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**ESC**  
European Society  
of Cardiology

# RECOMMANDATIONS ESC- ACTUALISATION

## Recommandations ESC 2023 sur l'endocardite infectieuse

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# DÉCLARATION DE LIENS D'INTÉRÊT POTENTIELS

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Je n'ai pas de lien d'intérêt potentiel à déclarer

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# L'EI, un problème majeur de santé publique...

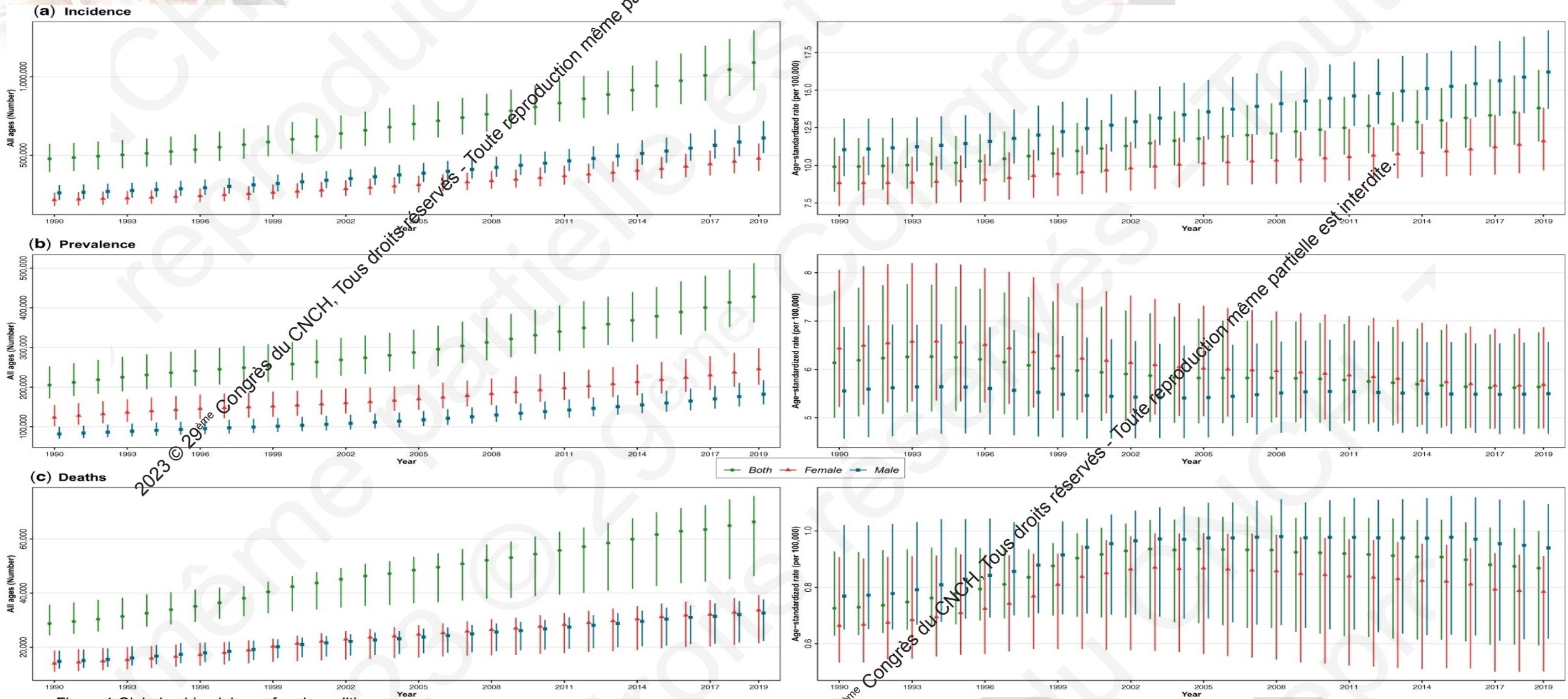
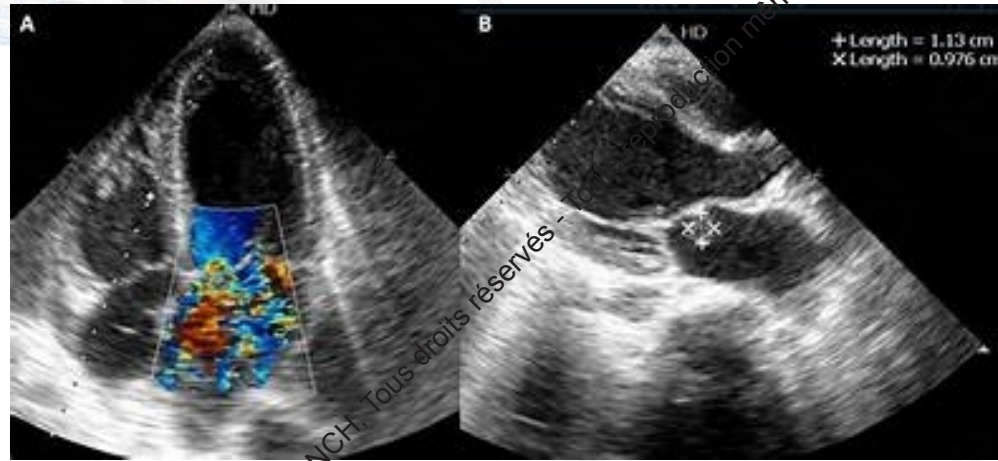
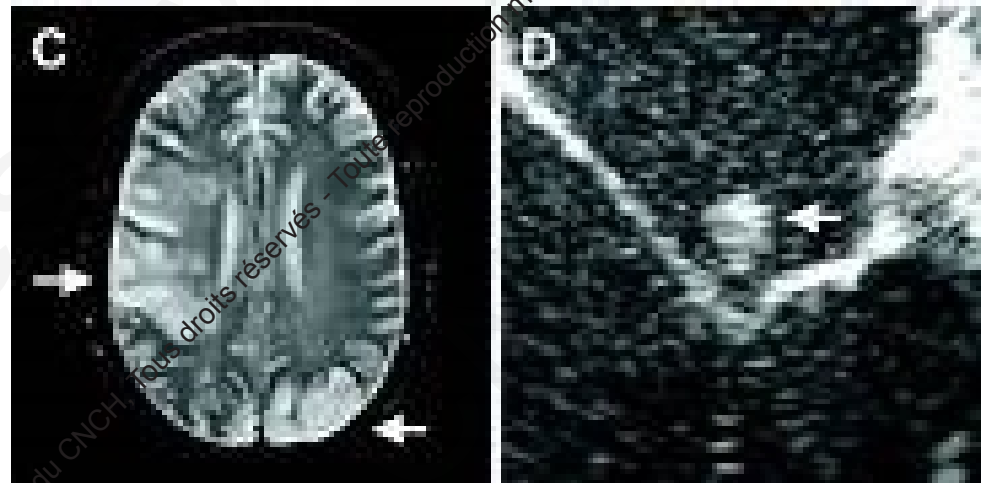
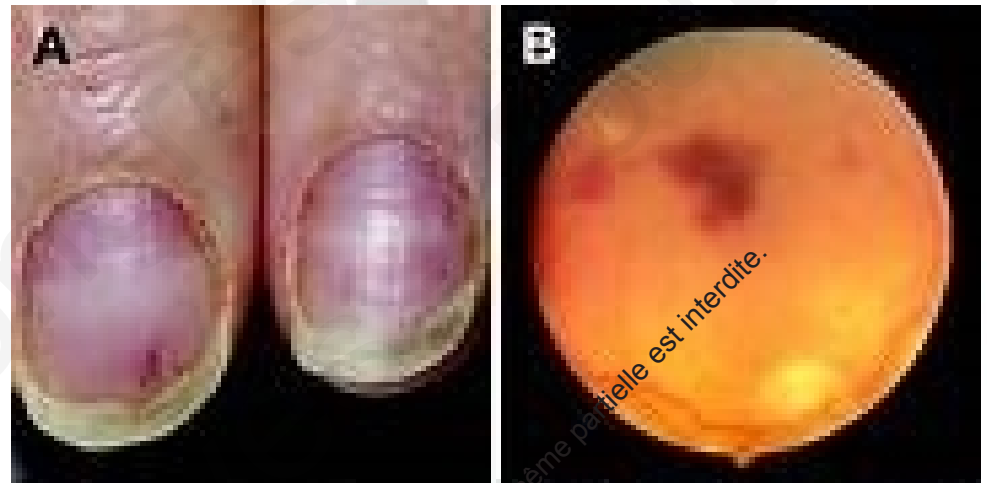


Figure 1 Global epidemiology of endocarditis

# Complications



Singla V, Sharma R, Nagamani AC, et al Mycotic aneurysm: a rare and dreaded complication of infective endocarditis. *Case Reports* 2013;2013:bcr2013200016



Systemic Complications of Infective Endocarditis | Circulation from www.ahajournals.org



# Le mérite des Recos 2015...

- Éléments de décisions cliniques majeurs
- Recommandations adaptées à chaque contexte



European Heart Journal Advance Access published August 29, 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)

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Mais.....



Scenarios cliniques de plus en plus complexes



Evolution des techniques diagnostiques: Imagerie nucléaire et scanner cardiaque...

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# Recommandations ESC 2023



## 2023 ESC Guidelines for the management of endocarditis

Developed by the task force on the management of endocarditis  
of the European Society of Cardiology (ESC)

Endorsed by the European Association for Cardio-Thoracic Surgery  
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85 PAGES et 857 REFERENCES



Tout  
d'abord...

**Table 1** Classes of recommendations

	Definition	Wording to use
Classes of recommendations	<b>Class I</b> Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.	Is recommended or is indicated
	<b>Class II</b> Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.	
	<b>Class IIa</b> Weight of evidence/opinion is in favour of usefulness/efficacy.	Should be considered
	<b>Class IIb</b> Usefulness/efficacy is less well established by evidence/opinion.	May be considered
	<b>Class III</b> Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.	Is not recommended

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Tout  
d'abord...

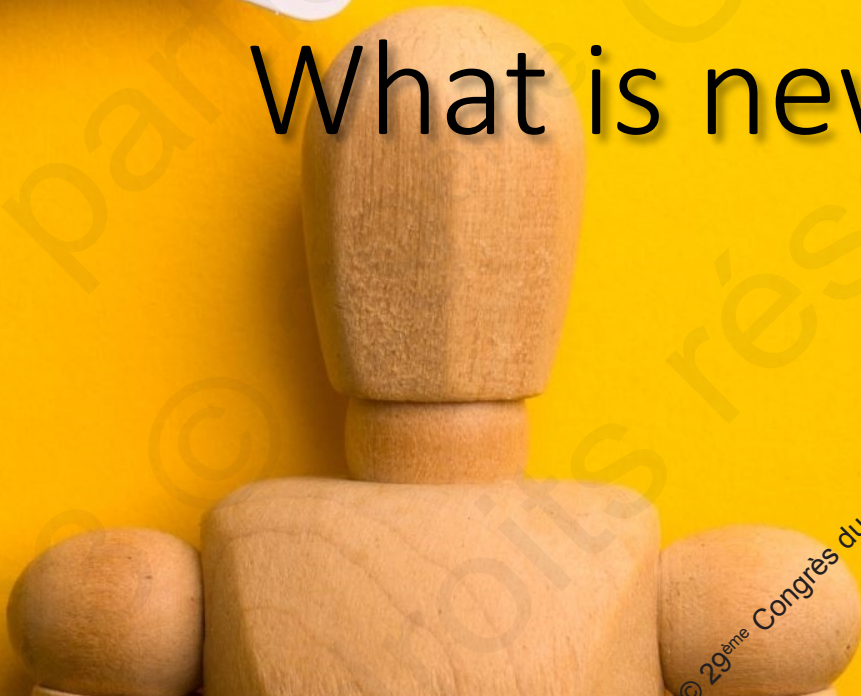
**Table 2** Levels of evidence

Level of evidence A	Data derived from multiple randomized clinical trials or meta-analyses.
Level of evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.
Level of evidence C	Consensus of opinion of the experts and/or small studies, retrospective studies, registries.

06/SC/20/23



What is new?



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Recommendation	Class	Level
<b>Section 3. Recommendation Table 1 — Recommendations for antibiotic prophylaxis in patients with cardiovascular diseases undergoing oro-dental procedures at increased risk of infective endocarditis</b>		
General prevention measures are recommended in individuals at high and intermediate risk of IE.	I	C
Antibiotic prophylaxis is recommended in patients with ventricular assist devices.	I	C
Antibiotic prophylaxis may be considered in recipients of heart transplant.	IIb	C

## Population à haut risque



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Antécédents d'EI

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Porteurs de prothèse implantée chirurgicalement ou par voie percutanée

Patients qui bénéficient de réparation valvulaire  
**quel que soit le matériel utilisé**

Cardiopathies congénitales (anomalies valvulaires congénitales isolées exclues)

---

**Porteurs de dispositifs d'assistance ventriculaire de longue durée comme thérapie de destination**

## Population à risque à intermédiaire



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Valvulopathie rhumatismale

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Valvulopathie dégénérative non  
rhumatismale

---

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Anomalies valvulaires congénitales y  
compris la bicuspidie aortique

---

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Porteurs de stimulateurs cardiaques et  
défibrillateurs

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Cardiomyopathie hypertrophique

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# Mesures générales



Patients should be encouraged to maintain twice daily tooth cleaning and to seek professional dental cleaning and follow-up at least twice yearly for high-risk patients and yearly for others.

Strict cutaneous hygiene, including optimized treatment of chronic skin conditions.

Disinfection of wounds.

Curative antibiotics for any focus of bacterial infection.

No self-medication with antibiotics.

Strict infection control measures for any at-risk procedure.

Discouragement of piercing and tattooing.

Limitation of infusion catheters and invasive procedures, when possible.

Strict adherence to care bundles for central and peripheral cannulae should be performed.



# Prudence en salle de KT....

Surgical standard aseptic measures are recommended during the insertion and manipulation of catheters in the catheterization laboratory environment.

Antibiotic prophylaxis covering for common skin flora including *Enterococcus* spp. and *S. aureus* should be considered before TAVI and other transcatheter valvular procedures.

<b>I</b>	<b>C</b>
<b>IIa</b>	<b>C</b>



# Diagnostic: Critères ESC 2023



## Major criteria:

### (i) Blood cultures positive for IE

- (a) Typical microorganisms consistent with IE from two separate blood cultures:
  - Oral streptococci, *Streptococcus gallolyticus* (formerly *S. bovis*), HACEK group, *S. aureus*, *E. faecalis*
- (b) Microorganisms consistent with IE from continuously positive blood cultures:
  - $\geq 2$  positive blood cultures of blood samples drawn  $>12$  h apart.
  - All of 3 or a majority of  $\geq 4$  separate cultures of blood (with first and last samples drawn  $\geq 1$  h apart).
- (c) Single positive blood culture for *C. burnetii* or phase I IgG antibody titre  $>1:800$ .

### (ii) Imaging positive for IE:

Valvular, perivalvular/periprosthetic and foreign material anatomic and metabolic lesions characteristic of IE detected by any of the following imaging techniques:

- Echocardiography (TTE and TOE).
- Cardiac CT.
- [18F]-FDG-PET/CT(A).
- WBC SPECT/CT.

## Minor criteria

### (i) Predisposing conditions (i.e. predisposing heart condition at high or intermediate risk of IE or PWID)

### (ii) Fever defined as temperature $>38^{\circ}\text{C}$

### (iii) Embolic vascular dissemination (including those asymptomatic detected by imaging only):

- Major systemic and pulmonary emboli/infarcts and abscesses.
- Haematogenous osteoarticular septic complications (i.e. spondylodiscitis).
- Mycotic aneurysms.
- Intracranial ischaemic/haemorrhagic lesions.
- Conjunctival haemorrhages.
- Janeway's lesions.

### (iv) Immunological phenomena:

- Glomerulonephritis.
- Osler nodes and Roth spots.
- Rheumatoid factor.

### (v) Microbiological evidence:

- Positive blood culture but does not meet a major criterion as noted above.
- Serological evidence of active infection with organism consistent with IE.

## IE Classification (at admission and during follow-up)

### Definite:

- 2 major criteria.
- 1 major criterion and at least 3 minor criteria.
- 5 minor criteria.

### Possible:

- 1 major criterion and 1 or 2 minor criteria.
- 3-4 minor criteria.

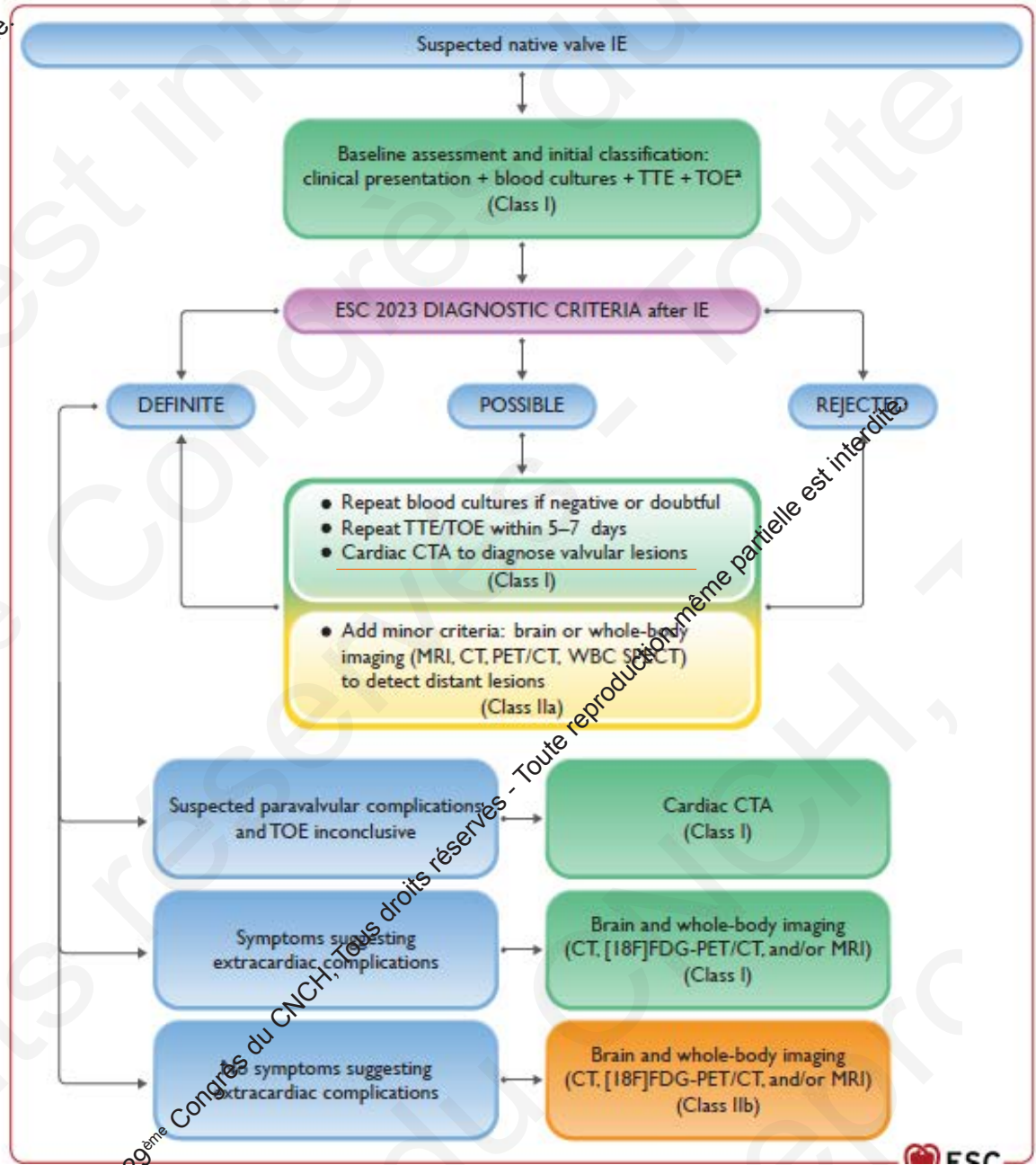
### Rejected:

- Does not meet criteria for definite or possible at admission with or without a firm alternative diagnosis.



# Diagnostic EI sur valve native

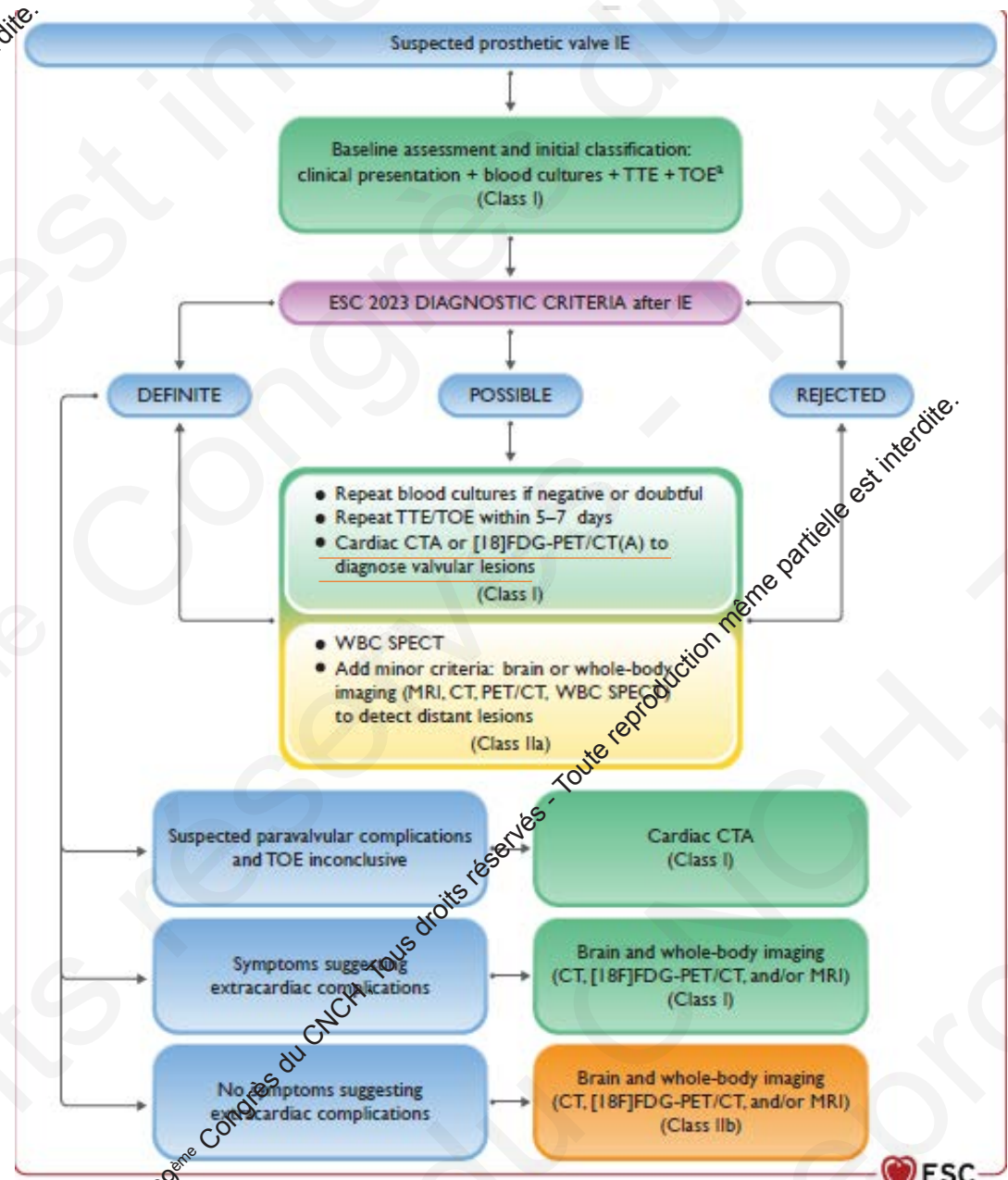
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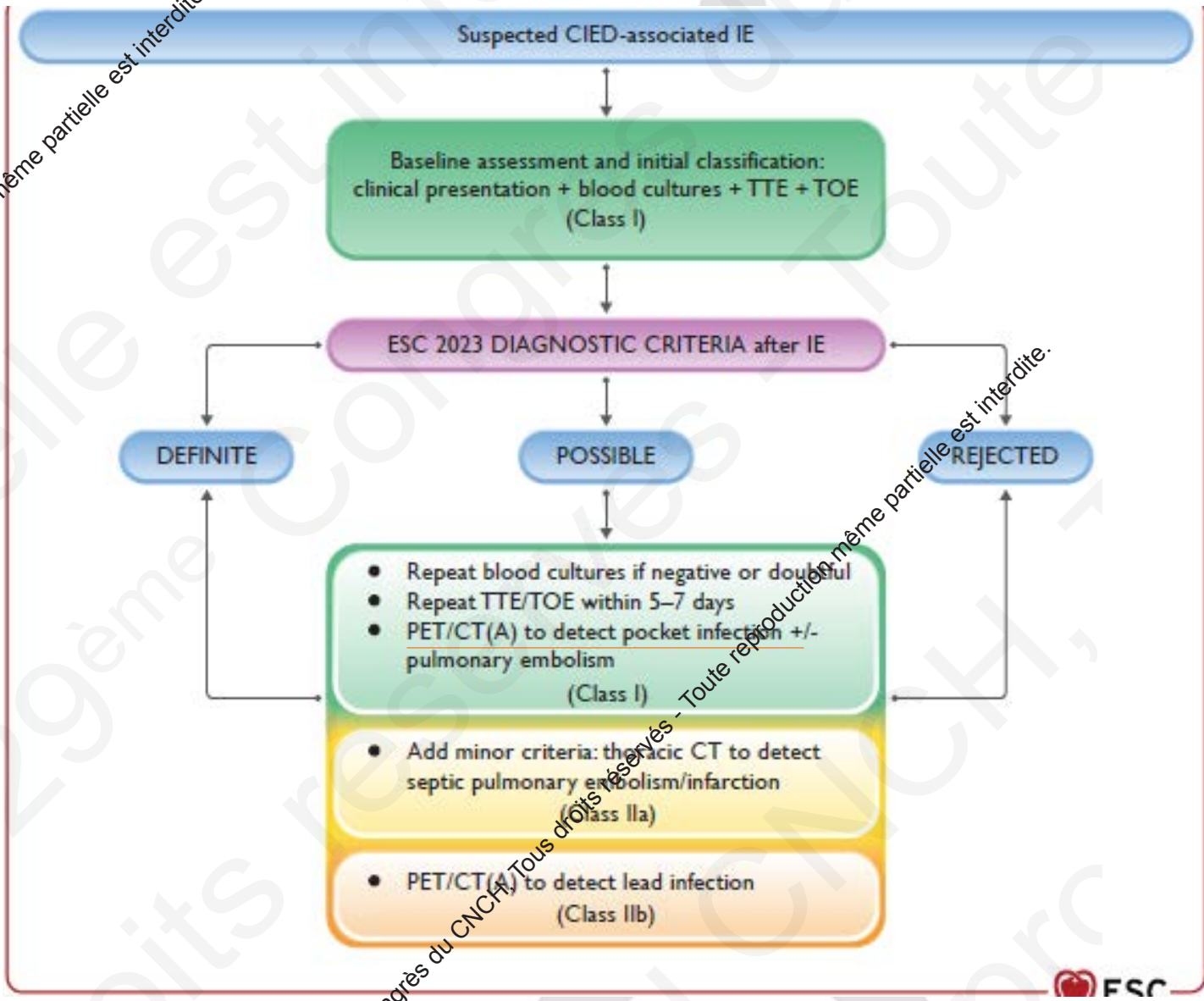
# Diagnostic EI sur prothèse

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# Diagnostic: EI sur stimulateurs/defibrillateurs cardiaques



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## Section 5. Recommendation Table 5 — Recommendations for the role of echocardiography in infective endocarditis

TOE is recommended when the patient is stable before switching from intravenous to oral antibiotic therapy.

**I**

**B**



Diagnostic:  
Autres  
techniques  
d'imagerie

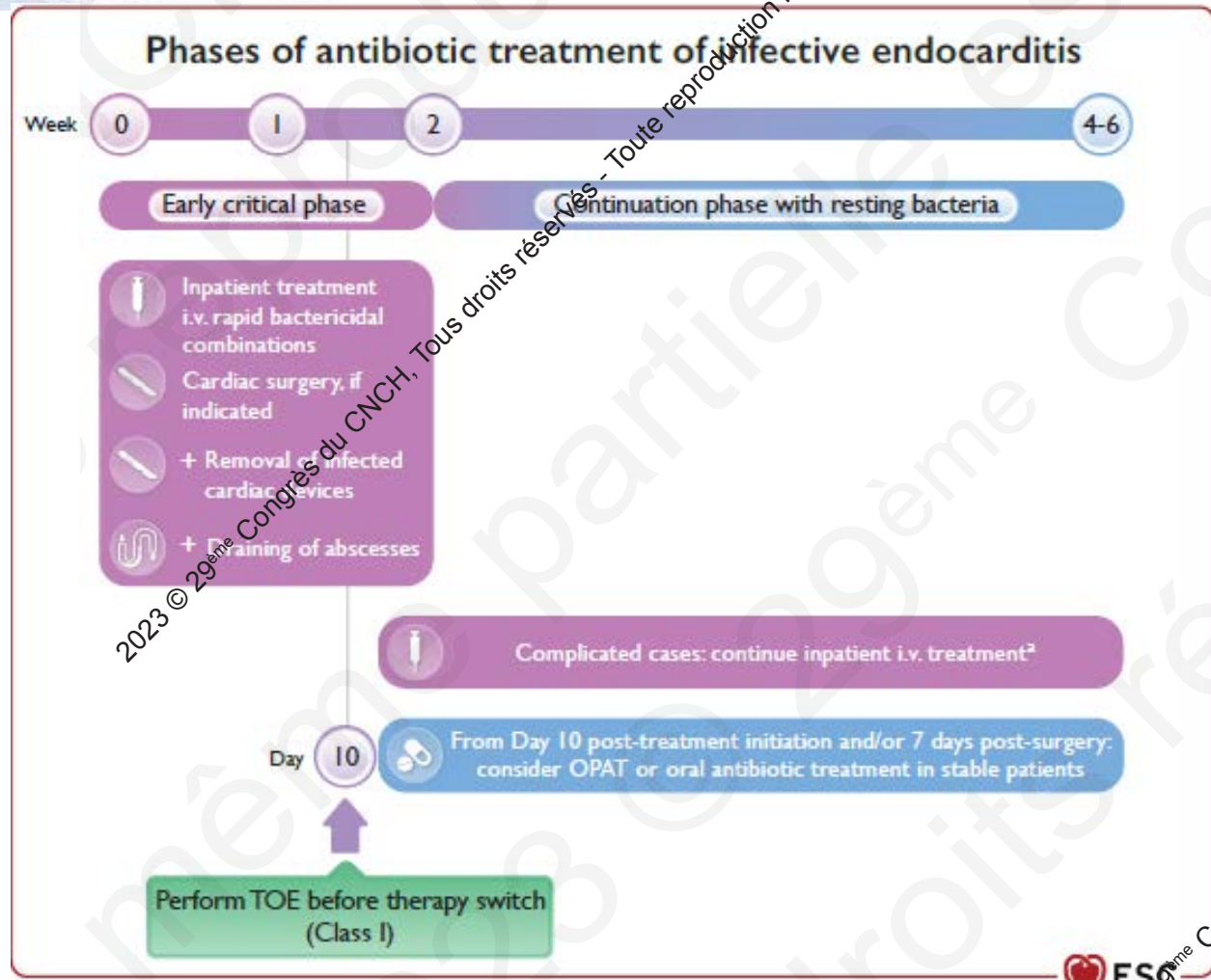
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Cardiac CTA is recommended in patients with possible NVE to detect valvular lesions and confirm the diagnosis of IE.	<b>I</b>	<b>B</b>
[18F]FDG-PET/CT(A) and cardiac CTA are recommended in possible PVE to detect valvular lesions and confirm the diagnosis of IE.	<b>I</b>	<b>B</b>
[18F]FDG-PET/CT(A) may be considered in possible CIED-related IE to confirm the diagnosis of IE.	<b>IIa</b>	<b>B</b>
Cardiac CTA is recommended in NVE and PVE to diagnose paravalvular or periprosthetic complications if echocardiography is inconclusive.	<b>I</b>	<b>B</b>
Brain and whole-body imaging (CT, [18F]FDG-PET/CT, and/or MRI) are recommended in symptomatic patients with NVE and PVE to detect peripheral lesions or add minor diagnostic criteria.	<b>I</b>	<b>B</b>
WBC SPECT/CT should be considered in patients with high clinical suspicion of PVE when echocardiography is negative or inconclusive and when PET/CT is unavailable.	<b>IIa</b>	<b>C</b>
Brain and whole-body imaging (CT, [18F]FDG-PET/CT, and MRI) in NVE and PVE may be considered for screening of peripheral lesions in asymptomatic patients.	<b>IIb</b>	<b>B</b>

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# Traitement: 2 phases...



# Un mot sur l'antibiothérapie empirique...

**Recommendation Table 10** — Recommendations for antibiotic regimens for initial empirical treatment of infective endocarditis (before pathogen identification)

Recommendations	Class <sup>a</sup>	Level <sup>c</sup>	
In patients with community-acquired NVE or late PVE (≥12 months post-surgery), ampicillin in combination with ceftriaxone or with (flu)cloxacillin and gentamicin should be considered using the following doses: <sup>255</sup>	IIa	C	
<i>Adult antibiotic dosage and route</i>			
Ampicillin			12 g/day i.v. in 4–6 doses
Ceftriaxone			4 g/day i.v. or i.m. in 2 doses
(Flu)cloxacillin			12 g/day i.v. in 4–6 doses
Gentamicin <sup>d</sup>			3 mg/kg/day i.v. or i.m. in 1 dose
<i>Paediatric antibiotic dosage and route</i>			
Ampicillin			300 mg/kg/day i.v. in 4–6 equally divided doses
Ceftriaxone			100 mg/kg i.v. or i.m. in 1 dose
(Flu)cloxacillin			200–300 mg/kg/day i.v. in 4–6 equally divided doses
Gentamicin <sup>d</sup>	3 mg/kg/day i.v. or i.m. in 3 equally divided doses		



In patients with early PVE (<12 months post-surgery) or nosocomial and non-nosocomial healthcare-associated IE, vancomycin or daptomycin combined with gentamicin and rifampin may be considered using the following doses:<sup>395</sup>

<i>Adult antibiotic dosage and route</i>	
Vancomycin <sup>e</sup>	30 mg/kg/day i.v. in 2 doses
Daptomycin	10 mg/kg/day i.v. in 1 dose
Gentamicin <sup>d</sup>	3 mg/kg/day i.v. or i.m. in 1 dose
Rifampin	900–1200 mg i.v. or orally in 2 or 3 doses
<i>Paediatric antibiotic dosage and route</i>	
Vancomycin <sup>e</sup>	40 mg/kg/day i.v. in 2–3 equally divided doses
Gentamicin <sup>d</sup>	3 mg/kg/day i.v. or i.m. in 3 equally divided doses
Rifampin	20 mg/kg/day i.v. or orally in 3 equally divided doses

IIb	C
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# Traitement: Place de l'antibiothérapie ambulatoire



## Section 7. Recommendation Table 11 — Recommendations for outpatient antibiotic treatment of infective endocarditis

Outpatient parenteral antibiotic treatment should be considered in patients with left-sided IE caused by *Streptococcus* spp., *E. faecalis*, *S. aureus*, or CoNS who were receiving appropriate i.v. antibiotic treatment for at least 10 days (or at least 7 days after cardiac surgery), are clinically stable, and who do not show signs of abscess formation or valve abnormalities requiring surgery on TOE.

<b>IIa</b>	<b>A</b>
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Outpatient parenteral antibiotic treatment is not recommended in patients with IE caused by highly difficult-to-treat microorganisms, liver cirrhosis (Child-Pugh B or C), severe cerebral nervous system emboli, untreated large extracardiac abscesses, heart valve complications, or other severe conditions requiring surgery, severe post-surgical complications, and in PWID-related IE.

<b>III</b>	<b>C</b>
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Partial Oral versus Intravenous Antibiotic Treatment  
of Endocarditis

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**BACKGROUND**

Patients with infective endocarditis on the left side of the heart are typically treated with intravenous antibiotic agents for up to 6 weeks. Whether a shift from intravenous to oral antibiotics once the patient is in stable condition would result in efficacy and safety similar to those with continued intravenous treatment is unknown.

**METHODS**

In a randomized, noninferiority, multicenter trial, we assigned 400 adults in stable condition who had endocarditis on the left side of the heart caused by streptococcus, *Enterococcus faecalis*, *Staphylococcus aureus*, or coagulase-negative staphylococci and who were being treated with intravenous antibiotics to continue intravenous treatment (199 patients) or to switch to oral antibiotic treatment (201 patients). In all patients, antibiotic treatment was administered intravenously for at least 10 days. If feasible, patients in the orally treated group were discharged to outpatient treatment. The primary outcome was a composite of all-cause mortality, unplanned cardiac surgery, embolic events, or relapse of bacteremia with the primary pathogen, from the time of randomization until 6 months after antibiotic treatment was completed.

**RESULTS**

After randomization, antibiotic treatment was completed after a median of 19 days (interquartile range, 14 to 25) in the intravenously treated group and 17 days (interquartile range, 14 to 25) in the orally treated group ( $P=0.48$ ). The primary composite outcome occurred in 24 patients (12.1%) in the intravenously treated group and in 18 (9.0%) in the orally treated group (between-group difference, 3.1 percentage points; 95% confidence interval, -3.4 to 9.6;  $P=0.40$ ), which met noninferiority criteria.

**CONCLUSIONS**

In patients with endocarditis on the left side of the heart who were in stable condition, changing to oral antibiotic treatment was noninferior to continued intravenous antibiotic treatment. (Funded by the Danish Heart Foundation and others; POET ClinicalTrials.gov number, NCT01919257.)

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Pour plus de lecture....

400 patients  
RCT de non-infériorité  
Critères primaires: mortalité  
toute cause, chirurgie cardiaque  
non planifiée, épisodes  
emboliques, rechutes du début  
de l'étude jusqu'à 6 mois.



# EI chez les porteurs de stimulateurs/défibrillateurs

Complete system extraction without delay is recommended in patients with definite CIED-related IE under initial empirical antibiotic therapy.

Extension of antibiotic treatment of CIED-related endocarditis to (4–)6 weeks following device extraction should be considered in the presence of septic emboli or prosthetic valves.

Use of an antibiotic envelope may be considered in select high-risk patients undergoing CIED reimplantation to reduce risk of infection.

<b>I</b>	<b>B</b>
<b>IIa</b>	<b>C</b>
<b>IIb</b>	<b>B</b>

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## Implantation de pacemaker pour BAV complet au cours de l'EI

Immediate epicardial pacemaker implantation should be considered in patients undergoing surgery for valvular IE and complete AVB if one of the following predictors of persistent AVB is present: pre-operative conduction abnormality, *S. aureus* infection, aortic root abscess, tricuspid valve involvement, or previous valvular surgery.

**IIa**

**C**



# Evaluation de l'anatomie coronarienne

In haemodynamically stable patients with aortic valve vegetations who require cardiac surgery and are high risk of CAD, a high-resolution multislice coronary CTA is recommended.

Invasive coronary angiography is recommended in patients requiring heart surgery who are high risk of CAD, in the absence of aortic valve vegetations.

In emergency situations, valvular surgery without pre-operative coronary anatomy assessment regardless of CAD risk should be considered.

Invasive coronary angiography may be considered despite the presence of aortic valve vegetations in selected patients with known CAD or at high risk of significant obstructive CAD.

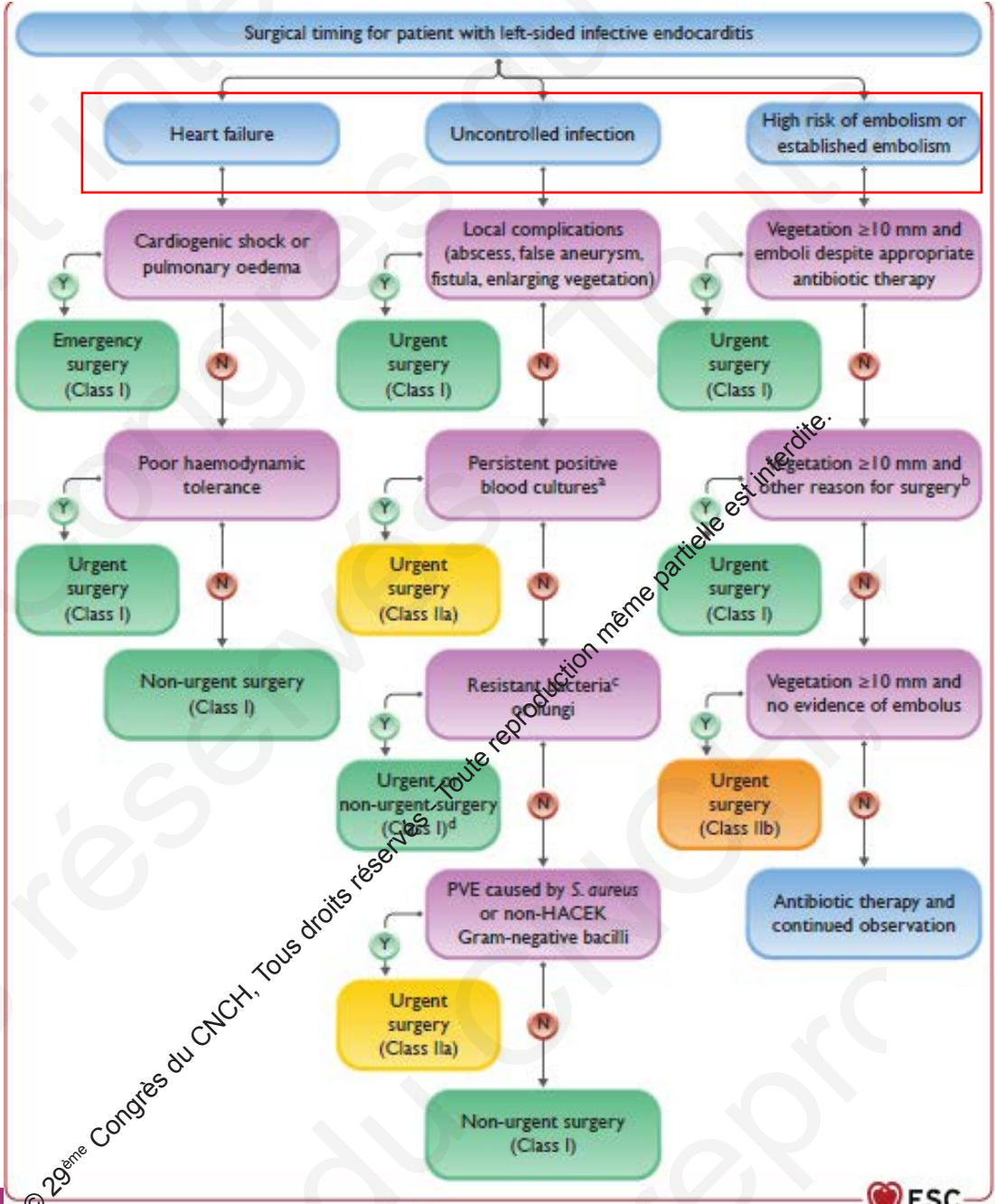
<b>I</b>	<b>B</b>
<b>I</b>	<b>C</b>
<b>IIa</b>	<b>C</b>
<b>IIb</b>	<b>C</b>



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# Traitement: Indications de chirurgie



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# Traitement: Timing de la chirurgie!!!



(i) Heart failure	
Emergency <sup>d</sup> surgery is recommended in aortic or mitral NVE or PVE with severe acute regurgitation, obstruction, or fistula causing refractory pulmonary oedema or cardiogenic shock. <a href="#">420,423,424,429,476,477</a>	<b>B</b>
Urgent <sup>d</sup> surgery is recommended in aortic or mitral NVE or PVE with severe acute regurgitation or obstruction causing symptoms of HF or echocardiographic signs of poor haemodynamic tolerance. <a href="#">5,420-422,429</a>	<b>B</b>

Emergency: 24h  
 Urgent: 3-5 jours  
 Non urgent: pendant le temps hospitalier



# Traitement: Timing de chirurgie!!

(ii) Uncontrolled infection		
Urgent <sup>d</sup> surgery is recommended in locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation, prosthetic dehiscence, new AVB). <sup>5,420,421,429,445</sup>	I	B
Urgent <sup>d</sup> or non-urgent surgery is recommended in IE caused by fungi or multiresistant organisms according to the haemodynamic condition of the patient. <sup>420</sup>	I	C
Urgent <sup>d</sup> surgery should be considered in IE with persistently positive blood cultures > 1 week or persistent sepsis despite appropriate antibiotic therapy and adequate control of metastatic foci. <sup>436,437</sup>	IIa	B
Urgent <sup>d</sup> surgery should be considered in PVE caused by <i>S. aureus</i> or non-HACEK Gram-negative bacteria. <sup>5,385,449</sup>	IIa	C



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# Traitement: Timing de la chirurgie !!

<b>(iii) Prevention of embolism</b>		
Urgent <sup>d</sup> surgery is recommended in aortic or mitral NVE or PVE with persistent vegetations $\geq 10$ mm after one or more embolic episodes despite appropriate antibiotic therapy. <small>451,455,457,471,478</small>	<b>I</b>	<b>B</b>
Urgent <sup>d</sup> surgery is recommended in IE with vegetation $\geq 10$ mm and other indications for surgery. <small>460,465,466,471,478</small>	<b>I</b>	<b>C</b>
Urgent <sup>d</sup> surgery may be considered in aortic or mitral IE with vegetation $\geq 10$ mm and without severe valve dysfunction or without clinical evidence of embolism and low surgical risk. <small>460,463,465,473,478</small>	<b>IIb</b>	<b>B</b>

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# Suivi



## Section 11. Recommendation Table 18 — Recommendations for post-discharge follow-up

Patient education on the risk of recurrence and preventive measures, with emphasis on dental health, and based on the individual risk profile, is recommended during follow-up.	<b>I</b>	<b>C</b>
Addiction treatment for patients following PWID-related IE is recommended.	<b>I</b>	<b>C</b>
Cardiac rehabilitation including physical exercise training should be considered in clinically stable patients based on an individual assessment.	<b>IIa</b>	<b>C</b>
Psychosocial support may be considered to be integrated in follow-up care, including screening for anxiety and depression, and referral to relevant psychological treatment.	<b>IIb</b>	<b>C</b>



# Revised recommendations



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Recommendations in 2015 version	Class	Level	Recommendations in 2023 version	Class	Level
<b>Section 3. Recommendation Table 1 — Recommendations for antibiotic prophylaxis in patients with cardiovascular diseases undergoing oro-dental procedures at increased risk of infective endocarditis</b>					
Antibiotic prophylaxis should be considered for patients at highest risk of IE: (1) Patients with any prosthetic valve including a transcatheter valve, or those in whom any prosthetic material was used for cardiac valve repair. (2) Patients with a previous episode of IE. (3) Patients with CHD: (a) Any type of cyanotic CHD. (b) Any type of CHD repaired with a prosthetic material whether placed surgically or by percutaneous techniques, up to 6 months after the procedure or lifelong if residual shunt.	<b>IIa</b>	<b>C</b>	Antibiotic prophylaxis is recommended in patients with previous IE.	<b>I</b>	<b>B</b>
			Antibiotic prophylaxis is recommended in patients with surgically implanted prosthetic valves and with any material used for surgical cardiac valve repair.	<b>I</b>	<b>C</b>
			Antibiotic prophylaxis is recommended in patients with transcatheter implanted aortic and pulmonary valvular prostheses.	<b>I</b>	<b>C</b>
			Antibiotic prophylaxis should be considered in patients with transcatheter mitral and tricuspid valve repair.	<b>IIa</b>	<b>C</b>
			Antibiotic prophylaxis is recommended in patients with untreated cyanotic CHD, and patients treated with surgery or transcatheter procedures with post-operative palliative shunts, conduits, or other prostheses. After surgical repair, in the absence of residual defects or valve prostheses, antibiotic prophylaxis is recommended only for the first 6 months after the procedure.	<b>I</b>	<b>C</b>



# Diagnostic et prise en charge: Endocarditis Team

## Section 4. Recommendation Table 4 — Recommendations for the Endocarditis Team

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 infectious disease specialist, a microbiologist, a cardiologist, imaging specialists, a cardiac surgeon and, if needed, a specialist in CHD.

**IIa** **B**

Diagnosis and management of patients with complicated IE are recommended to be performed at an early stage in a Heart Valve Centre, with immediate surgical facilities and an 'Endocarditis Team' to improve the outcomes.

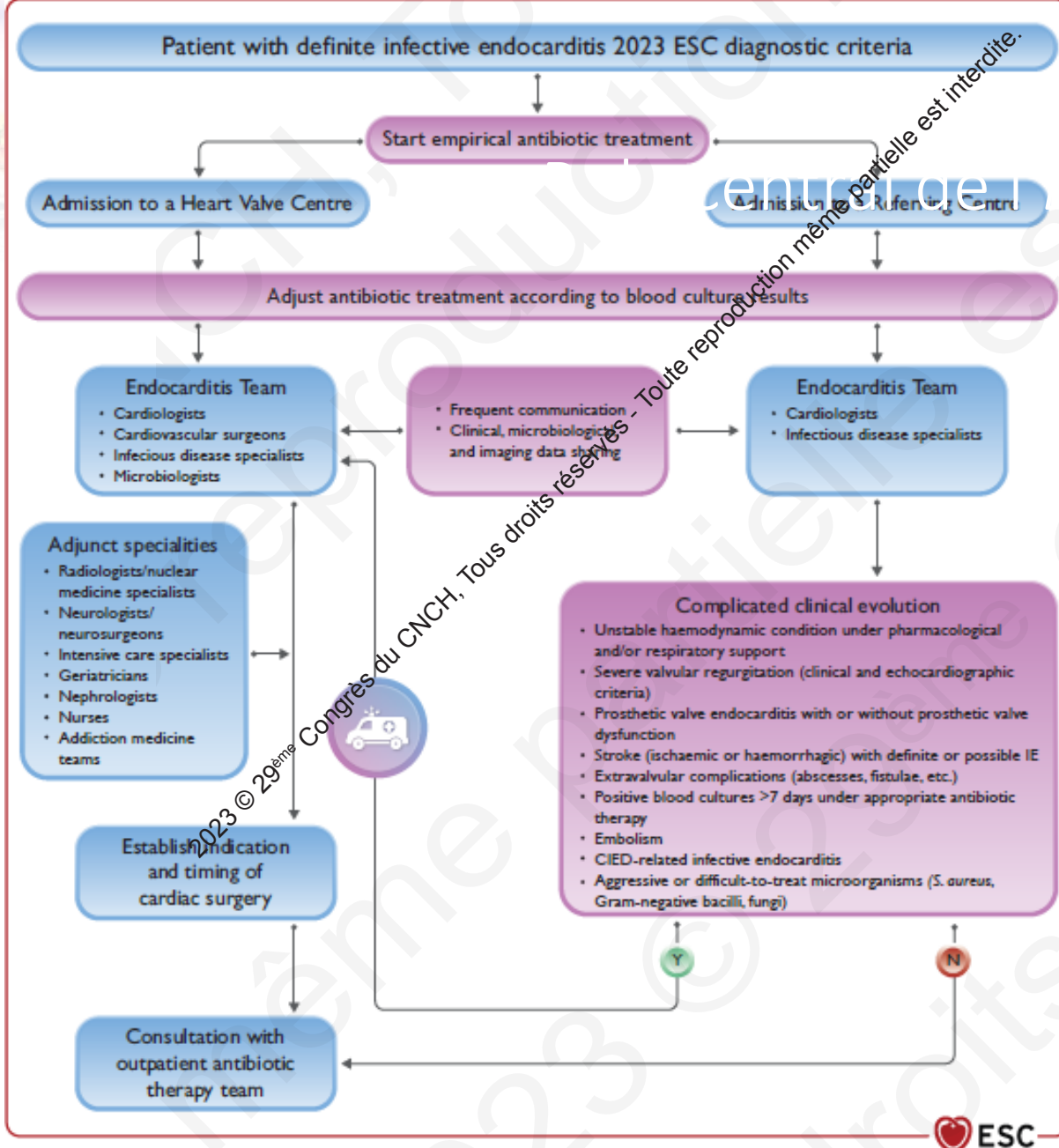
**I** **B**

For patients with uncomplicated IE managed in a non-reference centre, early and regular communication with the reference centre and, when needed, visits to the reference centre should be made.

**IIa** **B**

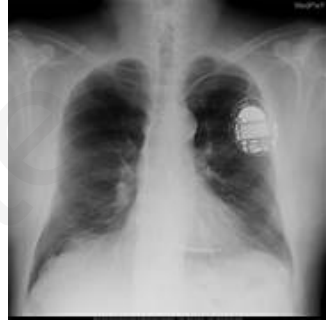
For patients with uncomplicated IE managed in a Referring Centre, early and regular communication between the local and the Heart Valve Centre Endocarditis Teams is recommended to improve the outcomes of the patients.

**I** **B**





# Diagnostic et prise en charge



## Section 12. Recommendation Table 20 — Recommendations for cardiovascular implanted electronic device-related infective endocarditis

Routine antibiotic prophylaxis is recommended before device implantation.	<b>I</b>	<b>B</b>	Antibiotic prophylaxis covering <i>S. aureus</i> is recommended for CIED implantation.	<b>I</b>	<b>A</b>
TOE is recommended in patients with suspected cardiac device-related infective endocarditis with positive or negative blood cultures, independent of the results of TTE, to evaluate lead-related endocarditis and heart valve infection.	<b>I</b>	<b>C</b>	TTE and TOE are both recommended in case of suspected CIED-related IE to identify vegetations.	<b>I</b>	<b>B</b>
In patients with NVE or PVE and an intracardiac device with no evidence of associated device infection, complete hardware extraction may be considered.	<b>IIb</b>	<b>C</b>	Complete CIED extraction should be considered in case of <u>valvular IE, even without definite lead involvement</u> , taking into account the identified pathogen and requirement for valve surgery.	<b>IIa</b>	<b>C</b>

# Diagnostic et prise en charge

When indicated, definite reimplantation should be postponed if possible, to allow a few days or weeks of antibiotic therapy.

**IIa**

**C**

If CIED reimplantation is indicated after extraction for CIED-related IE, it is recommended to be performed at a site distant from the previous generator, as late as possible, once signs and symptoms of infection have abated and until blood cultures are negative for at least 72 h in the absence of vegetations, and negative for at least 2 weeks if vegetations were visualized.

**I**

**C**





# Diagnostic et prise en charge

## Section 12. Recommendation Table 21 — Recommendations for the surgical treatment of right-sided infective endocarditis

Surgical treatment should be considered in the following scenarios:

- Microorganisms difficult to eradicate (e.g. persistent fungi) or bacteraemia for >7 days (e.g. *S. aureus*, *P. aeruginosa*) despite adequate antimicrobial therapy; or
- Persistent tricuspid valve vegetations > 20 mm after recurrent pulmonary emboli with or without concomitant right HF; or
- Right HF secondary to severe tricuspid regurgitation with poor response to diuretic therapy.

**IIa**

**C**

Surgery is recommended in patients with right-sided IE who are receiving appropriate antibiotic therapy for the following scenarios:

Right ventricular dysfunction secondary to acute severe tricuspid regurgitation non-responsive to diuretics.

Persistent vegetation with respiratory insufficiency requiring ventilatory support after recurrent pulmonary emboli.

Large residual tricuspid vegetations (>20 mm) after recurrent septic pulmonary emboli.

Patients with simultaneous involvement of left-heart structures.

**I**

**B**

**I**

**B**

**I**

**C**

**I**

**C**

## Section 12. Recommendation Table 22 — Recommendations for the use of antithrombotic therapy in infective endocarditis

Interruption of antiplatelet therapy is recommended in the presence of major bleeding.

**I**

**B**

Interruption of antiplatelet or anticoagulant therapy is recommended in the presence of major bleeding (including intracranial haemorrhage).

**I**

**C**





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Reprise des idées fortes des précédentes recommandations

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Imagerie multimodale+++

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Antibiothérapie orale chez certains patients sélectionnés

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Surveillance rapprochée

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Importance de *l'Endocarditis Team*, tout au long de la prise en charge: RCP précoce et régulière++

MERCI



*Seul, on va plus vite.*



*Mais tous ensemble,  
on va plus loin.*