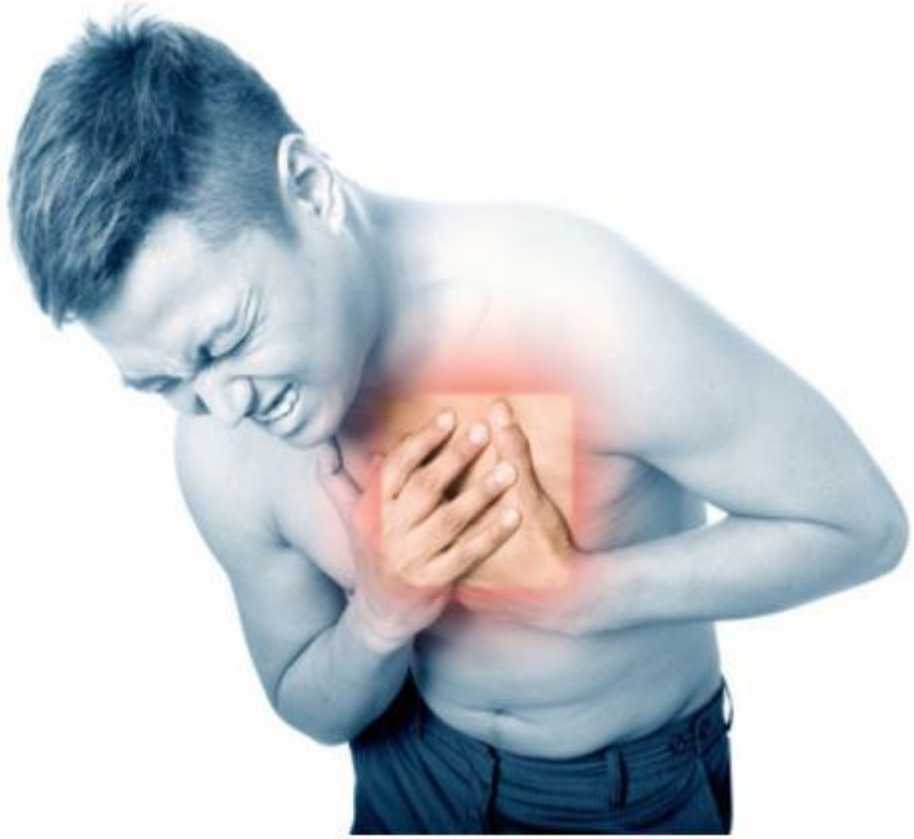
ABSORB(BVS) – IV революция в Интервенционалната кардиология

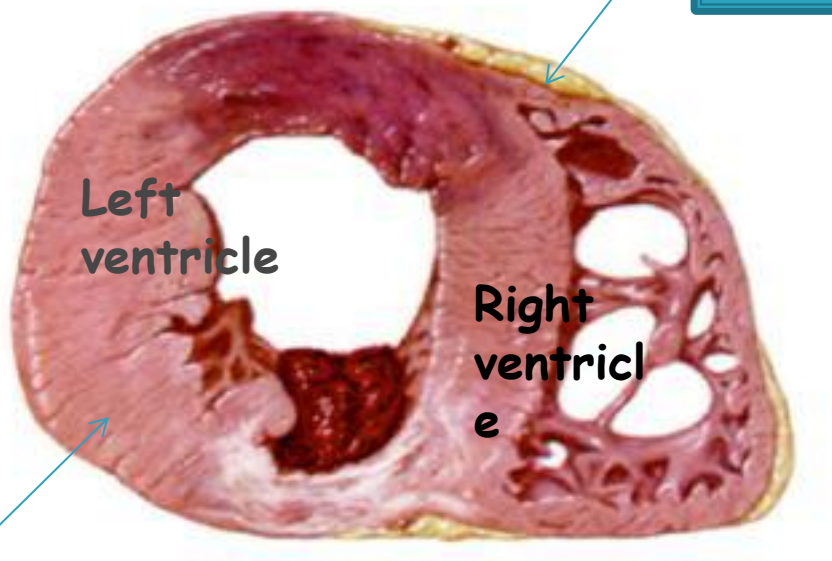
Д.Трендафилова
УБАЛССЗ "Св.Екатерина"

Исхемична болест на сърцето и Гръдна болка: Стабилна ангина,Нестабилна ангина или ОМИ



Последствие – загуба на контрактилна маса

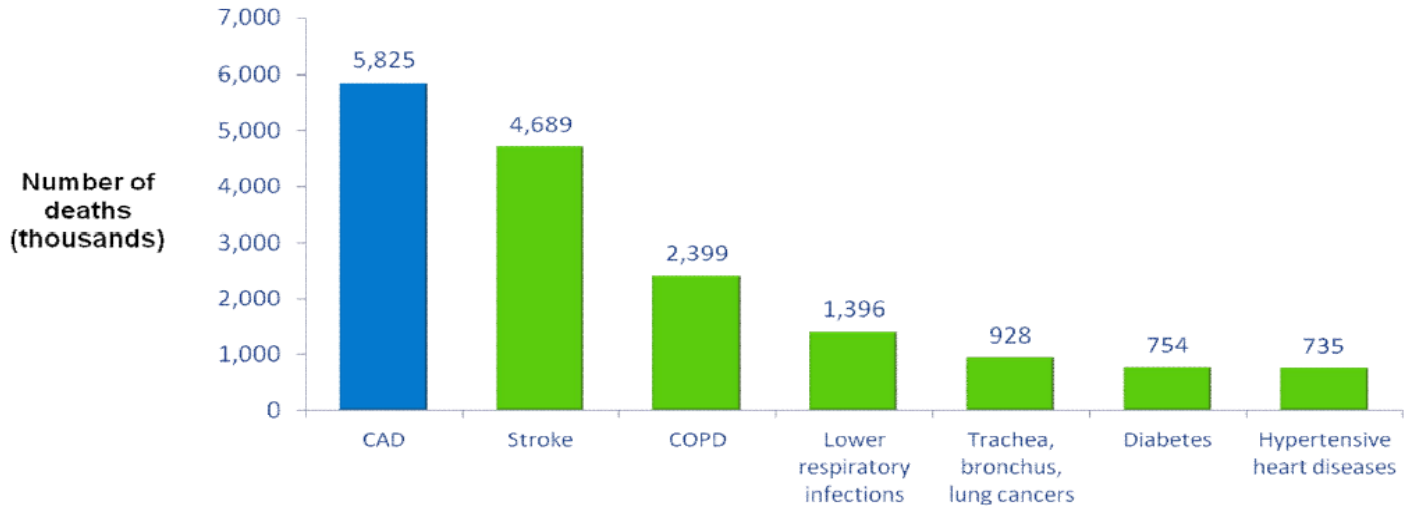
Acute anteroseptal infarction (Front)



Healed posterior infarction with overlying thrombus (Back)

ИБС е една от водещите причини за смърт при пациенти над 60 г.

Deaths in patients aged >60 years globally (2002)[1]



1. World Health Organization. Deaths from coronary heart disease. 2004. Available at: http://www.who.int/cardiovascular_diseases/en/cvd_atlas_14_deathHD.pdf. Accessed: Mar 2012. CAD=coronary artery disease; COPD=chronic obstructive pulmonary disease.

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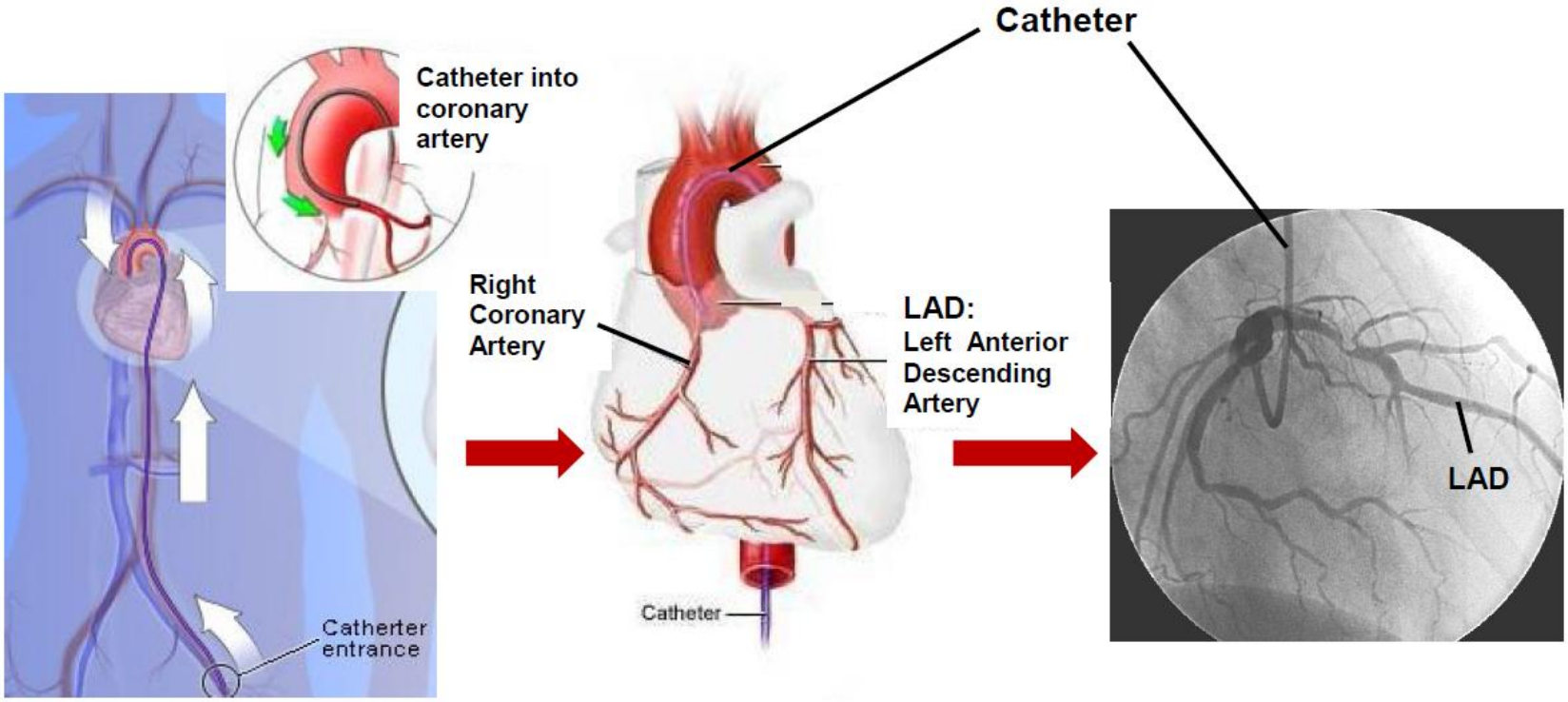
СКАГ – златен стандарт за диагноза



Technique Anatomy Angiogram

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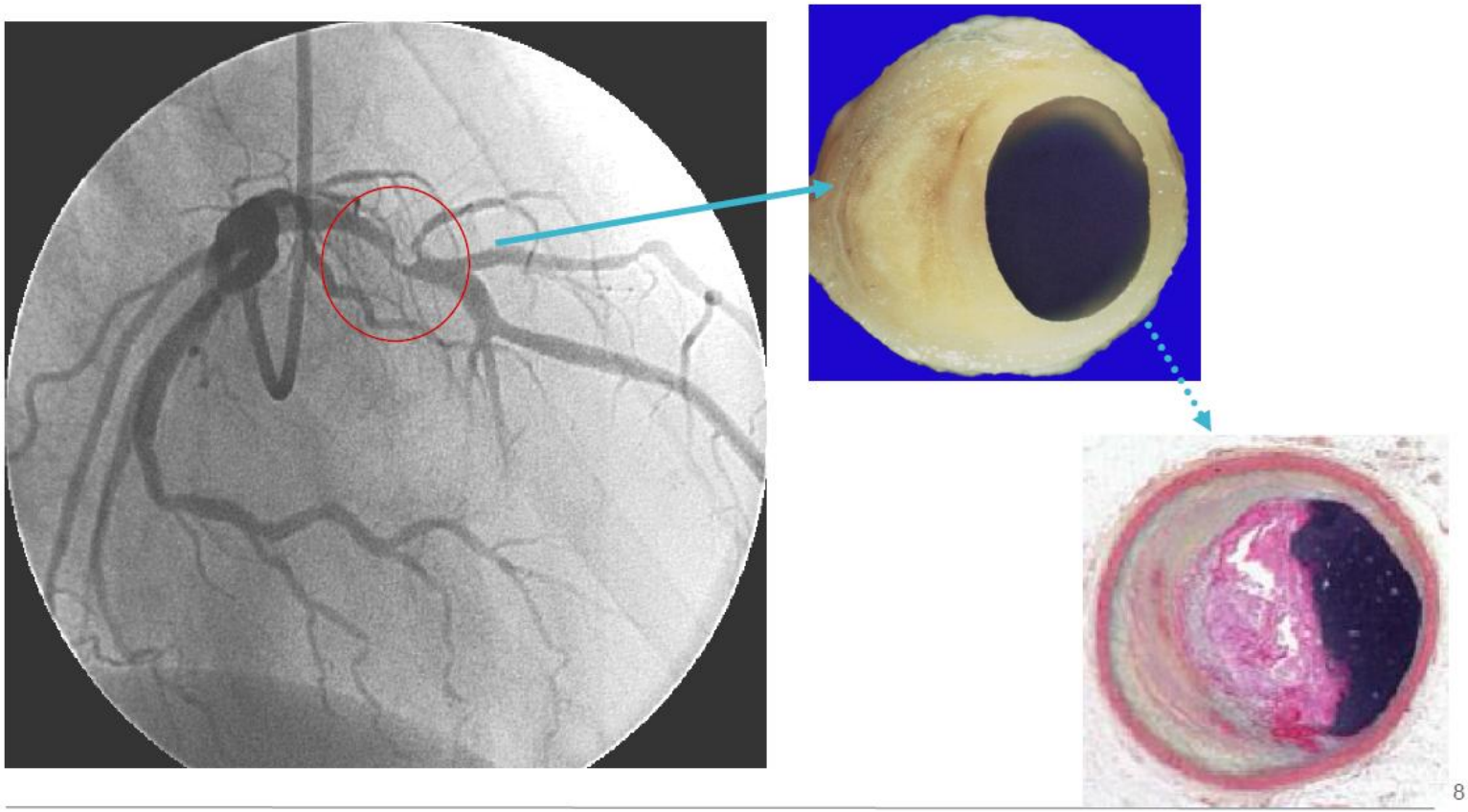
Стеноза на ЛАД



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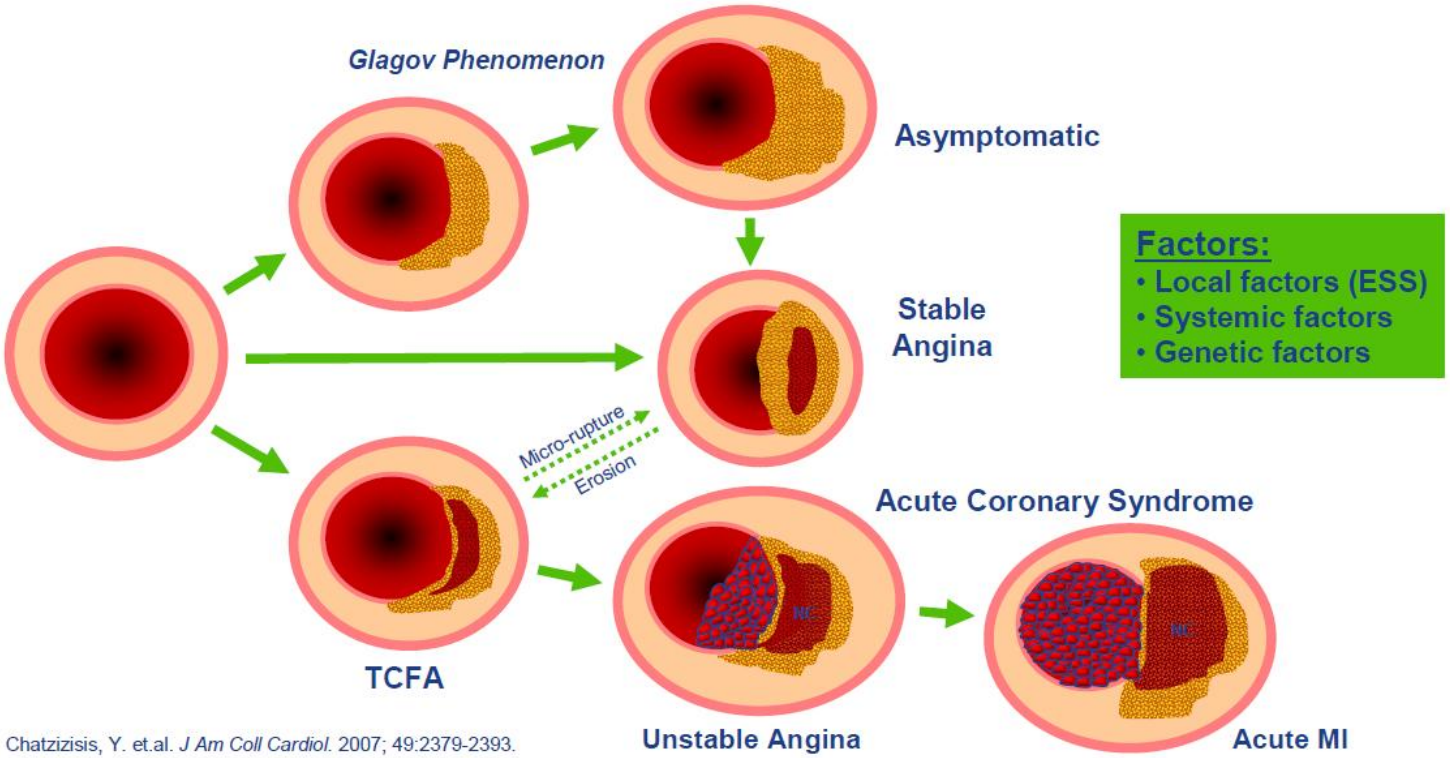
Естествена прогресия на коронарната атеросклероза

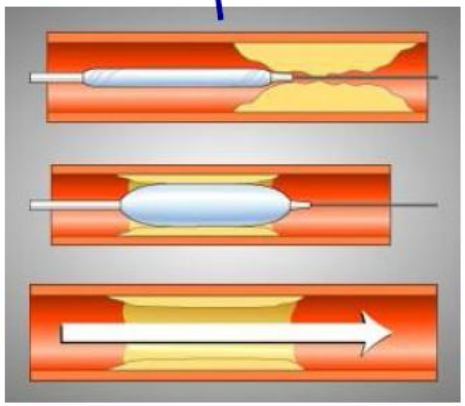


Chatzizisis, Y. et.al. *J Am Coll Cardiol.* 2007; 49:2379-2393.

Интервенционална кардиология - началото

1977

1. Balloon (PTCA):
Andreas Gruntzig performs the first PTCA in Zurich, Switzerland



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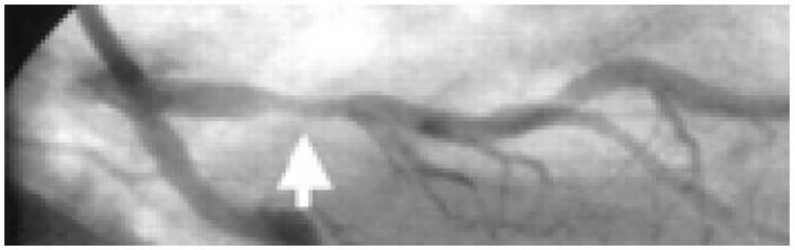
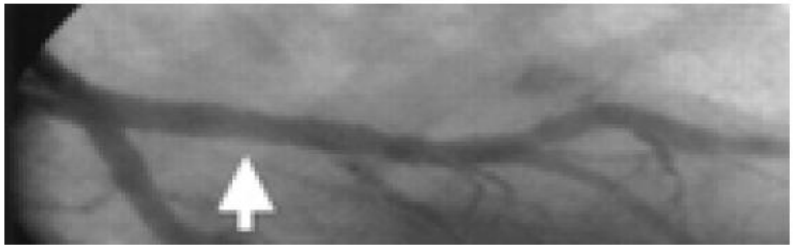
Недостатъци - Рестеноза след PTCA

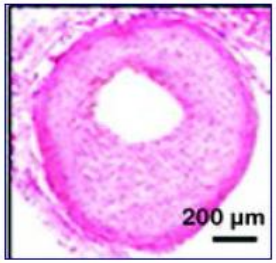
Pre PTCA



Immediately post - PTCA



6-month restenosis post - PTCA



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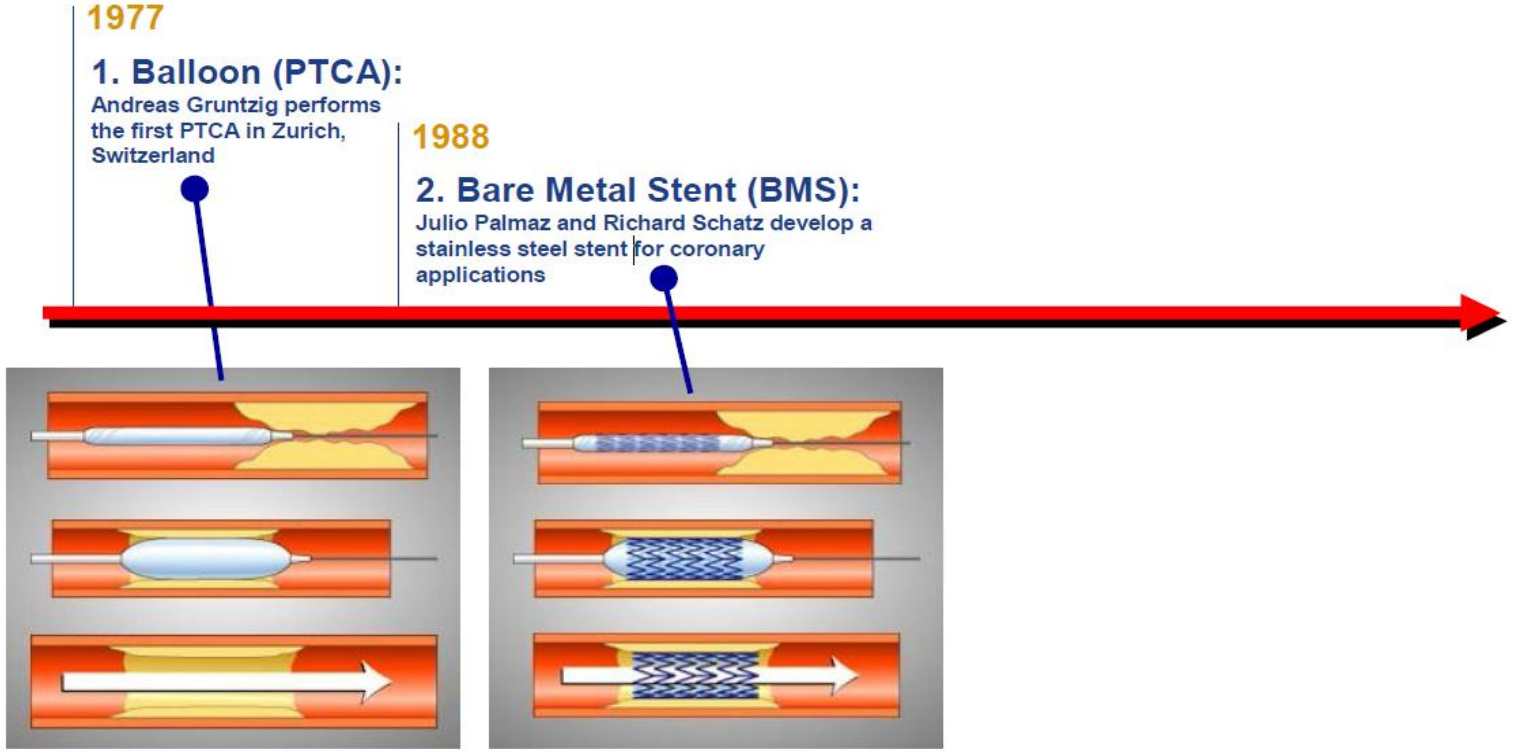
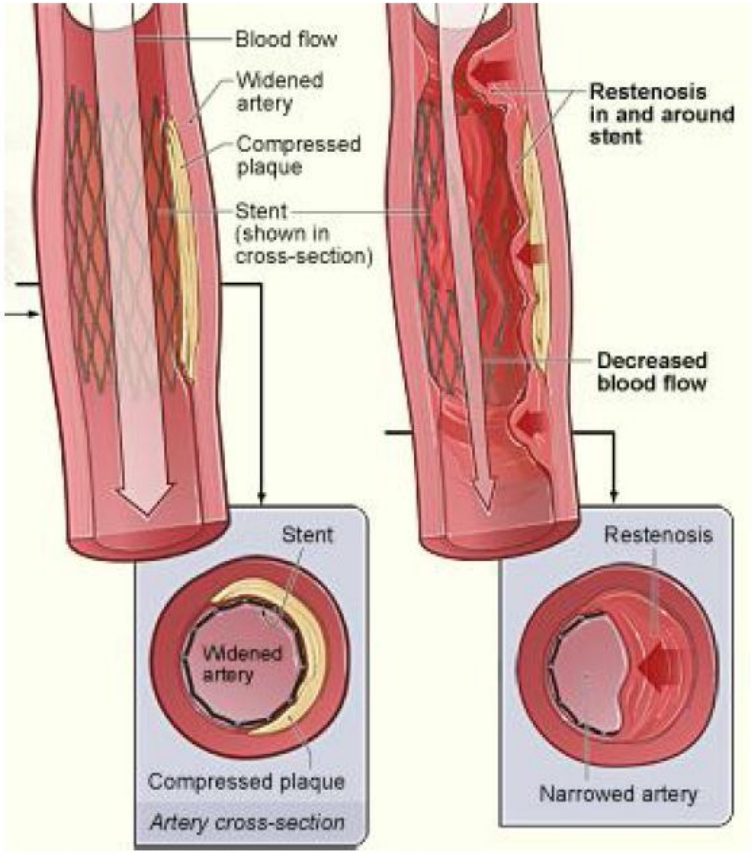
Интервенционална кардиология – 2-ра революция



Недостатъци - ISR



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Интервенционална кардиология – 3-та революция

1977

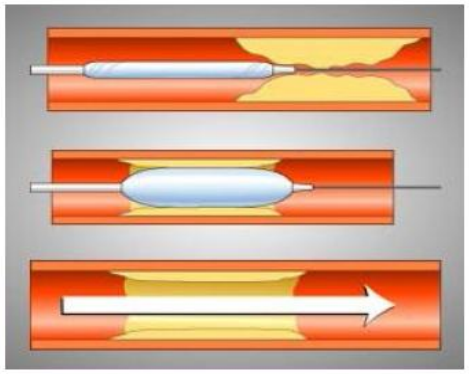
1. Balloon (PTCA):
Andreas Gruntzig performs the first PTCA in Zurich, Switzerland

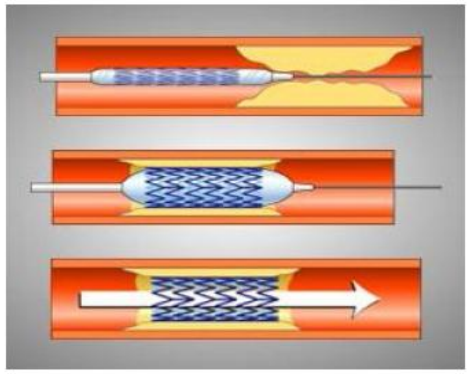
1988

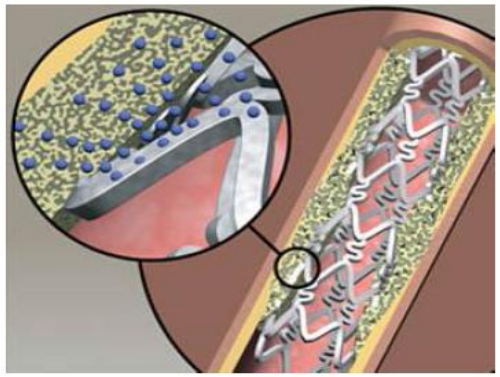
2. Bare Metal Stent (BMS):
Julio Palmaz and Richard Schatz develop a stainless steel stent for coronary applications

2002 - 2003

3. Drug-eluting stents (DES):
introduced to the European and U.S. markets







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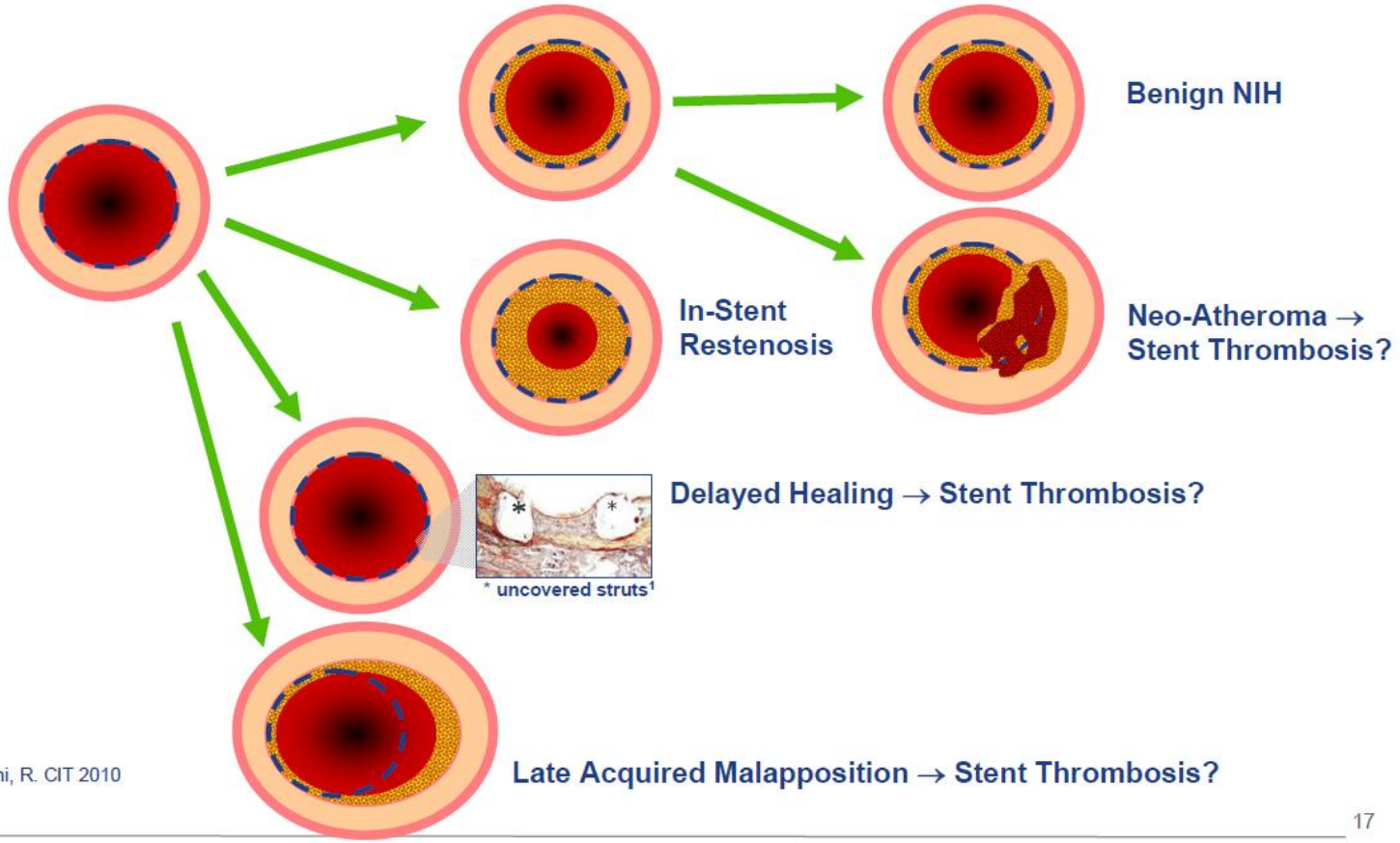
Стентиран съд -сегмент



1. Virmani, R. CIT 2010

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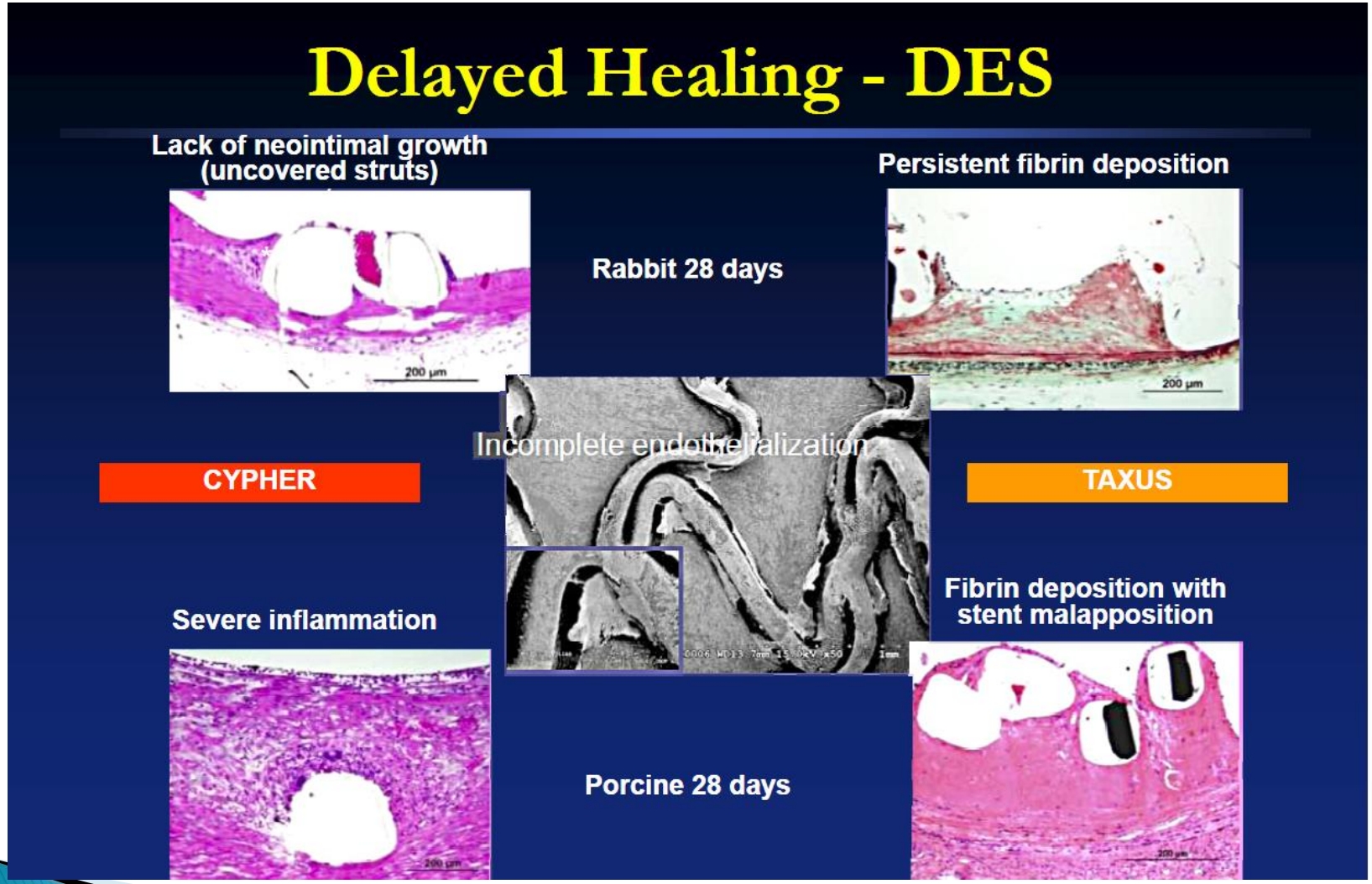
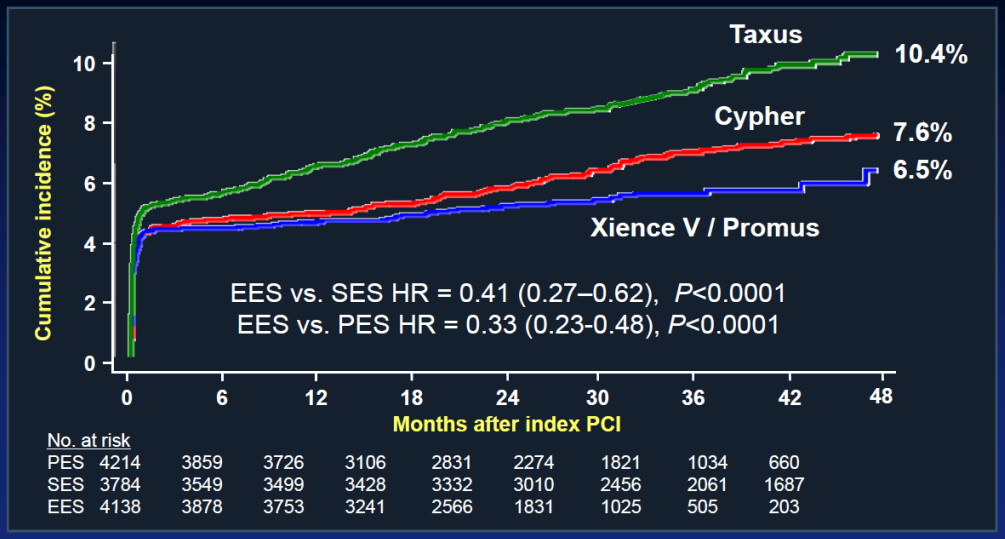
Забавена ендотелизация



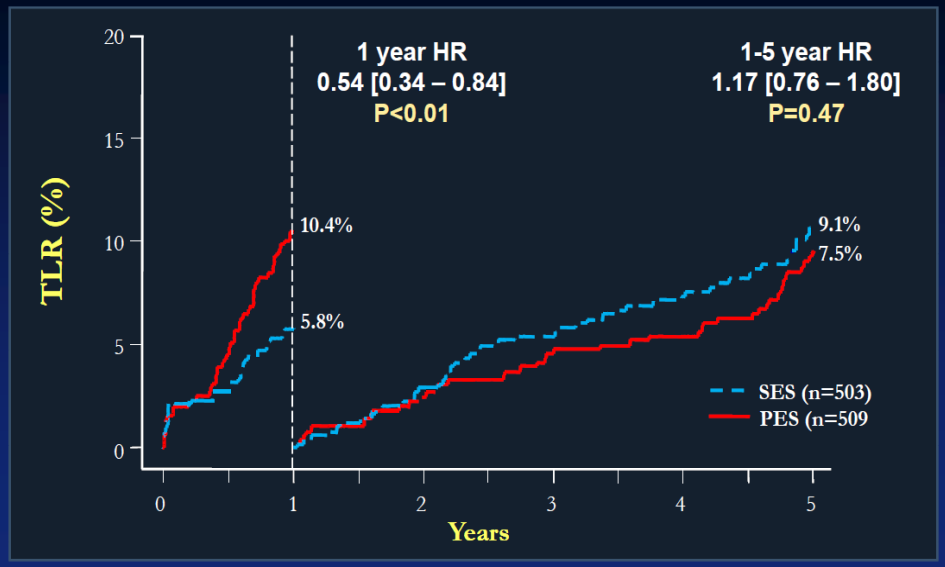
DES - MACE

Bern Rotterdam (n=12,339 pts)
ARC Definite or Probable ST at 4 Years



Lorenz Ršber, ESC 2011

SIRTAX-LATE: Target Lesion Revascularization
Landmark analysis



Raber L et al. *Circulation*. 2011;123:2819-2828

Интервенционална кардиология – 4-та революция

1977

1. Balloon (PTCA):
Andreas Gruntzig performs the first PTCA in Zurich, Switzerland

1988

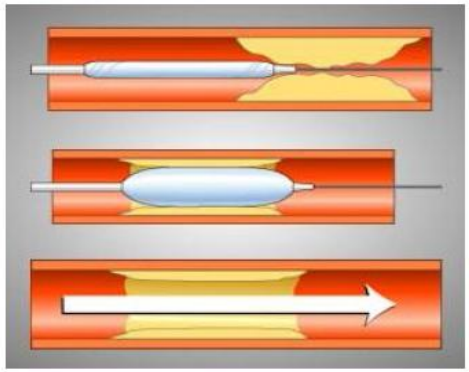
2. Bare Metal Stent (BMS):
Julio Palmaz and Richard Schatz develop a stainless steel stent for coronary applications

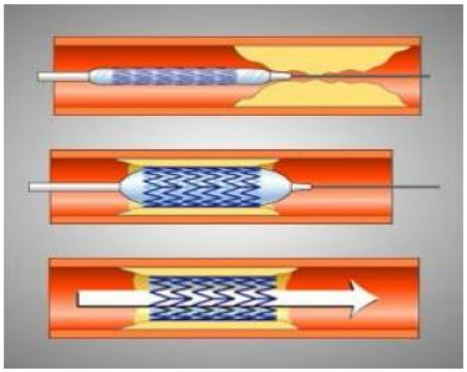
2002 - 2003

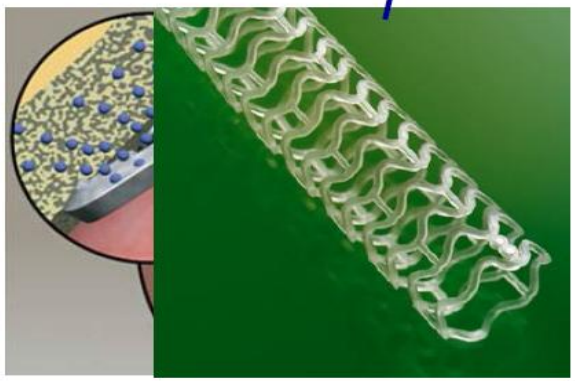
3. Drug-eluting stents (DES):
introduced to the European and U.S. markets

2011

4. Absorb
Bioresorbable Vascular Scaffold (BVS)







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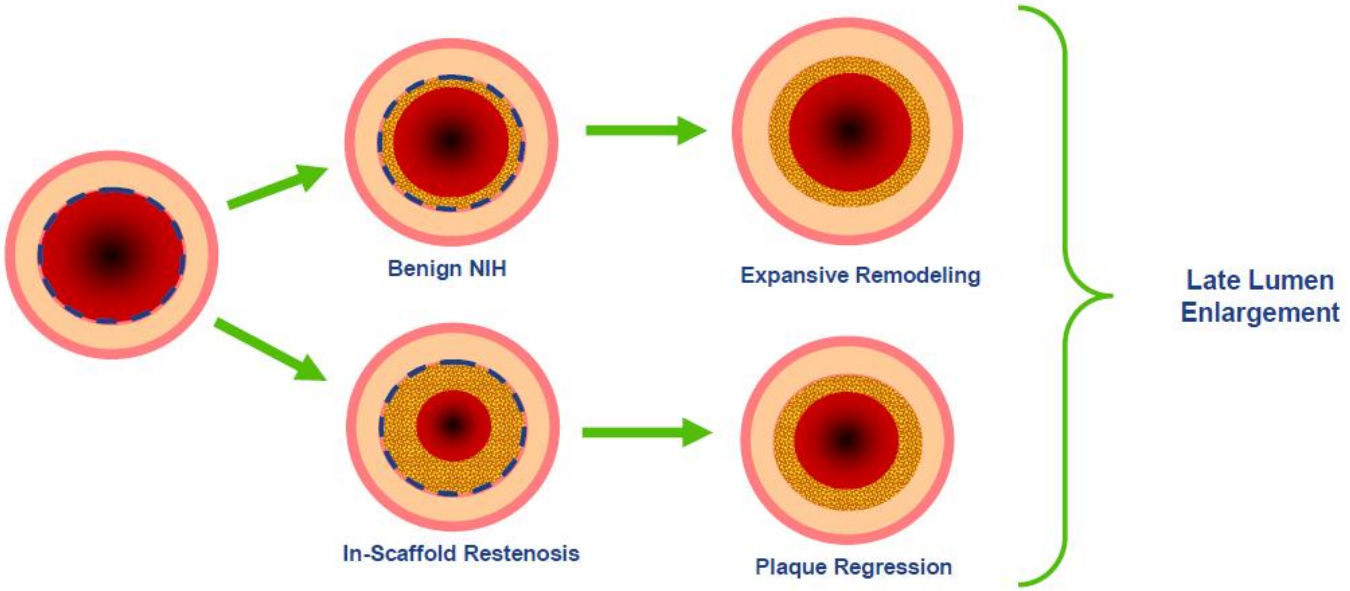
Възможни ползи при пълно резорбиране

Since struts disappear, issues related to very late persistent strut malapposition and chronically uncovered struts become irrelevant



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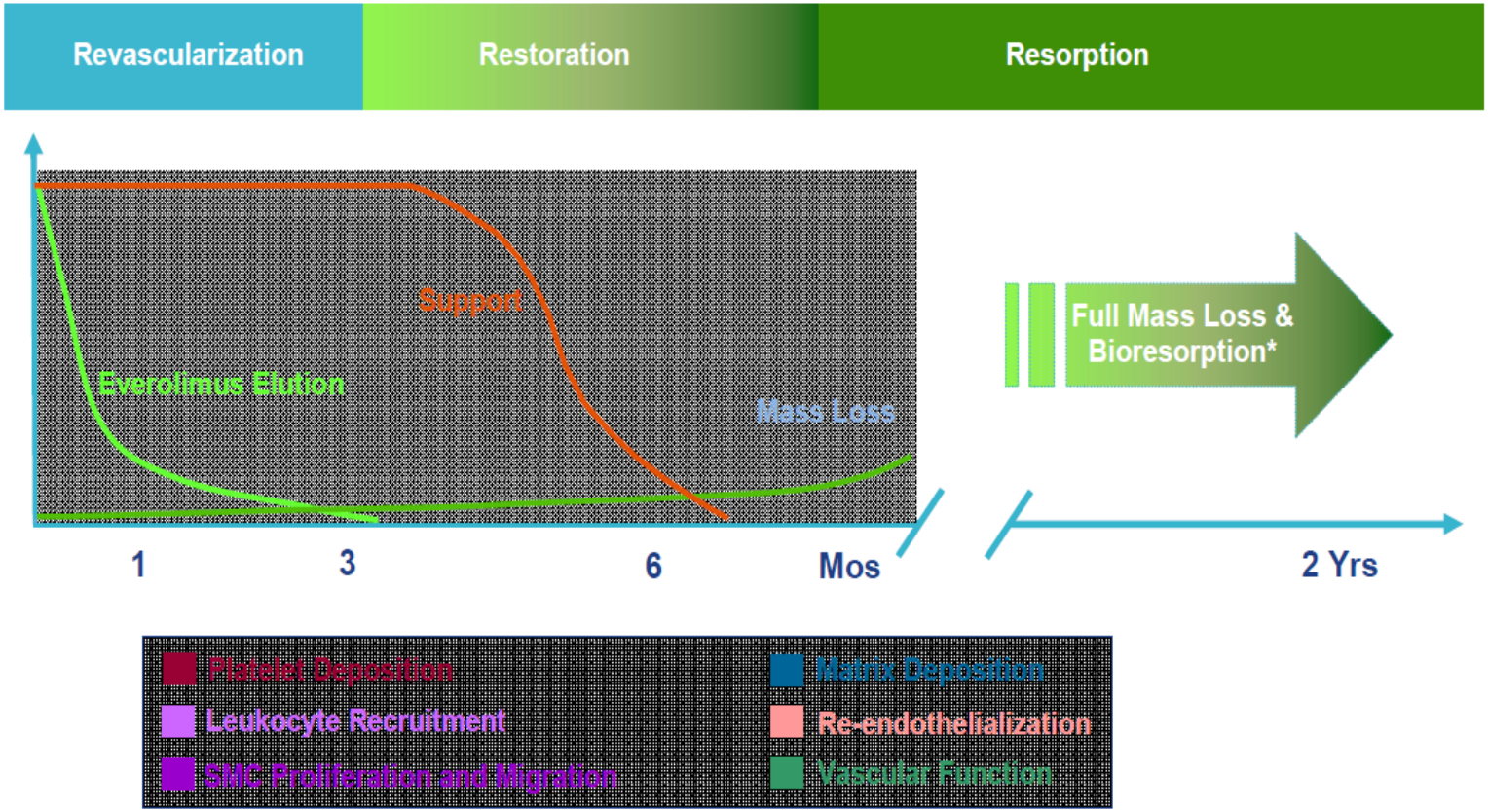
Клинична необходимост от BVS

- **Обосновка** ⟷ Временна необходимост от съдово "скеле"
- **Цел** ⟷ Подобрение на дългосрочната прогноза на пациентите
- **Потенциални ползи** ⟷
  - Възстановяване на нормалния вазомоторен отговор
  - Елиминиране на хр причини за съдово дразнене и възпаление
  - Съда остава подходящ за последващи терапевтични опции
  - Намаляване необходимостта от DAPT
  - Възможност за използване на неинвазивни образни методики за оценка
  - Подобряване на качеството на живот на пациентите

What is Required of a Fully Bioresorbable Scaffold ???



Forrester JS, et al., *J. Am. Coll. Cardiol.* 1991; **17:** 758.

*Small platinum markers at scaffold edges remain for fluoroscopic landmarking.

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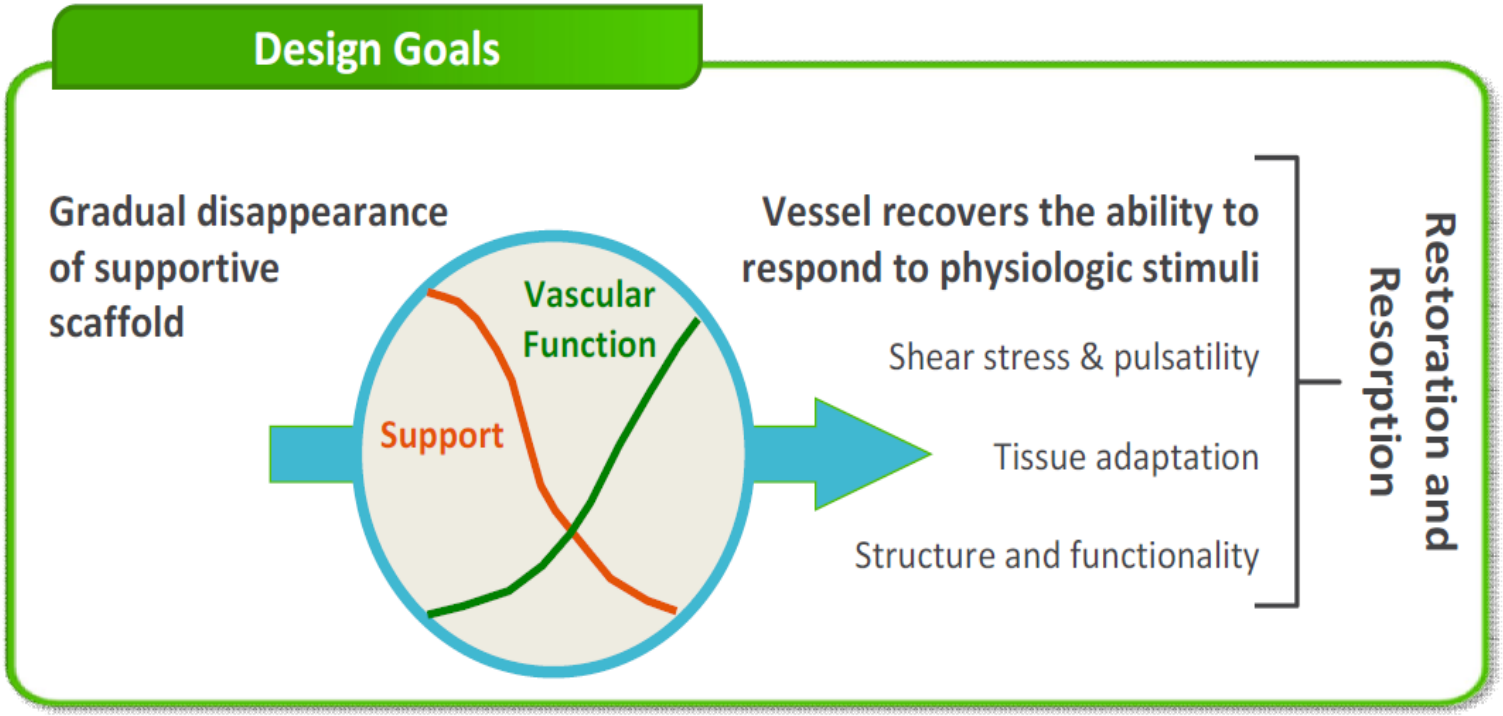
Potential for Mechanical Conditioning



Mechanical conditioning may lead to improved cellular organization and vascular function

Serruys, PW., et al. *Eur Heart J.* 2012 33, 16-25

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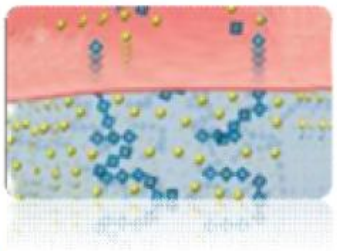
Abbott Vascular Everolimus-Eluting Bioresorbable Vascular Scaffold Components

Bioresorbable Scaffold

- Poly (L-lactide) (PLLA)
- Based on proven MULTI-LINK pattern
- Naturally resorbed, fully metabolized*

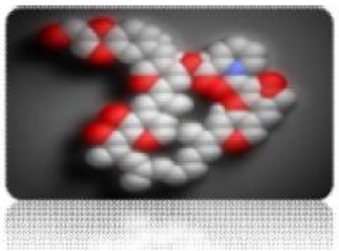
Bioresorbable Coating

- Poly (D,L-lactide) (PDLLA)
- Naturally resorbed, fully metabolized



Everolimus

- Similar dose density and release rate to XIENCE V



XIENCE V Delivery System

- World-class deliverability

*Except for platinum markers
All illustrations are artists' renditions

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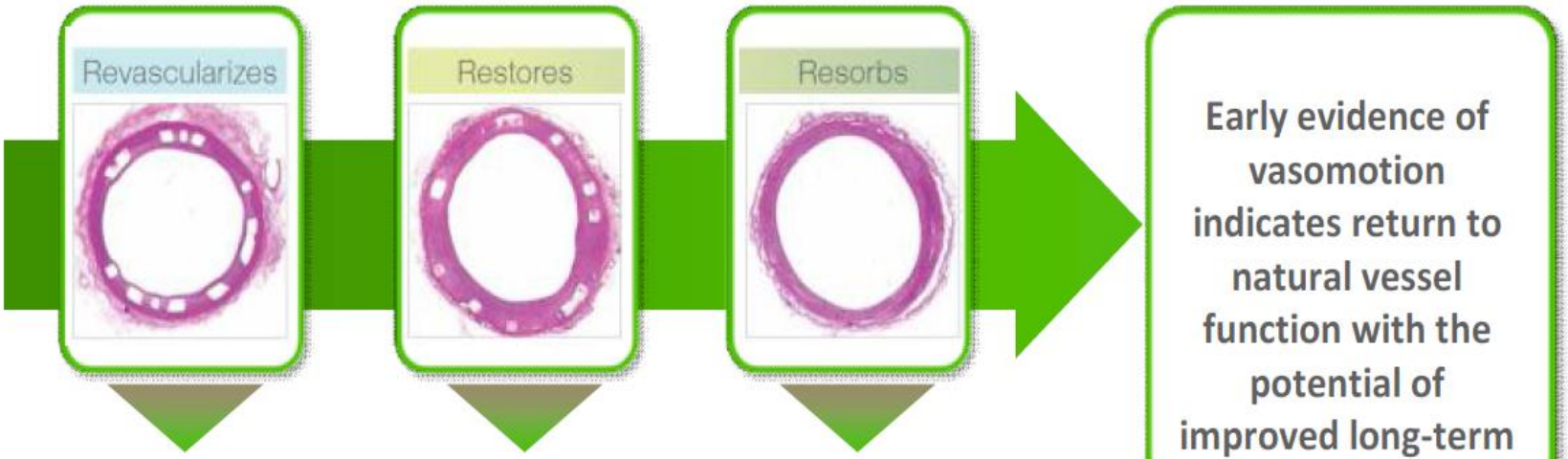
Absorb Bioresorbable Vascular Scaffold: Three Phases of Functionality



Vascular Reparative Therapy (VRT)

*Small platinum markers at scaffold edges remain for fluoroscopic landmarking.

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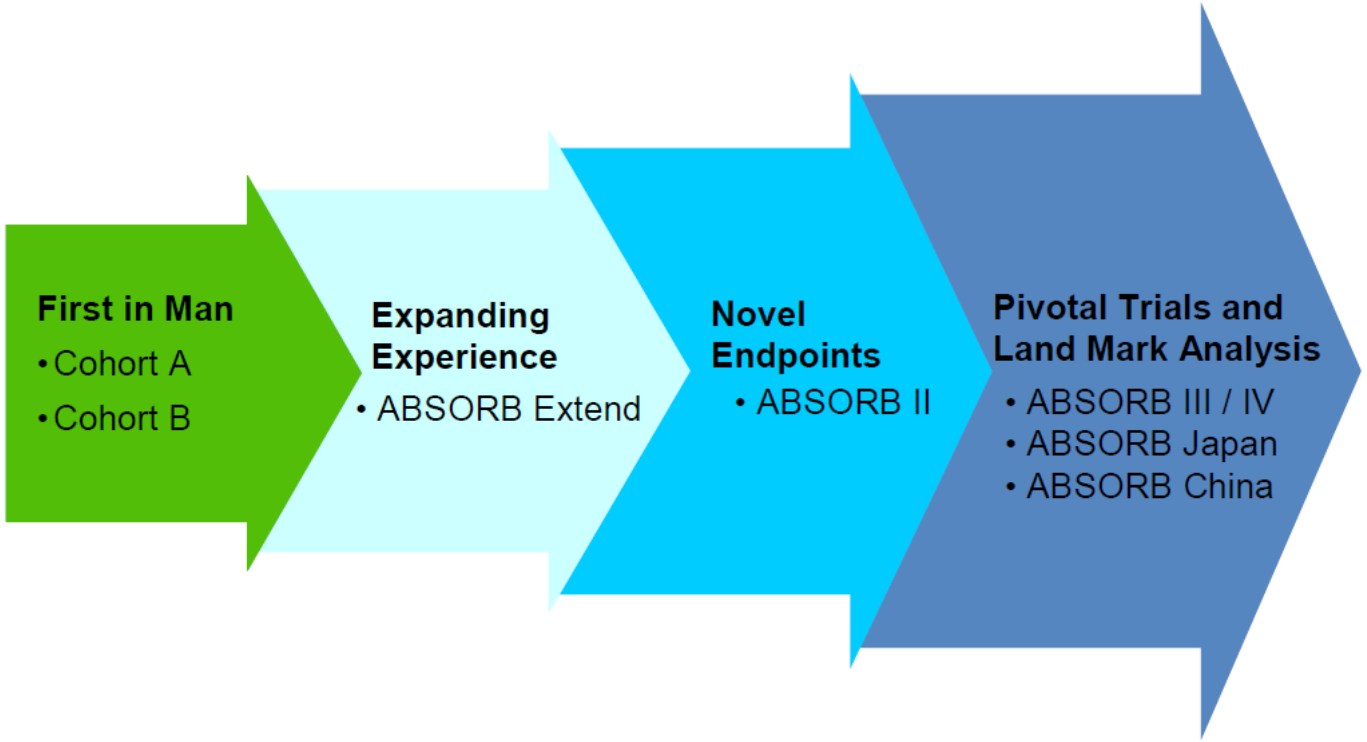
ABSORB –революционна терапия доказателства



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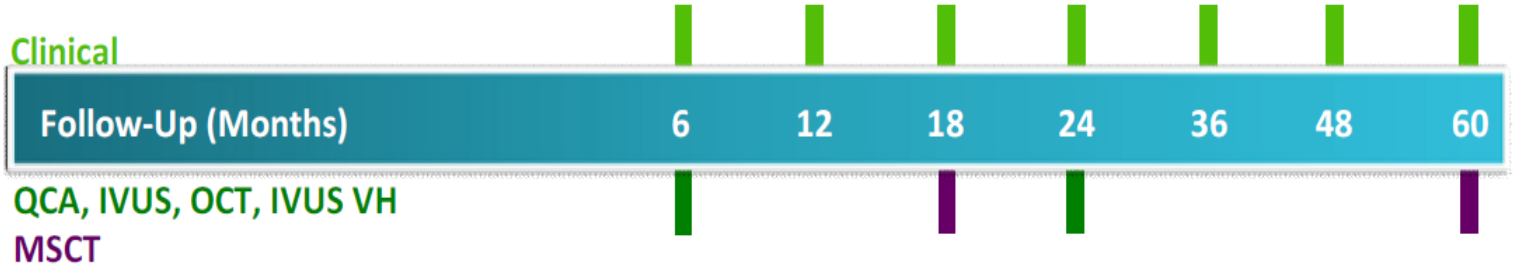
Introduction
ABSORB Cohort A

30 subjects
(Non-randomized) 4 sites in Europe & New Zealand



Study Objective	First In Man, Single Arm – safety/performance
Endpoints	Typical PCI clinical and imaging endpoints
Treatment	Single, de novo native coronary lesion in a vessel with a reference vessel diameter of 3.0 mm
Device Sizes	3.0 x 12 mm scaffolds (3.0 x 18 mm scaffolds available after enrolment start and used in 2 pts)

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ABSORB Cohort A
Excellent Long-Term Data Out to 5 Years

- ABSORB Cohort A Clinical Results at Each Phase: Intent to Treat

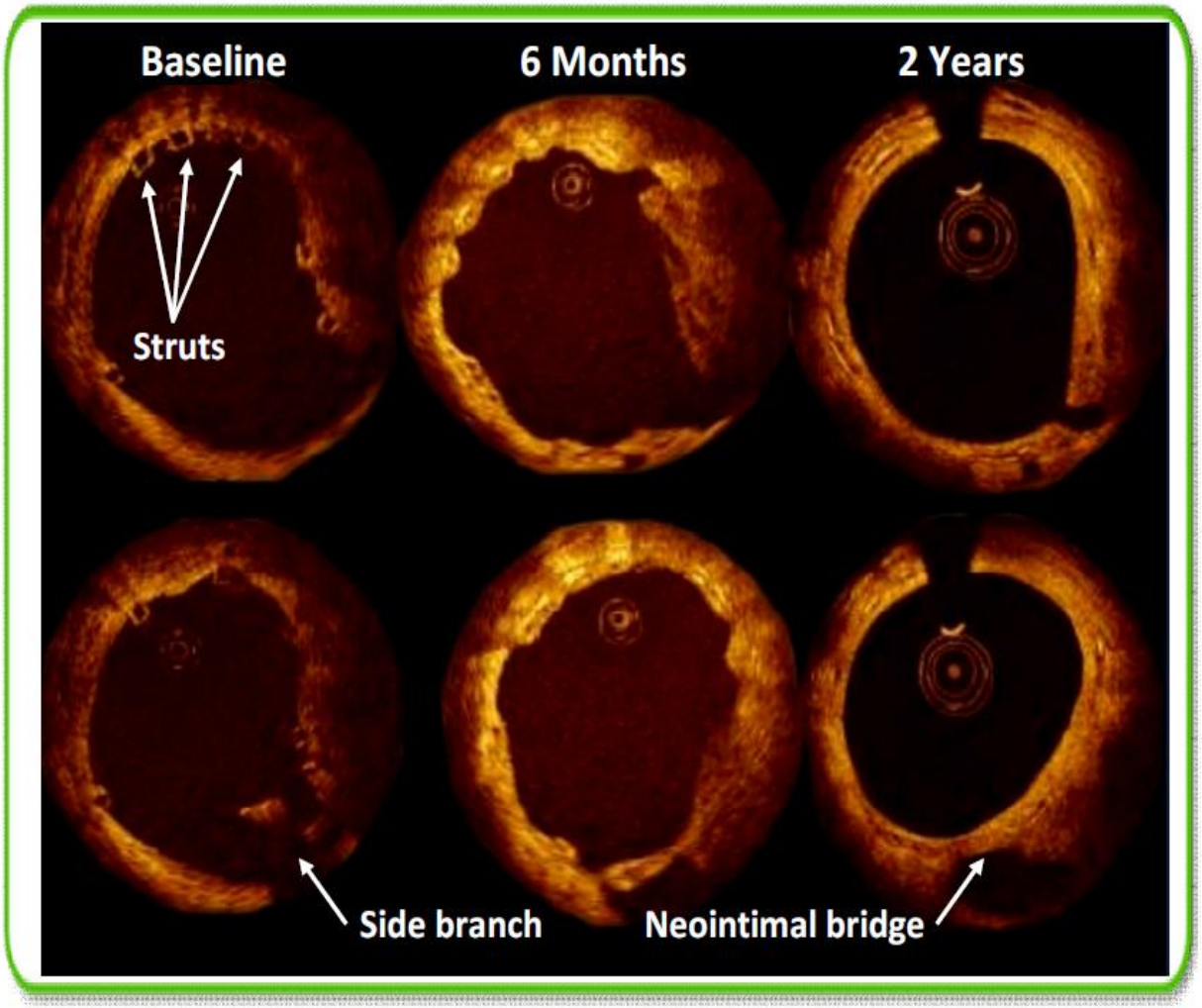
	RESTORATION		RESORPTION	
Hierarchical	6 Months 30 Patients	1 year 29 Patients**	2 Year 29 Patients**	5 Year 29 Patients**
Ischemia Driven MACE***	1 (3.3%)*	1 (3.4%)*	1 (3.4%)*	1 (3.4%)*
Cardiac Death	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
MI	1 (3.3%)*	1 (3.4%)*	1 (3.4%)*	1 (3.4%)*
Q-Wave MI	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Non Q-Wave MI	1 (3.3%)*	1 (3.4%)*	1 (3.4%)*	1 (3.4%)*
Ischemia Driven TLR	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
by PCI	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.%)
by CABG	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.%)

No scaffold thrombosis by ARC or Protocol

* Same patient – this patient also underwent a TLR, not qualified as ID-TLR (DS = 42%)
** One patient withdrew consent and missed the 9, 12, 18 month and 2, 3, and 4 year visits; two patients died from a non-cardiac causes, one at 706 days and one at 888 days post procedure
*** MACE – Composite endpoint comprised of cardiac death, myocardial infarction (MI) and ischemia-driven target lesion revascularization (TLR) by PCI or CABG

Serruys, TCT, 2011

ABSORB Cohort A
OCT Images – Baseline, 6 months and 2 years



Serruys, PW., ESC 2008.

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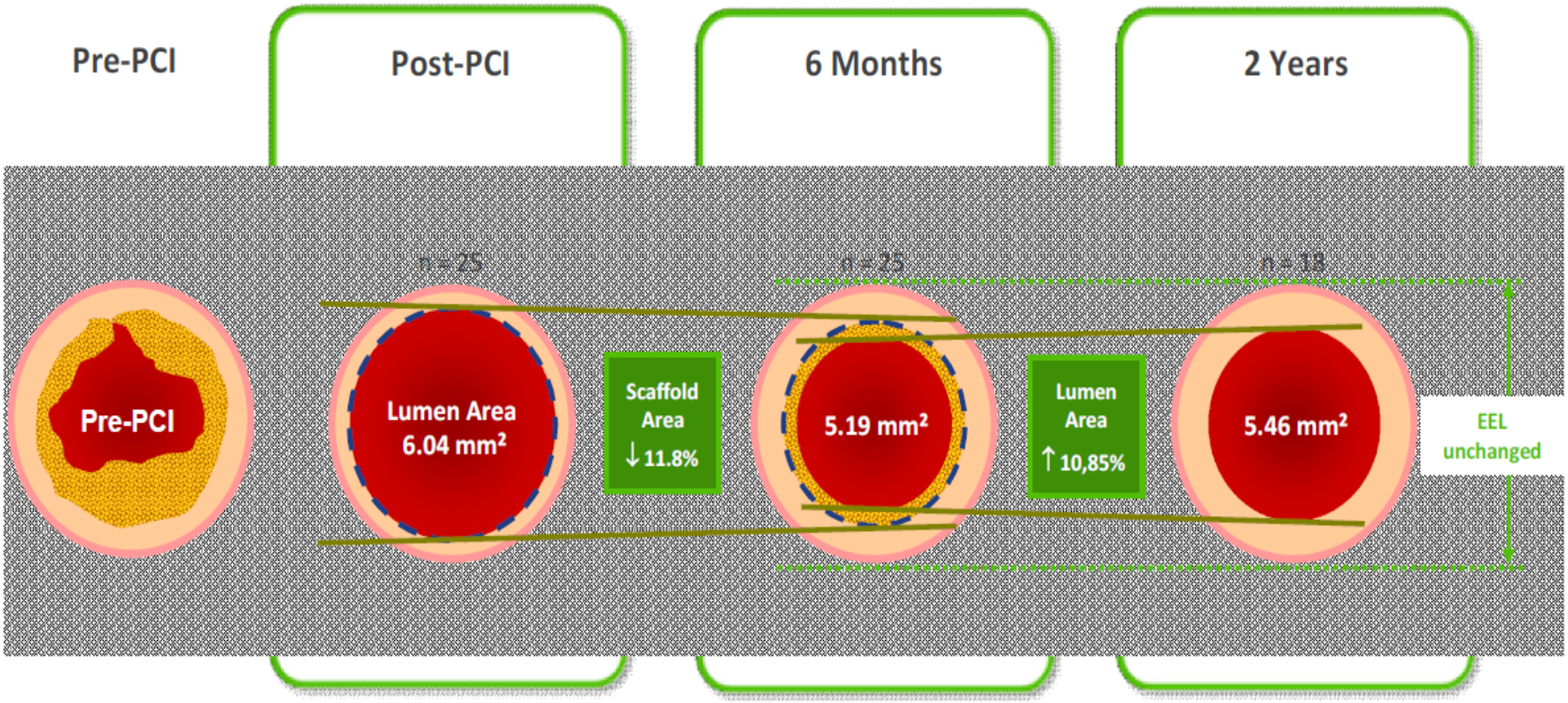
ABSORB Cohort A
Temporal Lumen Dimensional Changes, Per Treatment



ABSORB Cohort A, Unpaired analysis*

- Late lumen loss at 6 months mainly due to reduction in scaffold area
- Very late lumen enlargement noted from 6 months to 2 years

*Adapted from Serruys, PW, ACC 2009.

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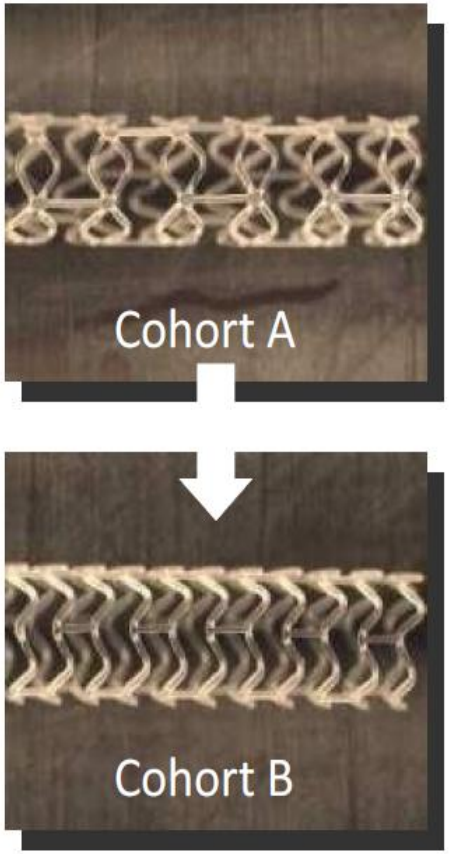
BVS Device Optimization Objectives



More uniform strut distribution

More even support of arterial wall

⇒ Lower late scaffold area loss (Late loss)

Maintain radial strength for at least 3 months

Unchanged:

Material, coating and backbone

Strut thickness

Drug release profile

Photos taken by and on file at Abbott Vascular.

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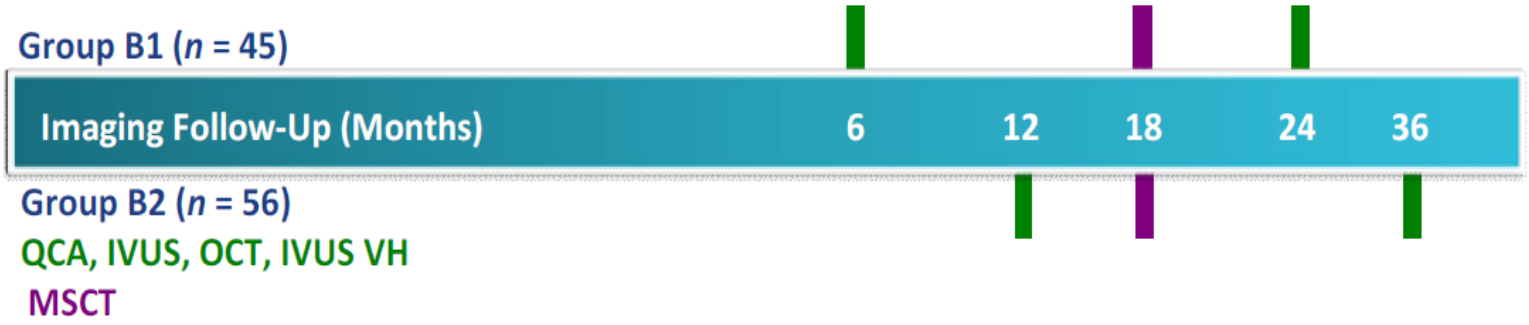
Introduction
ABSORB Cohort B

101 subjects
(Non-randomized) 12 sites in Europe, Australia, New Zealand



Study Objective	First In Man, Single Arm – safety/performance
Endpoints	Typical PCI clinical and imaging endpoints
Treatment	Up to 2 *de novo* lesions in different epicardial vessels Reference vessel diameter of 3.0 mm, lesions ≤ 14 mm in length
Device Sizes	3.0 x 18 mm devices

ABSORB Cohort B Group 1&2
Clinical Results - Intent to treat

	30 Days	6 Months	1 Year	2 Years
Non -Hierarchical	n = 101	n = 101	n = 101	n = 100*
Cardiac Death %	0	0	0	0
Myocardial Infarction % (n)	2.0 (2)	3.0 (3)	3.0 (3)	3.0 (3)
Q-wave MI	0	0	0	0
Non Q -wave MI	2.0 (2)	3.0 (3)	3.0 (3)	3.0 (3)
Ischemia driven TLR % (n)	0	2.0 (2)	4.0 (4)	6.0 (6)
CABG	0	0	0	0
PCI	0	2.0 (2)	4.0 (4)	6.0 (6)
Hierarchical MACE % (n)	2.0 (2)	5.0 (5)	6.9 (7)	9.0 (9)

No scaffold thrombosis by ARC or Protocol out to 2 – Year only 2 additional TLR events between 1 year and 2 year

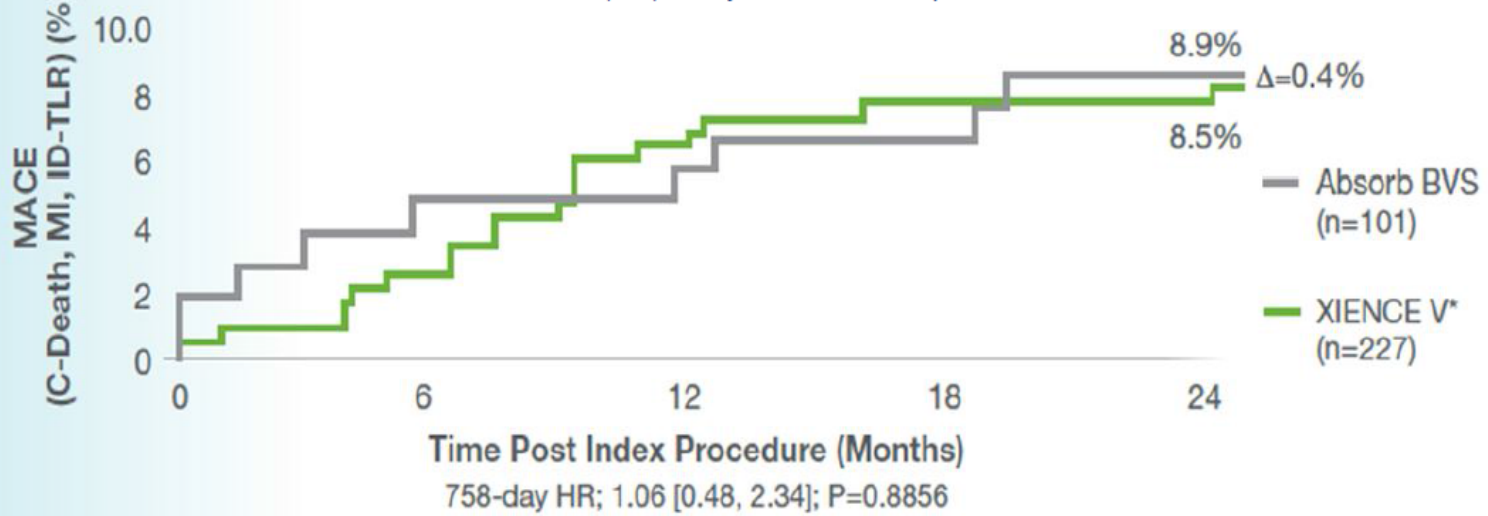
D. Dudek, ACC 2012 / *One patient missed the 2 year FUP

MACE: Cardiac death, MI, ischemia-driven TLR
TVF: Cardiac death, MI, ischemia-driven TLR, ischemia-driven TVR

ABSORB Cohort B
Clinical Results - MACE

Similar Rates of MACE Compared to Historical XIENCE Data

Intent to Treat (ITT) Analysis; Interim Snapshot

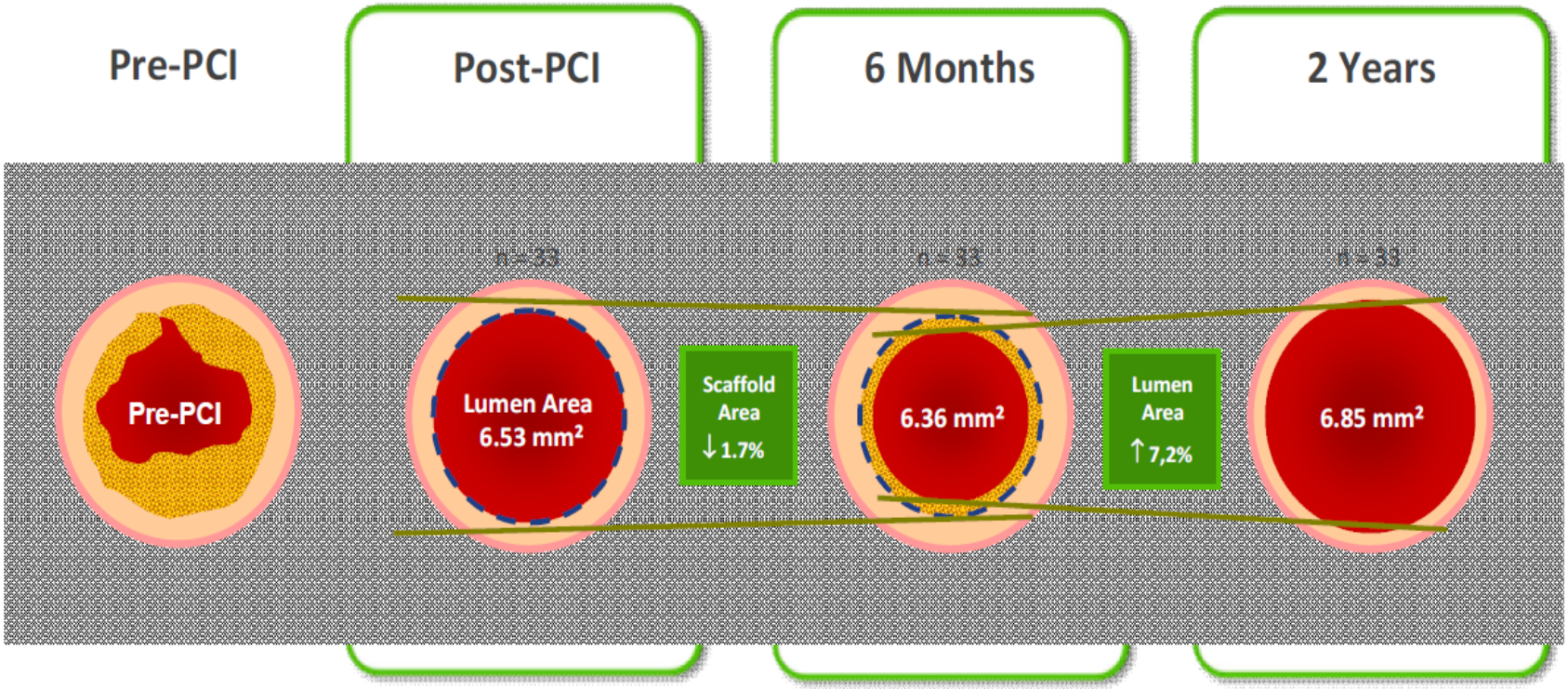


758-day HR; 1.06 [0.48, 2.34]; P=0.8856

**3.0 x 18 mm subgroup, SPIRIT I+SPIRIT II+SPIRIT III RCT.*

Dudek D. ABSORB Cohort B 2-year data, ACC 2012.

ABSORB Cohort B
Temporal Lumen Dimensional Changes



ABSORB Cohort B, Serial analysis*

- Very late lumen enlargement noted from 6 months to 2 years

*Serruys, PW., TCT 2011

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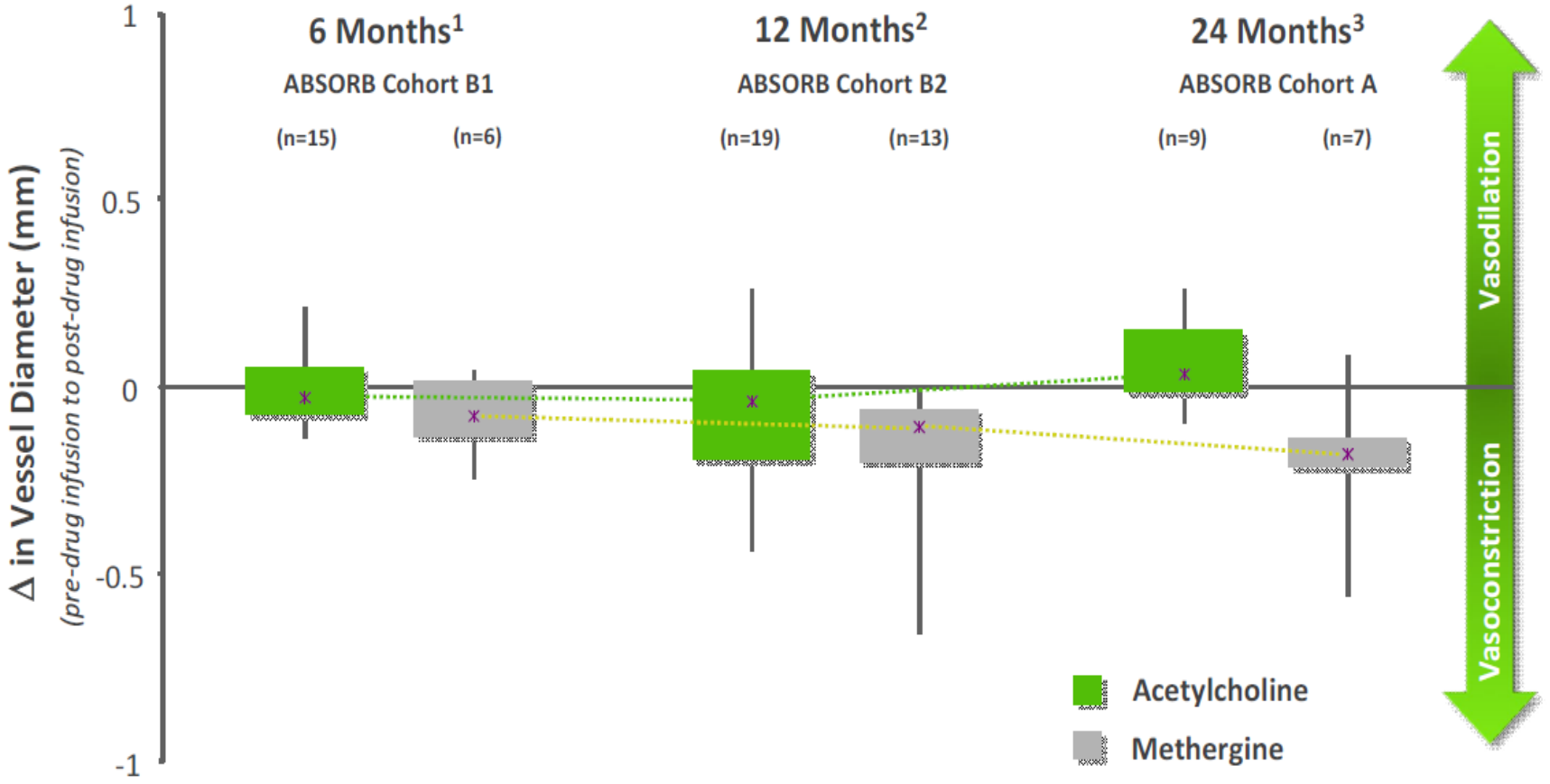
ABSORB Vasomotor Function Testing: Restoration of Vasomotion



1. Adapted from Serruys, PW. ACC 2011 / 2. Adapted from Serruys, PW. ACC 2011 / 3. Adapted from Serruys, PW, et al. Lancet 2009; 373: 897-910.

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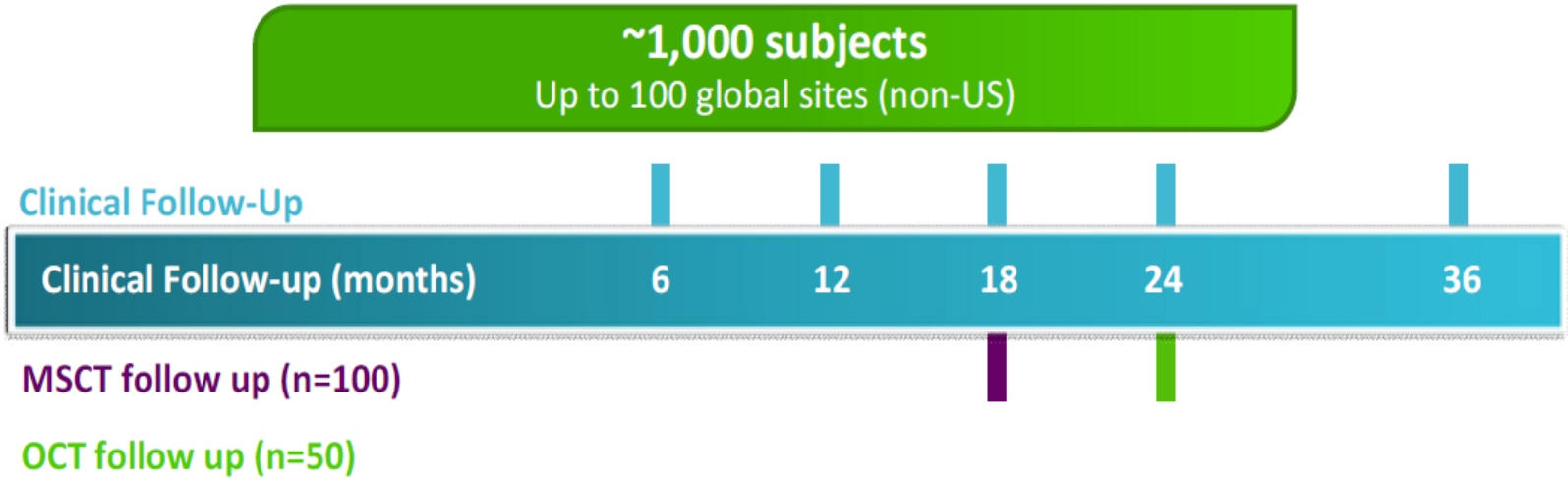
ABSORB EXTEND
Non-Randomized, Single-Arm, Continued Access Trial



Study Objective	Continued Access trial. FPI: Jan 11, 2011
Endpoints	Typical PCI clinical endpoints
Treatment	Up to 2 *de novo* lesions in different epicardial vessels Planned overlapping allowed in lesions >22 and ≤ 28 mm
Device Sizes	Scaffold diameters: 2.5, 3.0, 3.5 mm Scaffold lengths: 12*, 18, 28 mm

* Sizes to be introduced into the trial once available.

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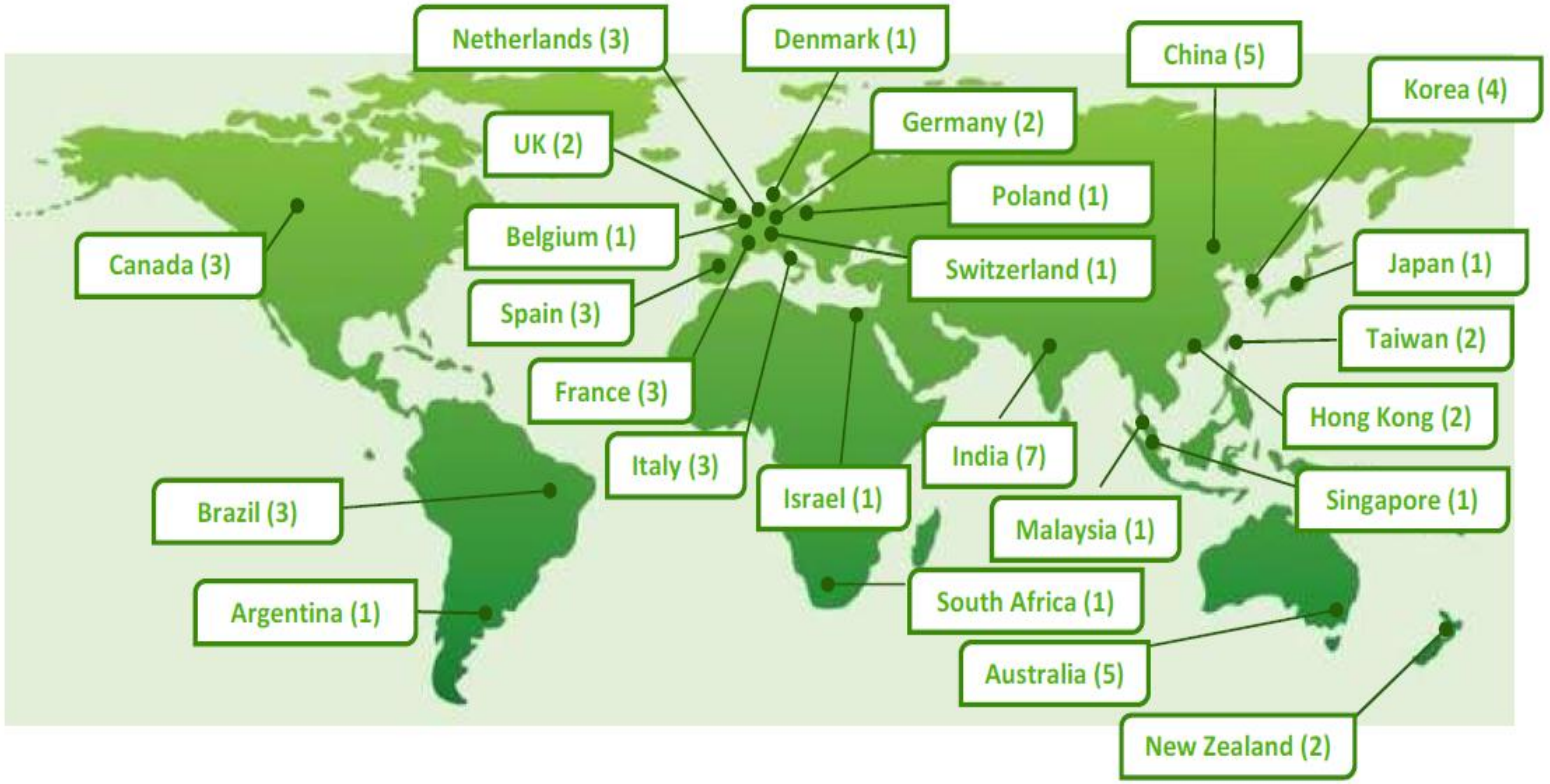
ABSORB EXTEND
Planned Clinical Sites

Expansion in clinical sites, worldwide



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ABSORB Extend
Clinical Results - Intent to treat; Interim Snapshot

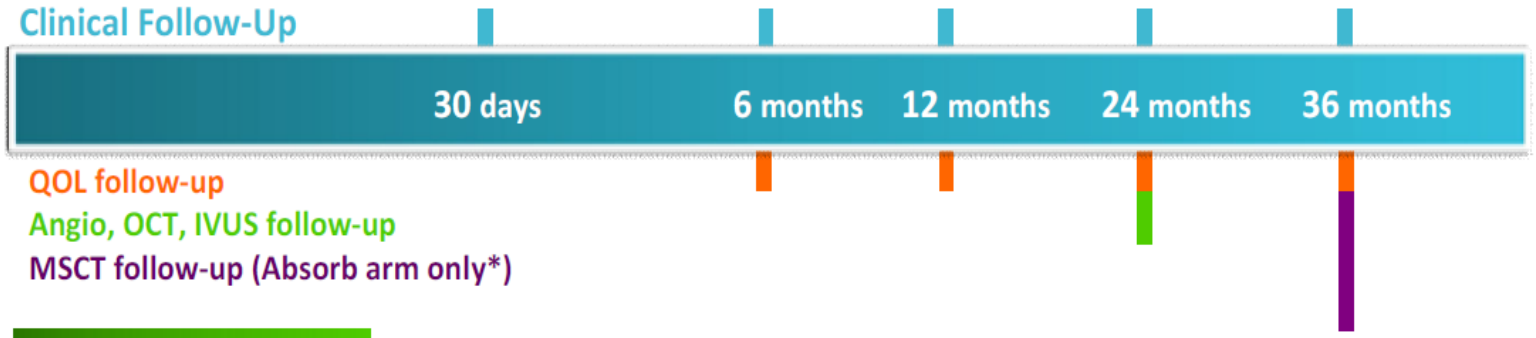
Non-Hierarchical	30 Days* n = 451	6 Months* n = 269
Cardiac Death (%)	0 (0.0)	1 (0.4)**
Myocardial Infarction n (%)	10 (2.2)	7(2.6)
Q-wave MI	3 (0.7)	3 (1.1)
Non Q-wave MI	7(1.6)	4 (1.5)
Ischemia Driven TLR n (%)	1(0.2)	1 (0.4)
PCI	1(0.2)	1 (0.4)
CABG	0	0
Hierarchical MACE n (%)	10 (2.2)	8 (3.0)

*Reflects an interim snapshot with only cleaned data as of the cut-off date of Jan. 11, **A non-BVS was implanted in the target lesion 2012
MACE: cardiac death, MI, ischemia-driven TLR

RJ van Geuns, PCR Rotterdam 2012

ABSORB II RCT

501 subjects
(Randomized 2:1 Absorb vs. XIENCE PRIME) Up to 40 European sites + New Zealand

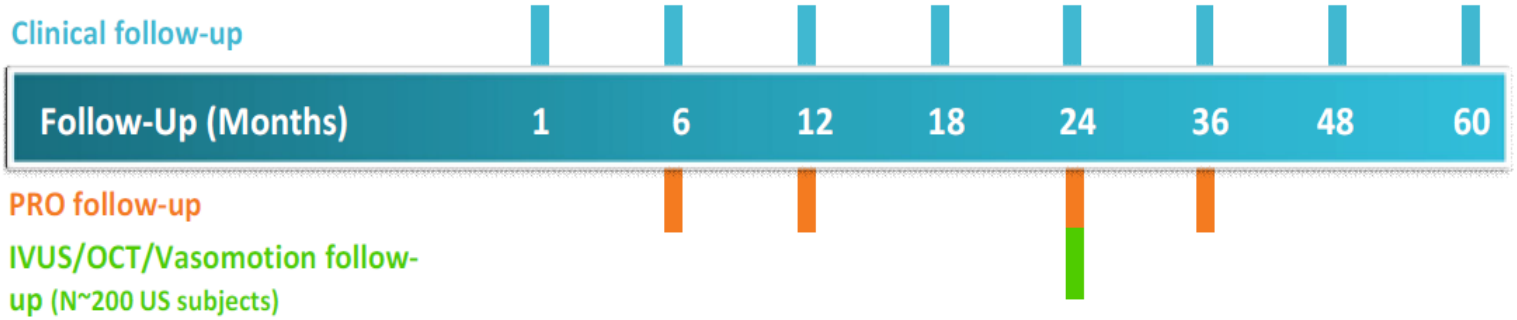


Study Objective	Randomized against XIENCE PRIME control. FPI 28-Nov-2011
Co-primary Endpoints	• Vasomotion assessed by change in Mean Lumen Diameter between pre- and post-nitrate at 2 years (superiority) • Minimum Lumen Diameter (MLD) at 2 years post nitrate minus MLD post procedure post nitrate (non-inferiority, reflex to superiority)
Treatment	Up to 2 *de novo* lesions in different epicardial vessels Planned overlapping allowed in lesions ≤ 48 mm
Device Sizes	Scaffold diameters: 2.5, 3.0, 3.5 mm Scaffold lengths: 12**, 18, 28 mm

* Non-German sites only.
** Sizes to be introduced into the trial once available.

ABSORB III
US Approval Trial

~2000 subjects (1267 Absorb, 733 XIENCE)
US and Australian sites. Follow-up out to 5 years



Study Objective	Seek US approval of Absorb BVS
Primary Endpoint	Clinically indicated target lesion failure at 1-year (composite of cardiac death, target vessel MI or clinically indicated TLR)
Treatment	Up to two *de novo* lesions in different epicardial vessels. No planned overlap allowed
Device Sizes	Scaffold diameters: 2.5, 3.0, 3.5 mm Scaffold lengths: 12, 18, 28 mm

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Обобщени резултати

Настоящите клинични данни от ABSORB BVS предполагат:

1. Реваскуларизация със сравнима безопасност и ефикастност на най-добър клас DES

- без ST в ABSORB CohortA (5 г.проследяване) и CohortB (5 г. проследяване)
- 0,4% ST за 6 мес. в ABSORB EXTEND
- сравнима честота на MACE(3.4% на 5г. (CohortA), 9% на 2г. (Cohort B), 2.9% на 6-ти мес. (EXTEND)

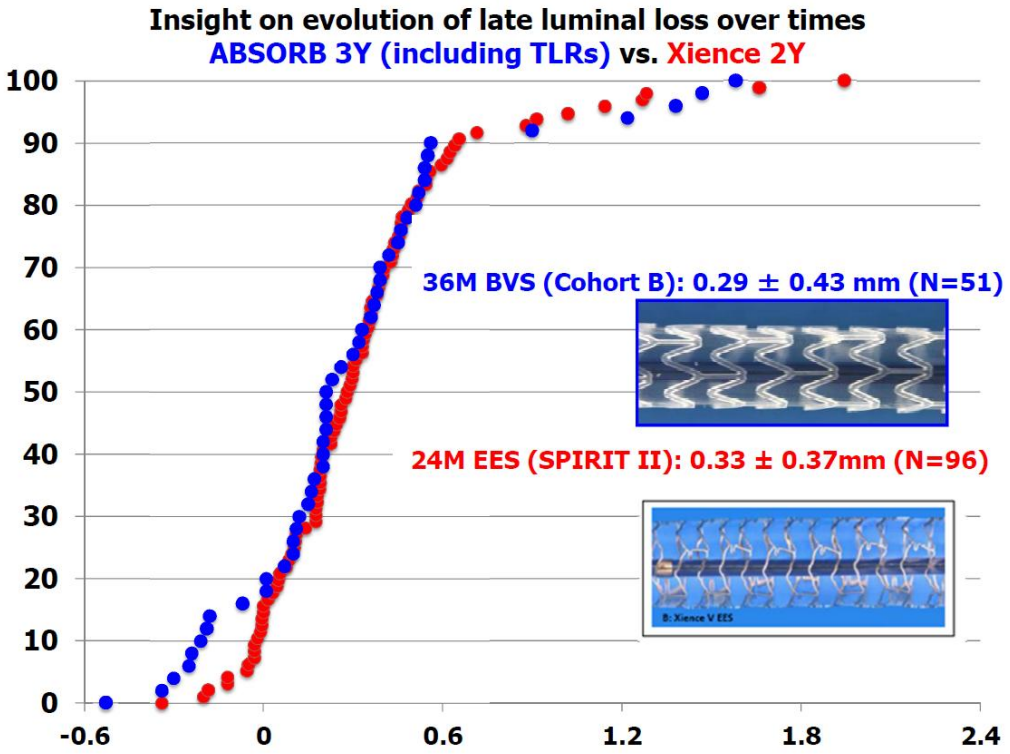
2. Възстановяване – първоначални белези

- възможно възстановяване на вазомоторната ф-ция (19/33pts показват увеличение на MLD след Ацх.- CohortB)
- възможно късно увеличение на лумена 6-24 мес. (CohortB)

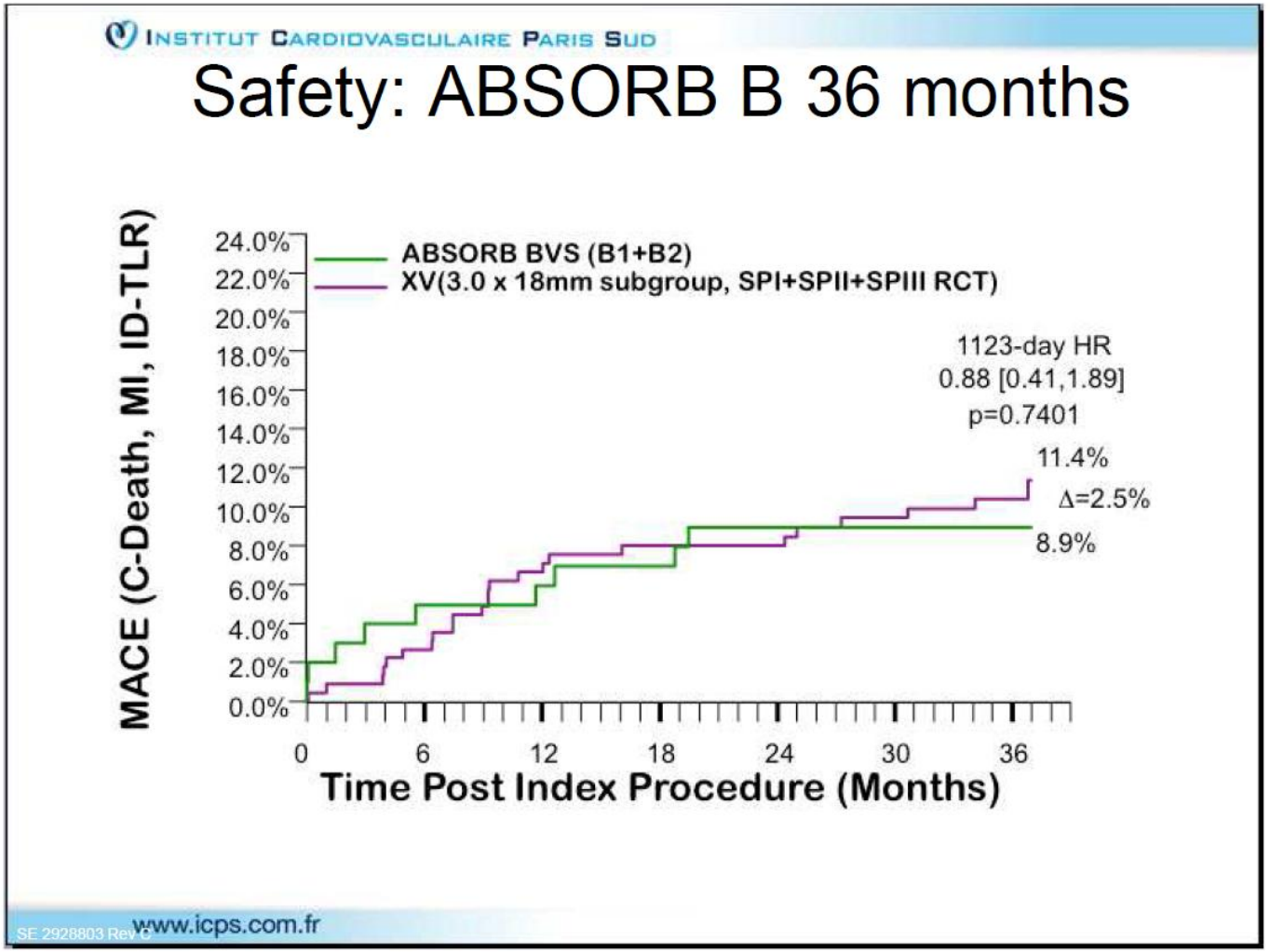
3. Резорбция на ABSORB – доказана с OCT- "Golden tube"

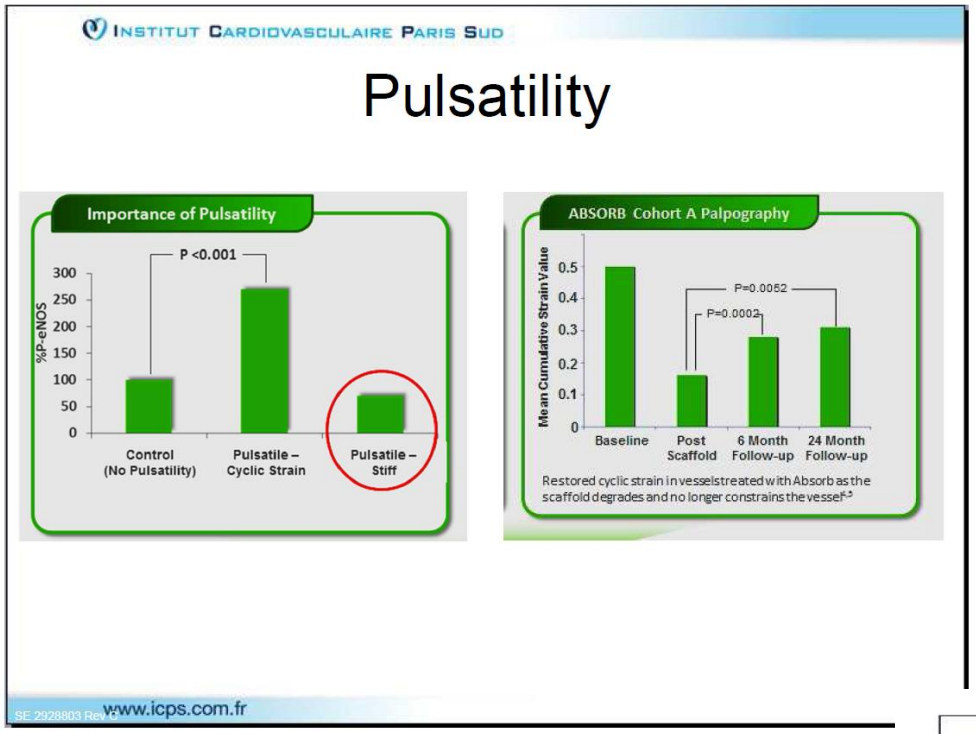
Обещаващи изводи

Ефективност - равна на съвременна генерация DES

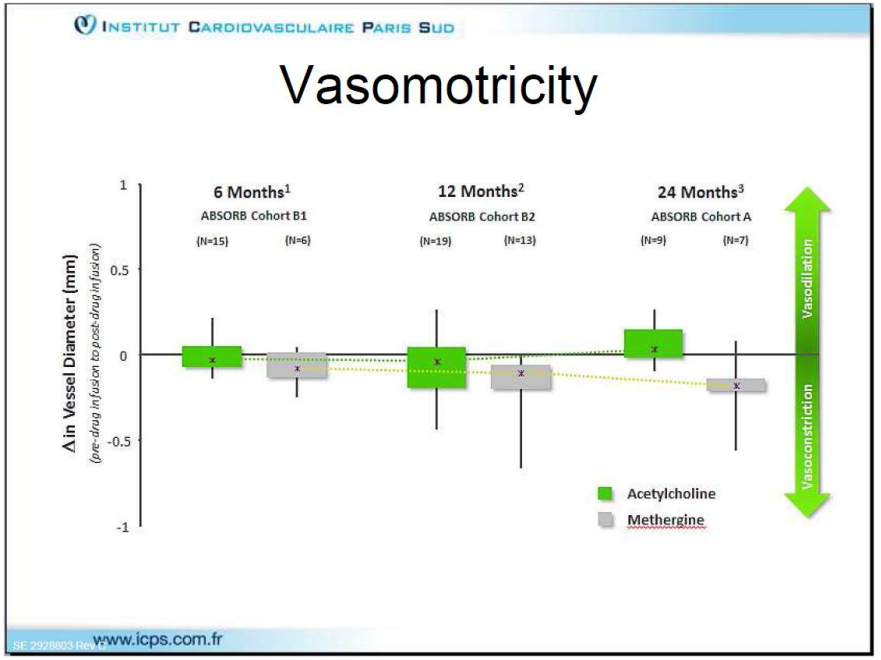


Безопасност

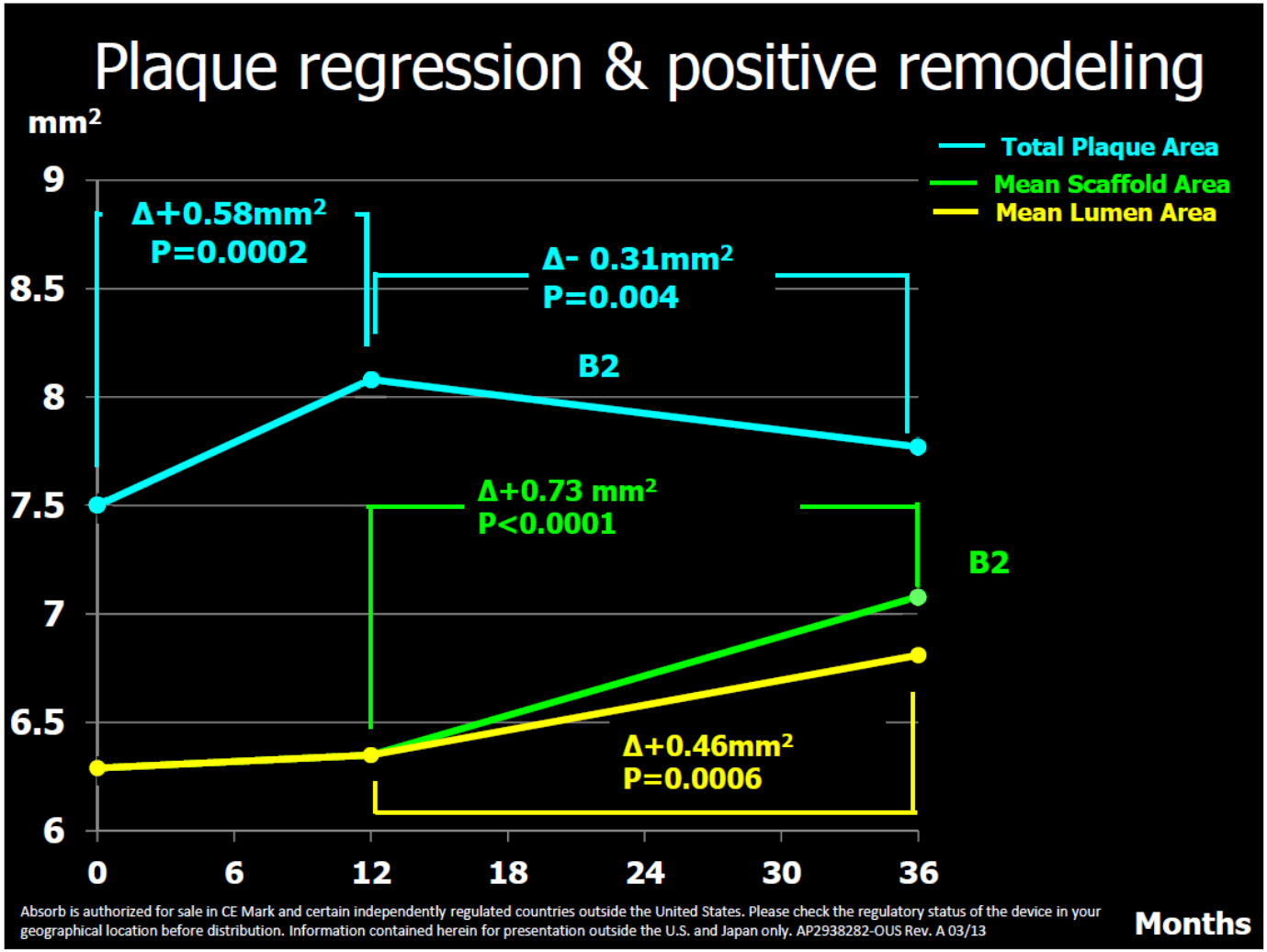




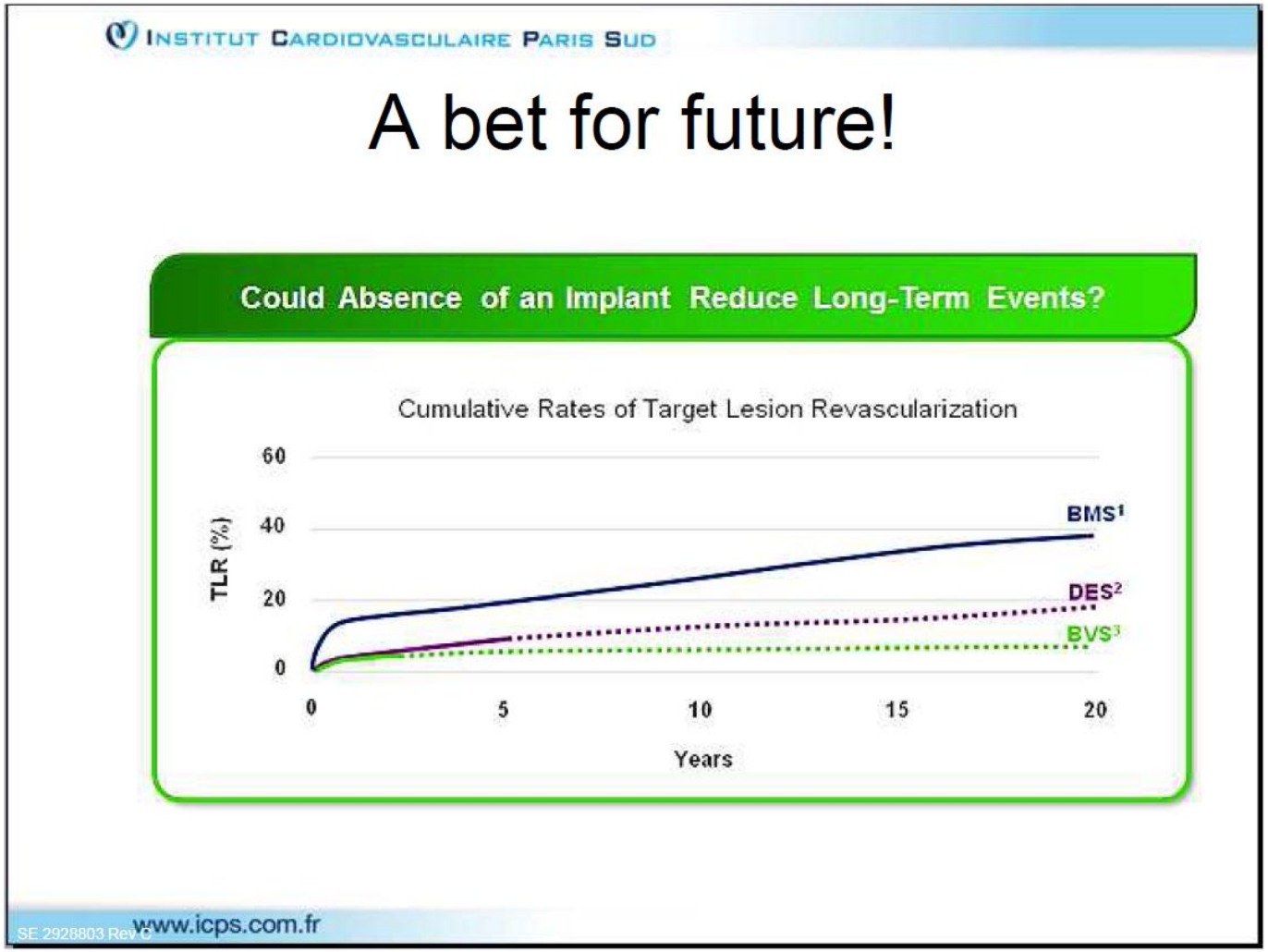
Възстановяване на съдовата ф-ция към норма



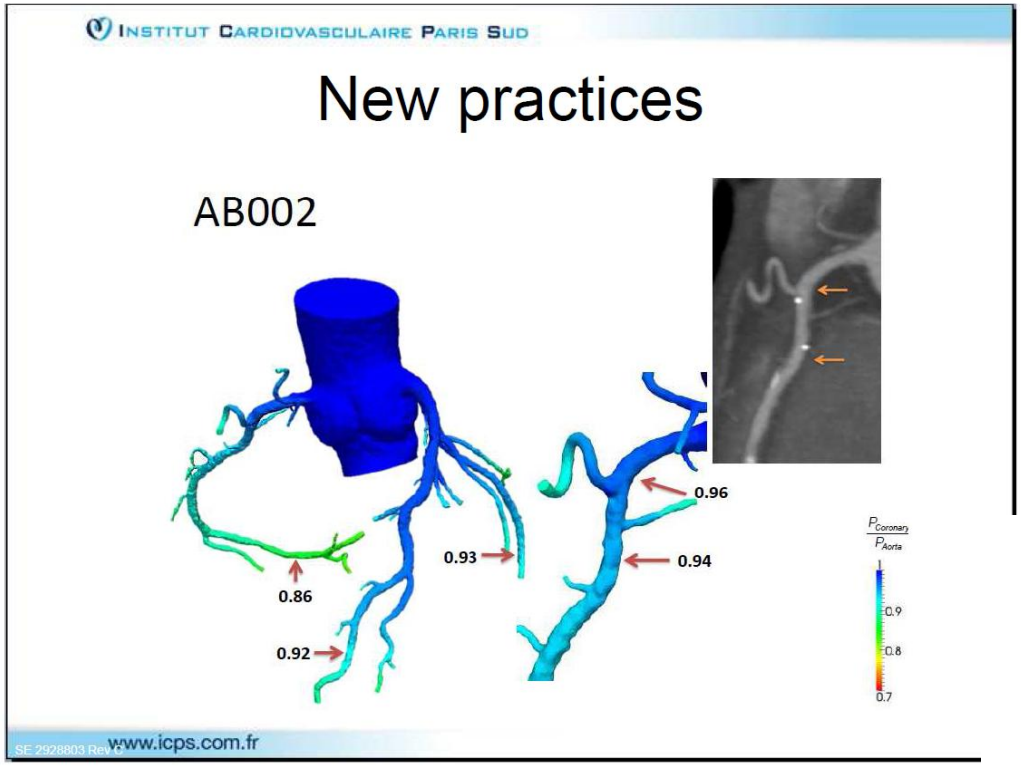
Позитивно ремоделиране

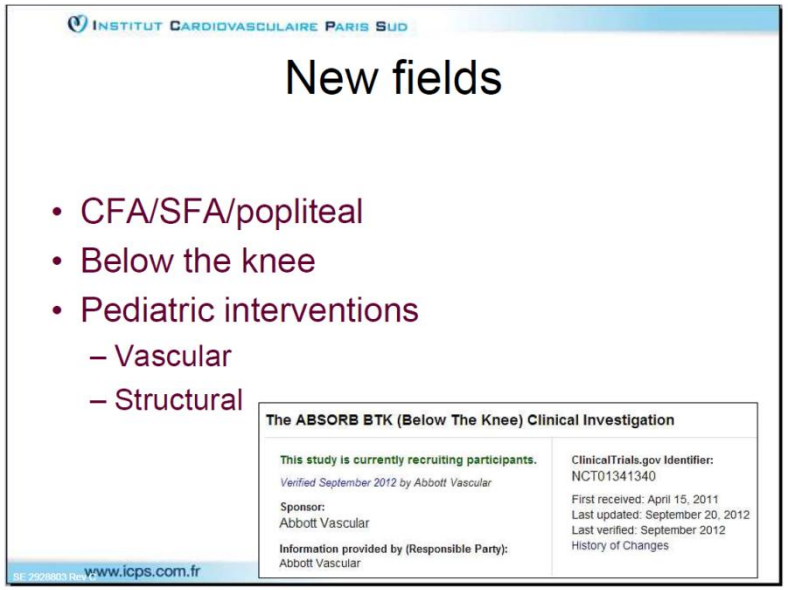


Възможност за бъдещи терапевтични опции



Нови възможности извън кардиологията





Благодаря за вниманието!

YES!

(of course)