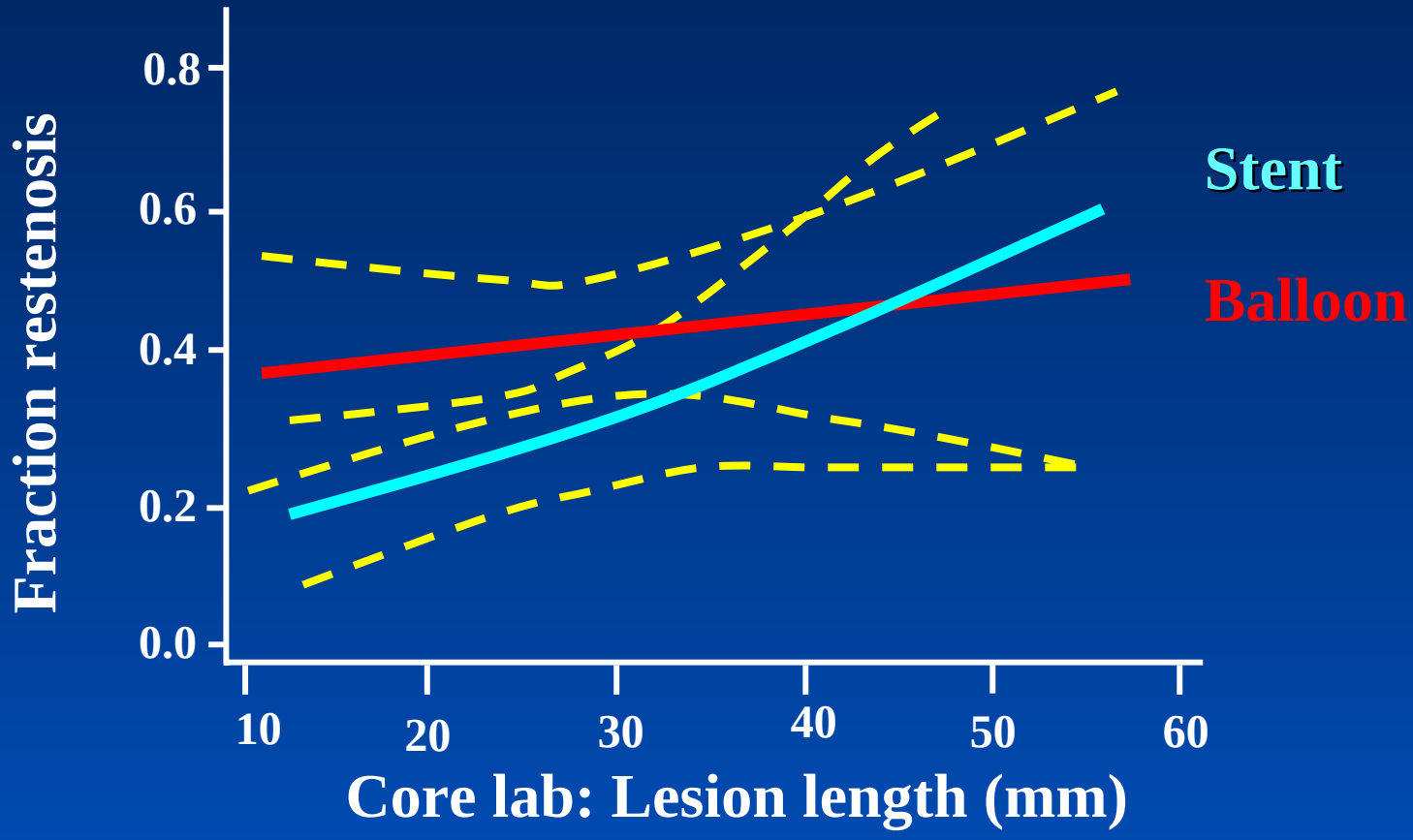



*Serruys PW et al, J Am Coll Cardiol 2002;39:393-9*

# Restenosis Rate

ADVANCE

**Stent is better than balloon PTCA in lesions with length ≤ 32 mm**




*Serruys PW et al, J Am Coll Cardiol 2002;39:393-9*

# Acceptable Stent Length Expected for Better Outcome than Balloon PTCA

***ADVANCE Trial***

**Stent Length ≤ 32 mm**

**Expected TVR = 13 %**

# Strategy of Spot Stenting

**Stenting in lesions with**
**CSA $\leq$ 5.5 mm$^2$ or**
**Diameter Stenosis $\geq$ 50%**
**After Balloon PTCA**
**In Long Lesion PCI**

*Colombo A et al, J Am Coll Cardiol 2001;38:1427-33*

# Spot Stenting vs. Long Stent

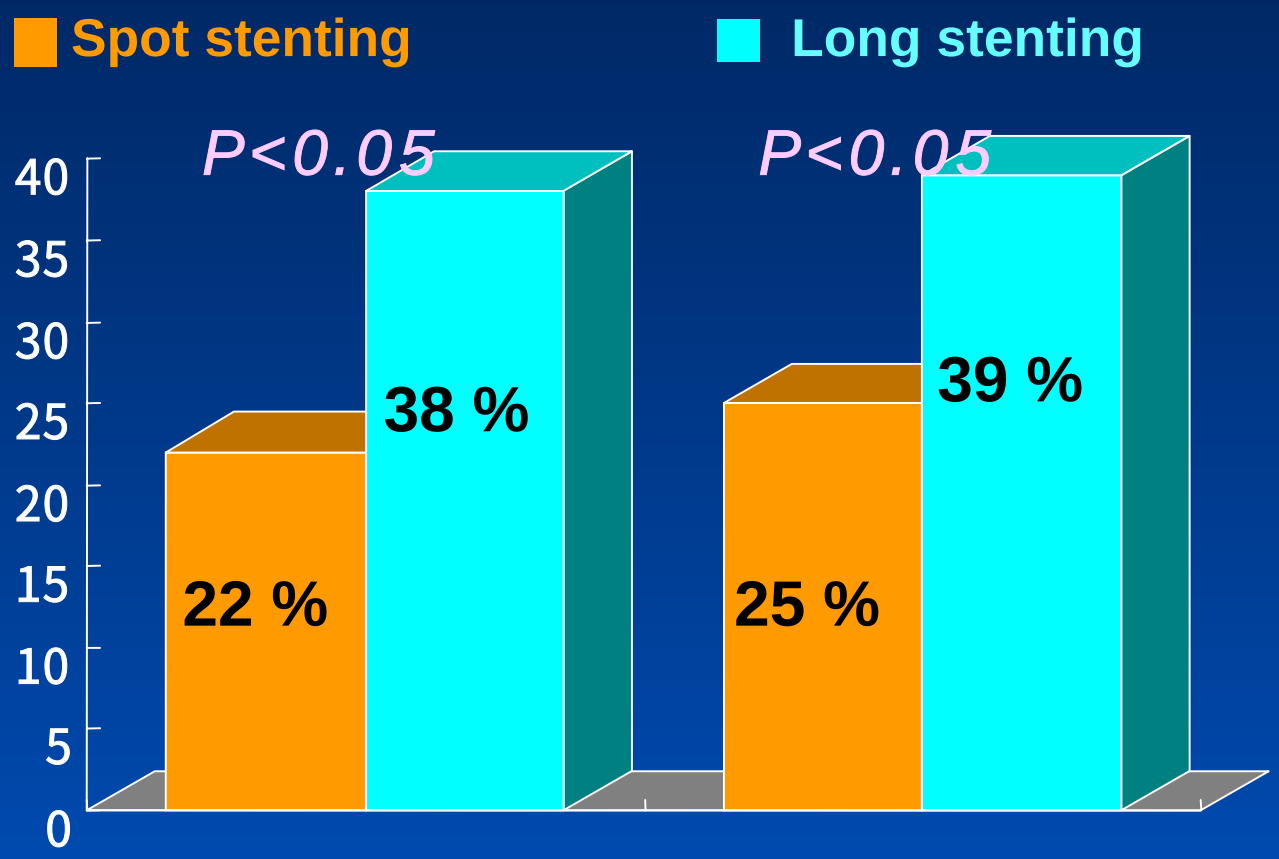
| | Short stent (n=101) | Long stent (n=121) | P value |
|---|---|---|---|
| Lesion length, mm | 29.3 | 27.3 | NS |
| Stent length, mm | 21 | 42.6 | <0.001 |
| No. of stent | 1.2 | 2.3 | <0.05 |
| Stent Thrombosis (%) | 0.8 | 2.1 | NS |
| Restenosis Rate (%) | 25 | 39 | <0.05 |
| TLR (%) | 19 | 34 | <0.05 |
| 6 month MACE (%) | 22 | 38 | <0.05 |
| Small Ref.vessel | | | |
| Restenosis Rate (%) | 29 | 52 | <0.05 |
| TLR (%) | 21 | 34 | NS |

*Colombo A et al, J Am Coll Cardiol 2001;38:1427-33*

# Spot Stenting vs. Long Stent

## 6 Months MACE

## Restenosis Rate




*Colombo A et al, J Am Coll Cardiol 2001;38:1427-33*

# *Single Long Stent Vs. Multiple Stents*

# IMPULSE Trial

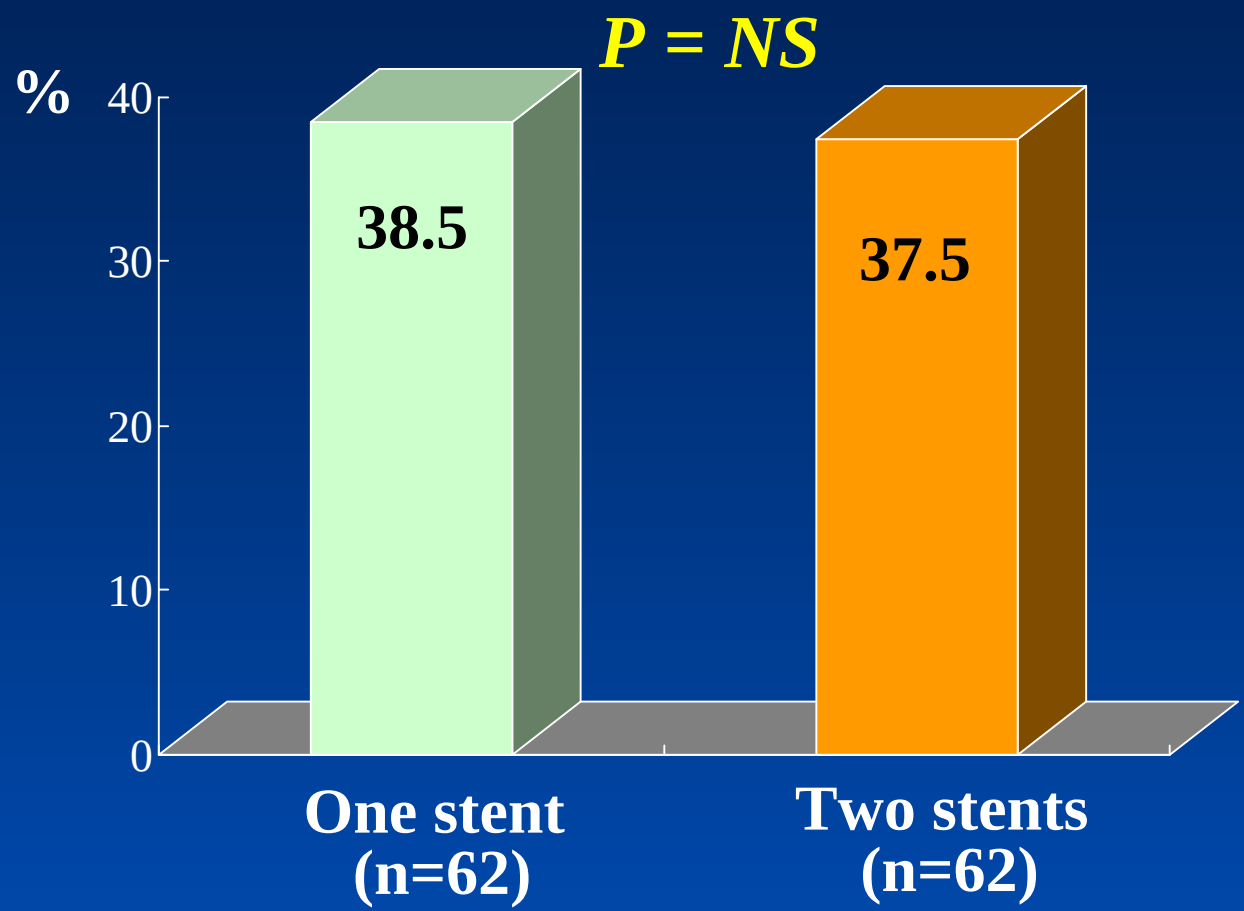
Lesion length : 20 to 40 mm

- Two stents with GFX II or S670 (n=62)
- One long stent with GFX II of S670 (n=62)

*Hoffmann R, et al. Am J Cardiol 2002:90:460-464*

# Restenosis Rate

*IMPULSE*

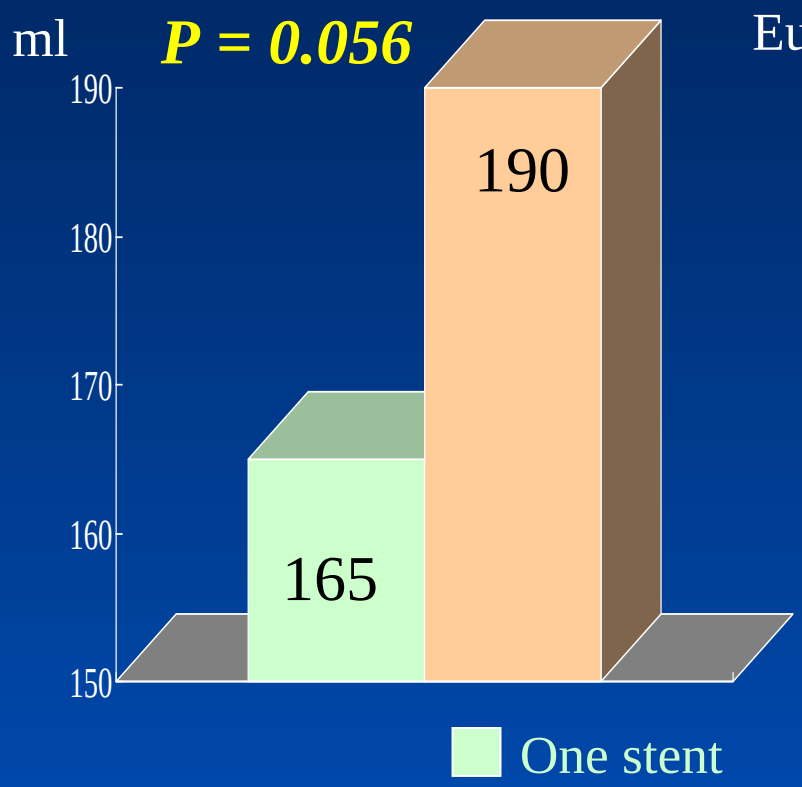



*Hoffmann R, et al. Am J Cardiol 2002:90:460-464*

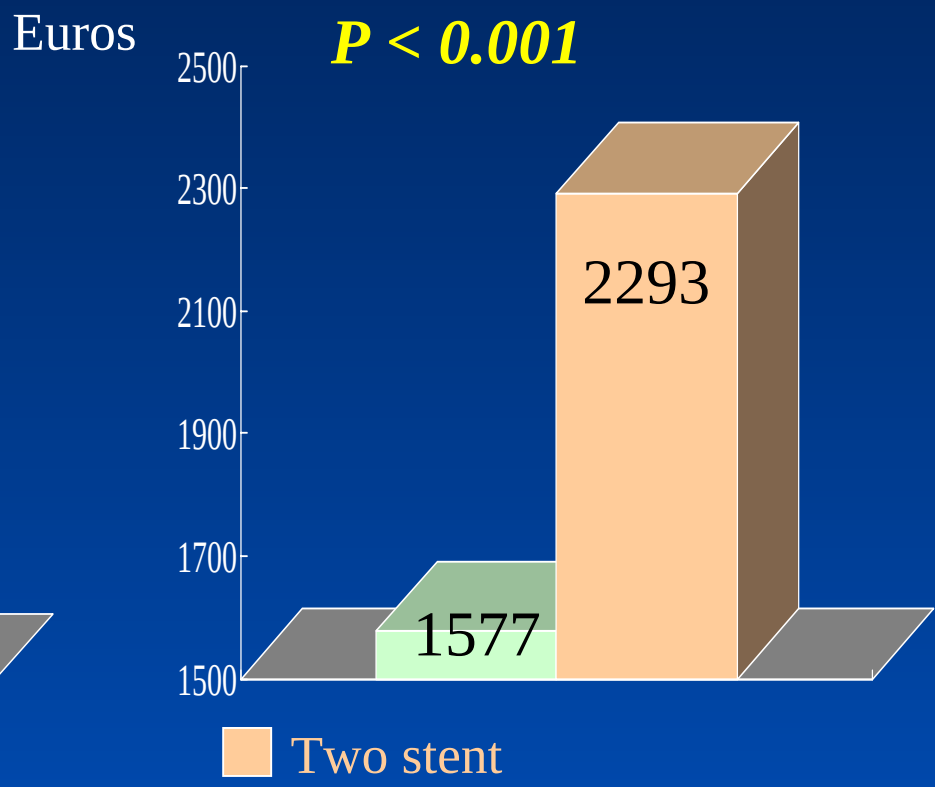
# Cost-Effectivenss

*IMPULSE*

## Contrast agent




## Intervention Cost




*Hoffmann R, et al. Am J Cardiol 2002:90:460-464*

# Stenting with Bare Metal Stent for Long Coronary Lesion

***We suggest …***

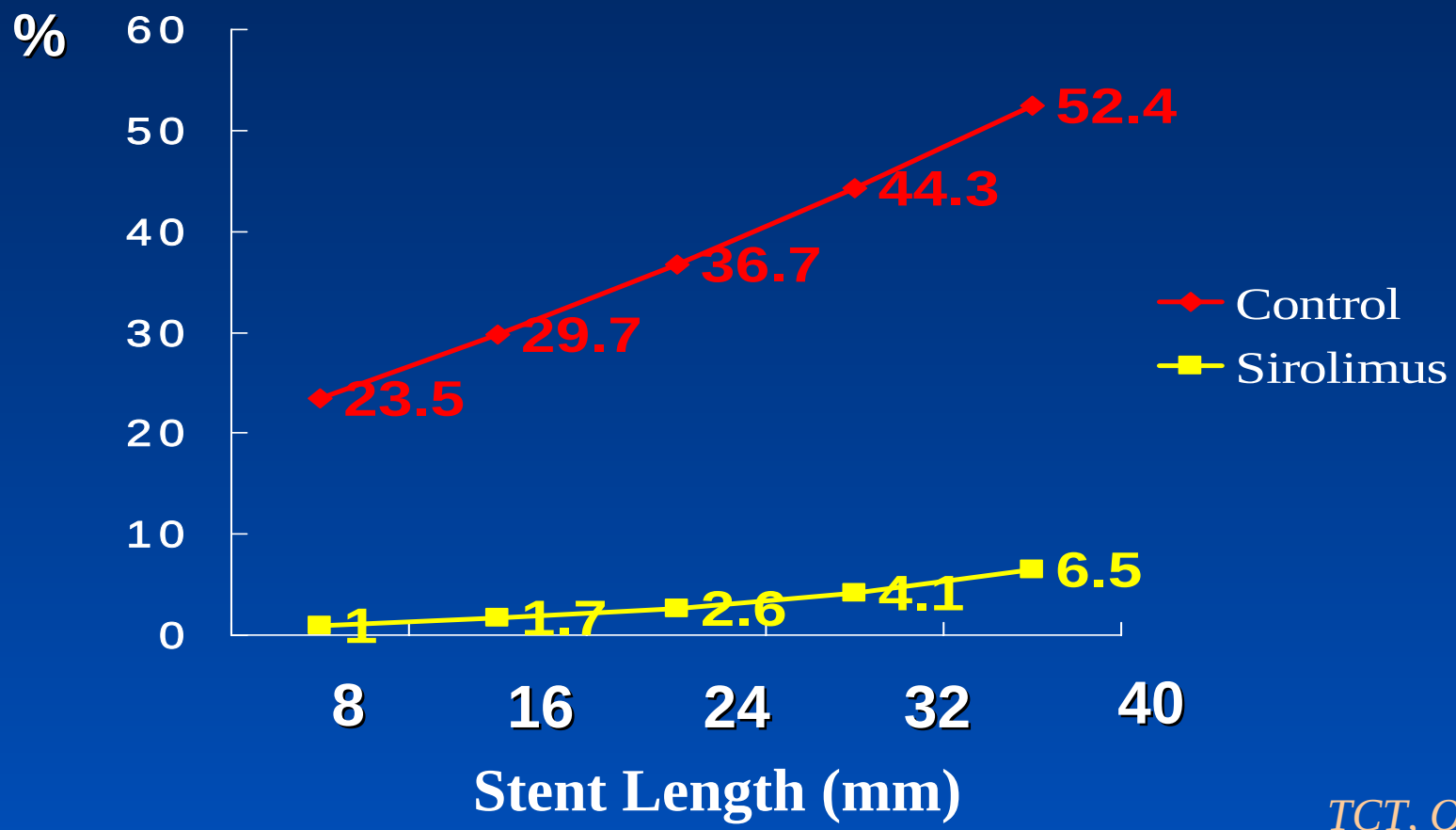
- Spot stenting
- Single stent

# *Does the strategy need to be changed ?*

## In the Era of Drug Eluting Stent

# No Abrupt Increase of Restenosis with Stent length of DES

## *SIRIUS : Sirolimus Eluting Stent*




*TCT, Oct 2002*

# Relative Reduction of Restenosis

## *SIRIUS : Sirolimus Eluting Stent*

### Non-diabetic

| Ref Dia \ Lesion length | < 12mm | 12 – 15 mm | ≥ 15mm |
|---|---|---|---|
| > 3.0mm | 81.7 % | 81.2 % | 80.4 % |
| 2.5 – 3.0 mm | 79.8 % | 79.2 % | 77.9 % |
| < 2.5mm | 77.6 % | 76.6 % | 74.8 % |

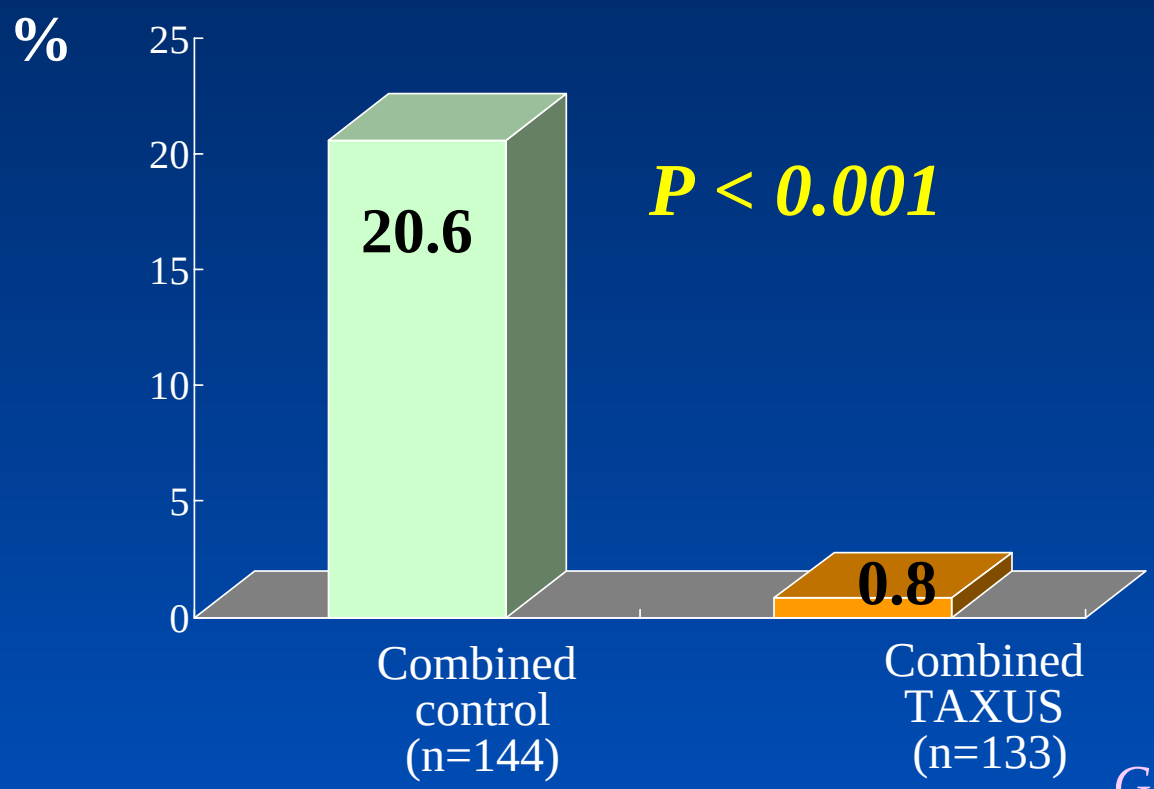
### Diabetic

| Ref Dia | < 12mm | 12 – 15 mm | ≥ 15mm |
|---|---|---|---|
| > 3.0mm | 78.0 % | 77.0 % | 75.3 % |
| 2.5 – 3.0 mm | 74.1 % | 72.7 % | 70.2 % |
| < 2.5mm | 69.6 % | 67.8 % | 64.5 % |

*TCT, Oct 2002*

# Restenosis in Lesions ≥ 10mm
## in stented segment

### *TAXUS II : Paclitaxel Eluting Stent*




*Grube E, ACC, 2003*

# Impact of Stent Overlapping

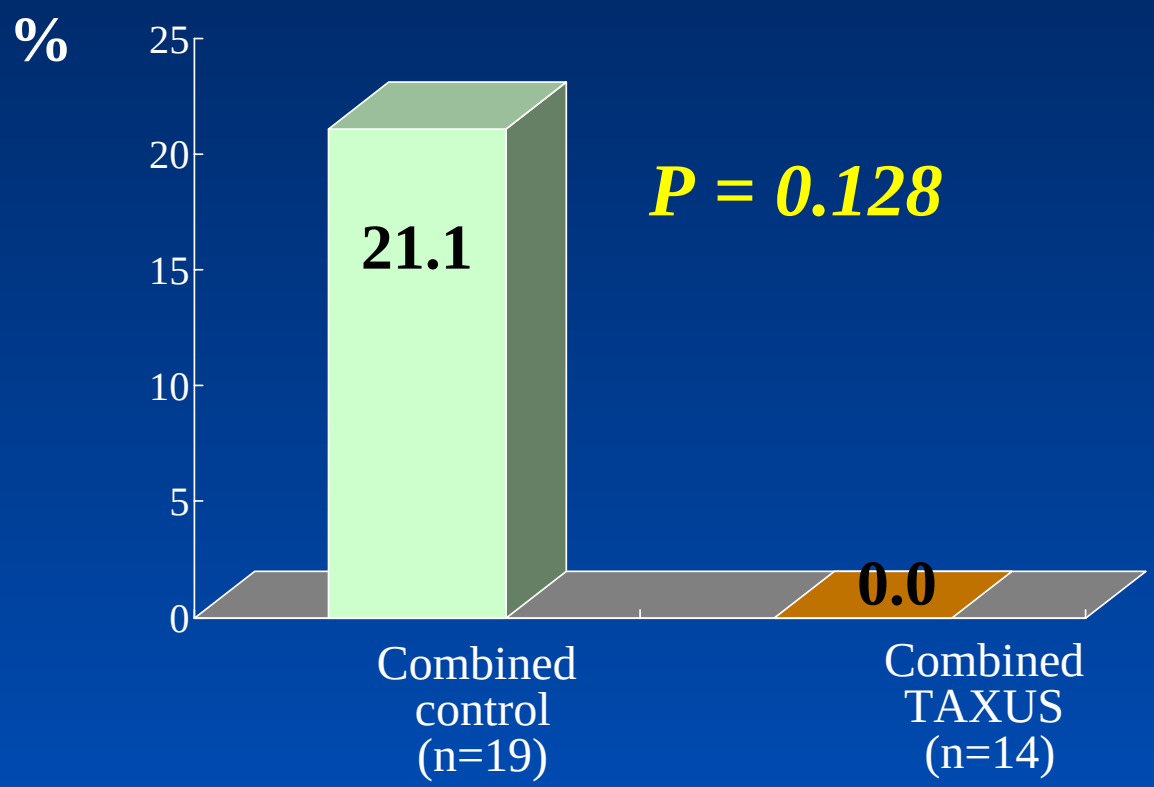
## *SIRIUS : Sirolimus Eluting Stent*

| | Sirolimus (n=176) | Control (n=168) | P value |
|---|---|---|---|
| **Late loss (mm)** | | | |
| In-stent | 0.23 | 1.14 | <0.001 |
| In-segment | 0.20 | 0.93 | <0.001 |
| **Restenosis (%)** | | | |
| In-stent | 7.1 | 42.7 | <0.001 |
| In-segment | 8.8 | 42.7 | <0.001 |

*TCT, Oct 2002*

# Restenosis in > 1 Stent
## in stented segment

***TAXUS II : Paclitaxel Eluting Stent***




*Grube E, ACC, 2003*

# Strategy in PCI with DES

***It should be changed to be …***

- Full lesion coverage
- No scary of stent overlapping