Current evidence-based treatment guidelines

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FACULTÉ DE MÉDECINE DE MARSEILLE

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2014
Update 2017

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PRACTICE GUIDELINE

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2015

AHA Scientific Statement

Infective Endocarditis in Adults: Diagnosis, Antimicrobial Therapy, and Management of Complications

A Scientific Statement for Healthcare Professionals From the American Heart Association

Endorsed by the Infectious Diseases Society of America

Larry M. Baddour, MD, FAHA, Chair; Walter R. Wilson, MD; Arnold S. Bayer, MD; Vance G. Fowler, Jr, MD, MHS; Imad M. Tleyjeh, MD, MSc; Michael J. Rybak, PharmD, MPH; Bruno Barsic, MD, PhD; Peter B. Lockhart, DDS; Michael H. Gewitz, MD, FAHA; Matthew E. Levison, MD; Ann F. Bolger, MD, FAHA; James M. Steckelberg, MD; Robert S. Baltimore, MD; Anne M. Fink, PhD, RN; Patrick O'Gara, MD, FAHA; Kathryn A. Taubert, PhD, FAHA; on behalf of the American Heart Association Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease of the Council on Cardiovascular Disease in the Young, Council on Clinical Cardiology, Council on Cardiovascular Surgery and Anesthesia, and Stroke Council

2015

European Heart Journal
doi:10.1093/eurheartj/ehv319

ESC GUIDELINES

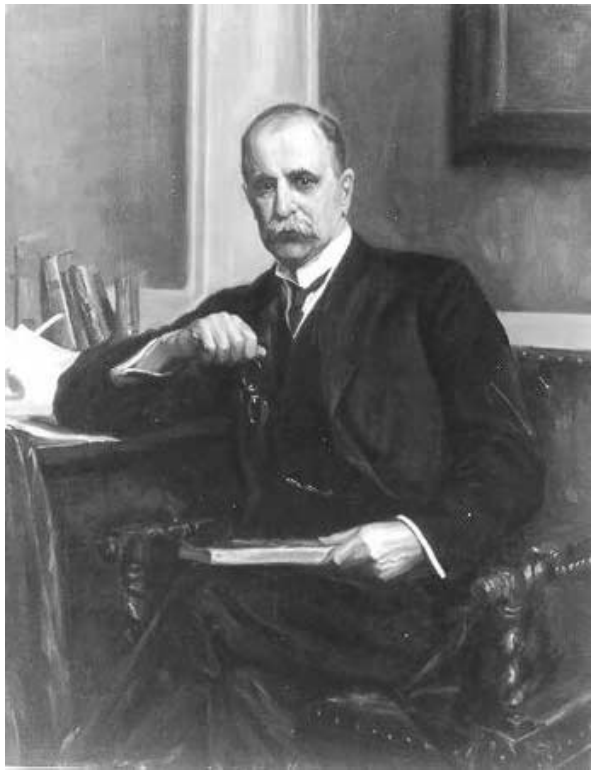
2015 ESC Guidelines for the management of infective endocarditis

The Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC)

Endorsed by: European Association for Cardio-Thoracic Surgery (EACTS), the European Association of Nuclear Medicine (EANM)

Endocarditis: a changing disease

- **new high-risk subgroups**
  - *IVDA*
  - *elderly*
  - *intracardiac devices*
  - *nosocomial diseases*
  - *hemodialysis*
  - *congenital heart disease*



- **new imaging techniques**

- **new therapeutic strategies**

Treatment guidelines

1. The “Endocarditis Team”
2. When to operate?
3. Specific situations
4. The EURO-ENDO registry

Treatment guidelines

1. ***The "Endocarditis Team"***
2. When to operate?
3. Specific situations
4. The EURO-ENDO registry

The multidisciplinary endocarditis team

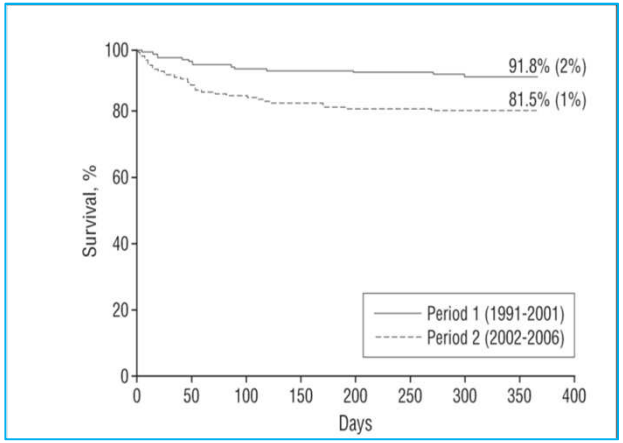
The multidisciplinary endocarditis team

Dramatic Reduction in Infective Endocarditis–Related Mortality With a Management-Based Approach

Elisabeth Botelho-Nevers, MD; Franck Thuny, MD; Jean Paul Casalta, MD; Hervé Richet, MD, PhD; Frédérique Gouriet, MD, PhD; Frédéric Collart, MD; Alberto Riberi, MD; Gilbert Habib, MD; Didier Raoult, MD, PhD

Bothelo-Nevers E . Arch Int Med 2009

The management of IE by a multidisciplinary medical-surgical team using a standardized protocol to treat IE was associated with a significant decrease in mortality



The « Endocarditis team »

Characteristics of the reference centre

1. Immediate access to diagnostic procedures should be possible, including TTE, TOE, multislice CT, MRI, and nuclear imaging.

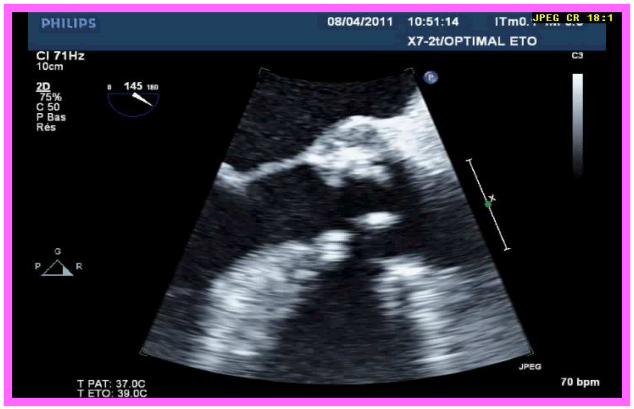
2. Immediate access to cardiac surgery should be possible during the early stage of the disease, particularly in case of complicated IE

3. Several specialists should be present on site (the “Endocarditis Team”), including at least cardiac surgeons, cardiologists, anaesthesiologists, ID specialists, microbiologists and, when available, specialists in valve diseases, CHD, pacemaker extraction, echocardiography and other cardiac imaging techniques, neurologists, and facilities for neurosurgery and interventional neuroradiology.

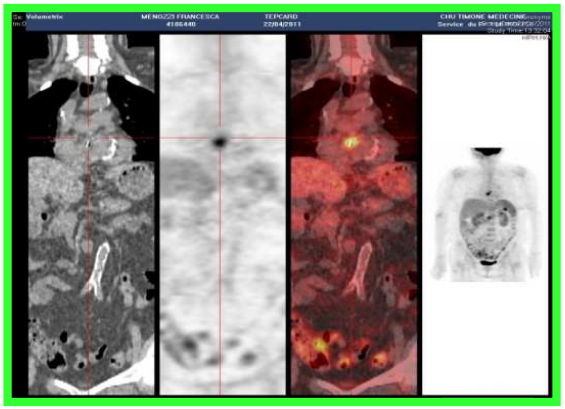
The « Endocarditis team »

Recommendations	Class	Level
Patients with complicated IE should be evaluated and managed at an early stage in a reference centre, with immediate surgical facilities and the presence of a multidisciplinary "Endocarditis Team", including an ID specialist, a microbiologist, a cardiologist, imaging specialists, a cardiac surgeon, and if needed a specialist in CHD.	IIa	B
For patients with non-complicated IE managed in a non-reference centre, early and regular communication with the reference centre and, when needed, with visit to the reference centre, should be made.	IIa	B

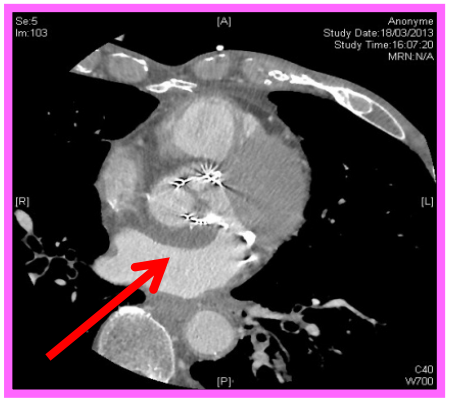
Multimodality imaging in IE



TOE
Morphology

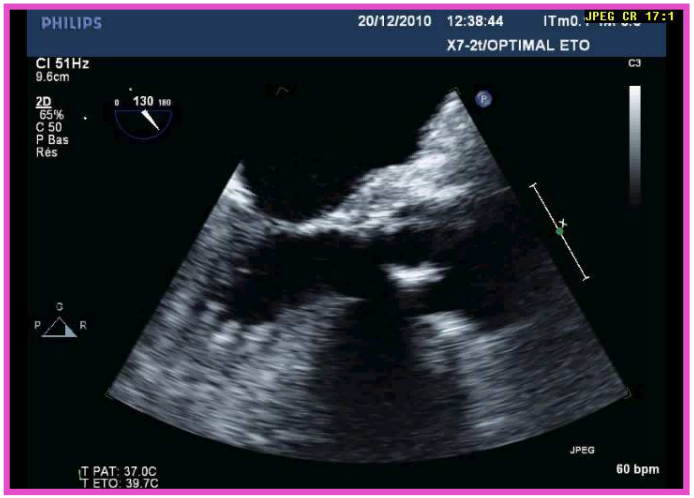


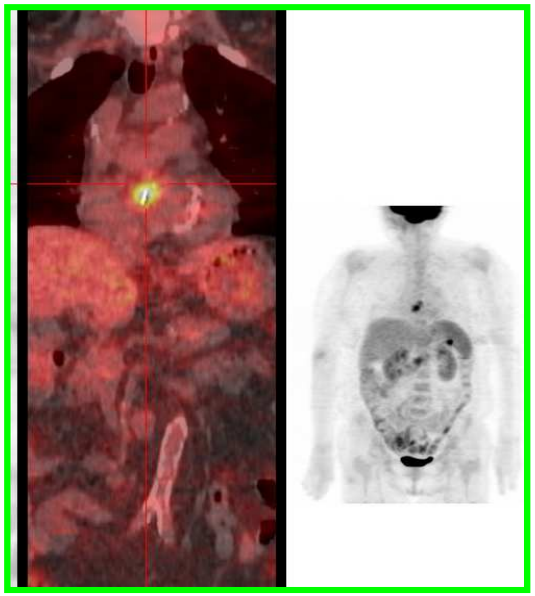
PET CT
Inflammation / infection

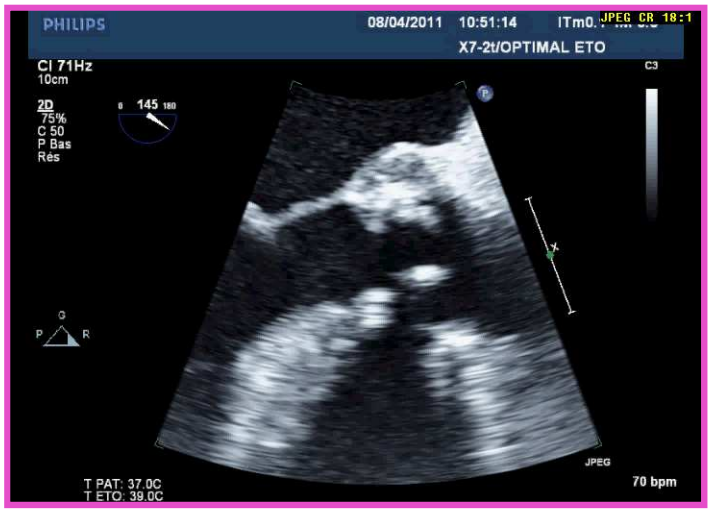


Cardiac CT
Perivalvular lesions

^{18}FDG-PET-CT in endocarditis







First TOE

^{18}FDG-PET-CT

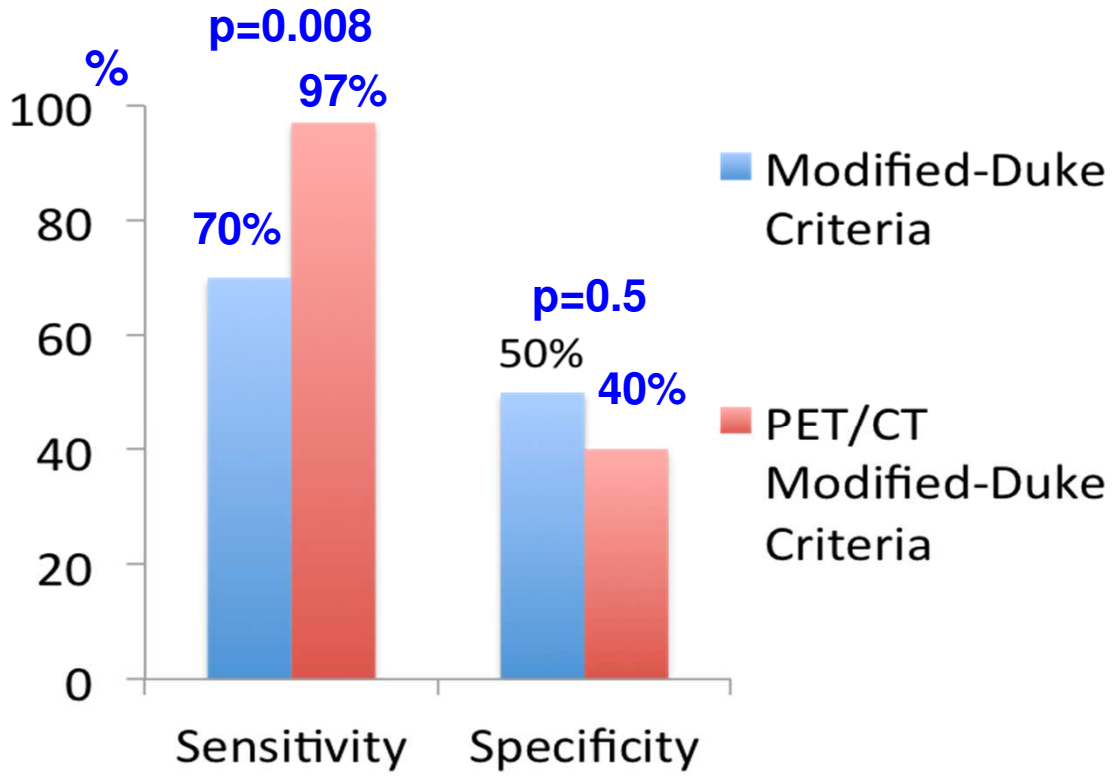
Follow-up TOE

EUROPEAN SOCIETY OF CARDIOLOGY®

^{18}FDG-PET-CT in endocarditis

Saby L, Thuny F, Habib G - J Am Coll Cardiol. 2013; 11;61:2374-82

PET/CT as a novel major criterion



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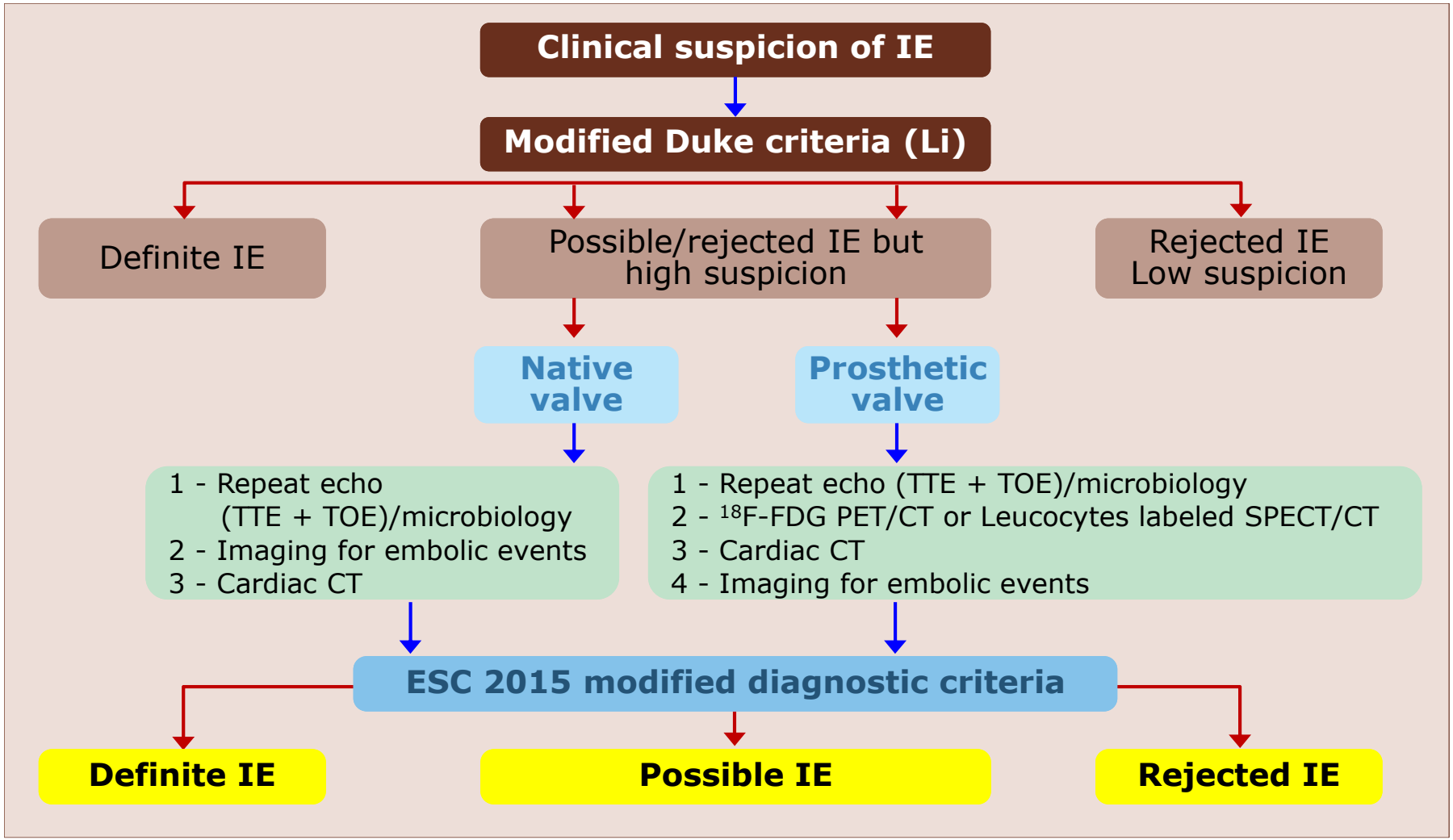
ESC 2015 algorithm for diagnosis of IE



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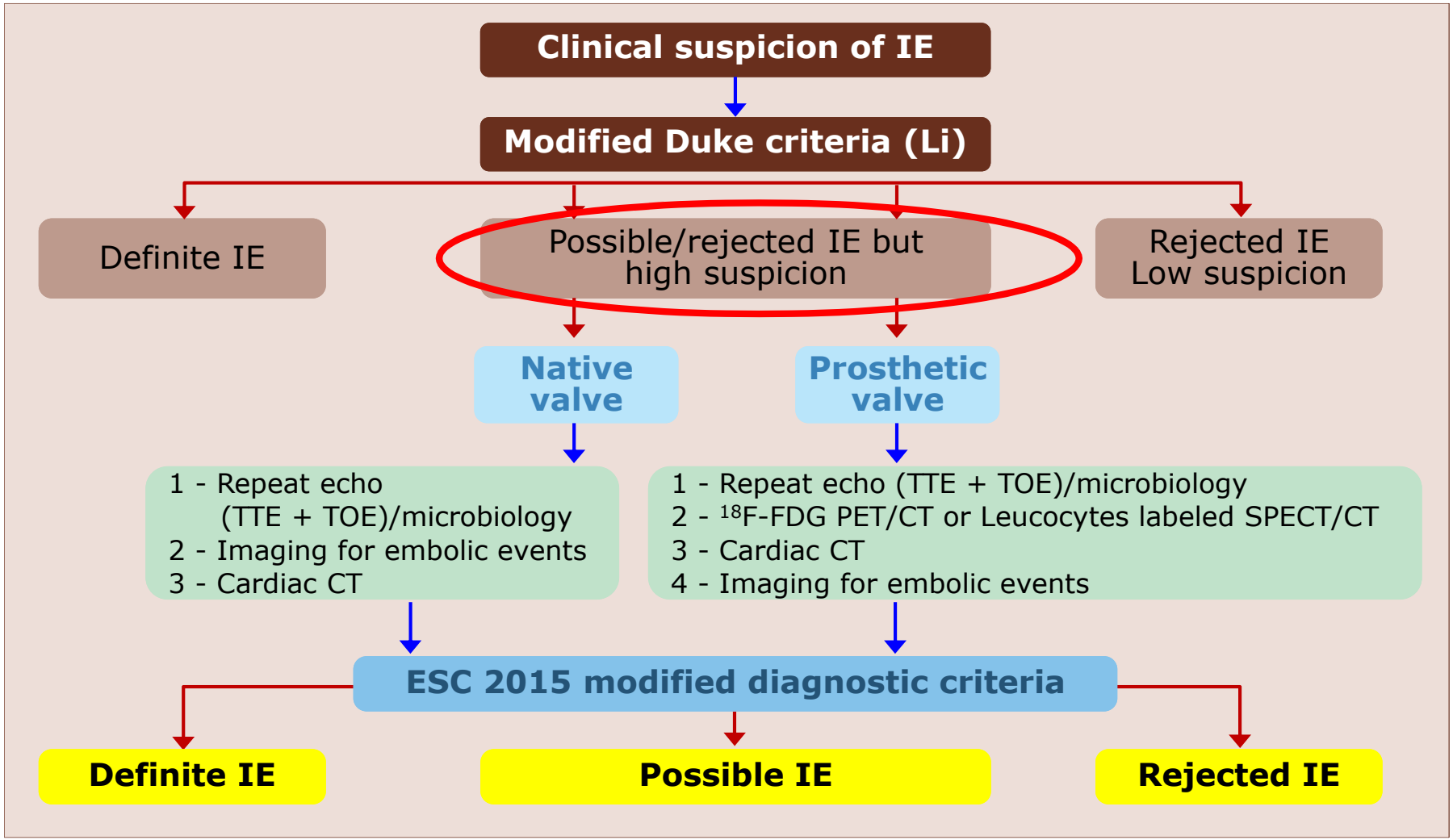

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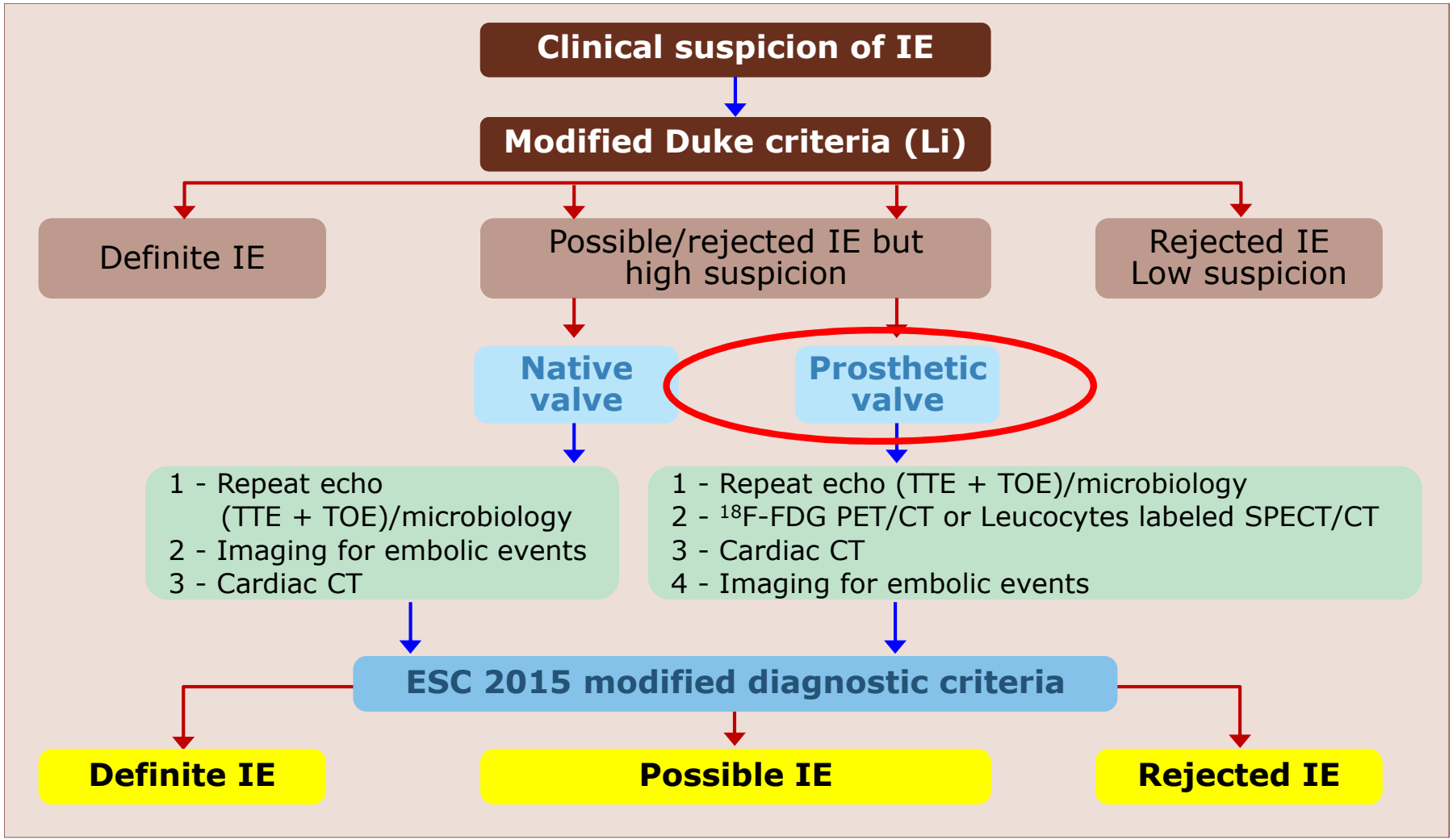
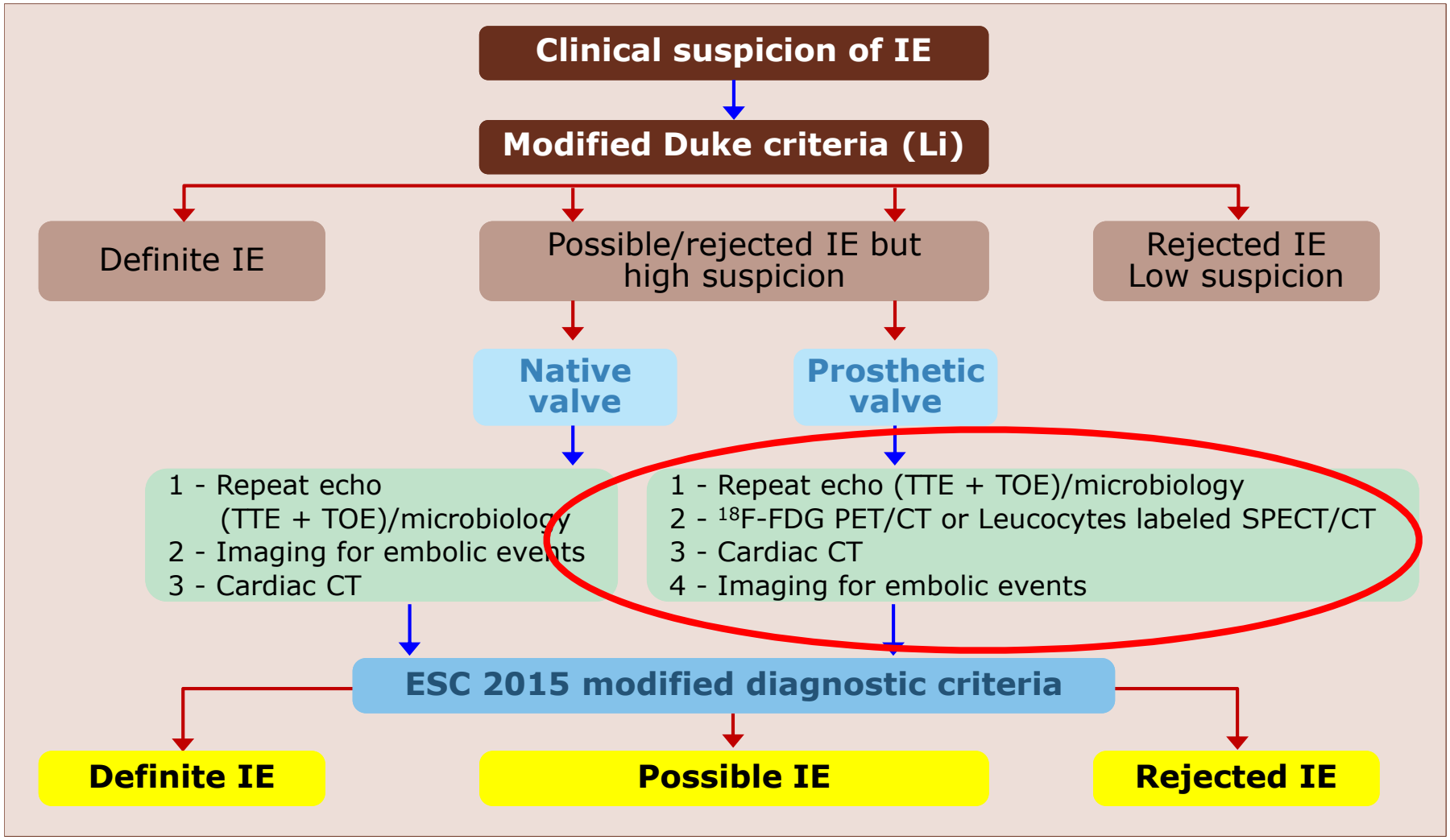
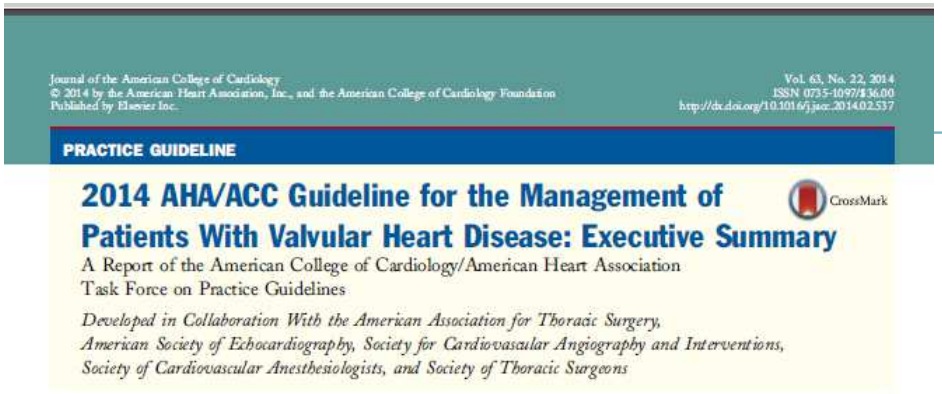


ESC 2015 algorithm for diagnosis of IE





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CLASS IIa

3. Cardiac CT is reasonable to evaluate morphology/anatomy in the setting of suspected paravalvular infections when the anatomy cannot be clearly delineated by echocardiography (678,699–701). *(Level of Evidence: B)*

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More study is needed to define the utility of ^{18}F-fluorodeoxyglucose positron emission tomography/CT in the diagnosis and management of IE.

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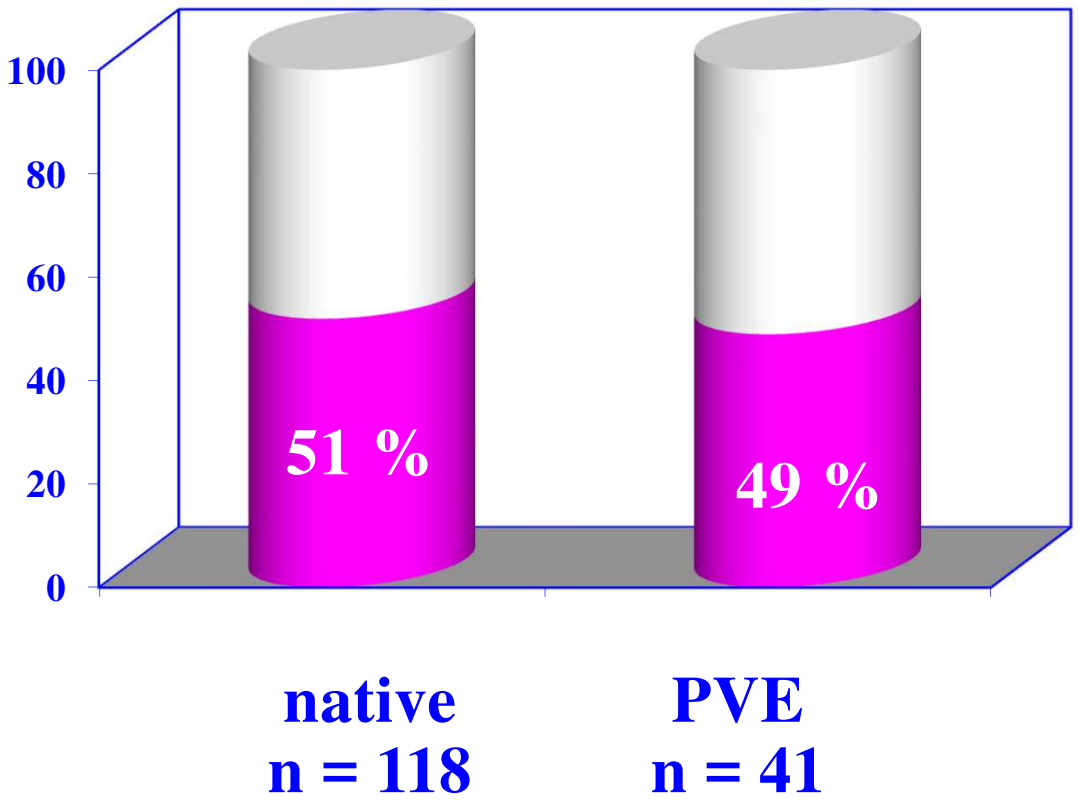
Treatment guidelines

1. The “Endocarditis Team”
2. ***When to operate?***
3. Specific situations
4. The EURO-ENDO registry

Surgery in IE : Euro Heart Survey

Tornos P – Heart 2005 ; 91 : 571-5



Surgery performed

Medical therapy only

Reasons for surgery

- *CHF: 65%*
- *persistent sepsis: 45%*
- *embolism: 20%*

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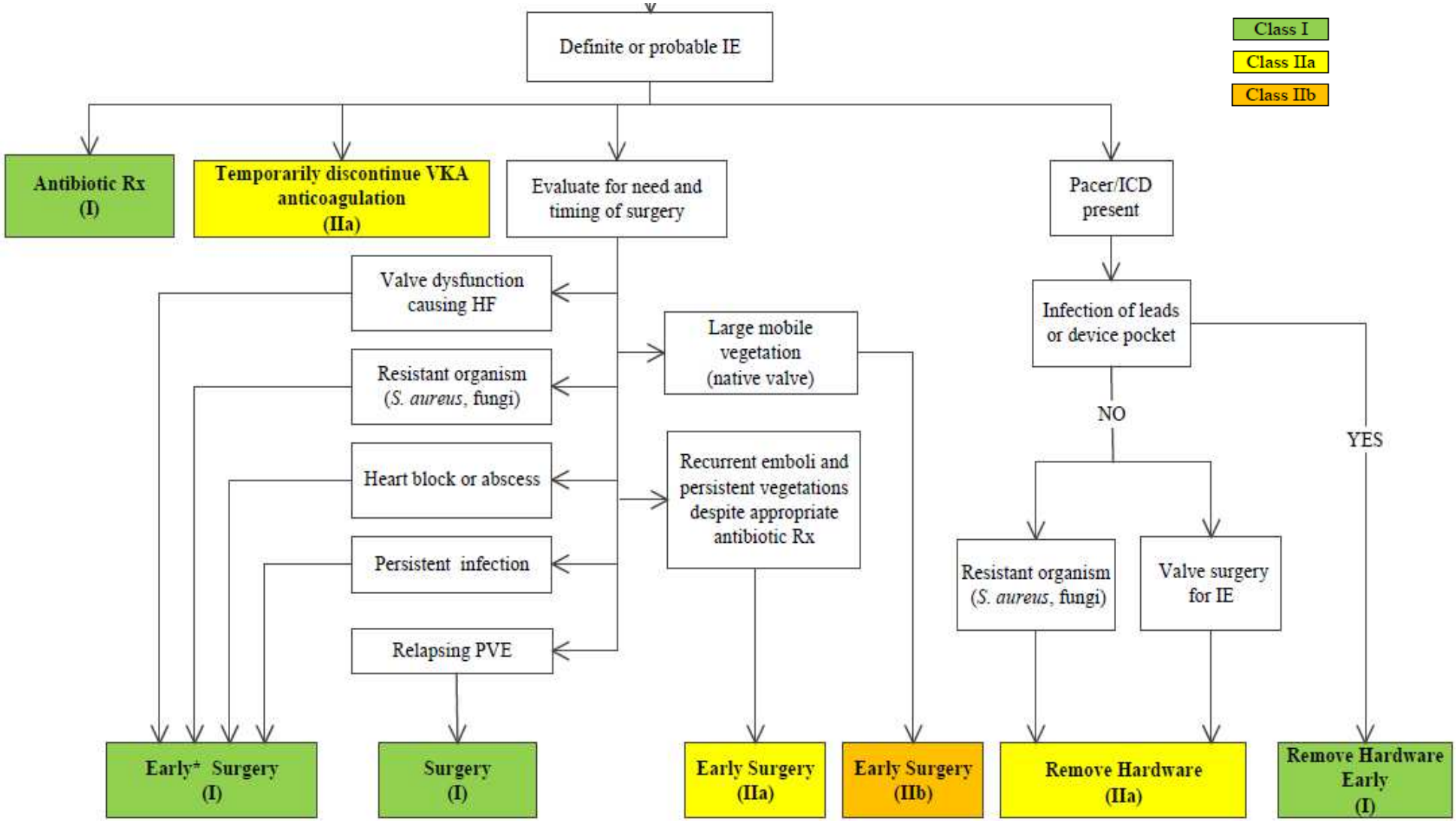
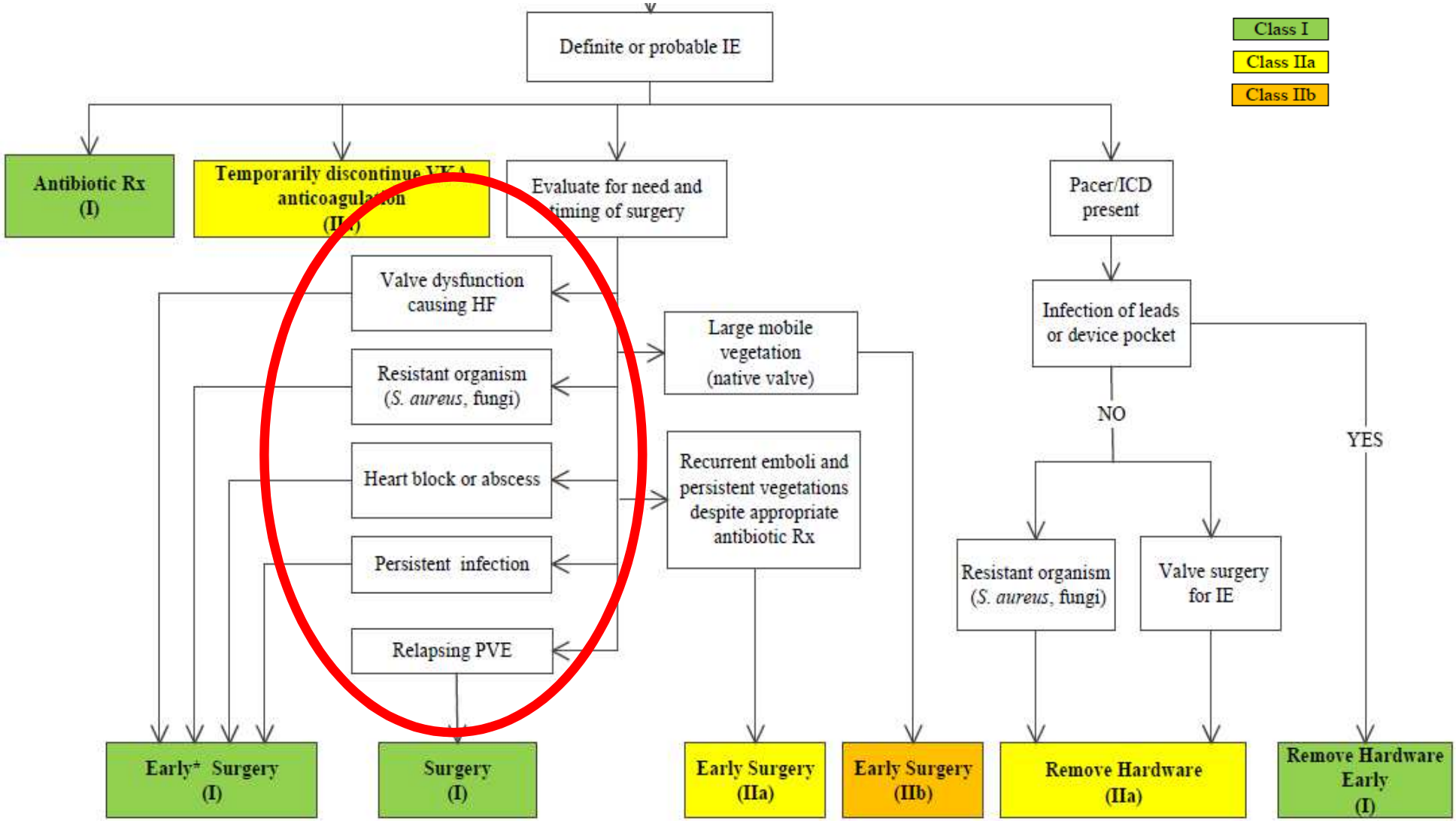
Indications and timing of surgery / ESC 2015

Indications for surgery	Timing	Class	Level
1. Heart Failure			
Aortic or mitral NVE or PVE with severe acute regurgitation, obstruction or fistula causing refractory pulmonary oedema or cardiogenic shock.	Emergency	I	B
Aortic or mitral NVE or PVE with severe regurgitation or obstruction causing symptoms of HF or echocardiographic signs of poor haemodynamic tolerance.	Urgent	I	B
2. Uncontrolled infection			
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation).	Urgent	I	B
Infection caused by fungi or multiresistant organisms.	Urgent/elective	I	C
Persisting positive blood cultures despite appropriate antibiotic therapy and adequate control of septic metastatic foci.	Urgent	IIa	B
PVE caused by staphylococci or non-HACEK Gram negative bacteria.	Urgent/elective	IIa	C
3. Prevention of embolism			
Aortic or mitral NVE or PVE with persistent vegetations >10 mm after one or more embolic episode despite appropriate antibiotic therapy.	Urgent	I	B
Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk.	Urgent	IIa	B
Aortic or mitral NVE or PVE with isolated very large vegetations (>30 mm).	Urgent	IIa	B
Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery.	Urgent	IIb	C

ACC – AHA guidelines 2014 update 2017 (valvular disease)



ACC – AHA guidelines 2014 update 2017 (valvular disease)



Indication 1: heart failure

Indications for surgery	Timing	Class	Level
1. Heart Failure			
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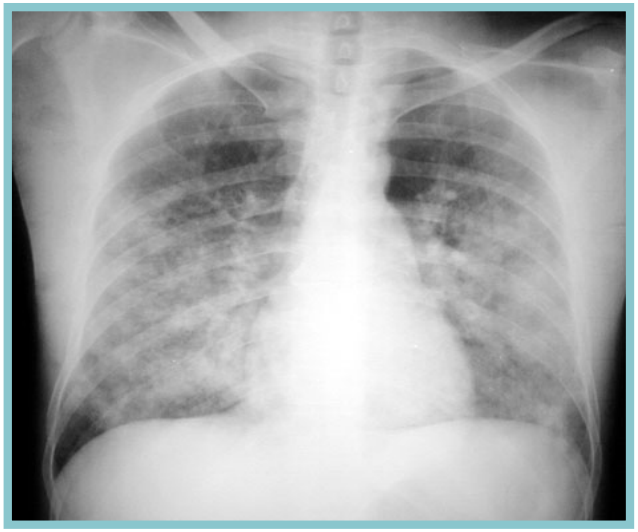
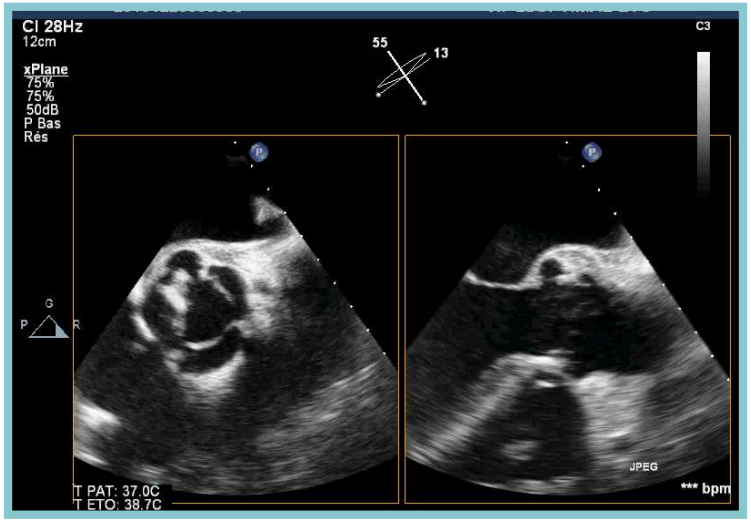
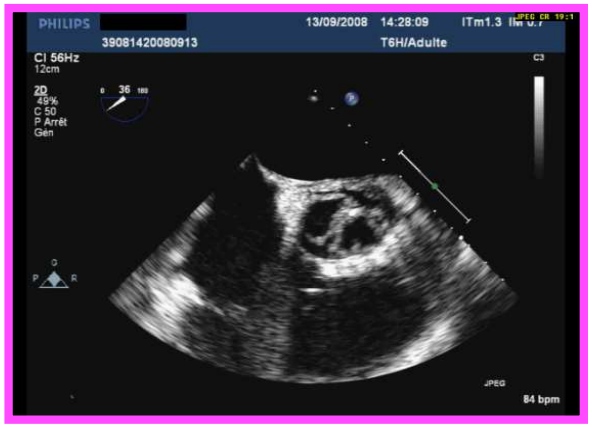
Aortic or mitral NVE or PVE with severe regurgitation or obstruction causing symptoms of HF or echocardiographic signs of poor haemodynamic tolerance.	Urgent	I	B

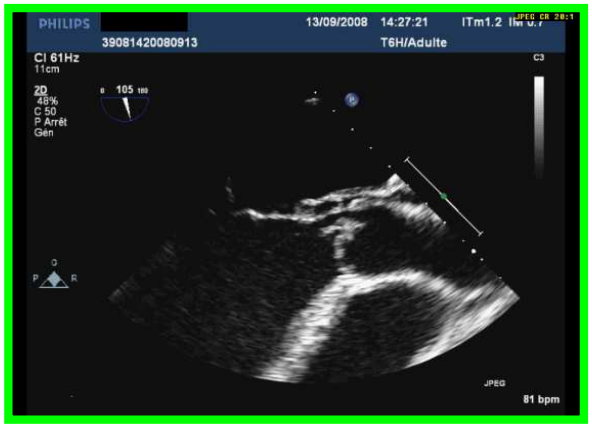


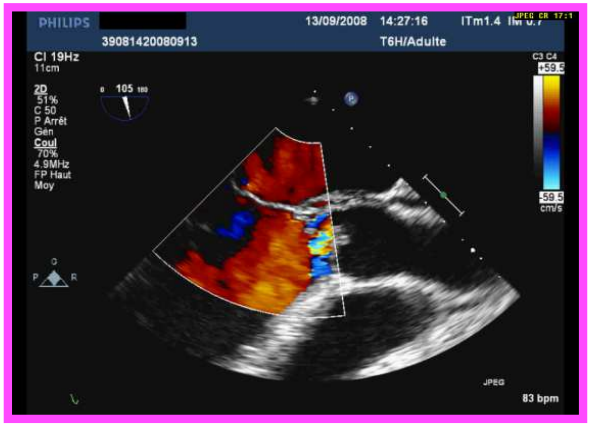


Indication 2: uncontrolled infection

Indications for surgery	Timing	Class	Level
2. Uncontrolled infection			
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation).	Urgent	I	B
Infection caused by fungi or multiresistant organisms.	Urgent/elective	I	C
Persisting positive blood cultures despite appropriate antibiotic therapy and adequate control of septic metastatic foci.	Urgent	IIa	B







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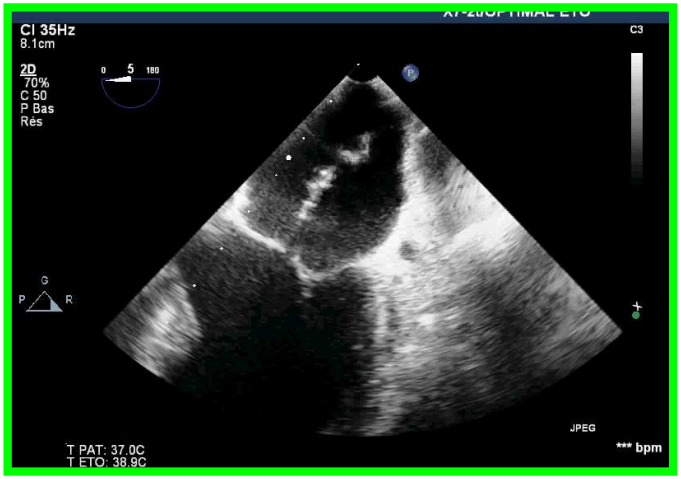
Indication 3: embolic events

Indications for surgery	Timing	Class	Level
3. Prevention of embolism			
Aortic or mitral NVE or PVE with persistent vegetations >10 mm after one or more embolic episode despite appropriate antibiotic therapy.	Urgent	I	B
Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk.	Urgent	IIa	B
Aortic or mitral NVE or PVE with isolated very large vegetations (>30 mm).	Urgent	IIa	B
Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery.	Urgent	IIb	C



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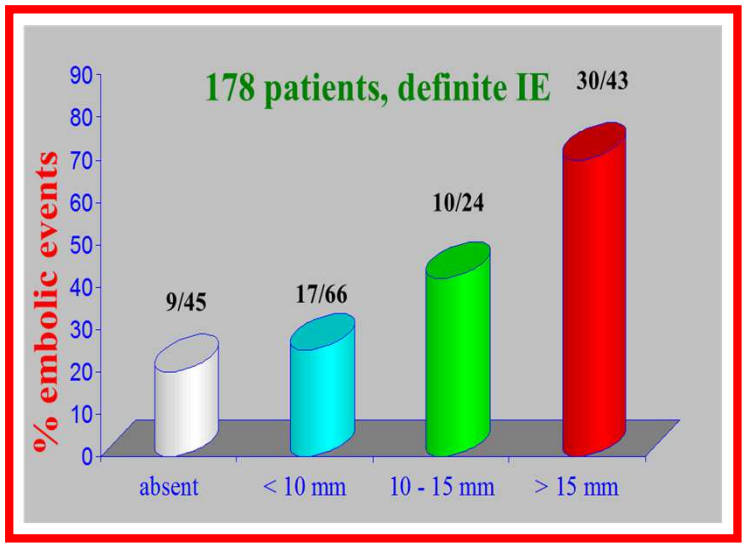
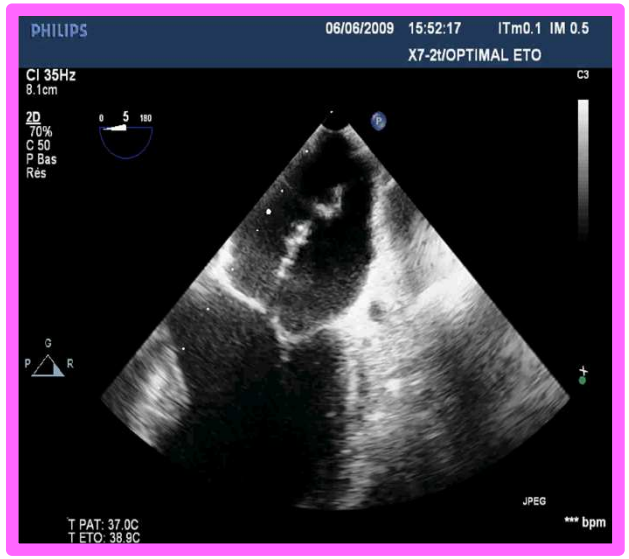
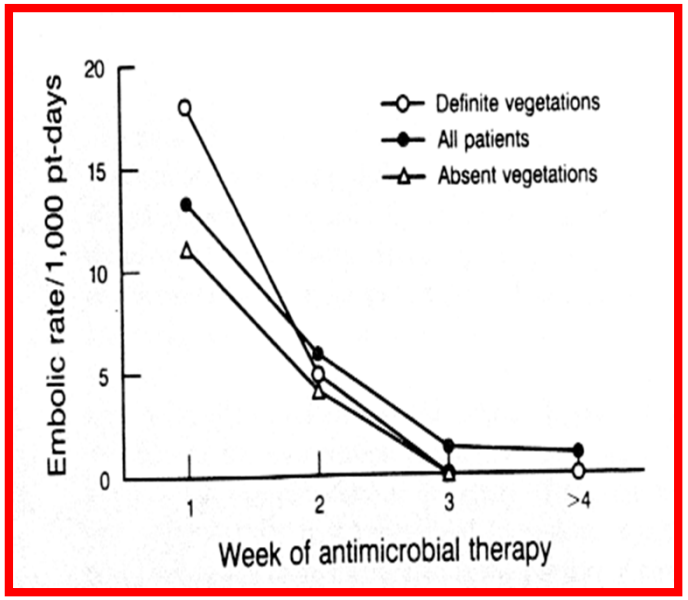
Embolic events in infective endocarditis

1. are frequent and severe
2. are related to the vegetation size
3. occur early in the course of IE



Di Salvo - JACC 2001





Steckelberg - Ann Int Med 1991

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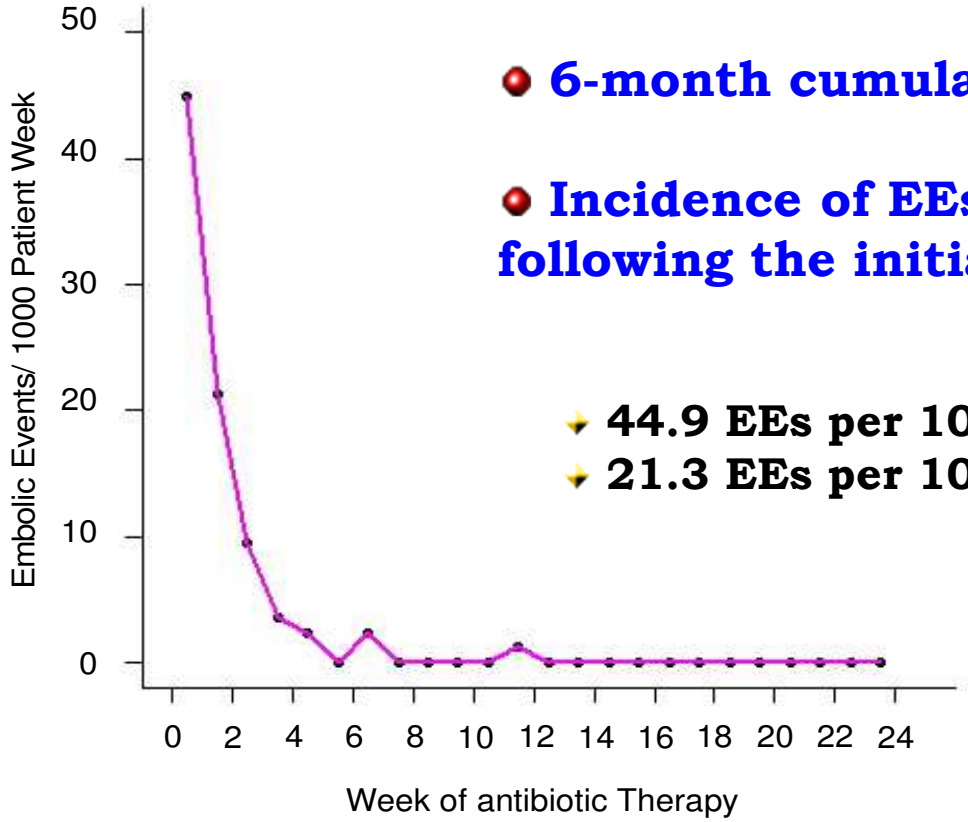
Risk of new embolism

Hubert S- J Am Coll Cardiol 2013;62:1384–92

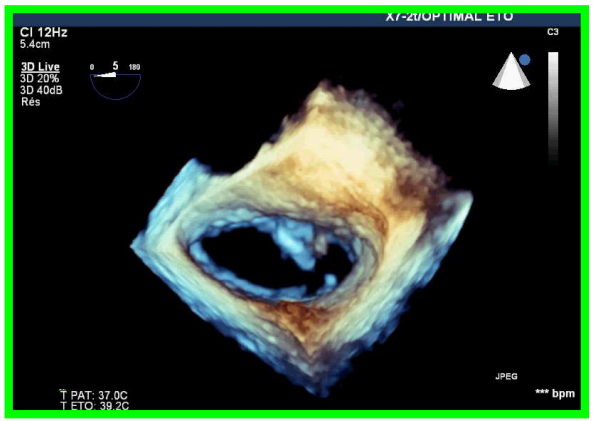


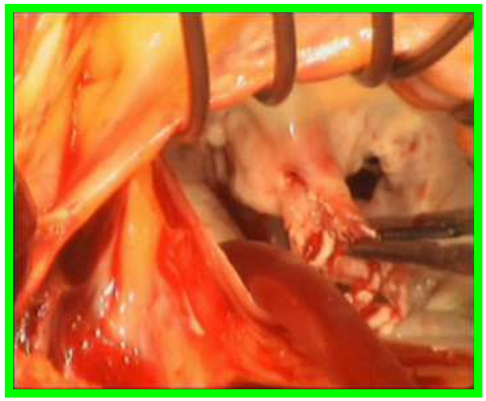
- **6-month cumulative incidence of new EEs: 8.5%**
- **Incidence of EEs highest during the first two weeks following the initiation of antibiotic therapy**
  - **44.9 EEs per 1000 patient-weeks the first week**
  - **21.3 EEs per 1000 patient-weeks the second week**

Indication 3: embolic events

Indications for surgery	Timing	Class	Level
3. Prevention of embolism			
Aortic or mitral NVE or PVE with persistent vegetations >10 mm after one or more embolic episode despite appropriate antibiotic therapy.	Urgent	I	B
Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk.	Urgent	IIa	B
Aortic or mitral NVE or PVE with isolated very large vegetations (>30 mm).	Urgent	IIa	B
Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery.	Urgent	IIb	C

Do not delay surgery !!!!





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Treatment guidelines

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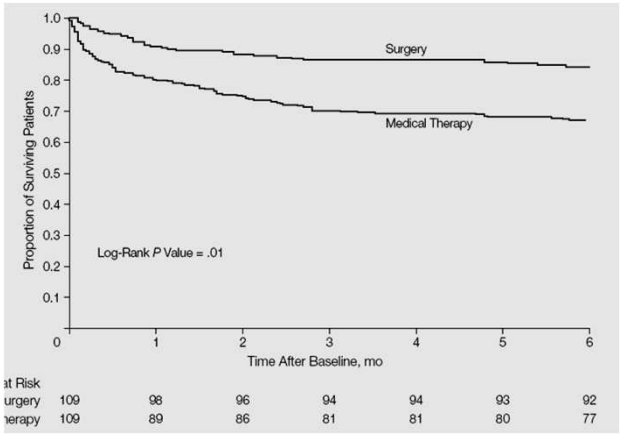
TAVI IE: The worst that can happen

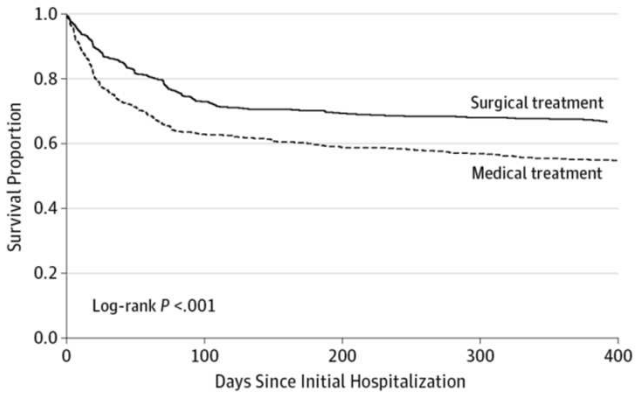
Vikram– JAMA 2003



513 patients

Native Valve IE

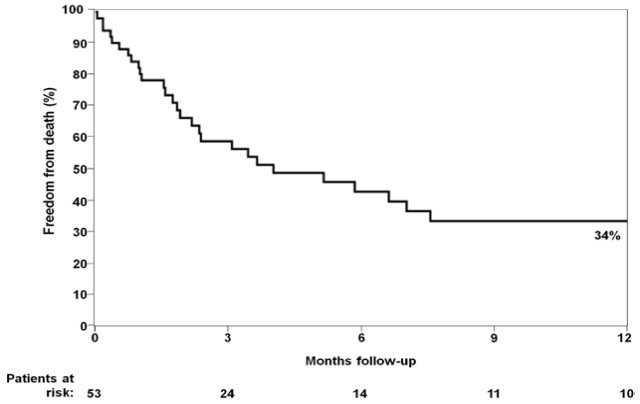
Lalani T– JAMA 2013



1025 patients

Prosthetic Valve IE

Amat-Santos IJ et al. Circulation 2015



53 patients

TAVI IE

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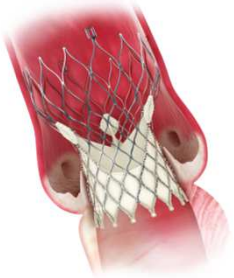


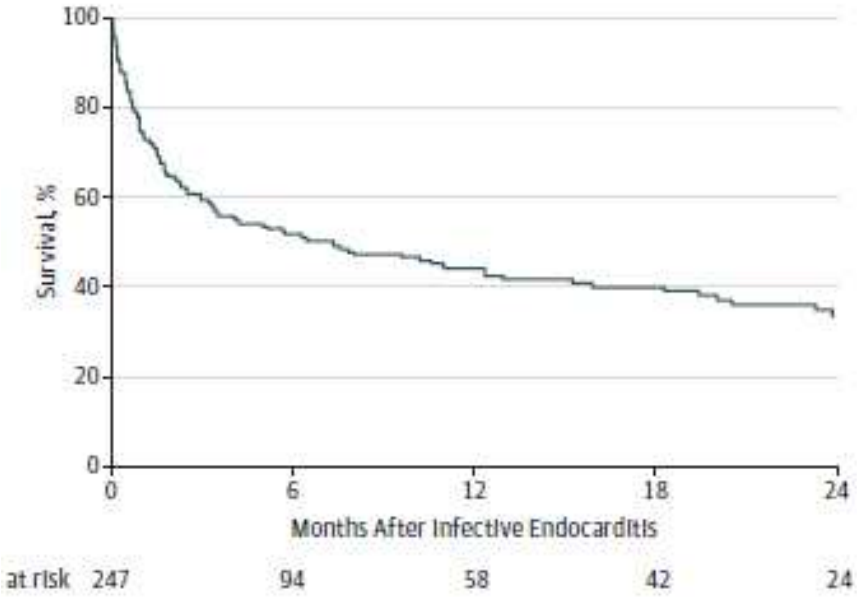
Research

Reguiero A – JAMA 2017

JAMA | Original Investigation

Association Between Transcatheter Aortic Valve Replacement and Subsequent Infective Endocarditis and In-Hospital Death

- 20006 patients between 2005-2015
- 250 IE
- incidence, 1.1%per person-year
- median age, 80 years; 64%men
- Enterococci species and Staphylococcus aureus the most frequent microorganisms (24.6% and 23.3%)
- in-hospital mortality: 36% (90 deaths; 160 survivors)
- Surgery performed in 14.8%



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Take-Home messages : Trt guidelines

1. A multidisciplinary approach is mandatory, including cardiologists, cardiac surgeons, microbiologists, and specialists of infectious diseases.

2. New imaging tools exist, including nuclear imaging and cardiac CT, but experience is needed and knowledge of the indications and limitations of each technique is mandatory

3. Patients with complicated IE, i.e. endocarditis with HF, abscess, or embolic or neurological complication or CHD, should be referred early and managed in a reference centre with immediate surgical facilities

4. Decision to operate is difficult and should be adapted to the individual patient

5. Registries are needed to assess if guidelines are applied and applicable !

Treatment guidelines

1. The “Endocarditis Team”
2. When to operate?
3. Specific situations
4. ***The EURO-ENDO registry***

EURObservational Research Programme

European Infective Endocarditis (EURO ENDO) Registry

Registry Status

26 March 2018

Gilbert Habib, chairman of the registry

ESC
European Society of Cardiology

Marseille, France

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