

Endocarditis in the elderly

Gilbert Habib
Département de Cardiologie - Timone – Marseille

Eurovalves Barcelona 2017



Aix-Marseille
université



FACULTÉ DE MÉDECINE
DE MARSEILLE



Endocarditis in the octogenarian

Gilbert Habib
Département de Cardiologie - Timone – Marseille

Eurovalves Barcelona 2017



Aix-Marseille
université



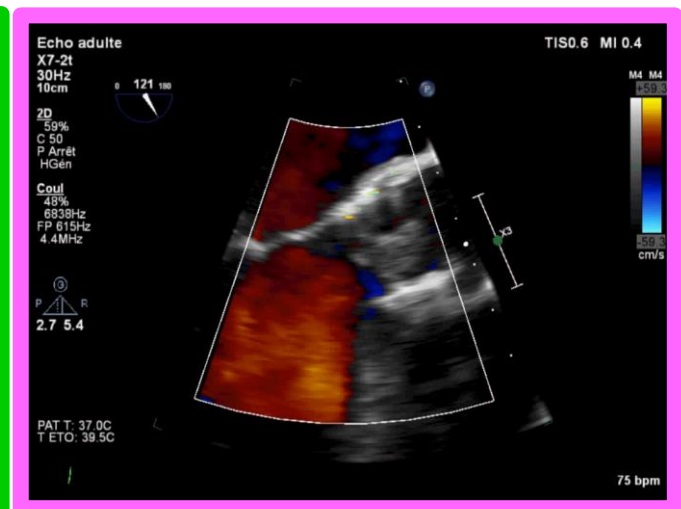
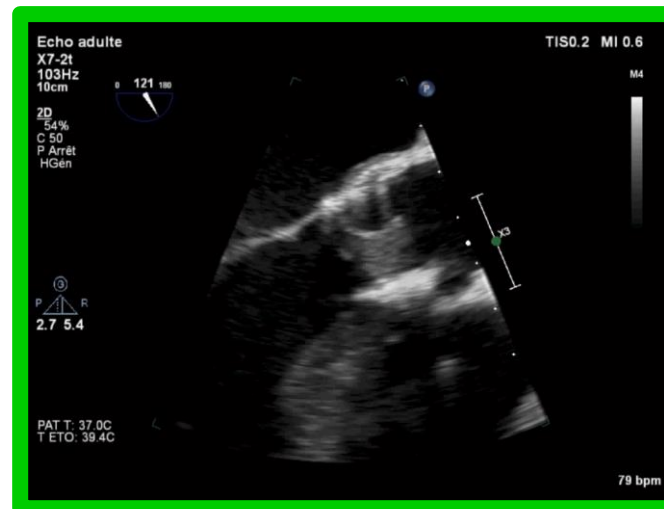
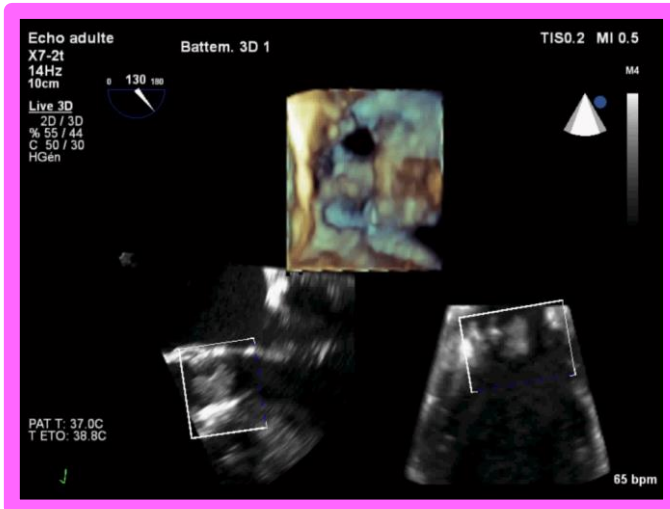
FACULTÉ DE MÉDECINE
DE MARSEILLE



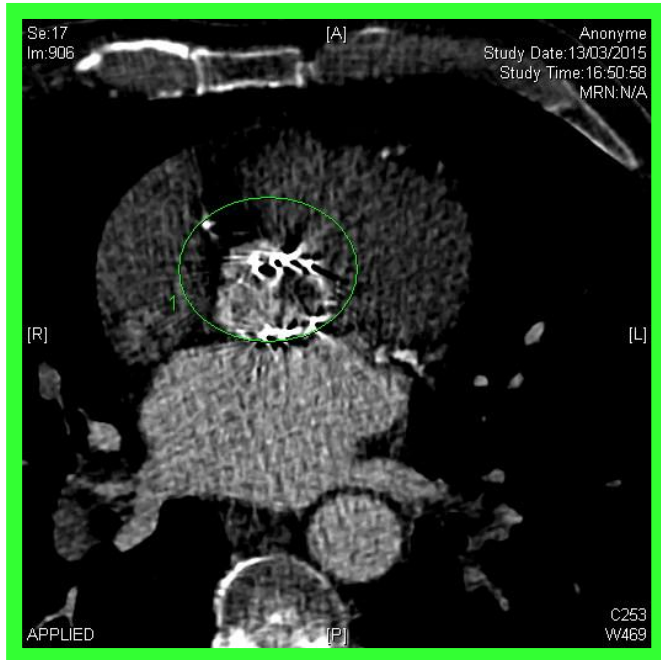
Case 1: TAVI endocarditis

- 80 year-old man
- CHF
- TAVI 2 years ago

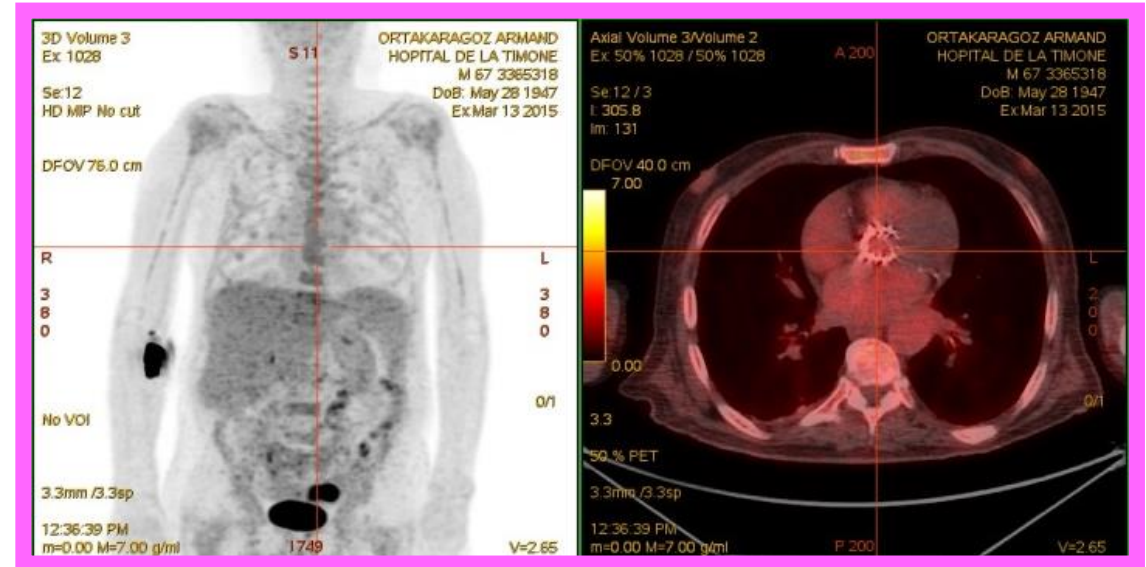
- fever = 38°
- BC: staphylococcus coagulase -



Multimodality Imaging



CT scan : positive



Doubtful PET CT

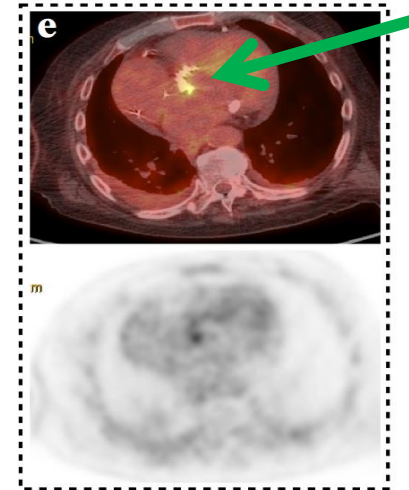
Patient 2: TAVI endocarditis



May, 27th 2016



May, 28th 2016



- ✦ 83 year-old man
- ✦ streptococcus salivarius IE
- ✦ 6 months after Edwards Sapien 3 implantation
- ✦ TEE: thickening of THV leaflets
- ✦ MSCT: leaflets thickening and vegetation
- ✦ PET/CT showed the THV ^{18}F -FDG uptake

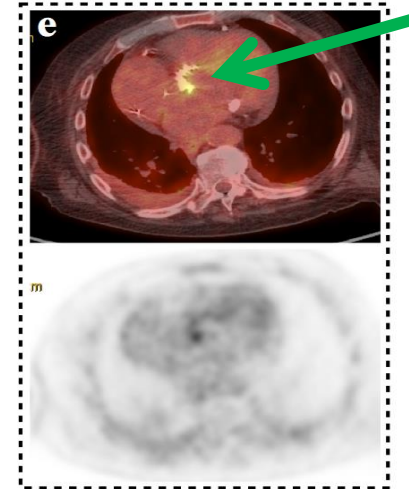
Patient 2: TAVI endocarditis



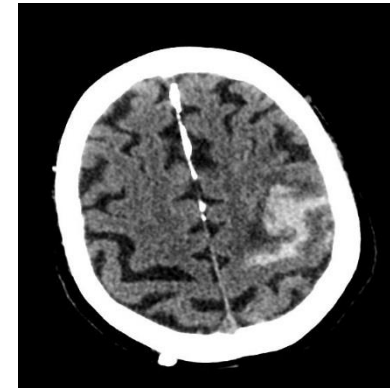
May, 27th 2016



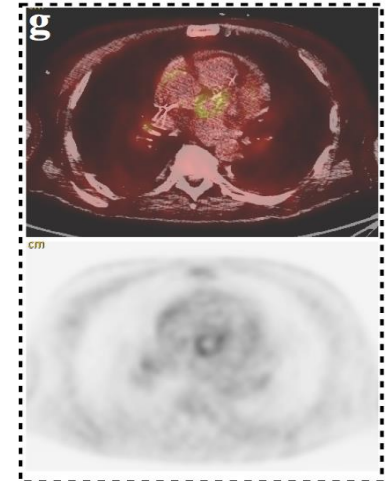
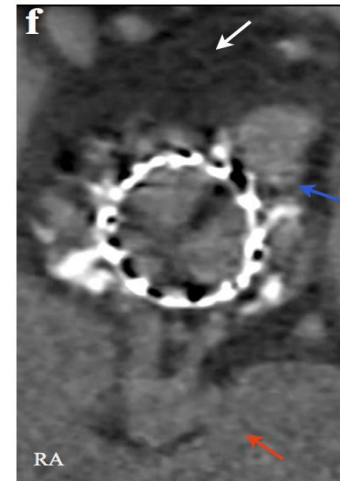
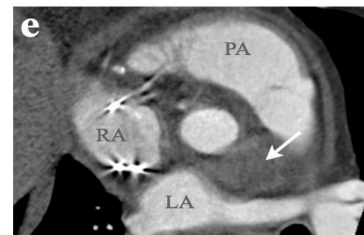
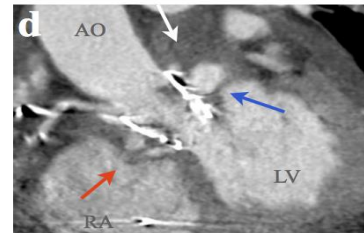
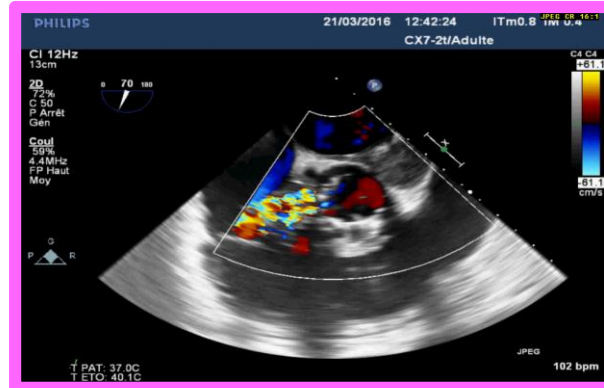
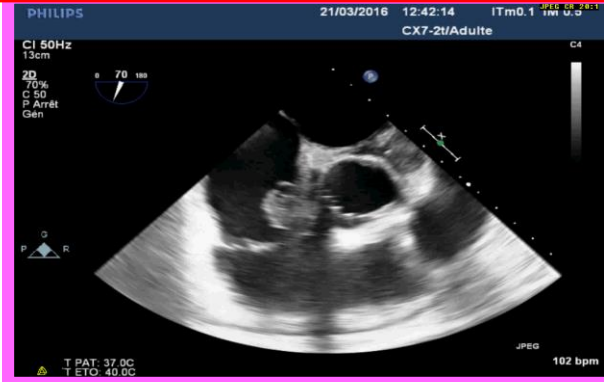
May, 28th 2016



- ✦ 83 year-old man
- ✦ streptococcus salivarius IE
- ✦ 6 months after Edwards Sapien 3 implantation
- ✦ TEE: thickening of THV leaflets
- ✦ MSCT: leaflets thickening and vegetation
- ✦ PET/CT showed the THV ^{18}F -FDG uptake



Patient 3: TAVI endocarditis



Panel D. A 84 year-old man with a *enterococcus faecalis* definite IE 8 months after a 26-mm Edwards Sapien 3 implantation. TEE showed an abscess on the external aortic root (white arrow, a, b and c) with a pseudoaneurysm near the THV stent (blue arrow, c) and a critical internal aortic periannular lesion with an aorto-right atrial fistulae (red arrows, a and b). MSCT confirmed all the lesions in d, e and f. PET/CT showed the THV ^{18}F -FDG uptake (g).

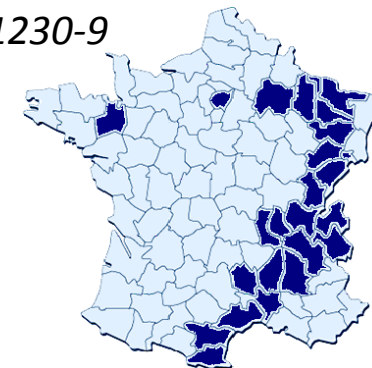
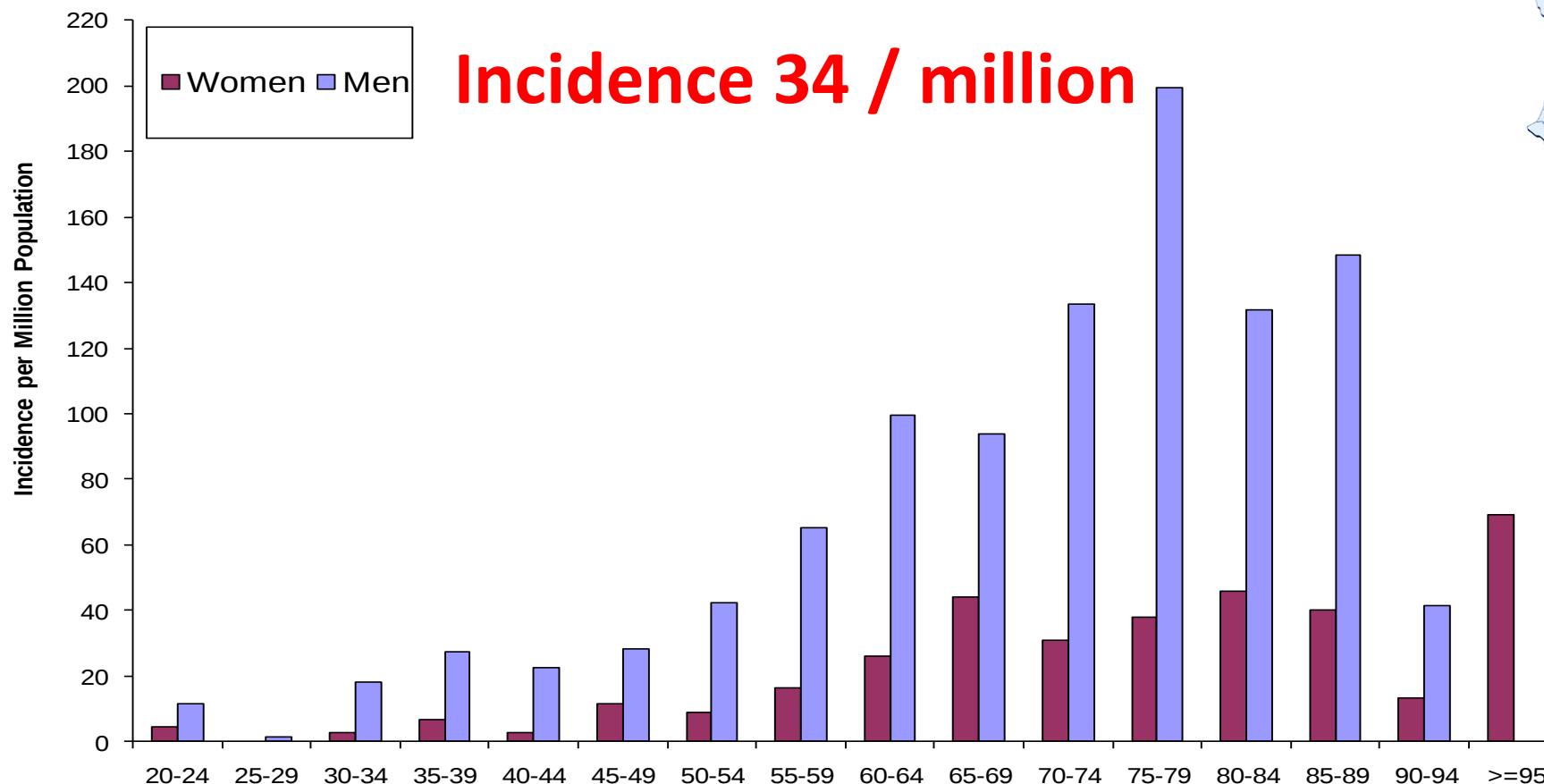
Endocarditis in the elderly

- The proportion of elderly patients increases in infective endocarditis (IE)
- Clinical, echocardiographic, and prognostic features of IE vary among studies
- Some studies showed that IE in the elderly was associated with a worse prognosis and a higher incidence of complications
- Other authors found no difference in clinical presentation and outcome between younger and older patients

Incidence of endocarditis

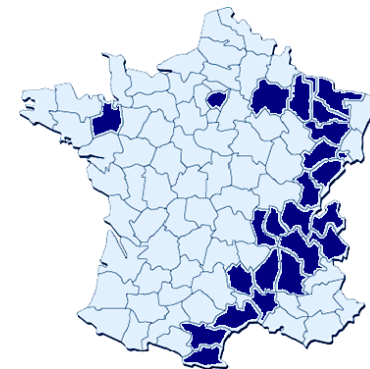
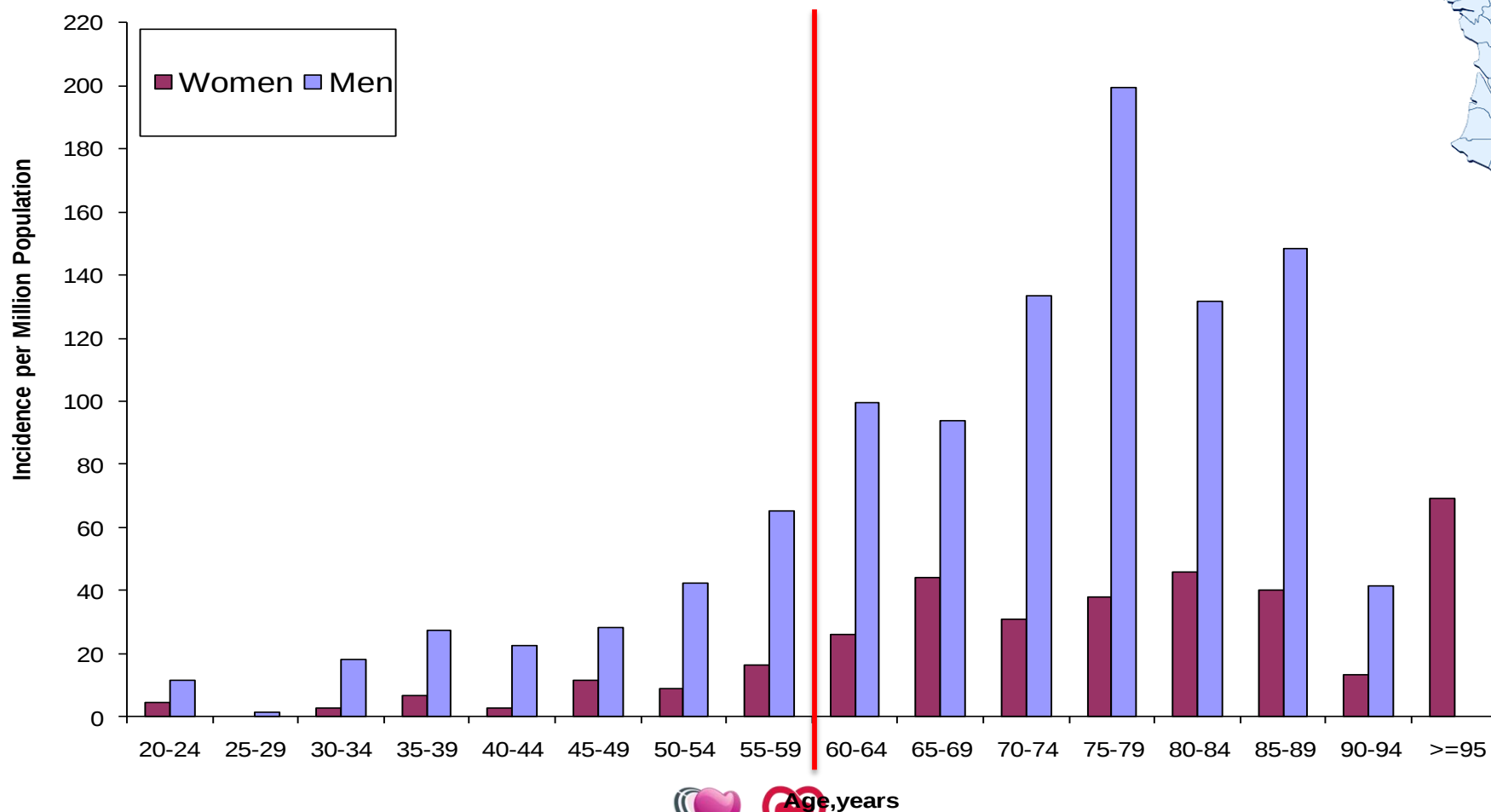
Selton Suty et al. Clin Infect Dis 2012;54:1230-9

All cases (n=497) of definite IE in 15 million inhabitants



Incidence of endocarditis

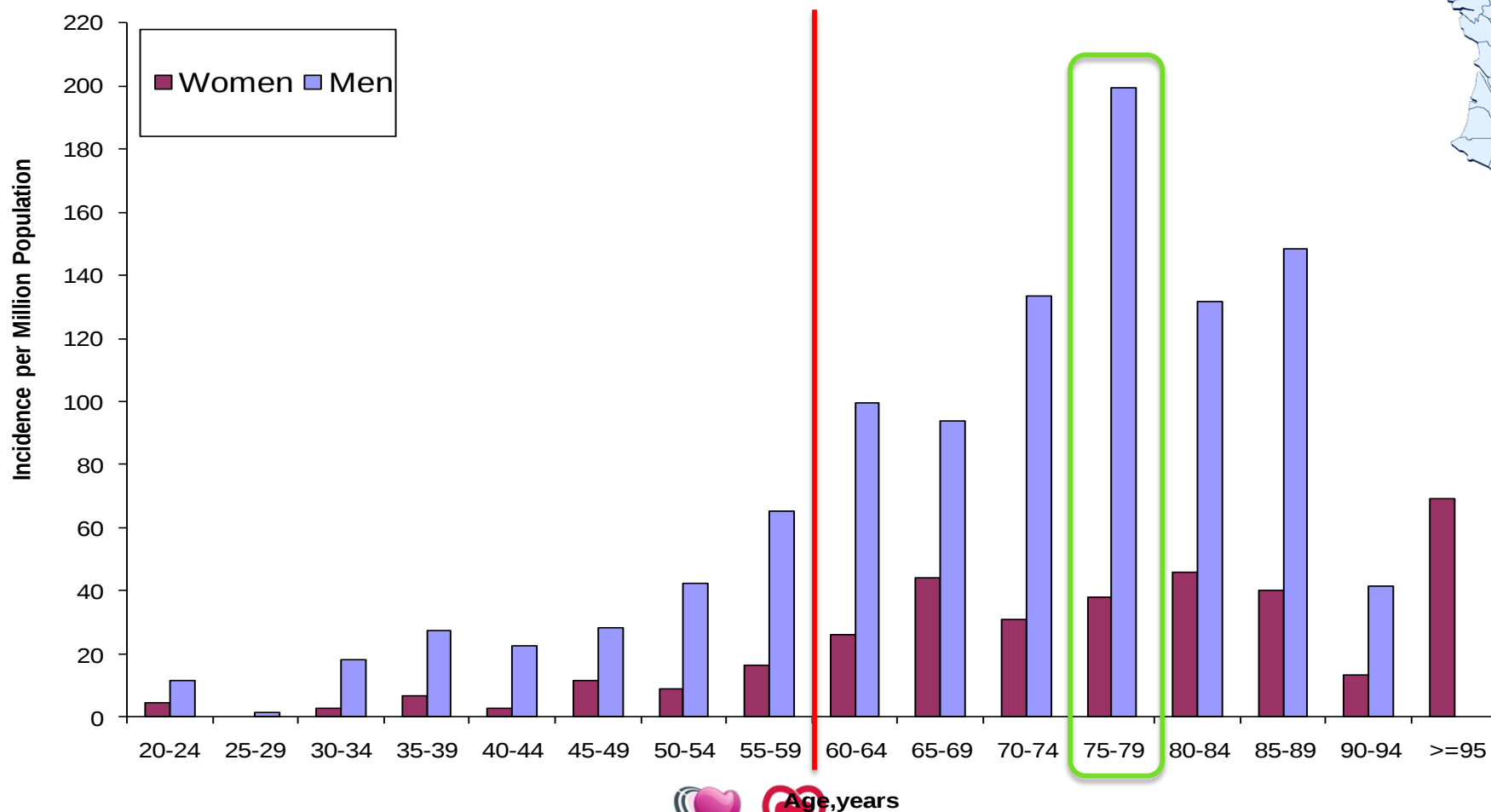
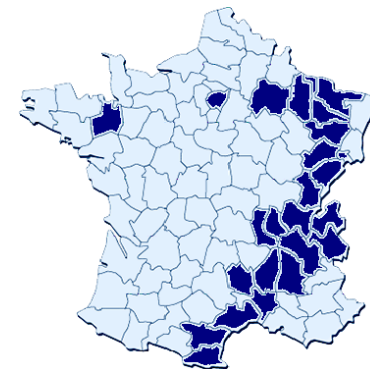
Incidence 34 / million



Incidence of TAVI endocarditis

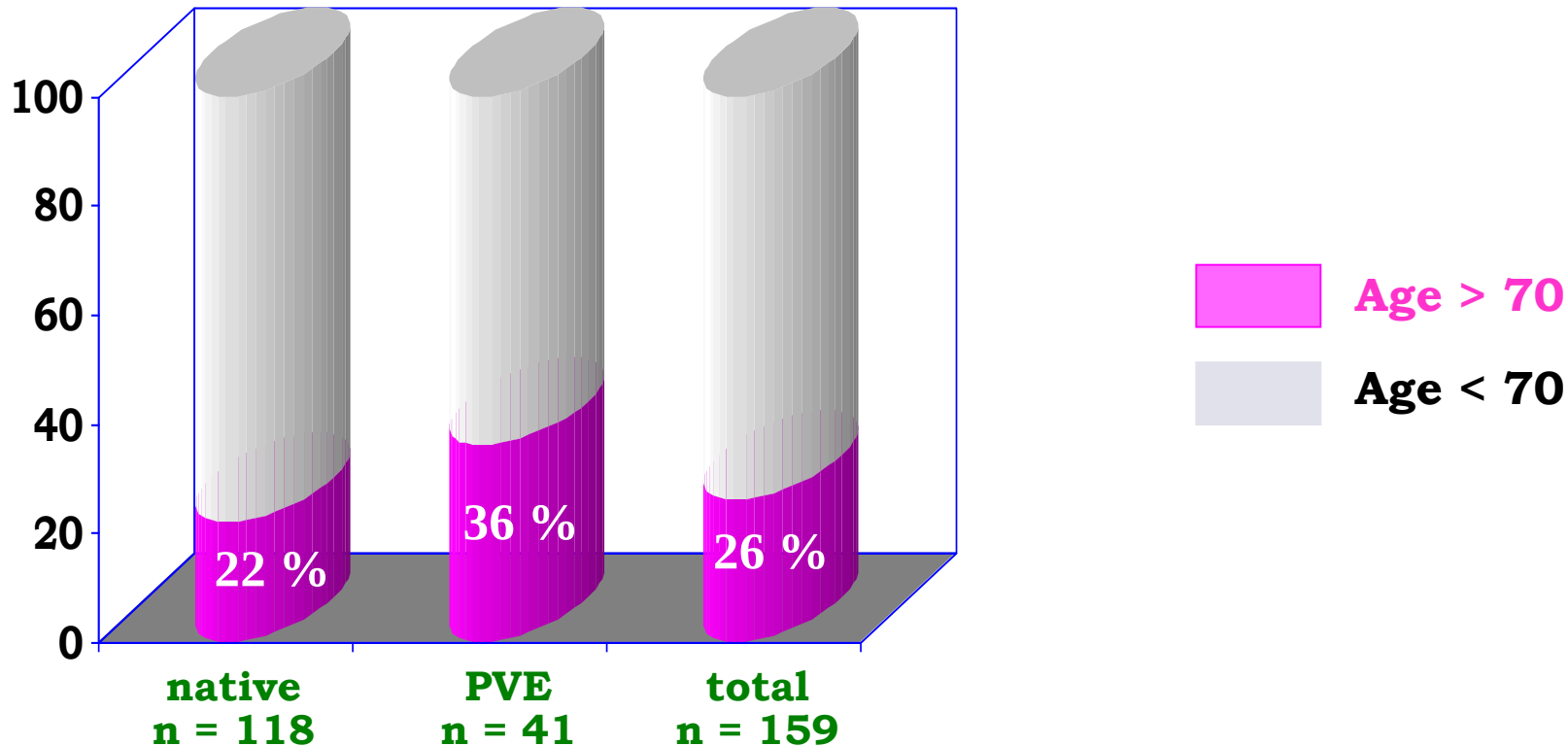
Incidence 34 / million

194 / million



Elderly in Euro Heart Survey

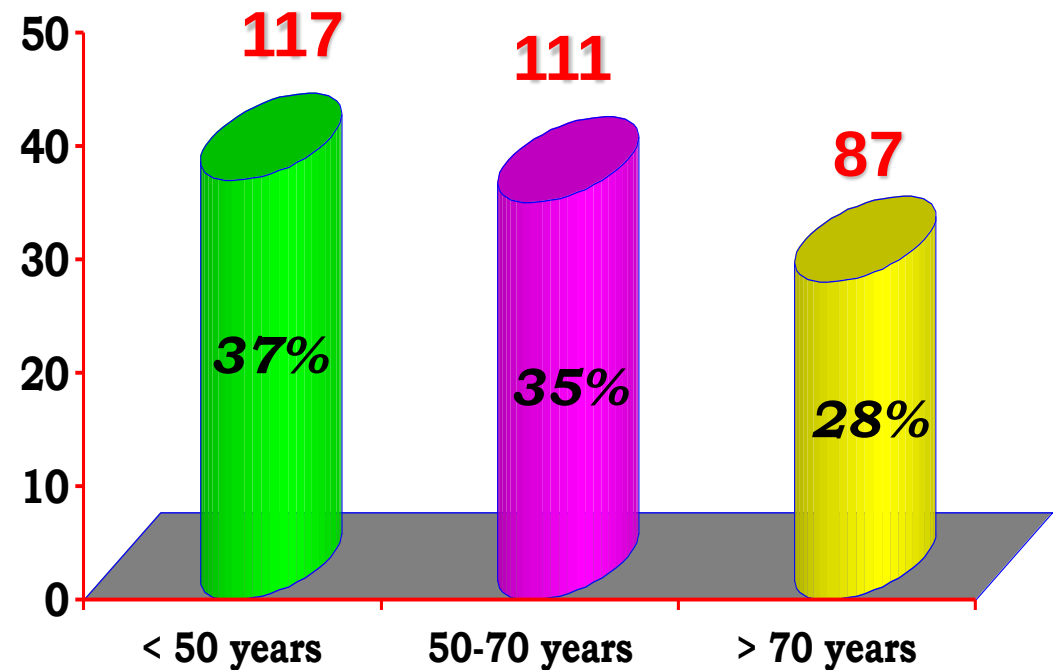
Tornos P – Heart 2005 ; 91 : 571-5



Endocarditis in the elderly

Di Salvo – Eur Heart J 2003 ; 24 : 1576-83

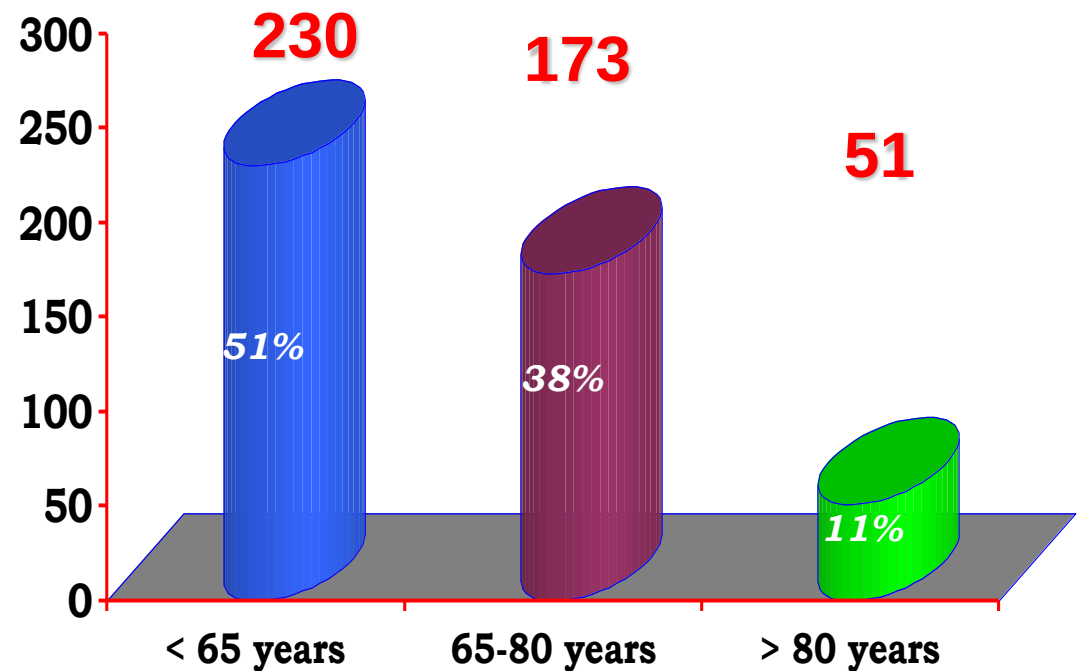
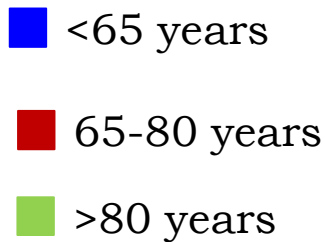
- multicenter study (Paris, Marseille, Rouen , Naples)
- 315 infective endocarditis
- 228 M, age 57 ± 17 years
- definite by Duke criteria
- TEE and BC in all



Endocarditis in octogenarians

L Oliver, unpublished data

- single center study (Marseille)
- 454 infective endocarditis



Endocarditis in the elderly

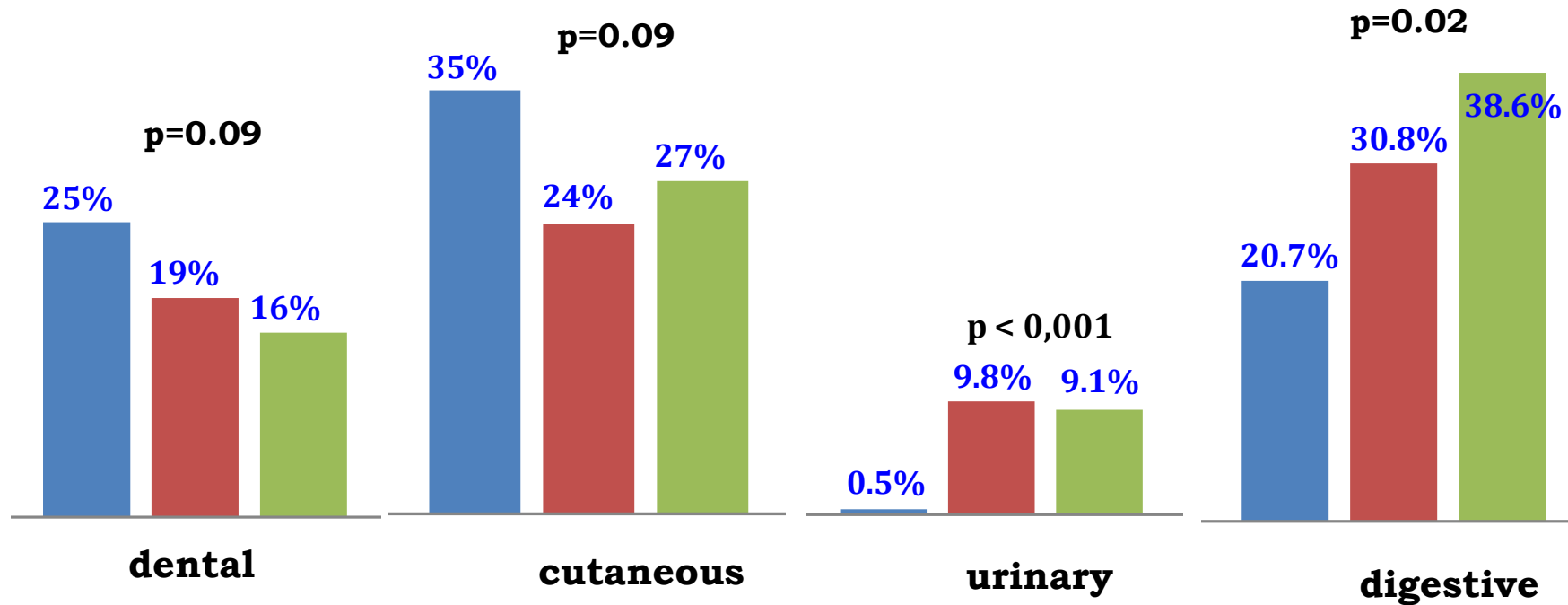
1. **predisposing conditions and portal of entry**
2. **clinical and laboratory features**
3. **echocardiographic data**
4. **prognosis and treatment**

Endocarditis in the elderly

1. *predisposing conditions and portal of entry*
2. **clinical and laboratory features**
3. **echocardiographic data**
4. **prognosis and treatment**

Portal of entry

■ <65 years ■ 65-80 years ■ >80 years

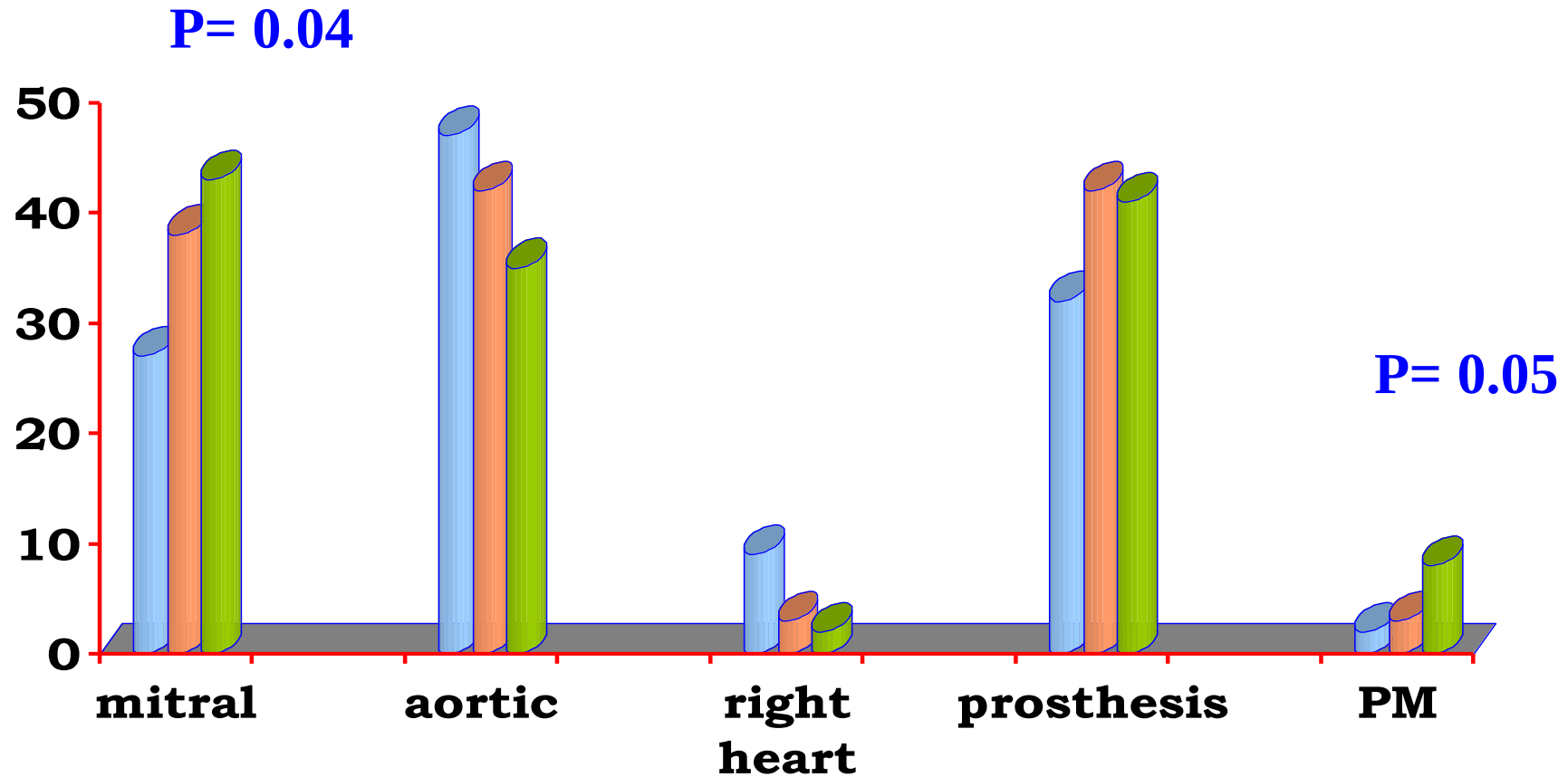


Predisposing cardiac conditions

- high incidence of degenerative valve disease
(*Werner AJM 1996, Zamorano JASE 2002*)
- frequent prosthetic and pacemaker IE
(*Selton-Suty Heart 1997*)
- higher incidence of right heart IE in younger pts
- digestive portal of entry and **S bovis** IE more frequent in elderly (*Selton-Suty 1997*)

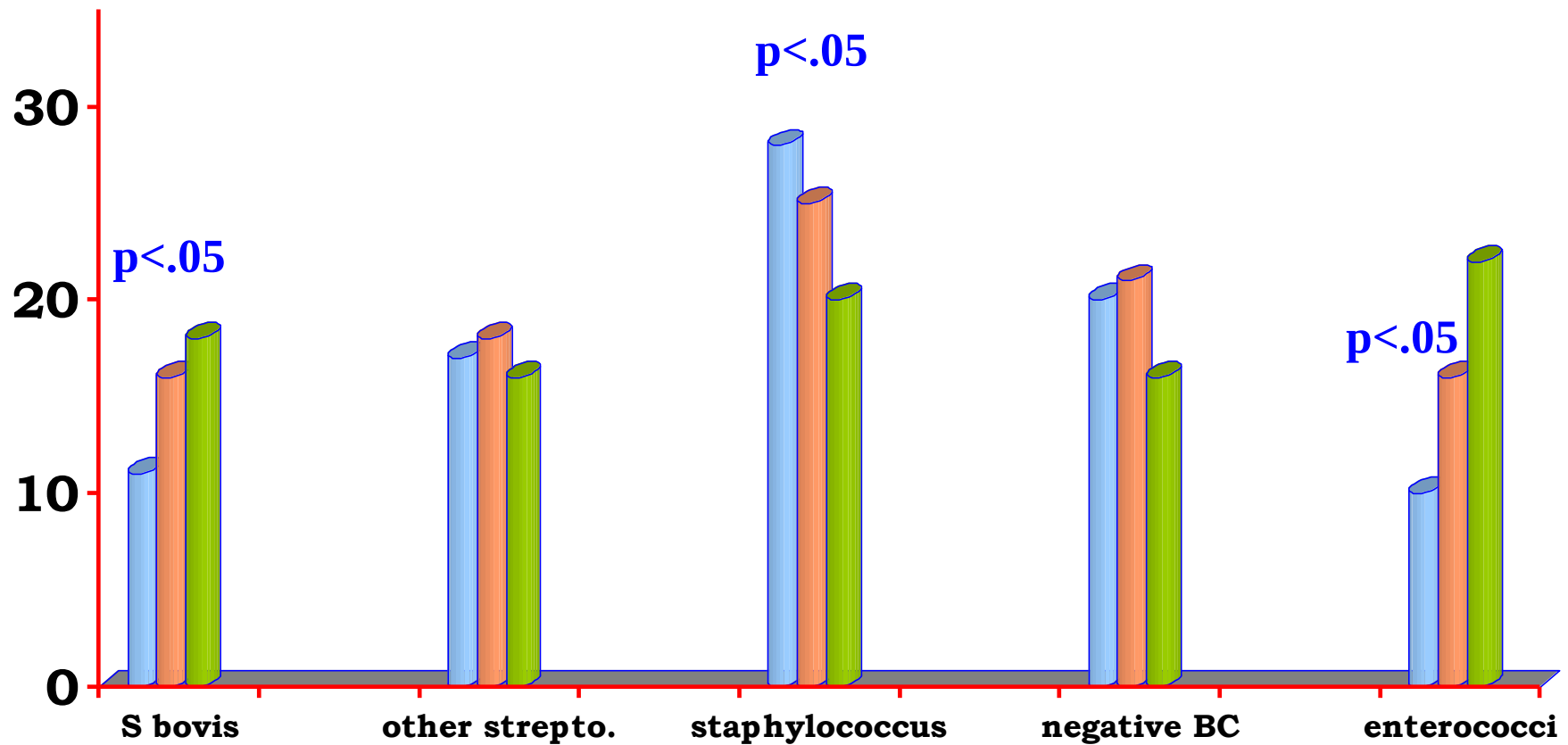
Endocarditis localization

■ <65 years ■ 65-80 years ■ >80 years



Microorganism involved

■ <65 years ■ 65-80 years ■ >80 years



Enterococcal endocarditis

Mc Donald JR – Am J Med 2005 ; 118 : 759-66

Table 1 Demographic characteristics and comorbid conditions of patients with left-sided native valve endocarditis due to enterococcus compared to non-enterococcus

Characteristic	Enterococcus (n = 107)	Non-enterococcus (n = 1178)	P value
	Number (%) or Mean $\pm$ SD		
Age (years)	66.4 $\pm$ 13.5	58.2 $\pm$ 16.5	<0.0001
Sex (men)	78 (73)	794 (67)	0.24
Community acquired	46 (74)	609 (84)	0.05
Nosocomial	9 (15)	64 (9)	0.11
Chronic catheter	2 (4)	43 (8)	0.28
Cancer	13 (21)	53 (8)	0.0005
Diabetes	11 (18)	87 (13)	0.27
Chronic dialysis	4 (7)	35 (5)	0.66
Other chronic illness	12 (24)	143 (27)	0.57
Congenital heart disease	3 (4)	119 (15)	0.02
Mitral valve prolapse	1 (2)	63 (9)	0.05

Endocarditis in the elderly

1. **predisposing conditions and portal of entry**
2. ***clinical and laboratory features***
3. **echocardiographic data**
4. **prognosis and treatment**

Clinical manifestations

- blunted febrile response
- atypical presentations
(*Terpening AJM 1987*)
 - *Fatigue, anorexia, weight loss*
 - *Neurologic symptoms*
 - *Rheumatologic complaints*
- delayed diagnosis +++ (*Zamorano JASE 2002*)
- less frequent embolisms ? (*Selton-Suty Heart 1997*)

Clinical and laboratory data

	< 65 y n = 230	65-80 y n = 173	> 80 y n = 51	p
Fever	80 %	78 %	80 %	ns
New/changing murmur	67 %	59 %	58 %	ns
NYHA III-IV	42 %	45 %	50 %	ns
Hb	11	10	11	ns
Spondylitis	5 %	12 %	23 %	< 0.001
New embolic events	9 %	15 %	21 %	0.03
Renal clearance	88	60	43	< 0.001
Atrial fibrillation	8%	35%	43%	< 0.001

Endocarditis in the elderly

1. **predisposing conditions and portal of entry**
2. **clinical and laboratory features**
3. ***echocardiographic data***
4. **prognosis and treatment**

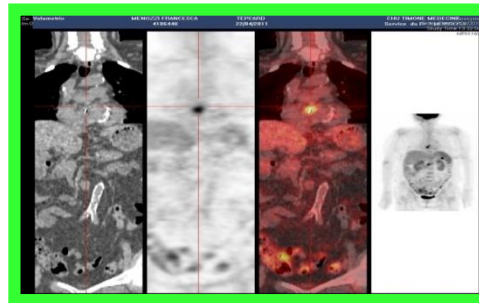
Echocardiographic features

	< 65 y n = 230	65-80 y n = 173	> 80 y n = 51	p
Vegetation	75%	78%	78%	ns
Abscess	17%	23%	20%	ns
New prosthetic regurg.	8 (7%)	6 (4%)	2 (3%)	ns
Severe valve regurg.	53 (50%)	57 (43%)	32 (42%)	ns
Valvular perforation	42%	28%	35%	0.02

Multimodality imaging in IE

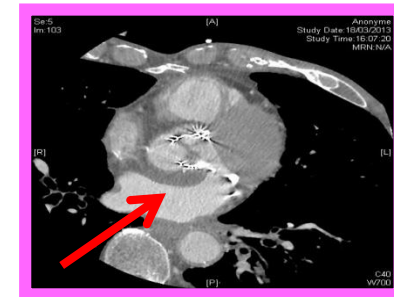


TEE Morphology



PET CT

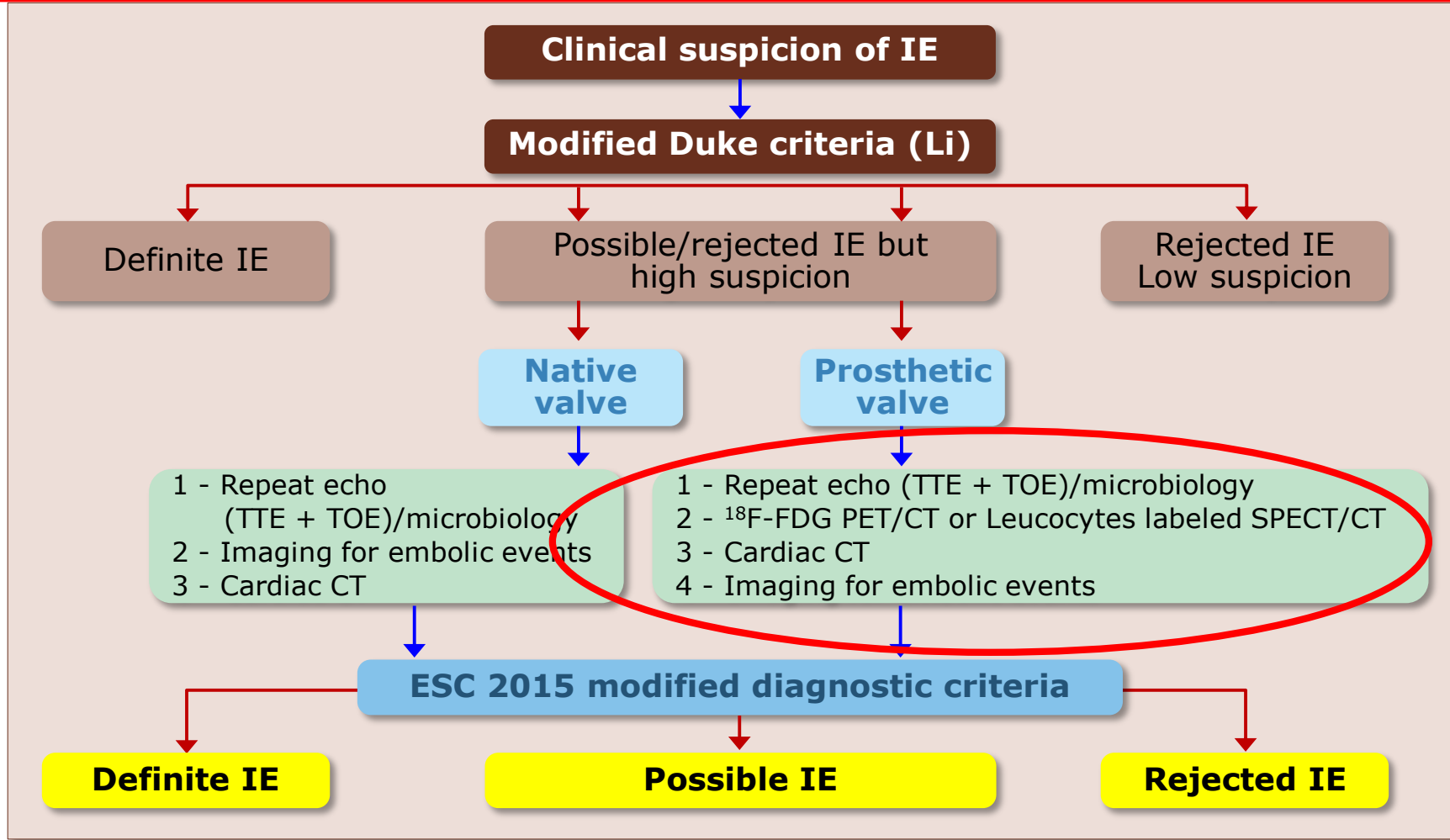
Inflammation / infection



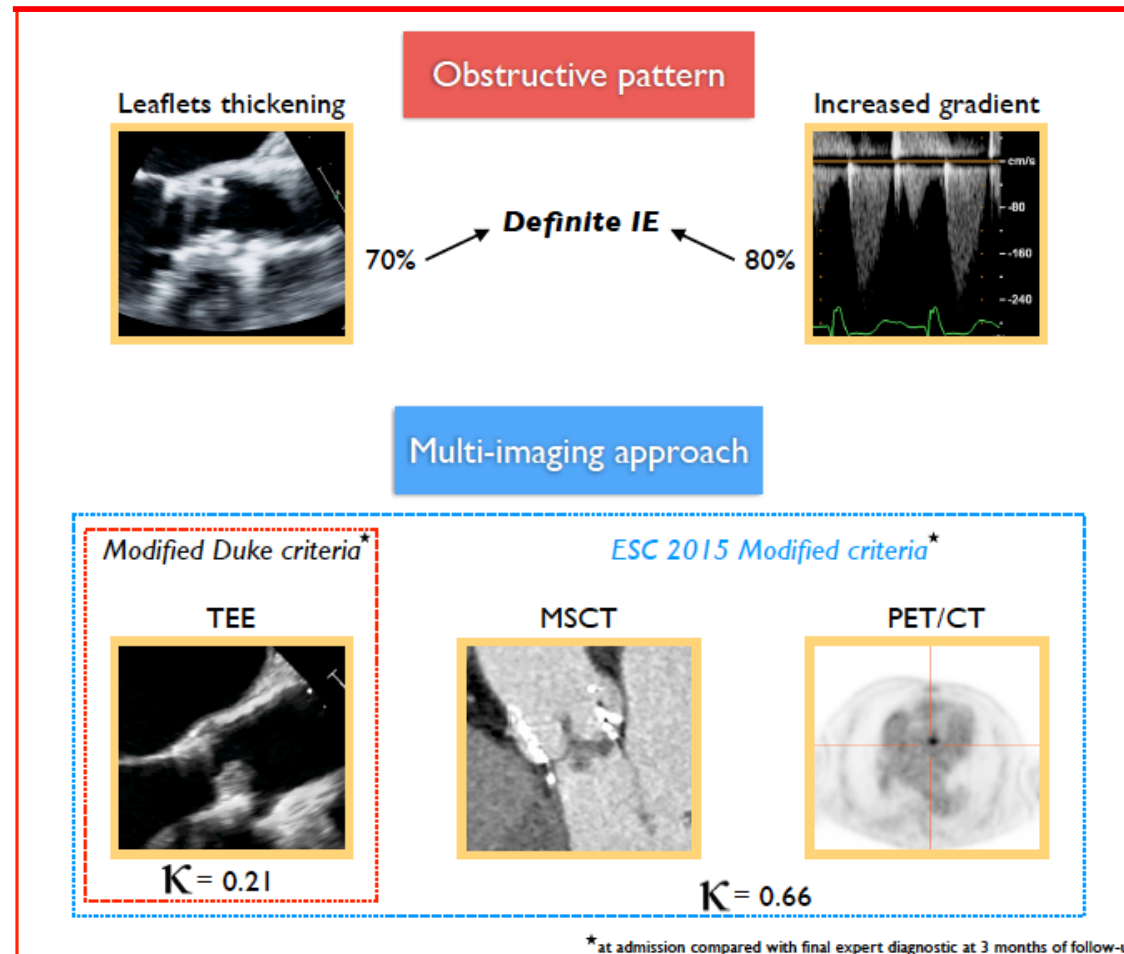
Cardiac CT

Perivalvular lesions

ESC 2015 algorithm for diagnosis of IE



TAVI endocarditis



Endocarditis in the elderly

1. **predisposing conditions and portal of entry**
2. **clinical and laboratory features**
3. **echocardiographic data**
4. ***prognosis and treatment***

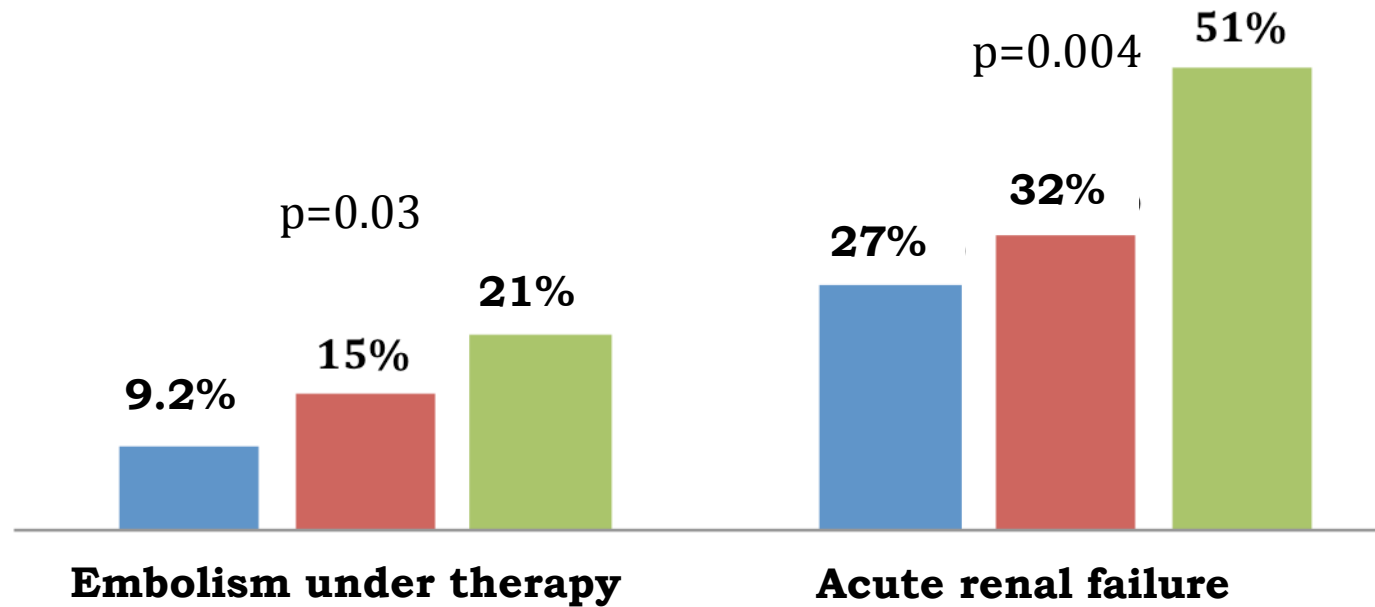
Prognosis and therapeutic options

- antibiotic nephrotoxicity
- less frequent surgery ? (*Selton-Suty Heart 1997*)
- increased surgical risk ? (*Netzer CID 1998*)
- worse prognosis ? (*Terpening AJM 1987*)

Influence of age on outcome ?

Morbidity

■ <65 years ■ 65-80 years ■ >80 years



Predictors of 1-year mortality

F Thuny – Circulation 2005 : 112:69-75

- ✦ 384 patients (Marseille, Paris, Rouen, Napoli)
- ✦ factors associated with 1-year mortality

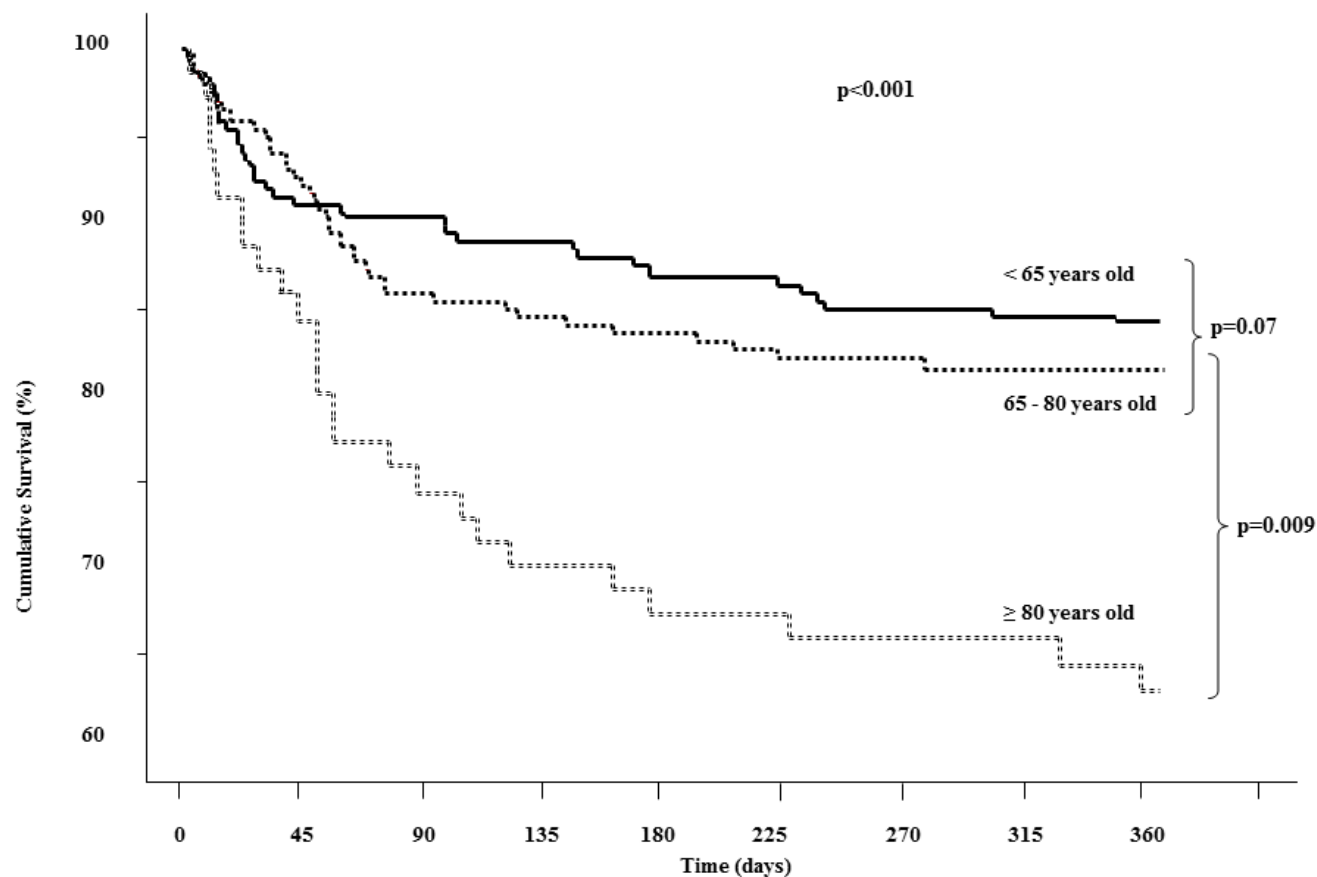
1-year – mortality = 20.6 %

	Adjusted RR	95% CI	P
Age	1.02	1.01–1.04	0.007
Female sex	1.6	1.01–2.58	0.048
Comorbidity index >2	1.6	0.92–2.64	0.1
Serum creatinine >2 mg/L	1.9	1.16–3.23	0.01
Prosthetic valve	1.6	0.99–2.68	0.053
<i>S aureus</i> IE	2	1.19–3.24	0.001
Moderate or severe CHF	1.6	1.02–1.54	0.04
Vegetation length >15 mm	1.8	1.10–2.82	0.02

Mortality in elderly patients with IE ?

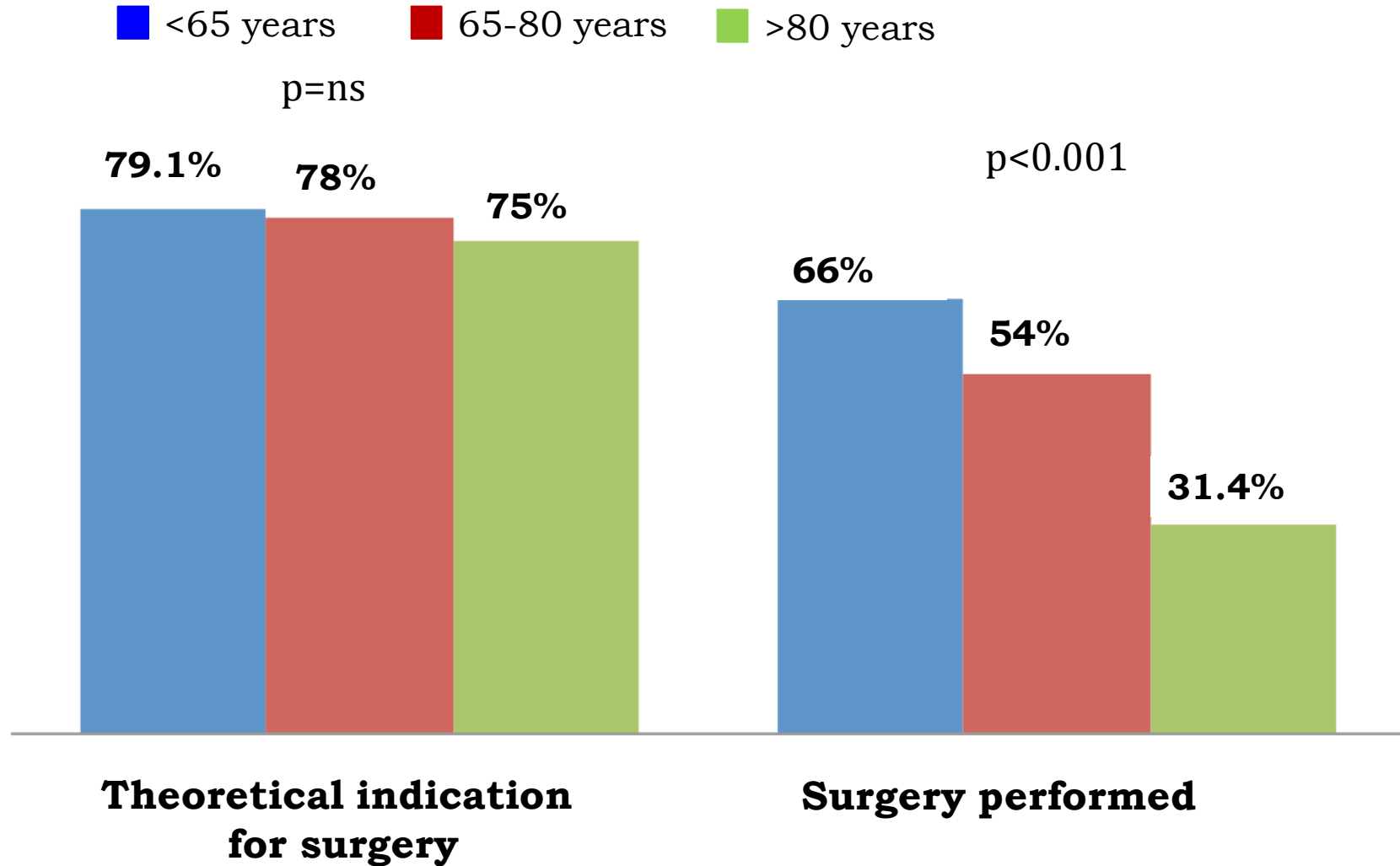
Author	total (n)	age (y)	elderly (n)	surgery (%)	in-hospital mortality (%)	long-term mortality
Selton-Suty	114	>70	25	24	28	
Netzer	135	>70	20	65	25	
DiSalvo	250	>70	87	41	17	
Remadi	348	>75	72	29	16	48
Lopez-Wolf	582	>80	34	17	20	
Oliver	454	>80	51	31	16	37

Long-term survival

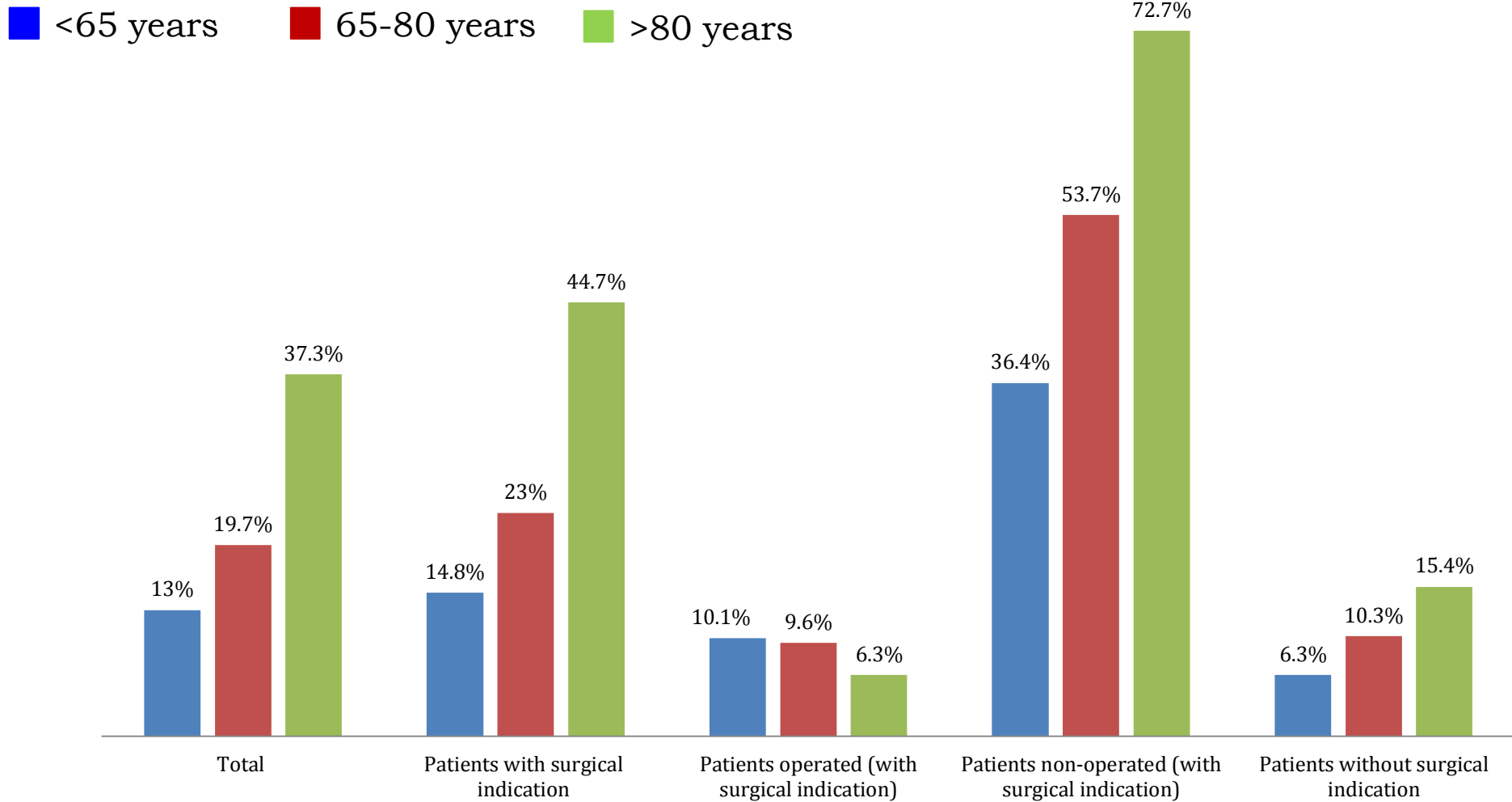


	Time (days)				
	0	90	180	270	365
< 65 years old	230	196	185	176	173
75-80 years old	173	142	137	133	130
≥ 80 years old	51	38	35	34	31

Surgical treatment

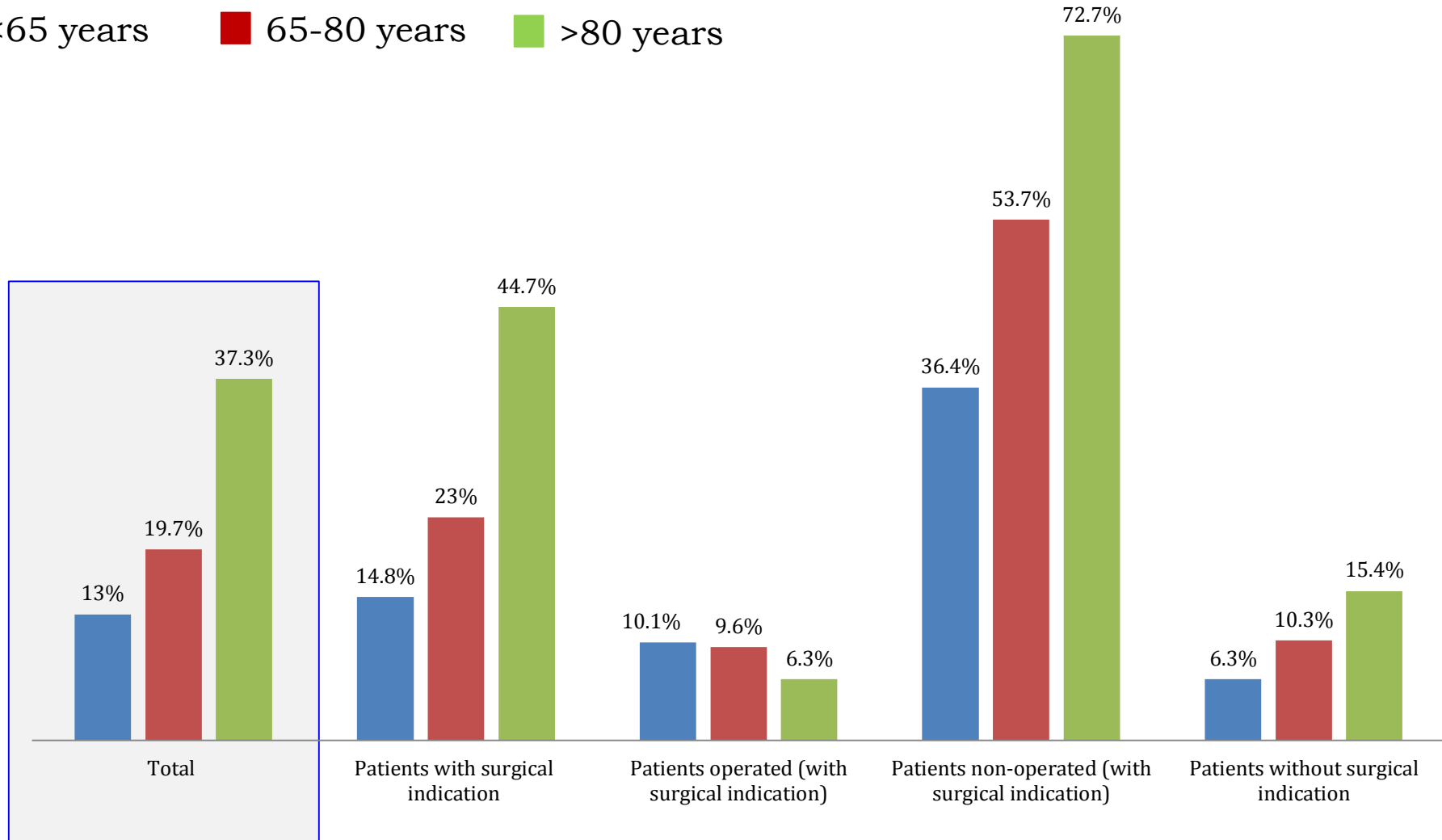


Mortality in octogenarians

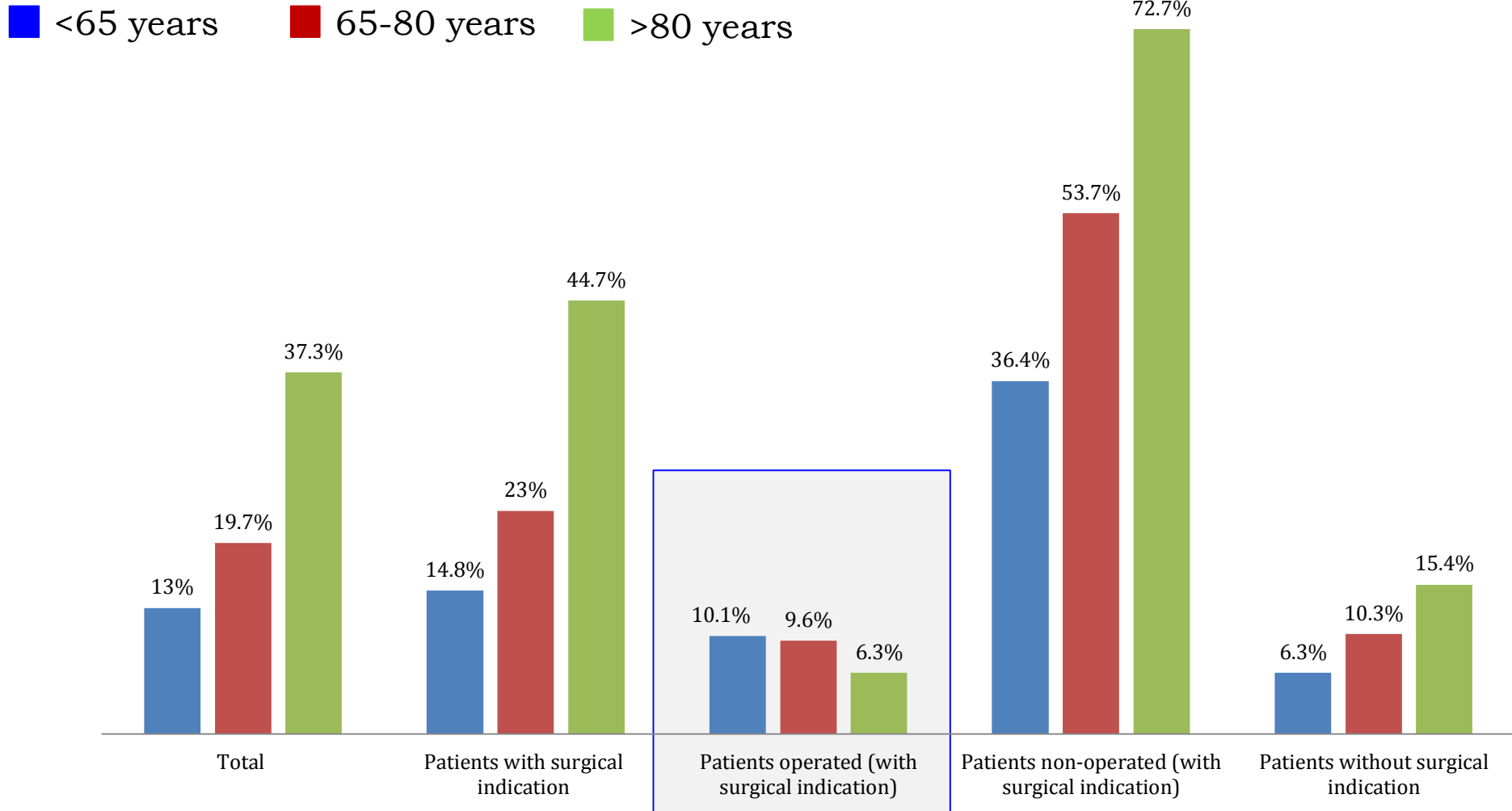


Mortality in octogenarians

■ <65 years ■ 65-80 years ■ >80 years

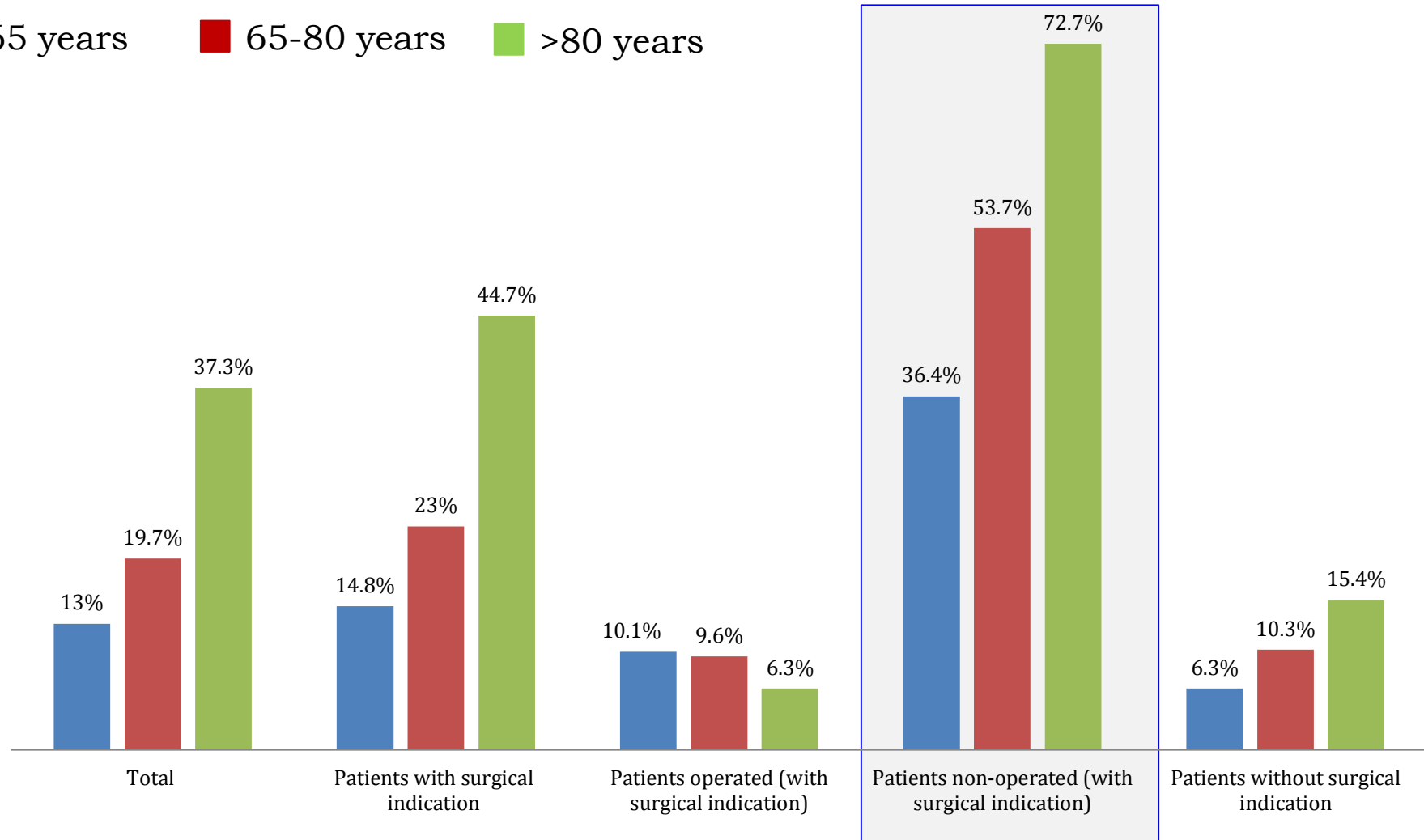


Mortality in octogenarians



Mortality in octogenarians

■ <65 years ■ 65-80 years ■ >80 years



Definite IE among > 80 year-old patients (n= 51)

**Indication for surgery
according to ESC guidelines
n= 38**

Surgery performed
n=16 (42.1%)

Mortality
n=1 (6.3%)

Surgery not performed
n=22 (57.9%)

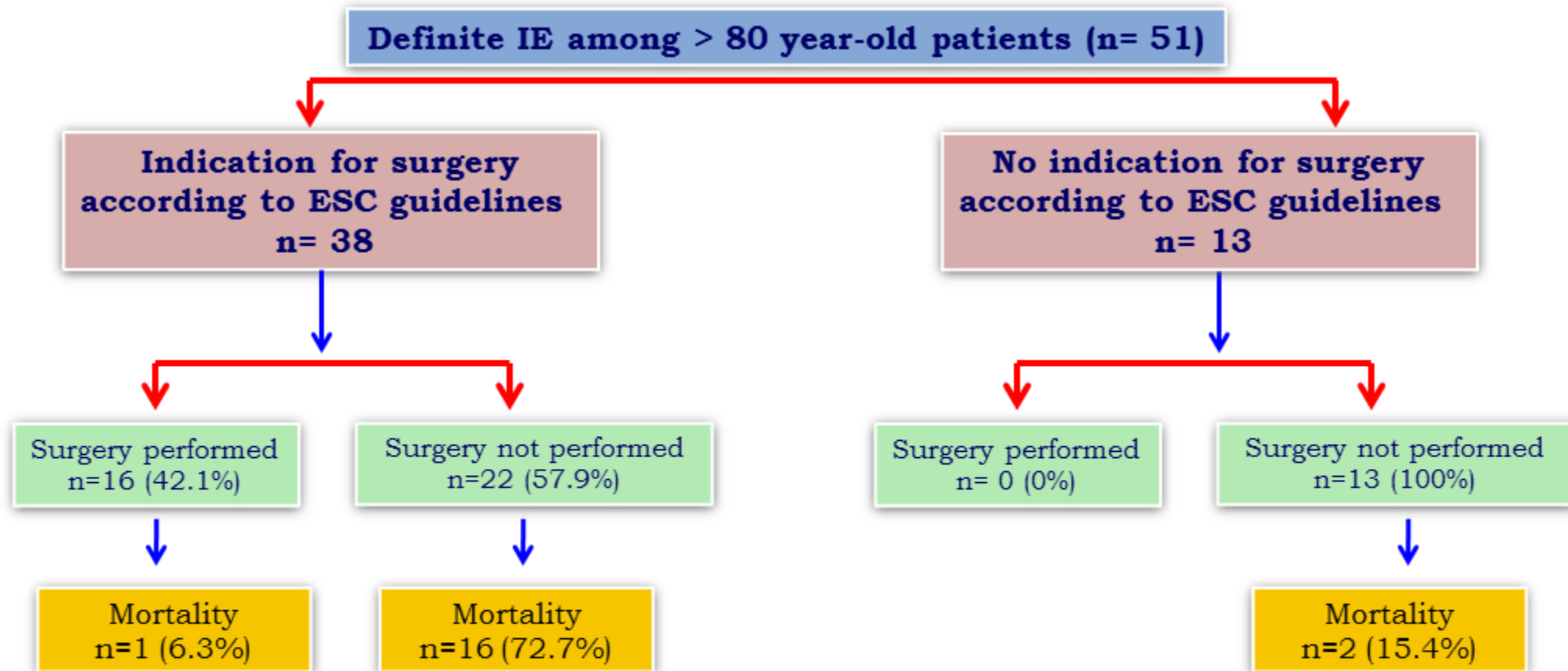
Mortality
n=16 (72.7%)

**No indication for surgery
according to ESC guidelines
n= 13**

Surgery performed
n= 0 (0%)

Surgery not performed
n=13 (100%)

Mortality
n=2 (15.4%)



Conclusions

1. IE in elderly carries specific clinical and prognostic features
2. Higher incidence of pacemaker infection, spondylitis, and digestive or urinary portal of entry
3. Enterococcus is the most frequent microorganism
4. Implementation of ESC guidelines is poor and surgery is underused
5. Octogenarians who can be treated by surgical therapy present with a low mortality, similar to that of younger patients
6. TAVI endocarditis will probably be the most frequent cause of IE in octogenarians in the future