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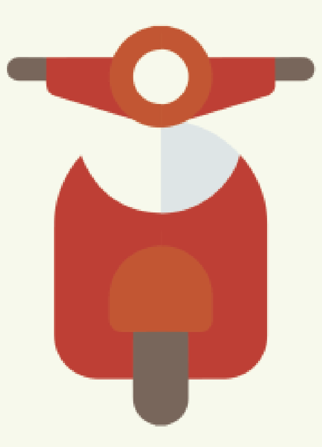

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2023 ESC endocarditis guidelines - summary

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FACULTY DISCLOSURE

No disclosures

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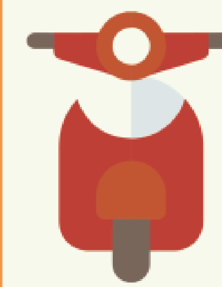

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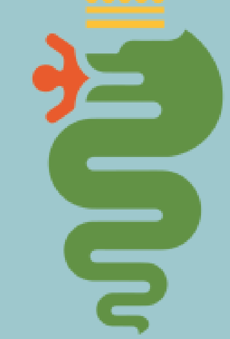
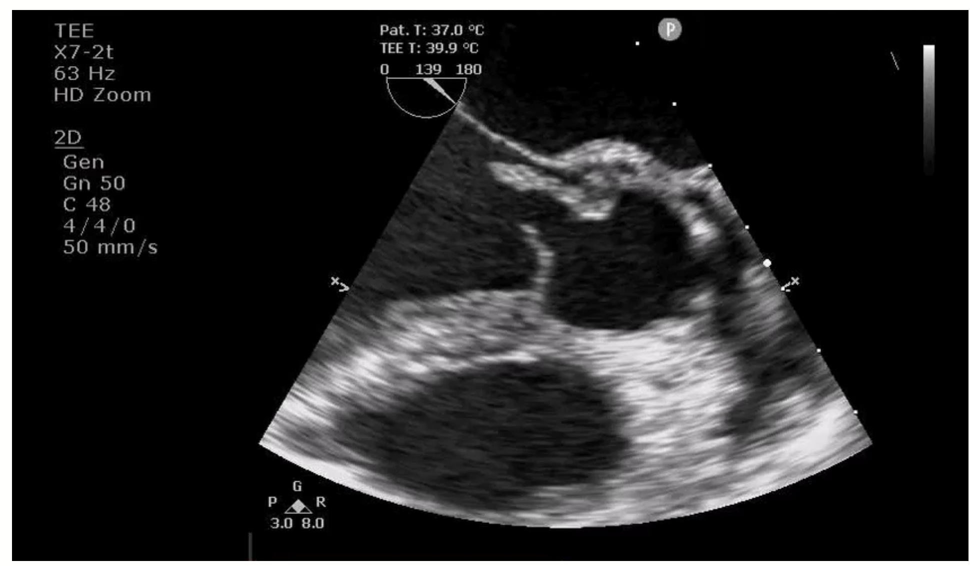


Why an update of ESC guidelines was needed?

- New data from registries ex Euro-endo registry
- The need of implementation of advanced multimodality imaging
- Emphasizing the value of Heart Team, Patient Education, Prevention



Date	Title
20/12/2022	Socio-economic variations determine the clinical presentation, aetiology and outcome of infective endocarditis: a prospective cohort sub-study from the ESC-EORP EURO-ENDO (European Infective Endocarditis) Registry
19/12/2022	Characteristics, management, and outcome of infective endocarditis in the Czech Republic: prospective data from the ESC EORP EURO-ENDO registry
19/12/2022	Surgery and outcome of infective endocarditis in octogenarians: prospective data from the ESC EORP EURO-ENDO registry
19/12/2022	Cancer and infective endocarditis: characteristics and prognostic impact
04/08/2022	Outcomes of culture-negative vs. culture-positive infective endocarditis: the ESC-EORP EURO-ENDO registry
05/06/2020	Infective endocarditis in the Netherlands: current epidemiological profile and mortality
14/10/2019	Clinical presentation, aetiology and outcome of infective endocarditis. Results of the ESC-EORP EURO-ENDO (European infective endocarditis) registry: a prospective cohort study
08/04/2019	EURO-ENDO (European Infective Endocarditis) registry

Cardiac and non-cardiac risk factors

Cardiac risk factors	Non-cardiac risk factors
• Previous infective endocarditis • Valvular heart disease • Prosthetic heart valve • Central venous or arterial catheter • Transvenous cardiac implantable electronic device • Congenital heart disease	• Central venous catheter • People who inject drugs • Immunosuppression • Recent dental or surgical procedures • Recent hospitalization • Haemodialysis

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(European Heart Journal; 2023 – doi: 10.1093/eurheartj/ehad193)

New recommendations (1)

Recommendations	Class	Level
Recommendations for antibiotic prophylaxis in patients with cardiovascular diseases undergoing oro-dental procedures at increased risk for infective endocarditis		
General prevention measures are recommended in individuals at high and intermediate risk for IE.	I	C
Antibiotic prophylaxis is recommended in pat		
Antibiotic prophylaxis may be considered in r		
Recommendations for infective endocarditis		
Systemic antibiotic prophylaxis may be consic an invasive diagnostic or therapeutic procedu genitourinary tract, skin, or musculoskeletal s		
Recommendations for infective endocarditis		
Optimal pre-procedural aseptic measures of t to prevent CIED infections.		

New recommendations (2)

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Recommendations	Class	Level
Recommendations for infective endocarditis prevention in cardiac procedures (continued)		
Surgical standard aseptic measures are recommended during the insertion and manipulation of catheters in the catheterization laboratory environment.	I	C
Antibiotic prophylaxis covering for common skin flora including *Enterococcus* spp. and *S. aureus* should be considered before TAVI and other transcatheter valvular procedures.	IIa	C
Recommendations for the role of echocardiography in infective endocarditis		
TOE is recommended when patient is stable before switching from intravenous to oral antibiotic therapy.	I	B
Recommendations for the role of computed tomography, nuclear imaging, and magnetic resonance in infective endocarditis		
Cardiac CTA is recommended in patients with possible NVE to detect valvular lesions and confirm the diagnosis of IE.	I	B

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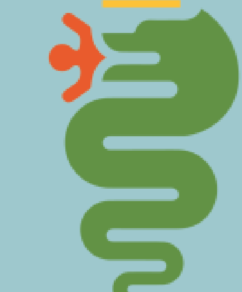
Revised recommendations (2)



2015	Class	Level	2023	Class	Level
Recommendations for antibiotic prophylaxis in patients with cardiovascular diseases undergoing oro-dental procedures at increased risk for infective endocarditis (continued)					
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.	IIa		Antibiotic prophylaxis is		

Revised recommendations (3)

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2015	Class	Level	2023	Class	Level
Recommendations for antibiotic prophylaxis in patients with cardiovascular diseases undergoing oro-dental procedures at increased risk for infective endocarditis (continued)					
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.	IIa	C	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.	I	C

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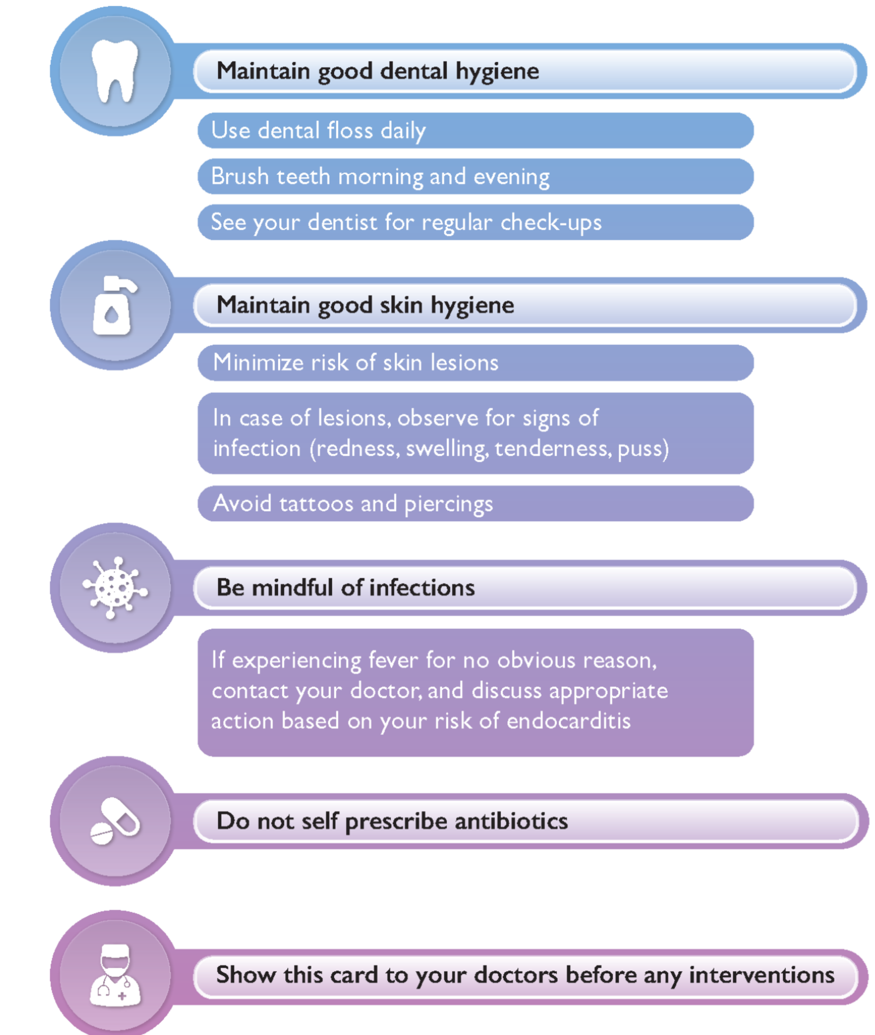
General prevention measures to be follow
intermediate risk for infective endocarditi

Patients should be encouraged to maintain twice dail dental cleaning and follow-up at least twice yearly fo
Strict cutaneous hygiene, including optimized treatm
Disinfection of wounds
Curative antibiotics for any focus of bacterial infectio
No self-medication with antibiotics
Strict infection control measures for any at-risk proce
Discouragement of piercing and tattooing
Limitation of infusion catheters and invasive procedu bundles for central and peripheral cannulae should b

Education of high-risk patients to prevent infective endocarditis



2023 ESC Guidelines for the management of en
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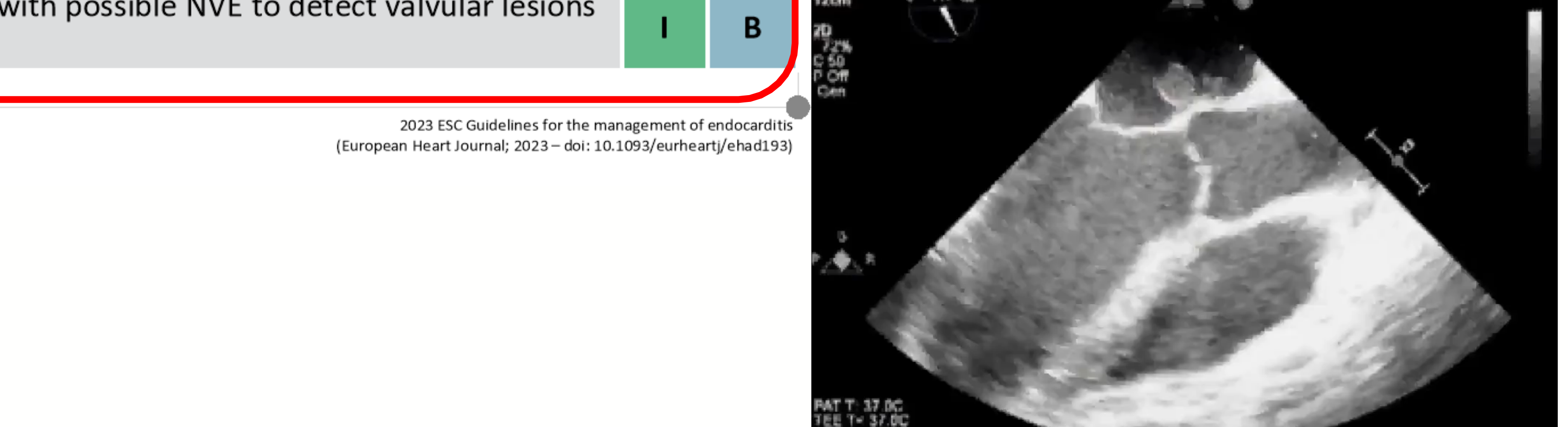
New recommendations (2)

Recommendations	Class	Level
Recommendations for infective endocarditis prevention in cardiac procedures (continued)		
Surgical standard aseptic measures are recommended during the insertion and manipulation of catheters in the catheterization laboratory environment.	I	C
Antibiotic prophylaxis covering for common skin flora including *Enterococcus* spp. and *S. aureus* should be considered before TAVI and other transcatheter valvular procedures.	IIa	C
Recommendations for the role of echocardiography in infective endocarditis		
TOE is recommended when patient is stable before switching from intravenous to oral antibiotic therapy.	I	B
Recommendations for the role of computed tomography, nuclear imaging, and magnetic resonance in infective endocarditis		
Cardiac CTA is recommended in patients with possible NVE to detect valvular lesions and confirm the diagnosis of IE.	I	B

Imaging



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New recommendations (3)

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Recommendations	Class	Level
Recommendations for the role of computed tomography, nuclear imaging, and magnetic resonance in infective endocarditis (continued)		
Cardiac CTA is recommended in patients with possible NVE to detect valvular lesions and confirm the diagnosis of IE.	I	B
[18F]FDG-PET/CT(A) and cardiac CTA are recommended in possible PVE to detect valvular lesions and confirm the diagnosis of IE.	I	B
[18F]FDG-PET/CT(A) may be considered in possible CIED-related IE to confirm the diagnosis of IE.	IIa	B
Cardiac CTA is recommended in NVE and PVE to diagnose paravalvular or periprosthetic complications if echocardiography is inconclusive.	I	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.	I	B

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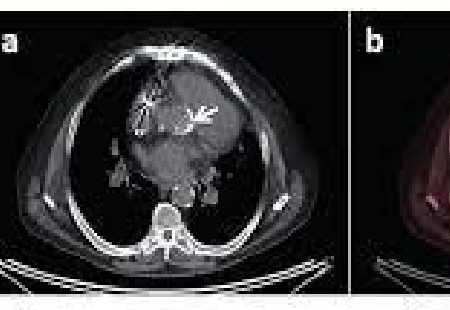

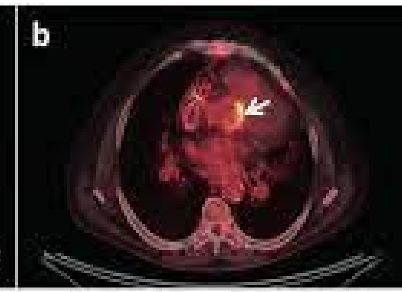

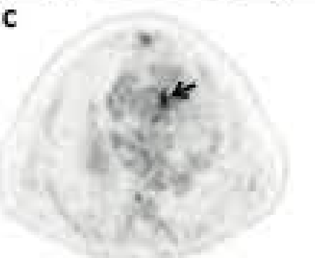

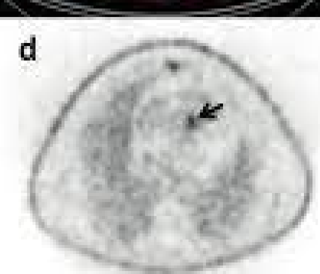

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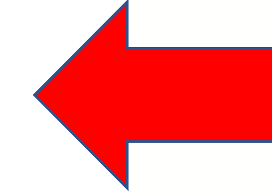
Recommendations	Class	Level
Recommendations for the role of computed tomography, nuclear imaging, and magnetic resonance in infective endocarditis (continued)		
WBC SPECT/CT should be considered in patients with high clinical suspicion of PVE when echocardiography is negative or inconclusive and when PET/CT is unavailable.	IIa	C
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.	IIb	B



Patient with definite infective endocarditis 2023 ESC diagnostic criteria

Start empirical antibiotic treatment

Admission to a Heart Valve Centre

Admission to a Referring Centre

Adjust antibiotic treatment according to blood culture results

Endocarditis Team

Endocarditis Team

Adjunct specialities
- Radiologists/nuclear medicine specialists
- Neurologists/ neurosurgeons
- Intensive care specialists
- Geriatricians
- Nephrologists
- Nurses
- Addiction medicine teams

Complicated clinical evolution
- Unstable haemodynamic condition under pharmacological and/or respiratory support
- Severe valvular regurgitation (clinical and echocardiographic criteria)
- Prosthetic valve endocarditis with or without prosthetic valve dysfunction
- Stroke (ischaemic or haemorrhagic) with definite or possible IE
- Extravalvular complications (abscesses, fistulae, etc.)
- Positive blood cultures >7 days under appropriate antibiotic therapy
- Embolism
- CIED-related infective endocarditis
- Aggressive or difficult-to-treat microorganisms (*S. aureus*, Gram-negative bacilli, fungi)

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Establish indication and timing of cardiac surgery

Consultation with outpatient antibiotic therapy team

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Definition of the endocarditis team:
- Cardiologists
- Cardiac surgeons
- Infectious diseases specialists
- Microbiologists

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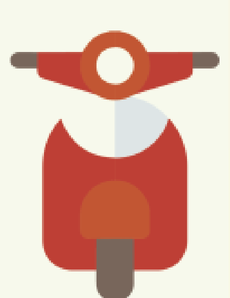

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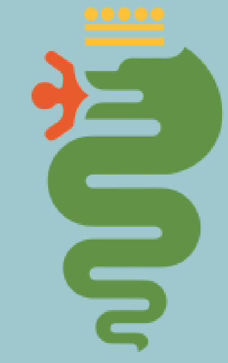

Timing for surgery

2015	Class	Level	2023	Class	Level
Recommendations for the main indications of surgery in infective endocarditis (native valve endocarditis and prosthetic valve endocarditis)					
Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk (urgent surgery should be considered).	IIa				
Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery (urgent surgery may be considered).	IIb				

2015	Class	Level	2023	Class	Level
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**	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.	I	B
			• Persistent vegetation with respiratory insufficiency requiring ventilatory support after recurrent pulmonary emboli.	I	B

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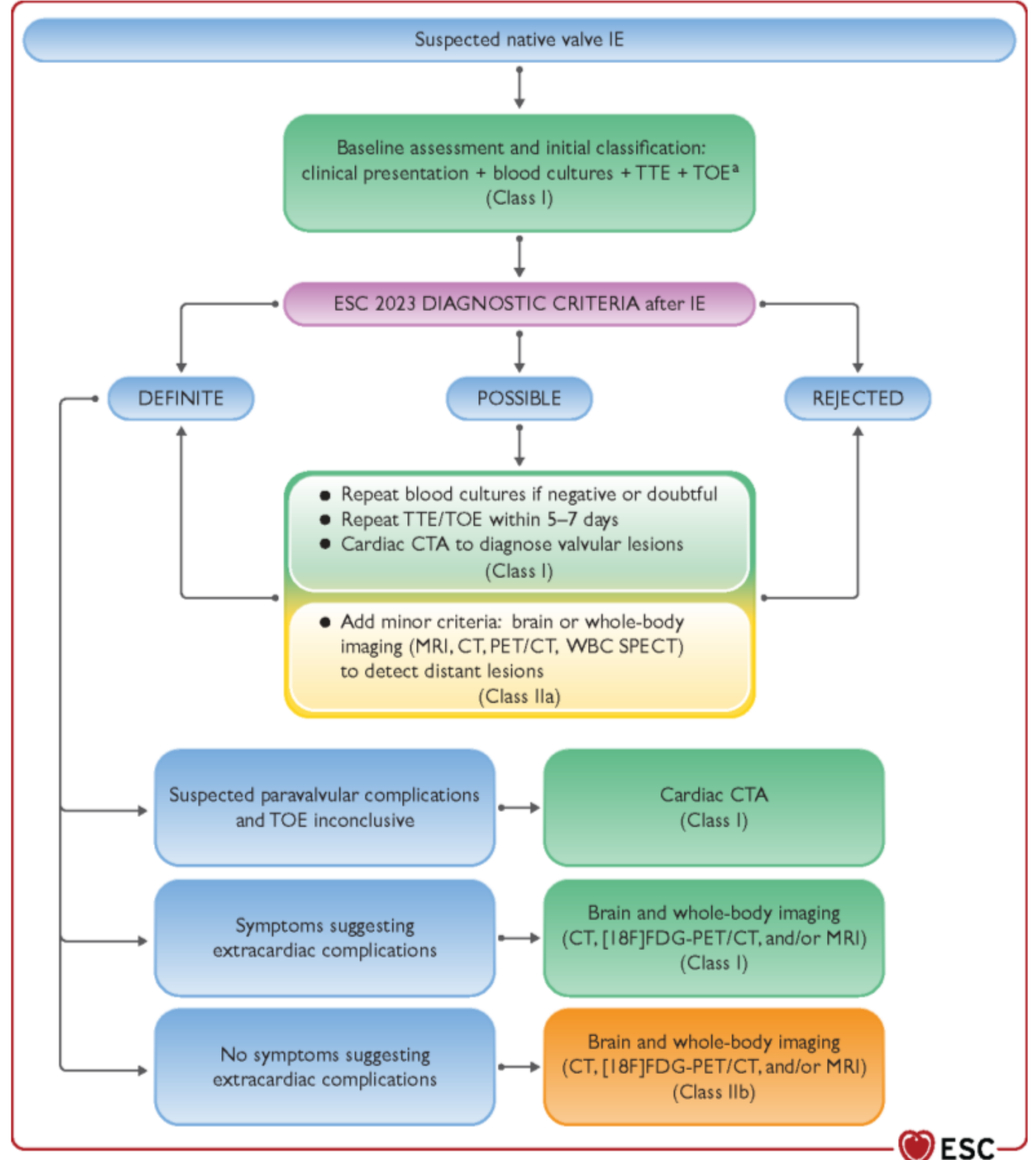
Large residual vegetations (>20 mm) after recurrent septic emboli (Ic)
Tricuspid repair better than replacement

European Society of Cardiology 2023 algorithm for diagnosis of native valve infective endocarditis



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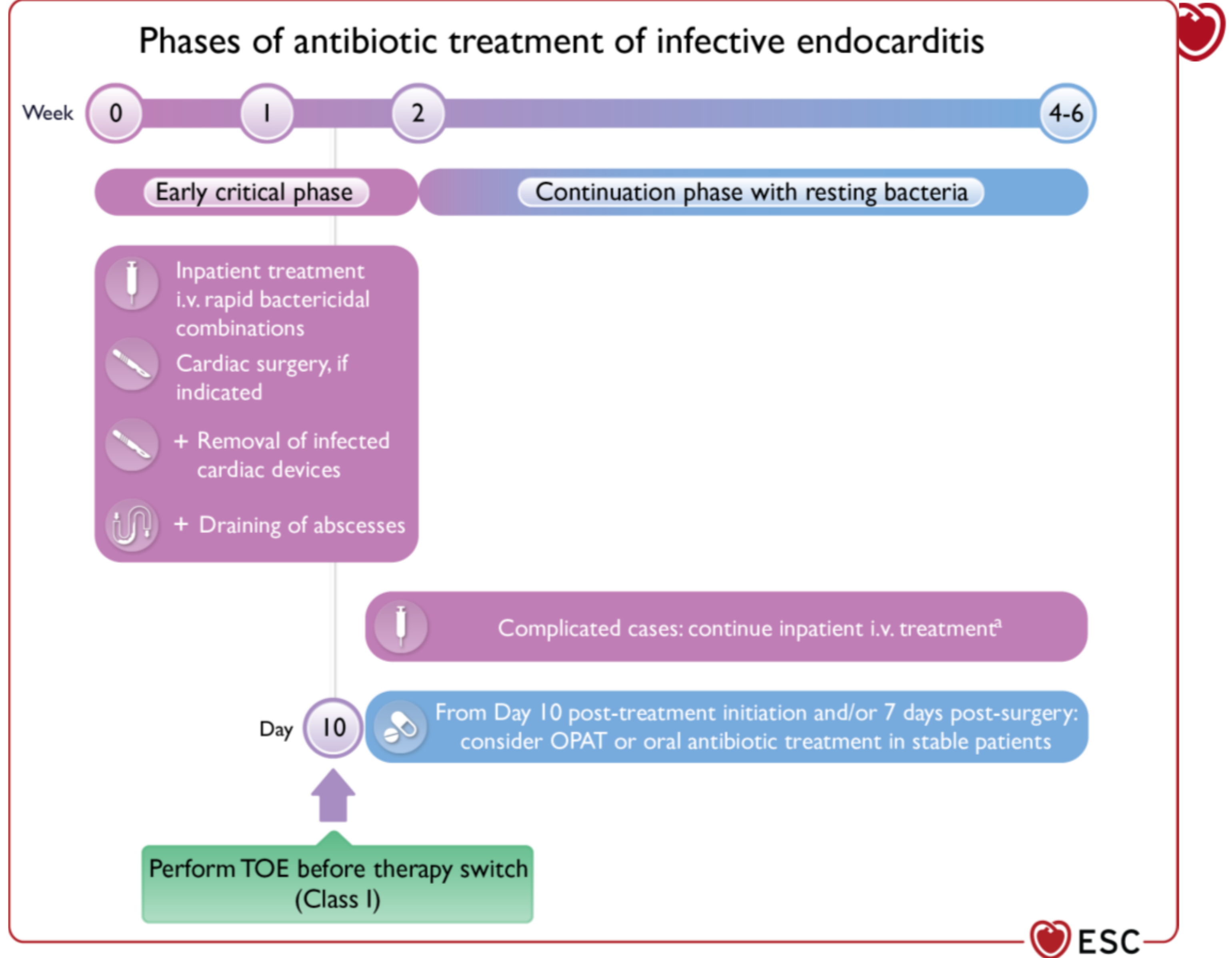
Phases of antibiotic treatment for infective endocarditis in relation to outpatient parenteral antibiotic therapy and partial oral endocarditis treatment



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Factors associated with an increased rate of relapse of infective endocarditis

Inadequate antibiotic treatment (i.e. agent, dose, duration)
Resistant microorganisms (i.e. *Brucella* spp., *Legionella* spp., *Chlamydia* spp., *Mycoplasma* spp., *Mycobacterium* spp., *Bartonella* spp., *C. Burnetii*, fungi)
Infective endocarditis caused by *S. aureus* and *Enterococcus* spp.
Polymicrobial infection in people who inject drugs
Periannular extension
Prosthetic valve endocarditis
Persistent metastatic foci of infection (abscesses)
Resistance to conventional antibiotic regimens
Positive valve culture
Persistence of fever at the 7th post-operative day
Chronic kidney disease, especially on dialysis
High-risk behaviour, inability to adhere to medical treatment
Poor oral hygiene

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Summary:

1. Remember cardiac and non cardiac risk factors
2. Prevention & education of the patient
3. Multimodality imaging
4. Definition of the endocarditis team
5. Consideration of OPAT management if uncomplication – non surgical – IE

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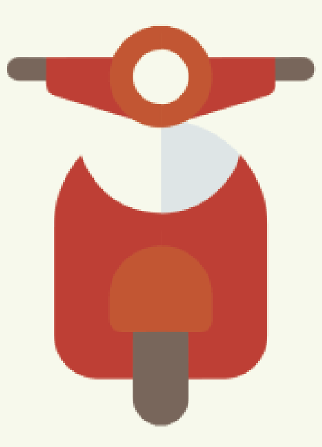

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