

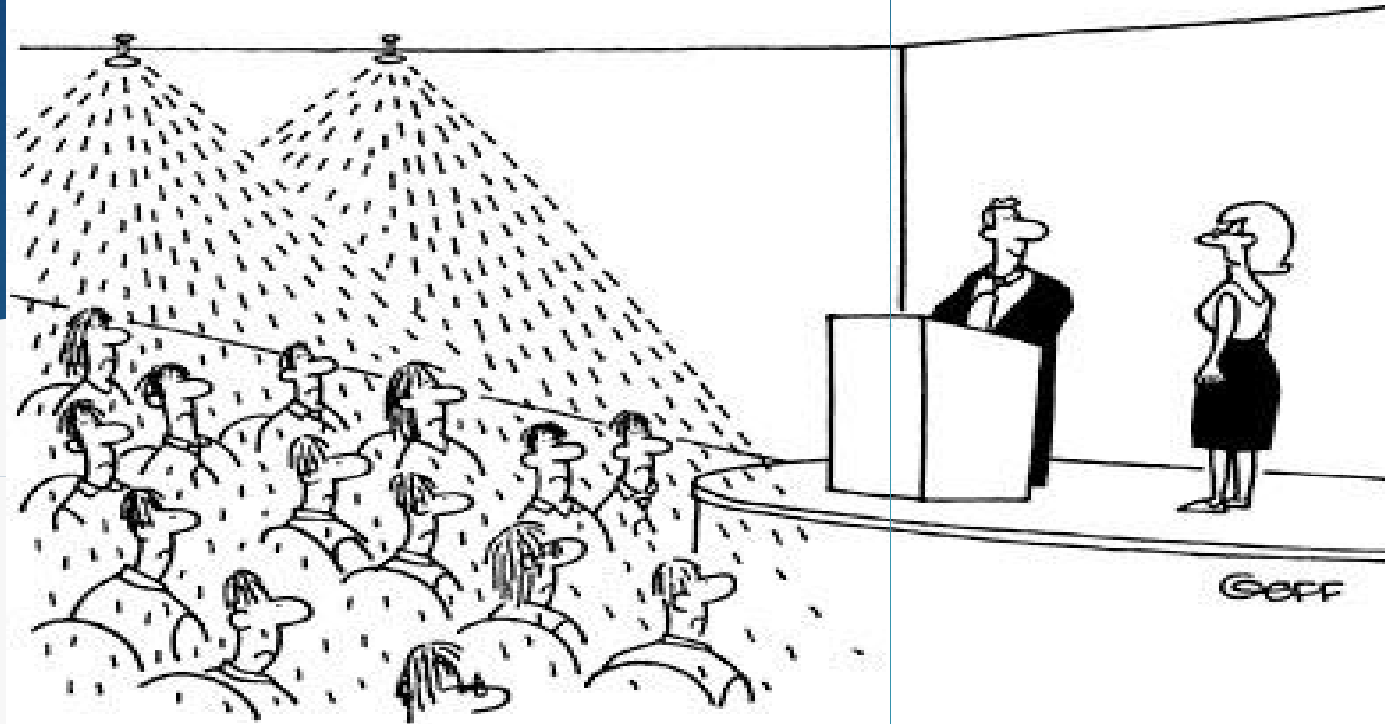
AVALIAÇÃO DE RISCO PRÉ-OPERATÓRIO EM CIRURGIA CARDIACA DE PACIENTES MUITO IDOSOS



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HOSPITAL ANA NERI
2017

Nenhum conflito de interesses

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**"You're not allowed to use
the sprinkler system to keep
your audience awake."**

AVALIAÇÃO DE RISCO PRÉ-OPERATÓRIO DE CIRURGIA CARDIACA EM PACIENTES MUITO IDOSOS

- EQUIPE MULTIPROFISSIONAL :**
- **MÉDICO** - CLÍNICO: IDENTIFICAÇÃO DOS FATORES PROGNÓSTICOS NEGATIVOS ;
CIRURGIÃO: EXPLICAÇÕES INERENTES AO PROCEDIMENTOS PERI-OPERATÓRIOS
 - **ENFERMAGEM** – NECESSIDADE DE ACESSOS VENOSOS, SONDAS , USO DE
MEDICAMENTOS
 - **PSICOLOGIA** – IDENTIFICAÇÃO DE SIND. FRAGILIDADE E MAIOR CHANCE DE
DEPRESSÃO PÓS-OP E DEMANDAS FAMILIARES / COMPREENSÃO DO TRAUMA CIRÚRGICO/
VERSÃO BRASILEIRA DO QUESTIONÁRIO DE QUALIDADE DE VIDA -SF-36/ MEEM/ EDG/ BONFAQ
 - **NUTRIÇÃO** – AVALIAÇÃO DO ESTADO NUTRICIONAL / DESNUTRIÇÃO
 - **FISIOTERAPIA** – AVALIAÇÃO DA CAPACIDADE DE REALIZAÇÃO DE ATIVIDADES
MOTORAS E REABILITAÇÃO CARDÍACA
 - **ODONTOLOGIA** - AV AVALIAÇÃO E INTERVENÇÃO ANTES DE TODA CIRURGIA VALVULAR

AVALIAÇÃO DE RISCO PRÉ-OPERATÓRIO DE CIRURGIA CARDIACA EM PACIENTES MUITO IDOSOS

Q1: To what extent do cardiac surgical operations improve functional outcomes in an elderly patient population?

Q2: How can stroke and neurocognitive deterioration following cardiac surgical procedures be reduced among elderly patients?

Q3: What changes in peri-operative care are needed to improve outcomes in the elderly cardiac surgical patient?

AValiação de Risco Pré-operatório de Cirurgia Cardíaca em Pacientes Muito Idosos

$$\text{predicted mortality} = \frac{e^{(\beta_0 + \sum \beta_i X_i)}}{1 + e^{(\beta_0 + \sum \beta_i X_i)}}$$

Patient-related factors		Cardiac-related factors	
Age (years)	65	0	
Gender	Female		
Chronic pulmonary disease ¹	Yes		
Extracardiac arteriopathy ²	Yes		
Neurological dysfunction ³	Yes		
Previous Cardiac Surgery	Yes		
Creatinine > 200 µmol/L	Yes		
Active endocarditis ⁴	Yes		
Critical preoperative state ⁵	Yes		
		Unstable angina ⁶	Yes
		LV function	Poor
		Recent MI ⁷	Yes
		Pulmonary hypertension ⁸	Yes
		Operation-related factors	
		Emergency ⁹	Yes
		Other than isolated CABG	Yes
		Surgery on thoracic aorta	Yes
		Post infarct septal rupture	Yes

Logistic	EuroSCORE	99.96 %
Note: Logistic is now default calculator		
		Calculate
		Clear

Very good discrimination and calibration
 Observed mortality: 4.18%
 Expected mortality: 3.95%

Nashef et al. EJCTS, 2012



Calculations

Today's Date 10/21/2014

Procedure

Coronary Artery Bypass Yes No Missing

Valve Surgery Yes No Missing

Aortic Yes No Missing

- Aortic Procedure**
- Replacement
 - Repair/Reconstruction
 - Root Reconstruction with valved conduit
 - Replacement and insertion aortic non-valved conduit
 - Resuspension Aortic Valve without replacement of ascending Aorta

- Aorta**
- Resuspension Aortic Valve with replacement of ascending Aorta
 - Apico-aortic conduit (Aortic valve bypass)
 - Autograft with pulmonary valve- Ross procedure
 - Homograft
 - Valve sparing root reimplantation (David)
 - Valve sparing root remodeling (Yacoub)
 - Missing

Resection of Sub-Aortic Stenosis Yes No Missing

Mitral Yes No Missing

- Tricuspid**
- No
 - Annuloplasty Only
 - Replacement
 - Reconstruction with Annuloplasty
 - Reconstruction without Annuloplasty
 - Valvectomy

Procedure Name	AVRepl+CABG
Risk of Mortality	1.485%
Morbidity or Mortality	12.008%
Long Length of Stay	4.973%
Short Length of Stay	46.469%
Permanent Stroke	1.198%
Prolonged Ventilation	6.437%
DSW Infection	0.208%
Renal Failure	2.536%
Reoperation	7.592%

Online STS Risk Calculator Dataset: 2.73

Help | More about Risk Calculator

Today's Date 11/13/2014

Definitions | Support

New | Print

Calculations

Procedure Name
 Risk of Mortality
 Morbidity or Mortality
 Long Length of Stay
 Short Length of Stay
 Permanent Stroke
 Prolonged Ventilation
 DSW Infection
 Renal Failure
 Reoperation

Procedure

Coronary Artery Bypass Yes No Missing

Valve Surgery Yes No Missing

VAD Implanted or Removed
 No
 Yes, implanted
 Yes, explanted
 Yes, implanted and explanted
 Missing

Other Non-Cardiac Procedure Yes No Missing

Unplanned Procedure
 No
 Yes, unsuspected patient disease or anatomy
 Yes, surgical complication
 Missing

Other Cardiac Procedure Yes No Missing

High Surgical STS score is **> 10 %**

Patient related factors		Cardiac related factors	
Age ¹ (years)	0	NYHA	select
Gender	select	CCS class 4 angina ⁸	no
Renal impairment ² <small>See calculator below for creatinine clearance</small>	normal (CC >85ml/min)	LV function	select
Extracardiac arteriopathy ³	no	Recent MI ⁹	no
Poor mobility ⁴	no	Pulmonary hypertension ¹⁰	no
Previous cardiac surgery	no	Operation related factors	
Chronic lung disease ⁵	no	Urgency ¹¹	elective
Active endocarditis ⁶	no	Weight of the intervention ¹²	isolated CABG
Critical preoperative state ⁷	no	Surgery on thoracic aorta	no
Diabetes on insulin	no		
EuroSCORE II	0		

EuroSCORE II

Note: This is the 2013 EuroSCORE II

Calculate Clear

High Surgical risk by EuroSCORE is **> 20%**

EuroSCORE II. .744-41:734;2012 gruS carohoidraC J ruE

Appendix 1: Description of risk factors

Risk factors	Assigned weight
Female gender	1
Morbid obesity ($\geq 1.5 \times$ the ideal weight)	3
Diabetes	3
Hypertension (systolic blood pressure > 140 mm Hg)	3
EF (%)	
Good ≥ 50	0
Fair 30-49	2
Poor < 30	4
Age	
< 70	7
71-74	12
≥ 75	20
Re-operation	
1 st	5
2 nd	10
Preoperative IABP	20
LV aneurysm	5
Emergency surgery following PTCA or catheterization complications	10
Dialysis dependency (peritoneal or hemo-dialysis)	10
Catastrophic states (acute structural defect, cardiogenic shock, acute renal failure or similar conditions)	10-50
Other rare circumstances (paraplegia, pacemaker dependency, severe asthma, congenital heart disease in the adult)	2-10
Mitral surgery	5
Mitral surgery and PA pressure ≥ 60 mm Hg	8
Aortic surgery	5
Aortic surgery and aortic gradient ≥ 120 mm Hg	7
CABG at the time of valve surgery	2

IABP: Intra-aortic balloon pump, CABG: Coronary artery bypass grafting, PTCA: Percutaneous transluminal coronary angioplasty, LV: Left ventricular, EF: Ejection fraction, PA: Pulmonary artery

Parsonnet Score

Interpretation

Parsonnet score	Risk	Predicted Mortality (%)
0-4	good	1
5-9	fair	5
10-14	poor	9
15-19	high	17
20+	extremely high	30

Table 1. Surgical risk scoring tools.⁷

Risk Stratification Scoring Systems	Number of clinical variables
Society of Thoracic Surgeons (STS)	40
ACEF	3
Parsonnet	16
Cleveland Clinic	9
Mayo Clinic	7
EuroSCORE II	17

Afinal , qual escore utilizar ?





Outcomes of Cardiac Surgery in Patients Age >80 Years: Results from the National Cardiovascular Network

Karen P. Alexander, MD,*† Kevin J. Anstrom, MS,* Lawrence H. Muhlbaier, PHD,*† Ralph D. Grosswald, MPH, Peter K. Smith, MD, FACC,§ Robert H. Jones, MD, FACC,§ Eric D. Peterson, MD, MPH, FACC*† Durham, North Carolina and Atlanta, Georgia

67,764 patients (4,743 octogenarians) undergoing cardiac surgery at 22 centers in the National Cardiovascular Network

Journal of the American College of Cardiology Vol. 35, No. 3, 2000

Multivariate Logistic Regression Model for the Prediction of In-Hospital Mortality After CABG in Order of Descending

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Table 1 - Duke Activity Status Index translated into Brazilian Portuguese

Item	Atividade	Sim	Não
1	Você consegue cuidar de si mesmo (comer, vestir-se, tomar banho ou utilizar o vaso sanitário)?	2,75	0
2	Você consegue andar dentro de casa?	1,75	0
3	Você consegue andar um ou dois quarteirões em terreno plano?	2,75	0
4	Você consegue subir uma escada ou uma ladeira?	5,50	0
5	Você consegue correr uma distância curta?	8,00	0
6	Você consegue realizar tarefas leves de casa, como tirar o pó ou lavar a louça?	2,70	0
7	Você consegue fazer trabalho moderado em casa como aspirar, varrer o chão ou guardar as compras?	3,50	0
8	Você consegue fazer trabalho pesado em casa, como esfregar o piso ou levantar e movimentar móveis pesados?	8,00	0
9	Você consegue realizar tarefas como apanhar folhas caídas ou cortar a grama?	4,50	0
10	Você consegue ter relações sexuais?	5,25	0
11	Você consegue participar de atividades de lazer moderadas (boliche, dança, tênis ou chutar uma bola)?	6,00	0
12	Você consegue participar de esportes vigorosos (natação, futebol, basquete ou voleibol)?	7,50	0
Notas: Índice de Atividade de Duke: SOMA (valores de todos os 12 itens); interpretação: valor máximo = 58,2; valor mínimo = 0; estimativa de pico de oxigênio (em mL/min): $0,43 \times (\text{Índice de Atividade de Duke}) + 9,6$.			

Source: Hlatky et al. (5).

Note: Duke Activity Status Index is a self-administered questionnaire that measures a patient's functional capacity. It can be used to get a rough estimate of a patient's peak oxygen uptake.

Duke Activity Status Index

- Assess functional capacity
- Metabolic equivalent task (MET)
- 1 MET = O₂ 3.5ml/kg/min (resting consumption of 70kg 40yr old man)

>10 METs	Excellent
7-10	Good
4-7	Moderate
≤ 4	Poor

1 MET

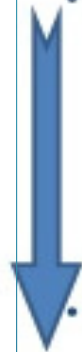
- * Can you take care of self?
- * Eat, dress, use toilet?
- * Walk indoors in house?
- * Walk a block or two on level at 2-3 mph?
- * Do light housework like dusting or dishes?



4 METs

4 METs

- Climb a flight of stairs, walk up hill?
- Walk on level at 4 mph?
- Run a short distance?
- Heavy housework
- Golf, bowling, dancing, doubles tennis



>10 METs

- Swimming, singles tennis
- football, basketball

Goals of treatment from physician and patient side.

Goals of treatment (physician view)

1. Relief of symptoms Relief of coronary ischaemia
2. Prevention of cardiac-related death
3. Prevention of CAD progression and related conditions: myocardial infarction, left ventricular dysfunction, congestive heart failure

Goals of treatment from physician

In physician terms

1. Life prolongation (longevity influence)
2. Premature cardiac death and MI prevention
3. Maintenance of independence
4. Relief of symptoms
5. Reduction the need for medical treatment
6. Long term effect

Risks of procedure:

pain, cognitive impairment, stroke, CIN, bleeding, death

Possibility of recurrent procedure

Price (including medications/visits after procedure)

Use of DAPT in case of PCI

Goals of treatment from Patient side

In patient terms

Could it extend my life?

Will I feel more comfortable?

Could it help me avoid heart attack or death?

What will happen if I would do nothing?

Will I be more physically active?

Will I be able to maintain myself?

Will I feel free from pain and shortness of breath?

Could I take lesser pills?

How long will stay the effect of treatment?

Treatment perspective

How long will it take for me to feel better?

Will I feel pain during and after procedure?

Will it break my mind? Could I become disabled?

Do I need repeat procedure?

How much will it costs at all?

What should I do after procedure?

Coronary revascularization in the elderly with stable angina

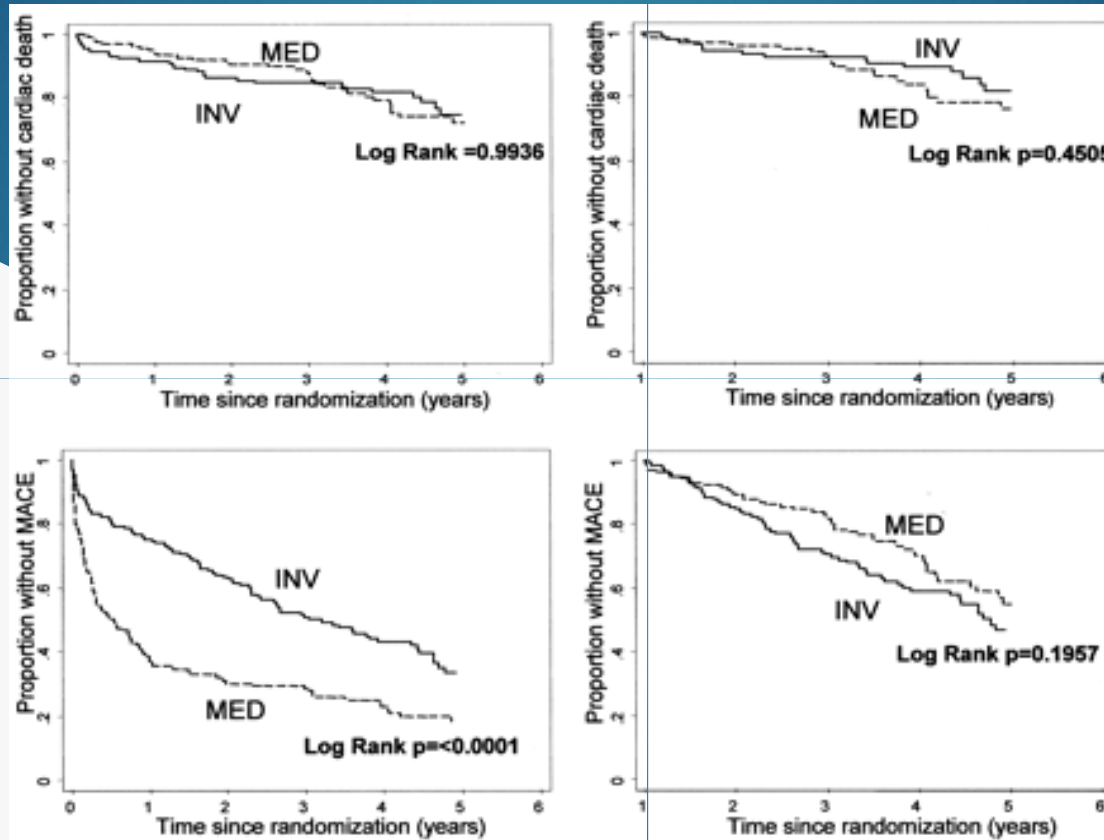
Causes for increased risk of cognitive cerebral injury with open heart surgery

- Embolic deposition to the brain
- Blood pressure fluctuations
- Non-physiological pulsation during extracorporeal perfusion
- Activation of the inflammatory cascade due to blood elements contacting non-endothelialized surfaces
- Altered cerebral oxygenation

Kirill Lenarovich Kozlov
Aleksandr Andreevich Bogachev1

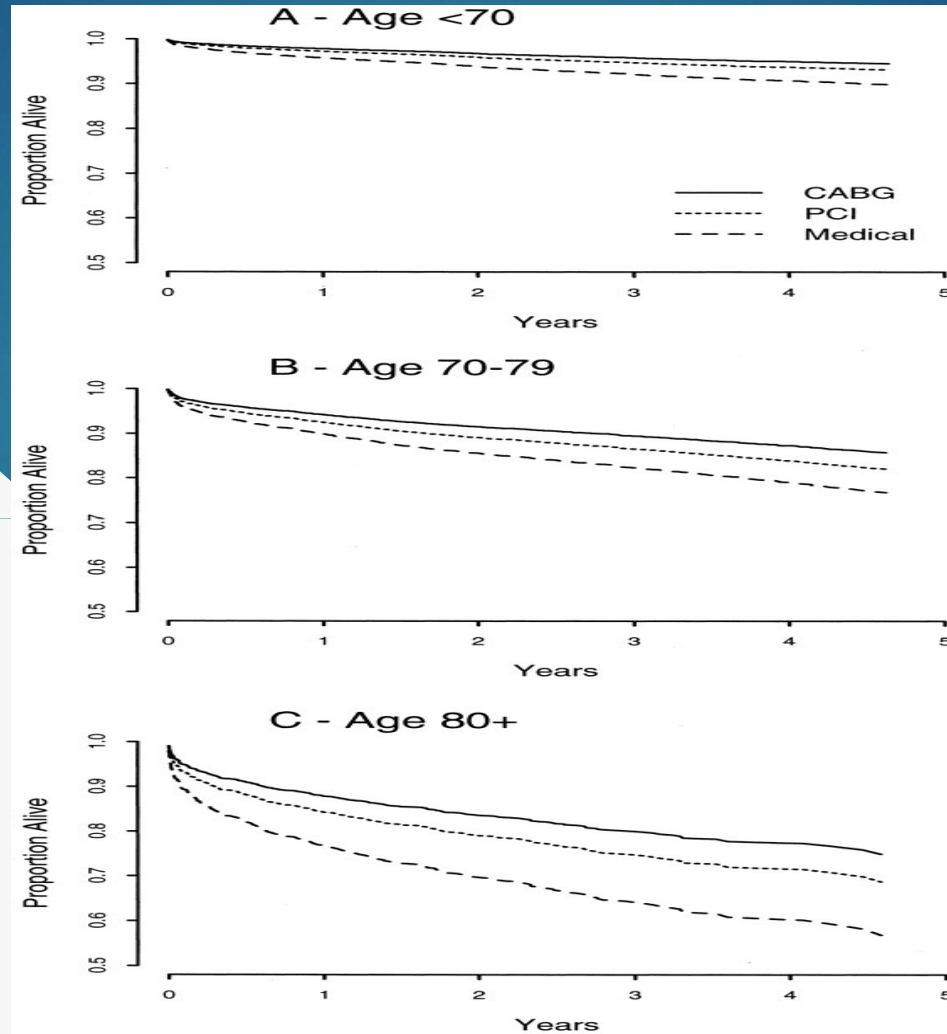
Journal of Geriatric Cardiology (2015) 12: 555–568

Long-Term Outcome in Elderly Patients With Chronic Angina Managed Invasively Versus by Optimized Medical Therapy



Circulation. 2004;110:1213-1218

Risk-adjusted survival curves for 3 age groups.

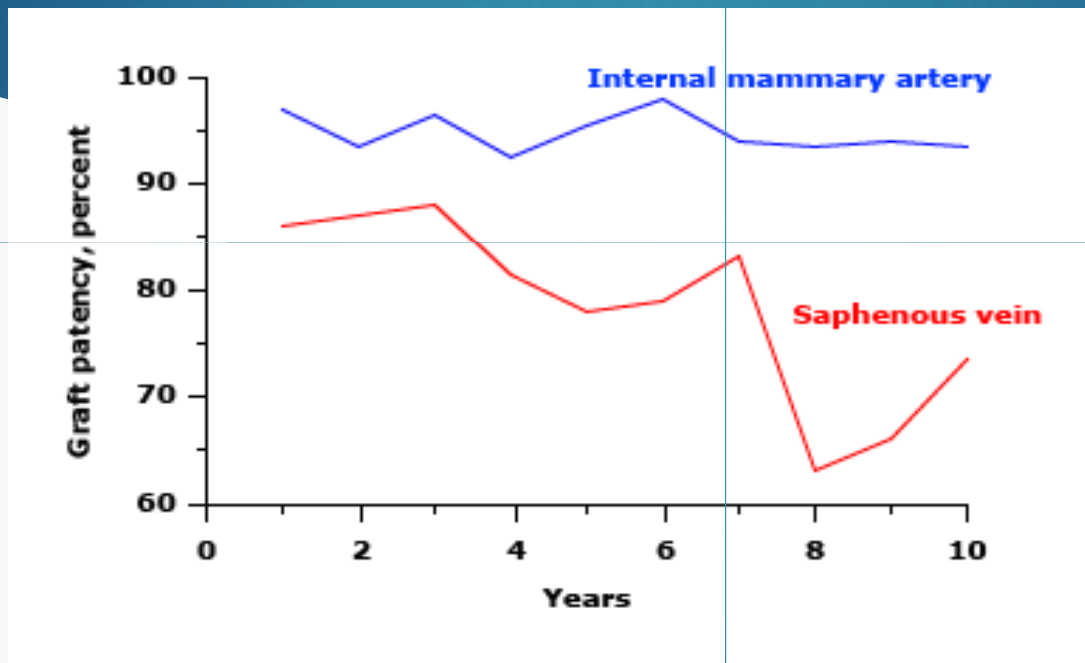


Michelle M. Graham et al. *Circulation*. 2002;105:2378-2384

Adjusted Survival Rates at 4 Years for Each Age Group

Age, y	Adjusted Survival, %			ARR, % (vs Medical Therapy)		NNT	
	Medical	PCI	CABG	PCI	CABG	PCI	CABG
<p>ARR indicates absolute risk reduction; NNT, number needed to treat to prevent 1 death at 4 years (calculated as 1/ARR).</p>							
<70	90.8	93.8	95.0	3.0	4.2	33.1	23.4
70–79	79.1	83.9	87.3	4.9	8.2	20.6	12.1
≥80	60.3	71.6	77.4	11.3	17.0	8.9	5.9

Graft patency after CABG



Loop FD, Lytle BW, Cosgrove DM, et al,
N Engl J Med 1986; 314:1.

APPROACH REGISTRY : 6.000 Patients > 80 Y
TIME TRIAL : 300 Patients > 80 y

invasive tr : in 4 y → 77% alive x 60% in medical tr

NNT = 6 for CABP x 9 for PTCA in elderly

GOPCABE Trial : mortality On Pump = Off Pump in elderly – NEJM , 2013

The ASCERT study linked data from the Society of Thoracic Surgeons Adult Cardiac Surgery Data base and the Centers for Medicare and Medicaid Services (United States).

This study included nearly 350,000 isolated CABG patients aged ≥65 years who were discharged between January 1, 2002 and December 31, 2007.

Kaplan-Meier estimated mortality was 3.2 percent at 30 days, 6.4 percent at 180 days, 8.1 percent at one year, 11.3 percent at two years, and 23.3 percent at three years of follow-up.

Shahian DM, O'Brien SM, Sheng S, Grover FL, Mayer JE, Jacobs JP, Weiss JM, DeLong ER, Peterson ED, Weintraub WS, Grau-Sepulveda MV, Klein LW, Shaw RE, Garratt KN, Moussa ID, Shewan CM, Dangas GD, Edwards FH SO

Circulation. 2012;125(12):1491.

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OUTCOMES OF CARDIAC SURGERY IN PATIENTS AGE >80 YEARS: RESULTS FROM THE NATIONAL CARDIOVASCULAR NETWORK

KAREN P. ALEXANDER, MD,*† KEVIN J. ANSTROM, MS,* LAWRENCE H. MUHLBAIER, PHD,*† RALPH D. GROSSWALD, MPH, \ PETER K. SMITH, MD, FACC,§ ROBERT H. JONES, MD, FACC,§ ERIC D. PETERSON, MD, MPH, FACC*† DURHAM, NORTH CAROLINA AND ATLANTA, GEORGIA

We found that the major clinical predictors of mortality were largely the same in octogenarians as in younger patients. In addition, while the relationship between age and in-hospital mortality appears to be nearly linear, the gap between mortality in the young and old after CABG is smaller than previously thought, especially for CABG and CABG/AVR

Journal of the American College of Cardiology Vol. 35, No. 3, 2000



OBRIGADO !

