

# Integrated FFR- measurement

# CoroNet PCI-monitor



- Online ischemia monitoring updated every 10th second
- Full monitoring capacity
- Measurement of intra coronary pressure - FFR
- Can be done both with S:t Jude (RADI) and Volcano pressure wire
- Network to CoroNet monitoring system
- Interface with Volcano IVUS

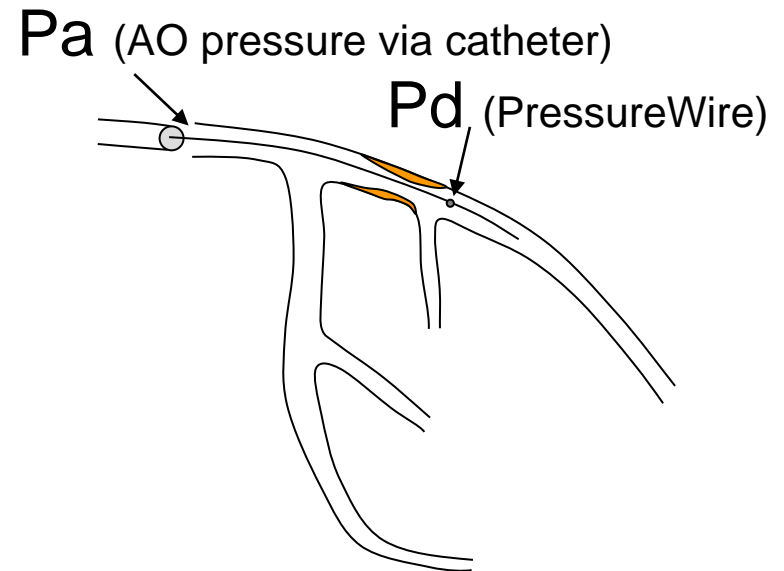
# Fractional Flow Reserve (FFR)

## Definition of FFR

“Maximum achievable blood flow in stenotic coronary artery divided by Maximum blood flow in the same artery without stenosis”

$$FFR = \frac{Pd}{Pa}$$

At maximum hyperemia



# Fractional Flow Reserve (FFR)

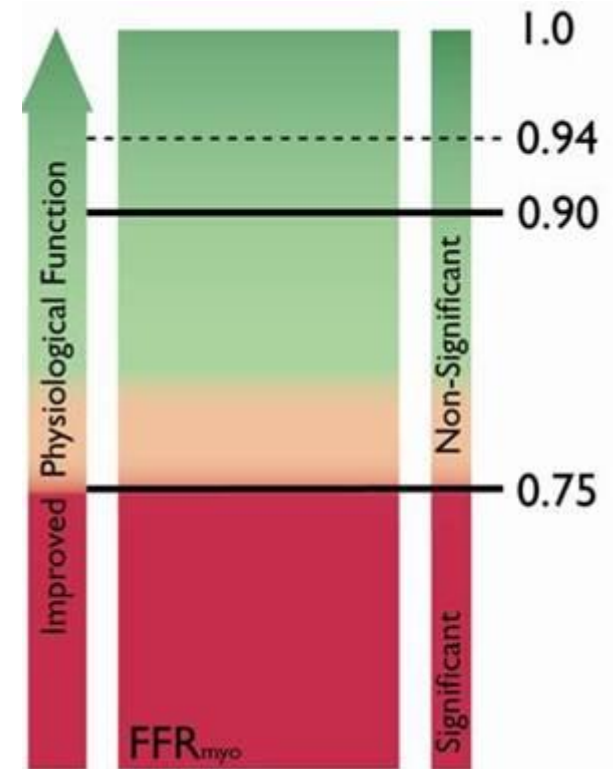
The reduction in myocardial blood flow by a stenosis, as indicated by FFR, can be closely correlated to Ischemia.

FFR = 1.0 → Normal artery

FFR > 0.75 → Ischemia very unlikely, sensitivity 88%

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FFR < 0.75 → Ischemia, specificity 100%



# Conclusion

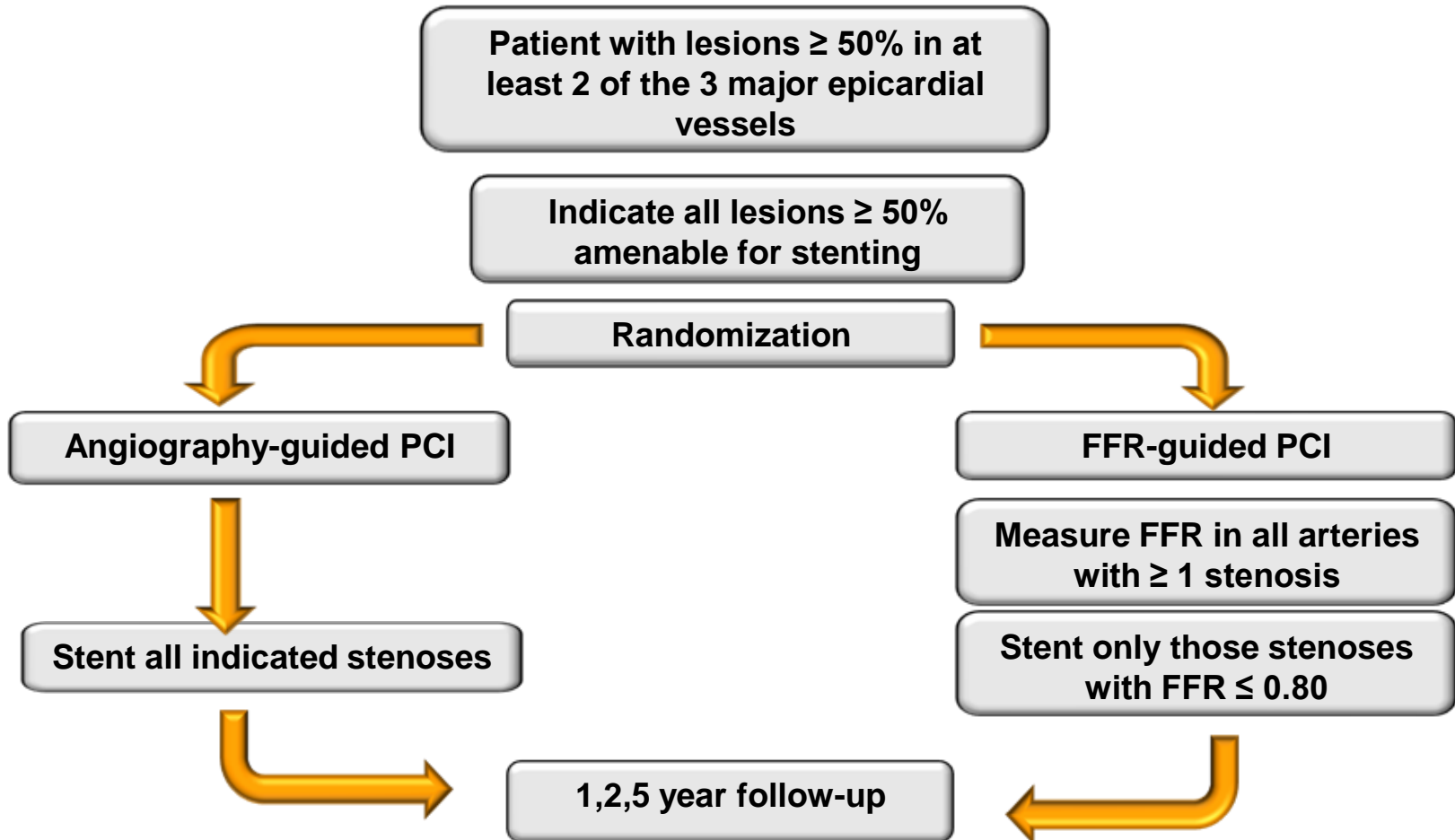
In this clinical example, FFR and PressureWire:

- Confirmed the appropriateness of stenting the RCA while avoiding a risky intervention of the LAD/D1/D2 or bypass surgery
- Selected the correct spots in the RCA where to place stents
- Provided both the means for assessing the vessels and delivered the balloon and stents to the appropriate locations
- Evaluated the result of stenting and detected the need for a second stent

# The FAME trial

(Fractional Flow Reserve versus Angiography in  
multivessel evaluation)

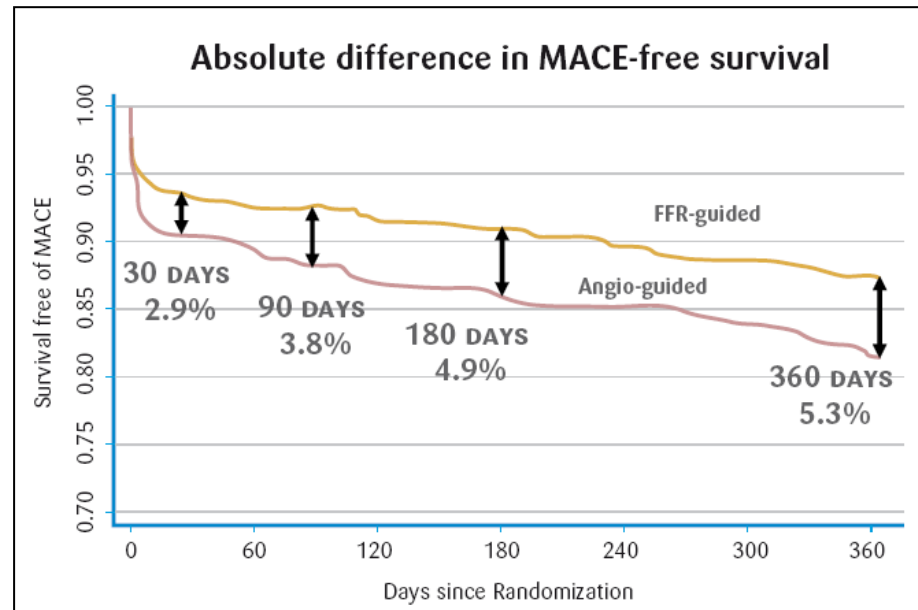
# The FAME trial



# The FAME trial

One year follow up results published in NEJM January 2009:

- Routine FFR significantly improves outcomes after (DES) stenting in patients with multivessel disease (MVD)
- FFR guided PCI reduces all types of events by **30%**
- FFR guided PCI **lower costs without prolonging the procedure**
- FFR guided PCI improves patients quality of life

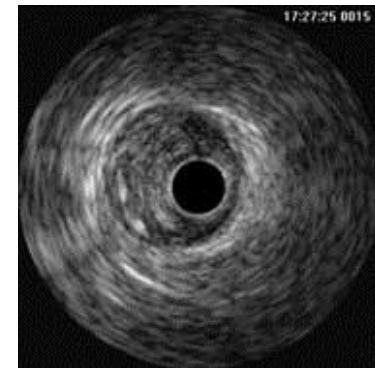
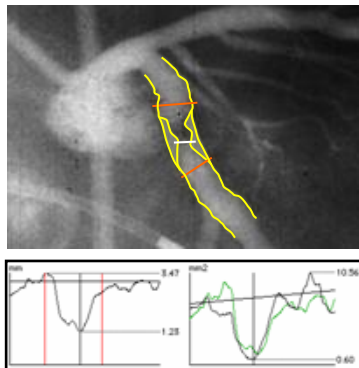


## The FAME trial

	ANGIO- group N=496	FFR- group N=509	P- value
Death	15 (3.0%)	9 (1.8%)	0.19
<b>Death or myocardial infarction</b>	<b>55 (11.1%)</b>	<b>37 (7.3%)</b>	<b>0.04</b>
CABG or repeat PCI	47 (9.5%)	33 (6.5%)	0.08
<b>Procedure time (min)</b>	<b>70 ± 44</b>	<b>71 ± 43</b>	0.51
<b>Contrast agent used (ml)</b>	<b>302 ± 127</b>	<b>272 ± 133</b>	<b>&lt;0.001</b>
<b>Materials used at procedure (US \$)</b>	<b>6007</b>	<b>5332</b>	<b>&lt;0.001</b>
Length of hospital stay (days)	3.7 ± 3.5	3.4 ± 3.3	0.05

# Why is FFR-guided PCI better than Image-guided?

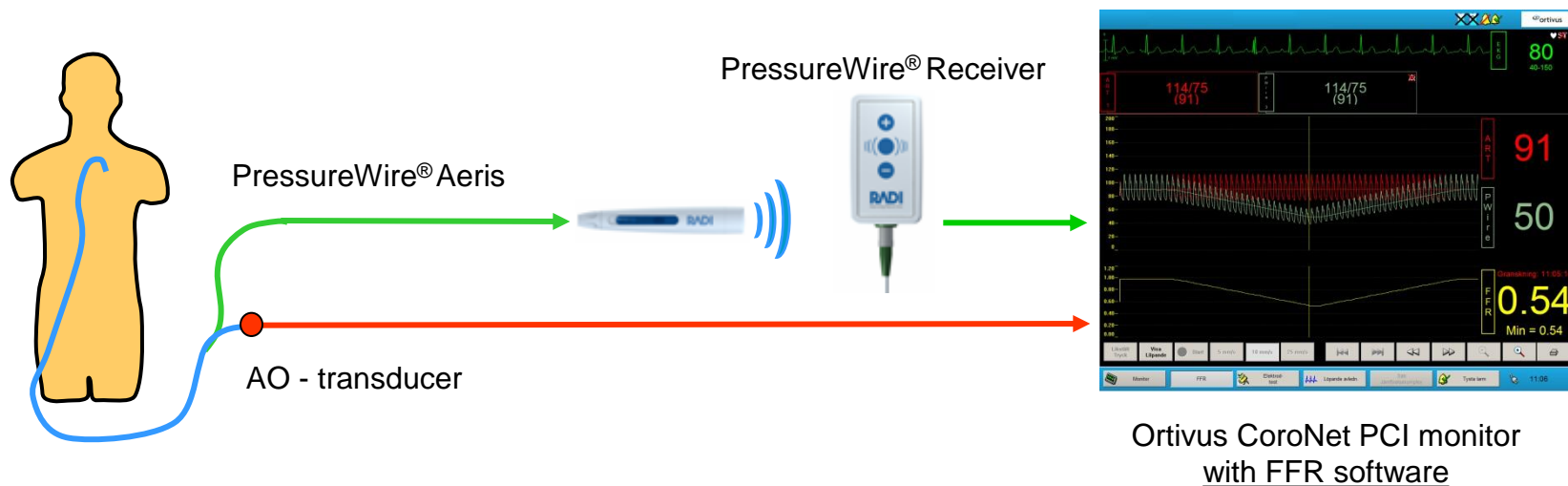
- Imaging modalities such as Angio, CT or IVUS can not identify which individual lesion is causing the patients ischemia.
- Imaging modalities can both over- and under estimate lesion severity, either leaving significant lesions untreated or causing excess stenting.
- Imaging modalities does not take into account collateral blood flow, size of myocardium or abnormal/impaired myocardium.
- Non-invasive stress techniques are often inconclusive and doesn't give physicians detailed information needed to pinpoint the significant lesions.



# Current standard for FFR measurement



# Integrated FFR measurement



# CoroNet PCI-monitor – FFR-measurement

