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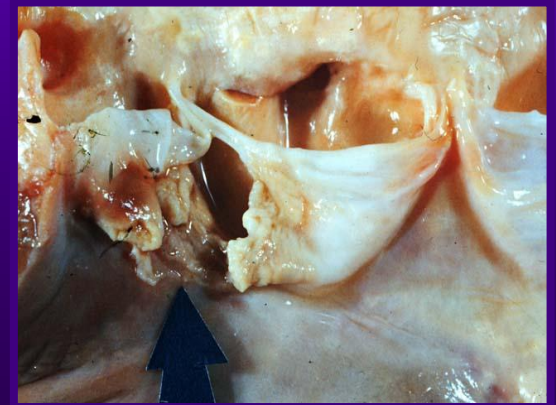
ENDOCARDITE INFECCIOSA *GUIDELINES*

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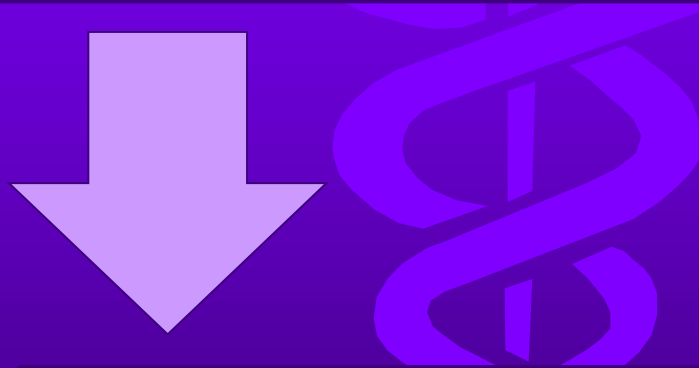
CHLN



Guidelines on the prevention, diagnosis, and treatment of infective endocarditis (new version 2009)

**The Task Force on the Prevention, Diagnosis, and Treatment of
Infective Endocarditis of the European Society of Cardiology (ESC)**

**Endorsed by the European Society of Clinical Microbiology and Infectious Diseases
(ESCMID) and by the International Society of Chemotherapy (ISC) for Infection and
Cancer**



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)**

INTRODUÇÃO

- Endocardite infecciosa é uma doença rara, que apesar dos múltiplos avanços técnicos se mantém com elevada mortalidade e complicações graves.
 - Na pediatria – CC e neonatais



INTRODUÇÃO

- Nas *guidelines* de 2009 tinham sido restringidas as indicações para profilaxia Ab.
- Em 2015 são introduzidas alterações no âmbito da abordagem do doente, por uma equipa especializada – *Endocarditis team* e, relativamente ao diagnóstico, o uso de métodos de imagem no campo da medicina nuclear.

PREVENÇÃO

- Bacteriemias de baixo grau são frequentes nas actividades diárias (escovagem, mastigação).
- Maioria dos estudos não revela uma associação entre procedimentos dentários invasivos e EI.
- O uso de Ab tem risco de reacção anafilática, que aumenta com o maior uso.
- O uso indiscriminado de Ab aumenta as resistências.

A eficácia, no humano, da profilaxia Ab nas bacteriemias é controversa (estudos são em modelo animal).

PREVENÇÃO

Table 3 Cardiac conditions at highest risk of infective endocarditis for which prophylaxis should be considered when a high-risk procedure is performed

Recommendations	Class ^a	Level ^b
Antibiotic prophylaxis should be considered for patients at highest risk for 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 or valvular regurgitation remains.	IIa	C
Antibiotic prophylaxis is not recommended in other forms of valvular or CHD.	III	C

CHD = congenital heart disease; IE = infective endocarditis.

^aClass of recommendation.

^bLevel of evidence.

^cReference(s) supporting recommendations.

Table 4 Non-specific prevention measures to be followed in high-risk and intermediate-risk patients

These measures should ideally be applied to the general population and particularly reinforced in high-risk patients:
• Strict dental and cutaneous hygiene. Dental follow-up should be performed twice a year in high-risk patients and yearly in the others.
• Disinfection of wounds.
• Eradication or decrease of chronic bacterial carriage: skin, urine.
• Curative antibiotics for any focus of bacterial infection.
• No self-medication with antibiotics.
• Strict infection control measures for any at-risk procedure.
• Discourage piercing and tattooing.
• Limit the use of infusion catheters and invasive procedure when possible. Favour peripheral over central catheters, and systematic replacement of the peripheral catheter every 3–4 days. Strict adherence to care bundles for central and peripheral cannulae should be performed.

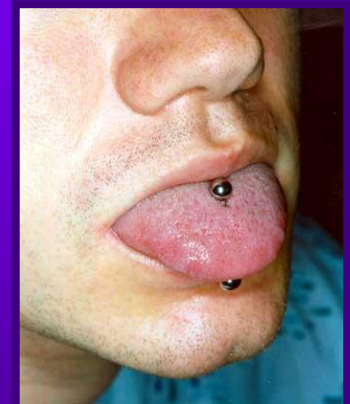
PREVENÇÃO

Procedimentos dentários:

Necessidade de Profilaxia	Sem necessidade de Profilaxia
1. Extração dentária 2. Procedimentos periodontais 3. Destartarização e curetagem subgengival 4. Colocação de implantes 5. Reimplantação de dentes avulsivos 6. Instrumentação endodôntica ou cirurgia apical 7. Colocação de fio de retração gengival 8. Colocação de bandas ortodônticas 9. Anestesia intraligamentar	1. Injeção anestésica através de tecido não infectado 2. Realização de radiografias dentárias 3. Colocação, ajuste ou remoção de sistemas de ortodôncia 4. Queda de dentição temporária 5. Sangramento por traumatismo dos lábios ou mucosa oral

PIERCING

- Penetração com jóias em orifícios feitos nas sobrancelhas, helix da orelha, lábios, língua, nariz, umbigo, mamilos e genitais.
- 2002 – Universitários em New York
Homens – 42% Mulheres – 60%
- Infecção local por *Staphylococcus aureus*, estreptococos do grupo A, *Pseudomonas* sp.
- El: Língua > Orelha > Nariz > Mamilo/umbigo



TATUAGENS



- Pigmentos industriais orgânicos com alta carga de impurezas e microorganismos:
 - Infecções virais: hepatites B,C,D, HIV, Papilomavirus
 - Bactérias: St. aureus, St. Pyogenes, Pseudomonas sp., Clostridium tetani, Haemophilus ducreyi, Treponema pallidum, Mycobacterium tuberculosis, Mycobacterium leprae
 - Fungos
- 63 amostras de tinta destinadas a tatuagens e maquiagens permanentes foram analisadas antes do uso:
18% positivas para bactérias e fungos

Reus HR et al – ND COS 012, Nov2001



ENDOCARDITIS TEAM

- Importância do tratamento destes doentes por equipas especializadas e multidisciplinares em centros de referência.

When to refer a patient with IE to an 'Endocarditis Team' in a reference centre

1. 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.
2. Patients with non-complicated IE can be initially managed in a non-reference centre, but with regular communication with the reference centre, consultations with the multidisciplinary 'Endocarditis Team', and, when needed, with external visit to the reference centre.

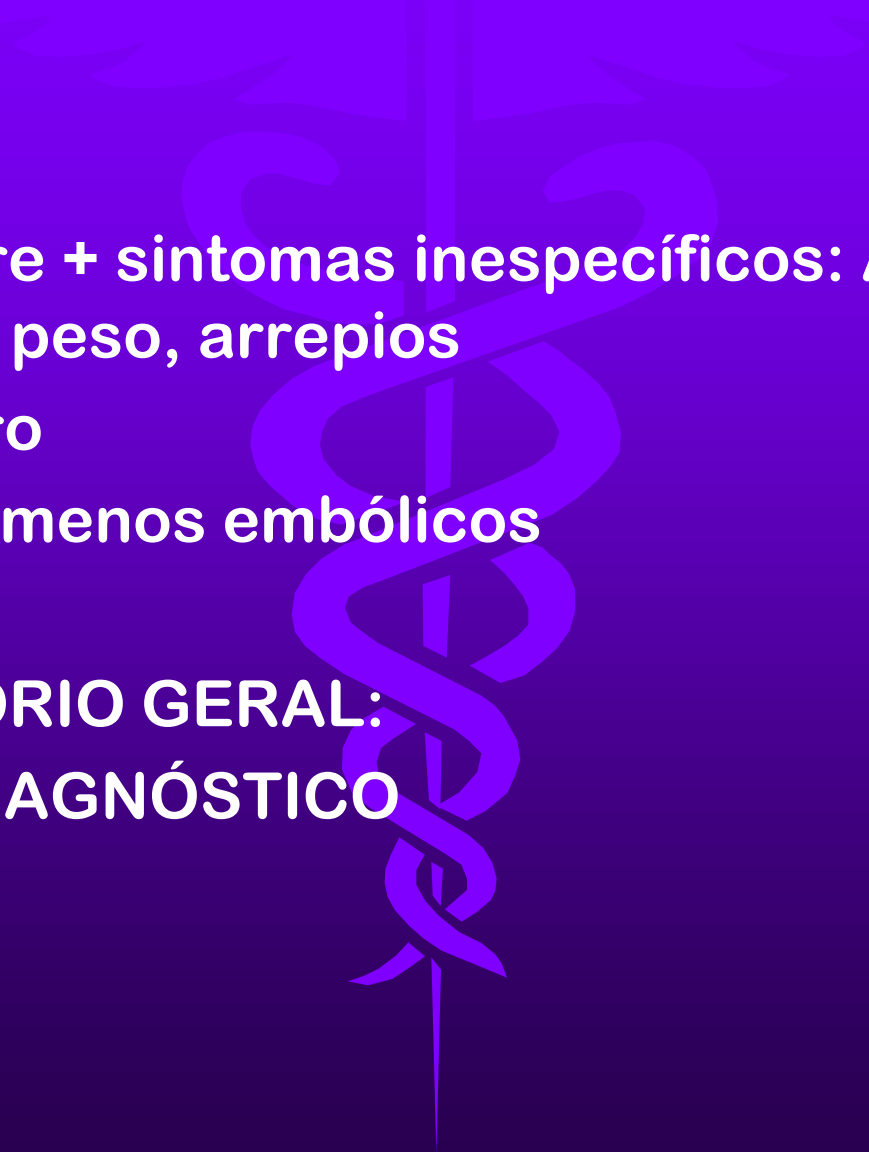
Characteristics of the reference centre

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 (HF, abscess, large vegetation, neurological, and embolic complications).
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.

Role of the 'Endocarditis Team'

1. The 'Endocarditis Team' should have meetings on a regular basis in order to discuss cases, take surgical decisions, and define the type of follow-up.
2. The 'Endocarditis Team' chooses the type, duration, and mode of follow up of antibiotic therapy, according to a standardized protocol, following the current guidelines.
3. The 'Endocarditis Team' should participate in national or international registries, publicly report the mortality and morbidity of their centre, and be involved in a quality improvement programme, as well as in a patient education programme.
4. The follow-up should be organized on an outpatient visit basis at a frequency depending on the patient's clinical status (ideally at 1, 3, 6, and 12 months after hospital discharge, since the majority of events occur during this period⁵⁷).

DIAGNÓSTICO

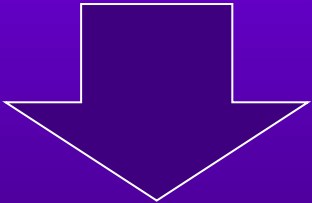


CLÍNICA:

- 90% Febre + sintomas inespecíficos: Anorexia, perda de peso, arrepios
- 85% sopro
- 25% fenômenos embólicos

**LABORATÓRIO GERAL:
NÃO É DIAGNÓSTICO**

MICROBIOLOGIA

- 3 AMOSTRAS DE 10 ML
 - 30´DE INTERVALO
 - CULTURA EM AEROBIOSE E ANAEROBIOSE
 - VIA PERIFÉRICA
 - TÉCNICA ESTÉRIL
- 
-
- RESULTADO POSITIVO TRATAR
 - RESULTADO NEGATIVO – EI COM CULTURA NEGATIVA

MICROBIOLOGIA

Table 12 Investigation of rare causes of blood culture negative infective endocarditis

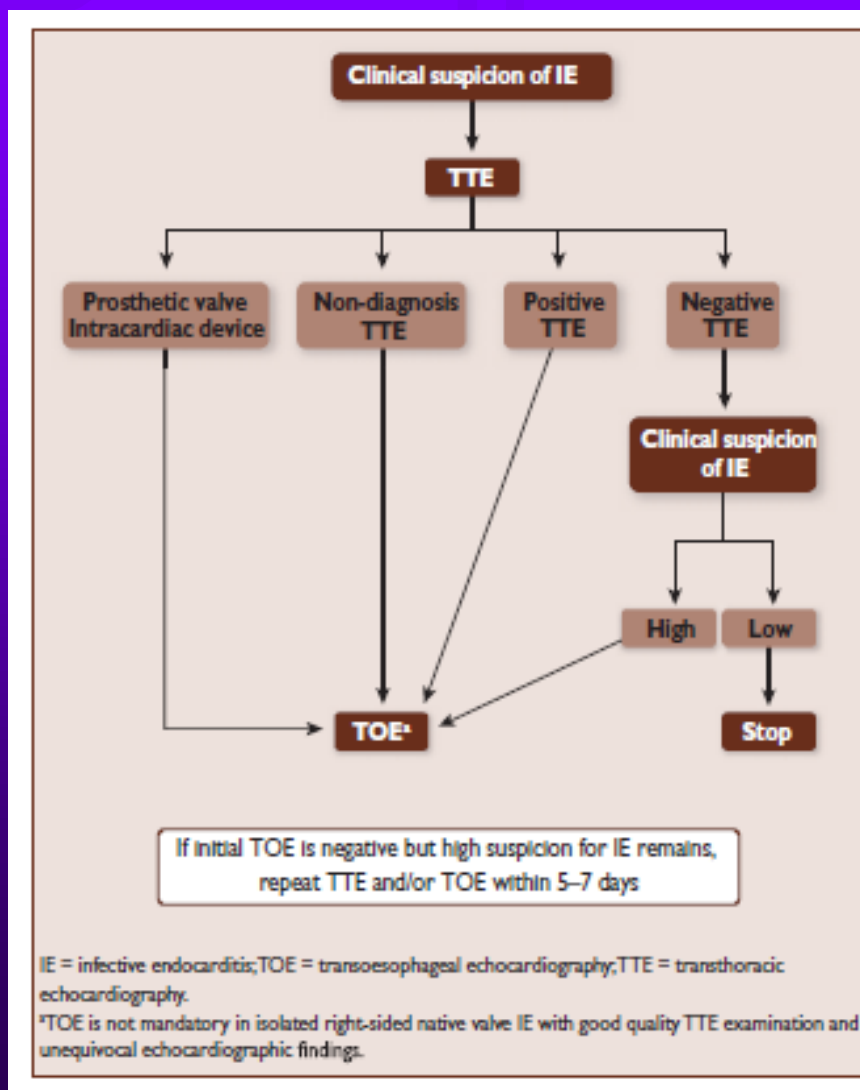
Pathogen	Diagnostic procedures
<i>Brucella spp.</i>	Blood cultures, serology, culture, immunohistology, and PCR of surgical material.
<i>Coxiella burnetii</i>	Serology (IgG phase I >1:800), tissue culture, immunohistology, and PCR of surgical material.
<i>Bartonella spp.</i>	Blood cultures, serology, culture, immunohistology, and PCR of surgical material.
<i>Tropheryma whipplei</i>	Histology and PCR of surgical material.
<i>Mycoplasma spp.</i>	Serology, culture, immunohistology, and PCR of surgical material.
<i>Legionella spp.</i>	Blood cultures, serology, culture, immunohistology, and PCR of surgical material.
<i>Fungi</i>	Blood cultures, serology, PCR of surgical material.

Ig = immunoglobulin; PCR = polymerase chain reaction.

IMAGEM

- Os métodos de imagem são importantes no diagnóstico e manejo do doente.
- O ECO permite uma avaliação diagnóstica, durante o tratamento médico, na cirurgia, qdo necessária, e no follow-up.
- A TAC multicorte , a RMN e as técnicas da medicina nuclear vieram auxiliar na precocidade diagnóstica.

ECOCARDIOGRAFIA



ECOCADIOGRAFIA

	Surgery/necropsy	Echocardiography
Vegetation	Infected mass attached to an endocardial structure or on implanted intracardiac material.	Oscillating or non-oscillating intracardiac mass on valve or other endocardial structures, or on implanted intracardiac material.
Abscess	Perivalvular cavity with necrosis and purulent material not communicating with the cardiovascular lumen.	Thickened, non-homogeneous perivalvular area with echodense or echolucent appearance.
Pseudoaneurysm	Perivalvular cavity communicating with the cardiovascular lumen.	Pulsatile perivalvular echo-free space, with colour-Doppler flow detected.
Perforation	Interruption of endocardial tissue continuity.	Interruption of endocardial tissue continuity traversed by colour-Doppler flow.
Fistula	Communication between two neighbouring cavities through a perforation.	Colour-Doppler communication between two neighbouring cavities through a perforation.
Valve aneurysm	Saccular outpouching of valvular tissue.	Saccular bulging of valvular tissue.
Dehiscence of a prosthetic valve	Dehiscence of the prosthesis.	Paravalvular regurgitation identified by TTE/TOE, with or without rocking motion of the prosthesis.

TOE = transoesophageal echocardiography; TTE = transthoracic echocardiography.

- Sensibilidade diagn. do ECOTT para vegetações é de 50-70% (prótese vs VN) e do ECO TE de 92-96%.
- Especificidade de 90% para ambos.

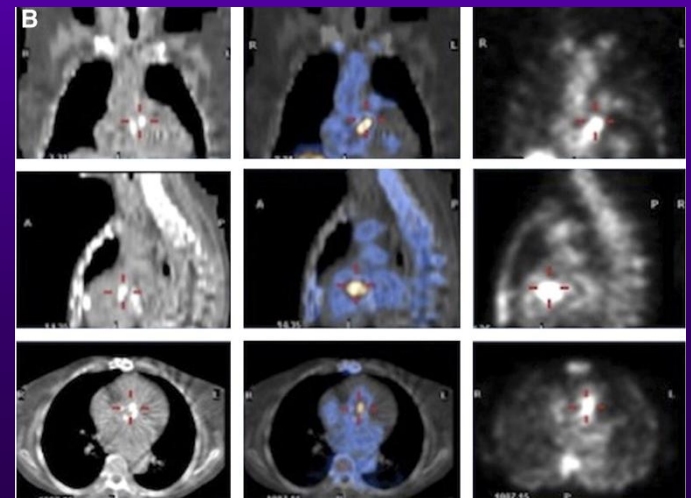
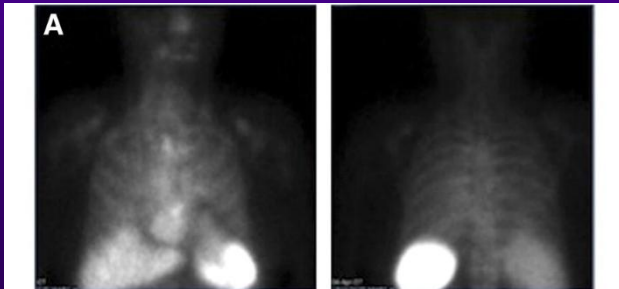


TAC E RMN

- Uteis no diagnóstico de lesões cerebrais. RMN mais sensível.
- A TAC no doente crítico tem a vantagem do tempo de execução.
- A TAC multicorte vem acrescer ao ECO o diagnóstico na avaliação da extensão perivalvular, na imagem pulmonar na EI do lado dto e nos abscessos abdominais (baço).

SPECT E PET - CT

- F-FDG PET e SPECT com leucócitos marcados são utilizados na identificação de focos de infecção, qdo o diagnóstico é duvidoso.
- Utilizados sobretudo em situações de EI em doentes com próteses valvulares ou dispositivos implantados.
- SPECT é mais específico e PET mais sensível.
- PET menos demorado.



CRITÉRIOS DE DIAGNÓSTICO

- Os critérios de Duke modificados apresentam uma sensibilidade de 80%.
- No entanto, têm uma baixa capacidade diagnóstica em casos de EI em prótese valvular ou associada a dispositivos implantados, pois nestes casos a ECO é normal ou inconclusiva em 30%.

Guidelines 2015: Mais 2 critérios major e 1 minor.

Major criteria

1. Blood cultures positive for IE

- a. Typical microorganisms consistent with IE from 2 separate blood cultures:
 - Viridans streptococci, *Streptococcus gallolyticus* (*Streptococcus bovis*), HACEK group, *Staphylococcus aureus*; or
 - Community-acquired enterococci, in the absence of a primary focus; or
- b. Microorganisms consistent with IE from persistently positive blood cultures:
 - ≥ 2 positive blood cultures of blood samples drawn >12 h apart; or
 - All of 3 or a majority of ≥ 4 separate cultures of blood (with first and last samples drawn ≥ 1 h apart); or
- c. Single positive blood culture for *Coxiella burnetii* or phase I IgG antibody titre $>1:800$

2. Imaging positive for IE

- a. Echocardiogram positive for IE:
 - Vegetation;
 - Abscess, pseudoaneurysm, intracardiac fistula;
 - Valvular perforation or aneurysm;
 - New partial dehiscence of prosthetic valve.
- b. Abnormal activity around the site of prosthetic valve implantation detected by ^{18}F -FDG PET/CT (only if the prosthesis was implanted for >3 months) or radiolabelled leukocytes SPECT/CT.
- c. Definite paravalvular lesions by cardiac CT.

Minor criteria

1. Predisposition such as predisposing heart condition, or injection drug use.
2. Fever defined as temperature $>38^\circ\text{C}$.
3. Vascular phenomena (including those detected by imaging only): major arterial emboli, septic pulmonary infarcts, infectious (mycotic) aneurysm, intracranial haemorrhage, conjunctival haemorrhages, and Janeway's lesions.
4. Immunological phenomena: glomerulonephritis, Osler's nodes, Roth's spots, and rheumatoid factor.
5. Microbiological evidence: positive blood culture but does not meet a major criterion as noted above or serological evidence of active infection with organism consistent with IE.

Table 13 Definition of infective endocarditis according to the modified Duke criteria (adapted from Li et al.⁸⁷)

Definite IE

Pathological criteria

- Microorganisms demonstrated by culture or on histological examination of a vegetation, a vegetation that has embolized, or an intracardiac abscess specimen; or
- Pathological lesions; vegetation or intracardiac abscess confirmed by histological examination showing active endocarditis

Clinical criteria

- 2 major criteria; or
- 1 major criterion and 3 minor criteria; or
- 5 minor criteria

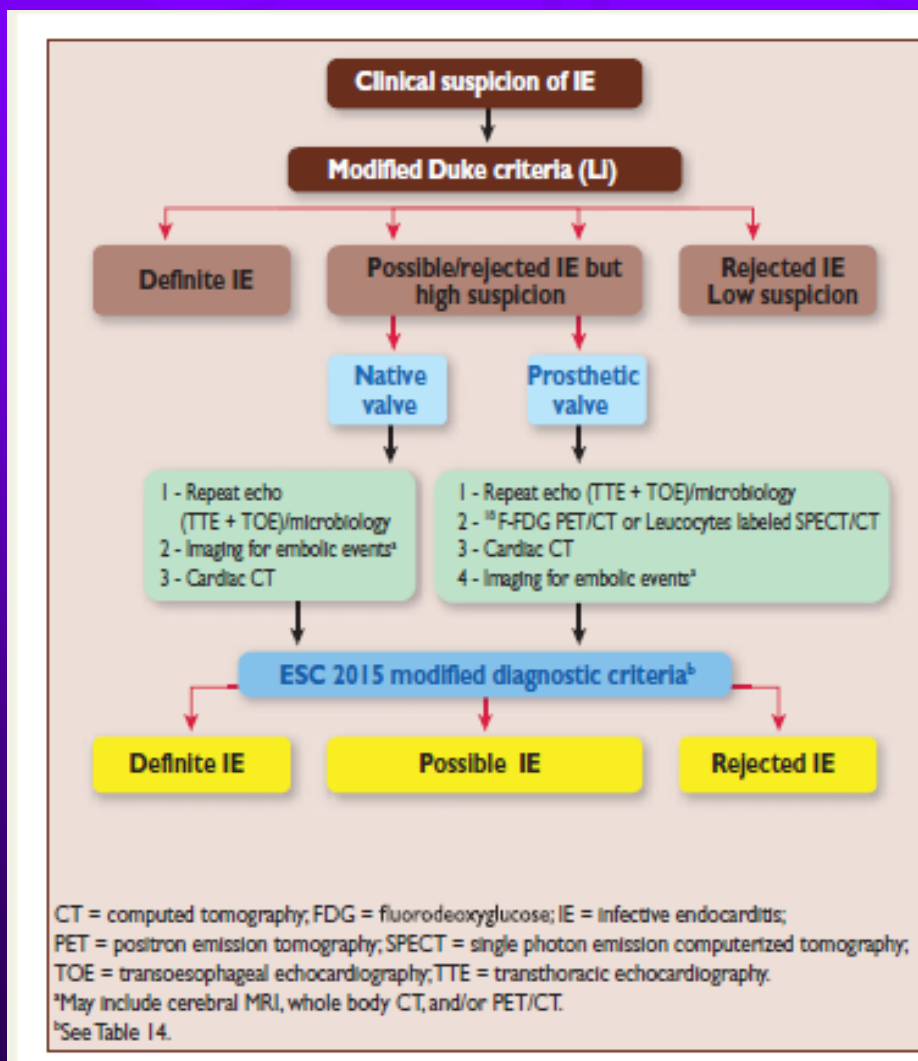
Possible IE

- 1 major criterion and 1 minor criterion; or
- 3 minor criteria

Rejected IE

- Firm alternate diagnosis; or
- Resolution of symptoms suggesting IE with antibiotic therapy for ≤ 4 days; or
- No pathological evidence of IE at surgery or autopsy, with antibiotic therapy for ≤ 4 days; or
- Does not meet criteria for possible IE, as above

ALGORITMO DIAGN 2015



FACTORES PROGNÓSTICOS

Patient characteristics

- Older age
- Prosthetic valve IE
- Diabetes mellitus
- Comorbidity (e.g., frailty, immunosuppression, renal or pulmonary disease)

Clinical complications of IE

- Heart failure
- Renal failure
- >Moderate area of ischaemic stroke
- Brain haemorrhage
- Septic shock

Microorganism

- *Staphylococcus aureus*
- Fungi
- Non-HACEK Gram-negative bacilli

Echocardiographic findings

- Periannular complications
- Severe left-sided valve regurgitation
- Low left ventricular ejection fraction
- Pulmonary hypertension
- Large vegetations
- Severe prosthetic valve dysfunction
- Premature mitral valve closure and other signs of elevated diastolic pressures

TERAPÊUTICA AB

- Iniciada o mais precocemente possível.
- Esquemas longos:
 - 2-6 S em EI válvula nativa
 - 6S em EI prótese valvular
- Se cirurgia e material retirado tiver culturas positivas, reinicia-se o esquema Ab.
- Uso mais cauteloso dos aminoglicosídeos pela toxicidade renal – *guidelines* 2015.

Oral Streptococci e *Streptococcus grupo bovis*

Antibiotic	Dosage and route	Duration (weeks)	Class ^a	Level ^a
Strains penicillin-susceptible (MIC $\leq$ 0.125 mg/L) oral and digestive streptococci				
Standard treatment: 4-week duration				
Penicillin G or Amoxicillin ^a or Ceftriaxone ^f	12–18 million U/day i.v. either in 4–6 doses or continuously	4	I	B
	100–200 mg/kg/day i.v. in 4–6 doses	4	I	B
	2 g/day i.v. or i.m. in 1 dose	4	I	B
	Paediatric doses:^g Penicillin G 200,000 U/kg/day i.v. in 4–6 divided doses Amoxicillin 300 mg/kg/day i.v. in 4–6 equally divided doses Ceftriaxone 100 mg/kg/day i.v. or i.m. in 1 dose			
Standard treatment: 2-week duration				
Penicillin G or Amoxicillin ^a or Ceftriaxone ^f combined with Gentamicin ^h or Netilmicin	12–18 million U/day i.v. either in 4–6 doses or continuously	2	I	B
	100–200 mg/kg/day i.v. in 4–6 doses	2	I	B
	2 g/day i.v. or i.m. in 1 dose	2	I	B
	3 mg/kg/day i.v. or i.m. in 1 dose	2	I	B
	4–5 mg/kg/day i.v. in 1 dose	2	I	B
	Paediatric doses:^g Penicillin G, amoxicillin, and ceftriaxone as above Gentamicin 3 mg/kg/day i.v. or i.m. in 1 dose or 3 equally divided doses			
In beta-lactam allergic patientsⁱ				
Vancomycin ^j	30 mg/kg/day i.v. in 2 doses	4	I	C
	Paediatric doses:^g Vancomycin 40 mg/kg/day i.v. in 2 or 3 equally divided doses			

Strains relatively resistant to penicillin (MIC 0.250–2 mg/l)^k				
Standard treatment				
Penicillin G or Amoxicillin ^a or Ceftriaxone ^f combined with Gentamicin ^h	24 million U/day i.v. either in 4–6 doses or continuously	4	I	B
	200 mg/kg/day i.v. in 4–6 doses	4	I	B
	2 g/day i.v. or i.m. in 1 dose	4	I	B
	3 mg/kg/day i.v. or i.m. in 1 dose	2	I	B
In beta-lactam allergic patientsⁱ				
Vancomycin ^j with Gentamicin ^k	30 mg/kg/day i.v. in 2 doses	4	I	C
	3 mg/kg/day i.v. or i.m. in 1 dose	2	I	C
	Paediatric doses:^g As above			

Staphylococcus spp

Antibiotic	Dosage and route	Duration (weeks)	Class ^d	Level ^f	P
Native valves					
Methicillin-susceptible staphylococci					
(Flu)cloxacillin or oxacillin	12 g/day i.v. in 4–6 doses	4–6	I	B	
	Paediatric doses^d 200–300 mg/kg/day i.v. in 4–6 equally divided doses				
Alternative therapy^a Cotrimoxazole ^e with Clindamycin	Sulfamethoxazole 4800 mg/day and Trimethoprim 960 mg/day (i.v. in 4–6 doses)	1 i.v. + 5 oral intake	IIb	C	
	1800 mg/day i.v. in 3 doses	1	IIb	C	
	Paediatric doses^d Sulfamethoxazole 60 mg/kg/day and Trimethoprim 12 mg/kg/day (i.v. in 2 doses) Clindamycin 40 mg/kg/day (i.v. in 3 doses)				
Penicillin-allergic patients^b or methicillin-resistant staphylococci					
Vancomycin ^{b,***}	30–60 mg/kg/day i.v. in 2–3 doses	4–6	I	B	
	Paediatric doses^d 40 mg/kg/day i.v. in 2–3 equally divided doses				
Alternative therapy^{***} Daptomycin ^{***d}	10 mg/kg/day i.v. once daily	4–6	IIa	C	
	Paediatric doses^d 10 mg/kg/day i.v. once daily				
Alternative therapy^a Cotrimoxazole ^e with Clindamycin	Sulfamethoxazole 4800 mg/day and Trimethoprim 960 mg/day (i.v. in 4–6 doses)	1 i.v. + 5 oral intake	IIb	C	
	1800 mg/day IV in 3 doses	1	IIb	C	

Prosthetic valves					
Methicillin-susceptible staphylococci					
(Flu)cloxacillin or oxacillin with Rifampin ^a and Gentamicin ^f	12 g/day i.v. in 4–6 doses	≥ 6	I	B	
	900–1200 mg i.v. or orally in 2 or 3 divided doses	≥ 6	I	B	
	3 mg/kg/day i.v. or i.m. in 1 or 2 doses	2	I	B	
	Paediatric doses^d Oxacillin and (flu)cloxacillin as above Rifampin 20 mg/kg/day i.v. or orally in 3 equally divided doses				
Penicillin-allergic patients^b and methicillin-resistant staphylococci					
Vancomycin ^b with Rifampin ^a and Gentamicin ^f	30–60 mg/kg/day i.v. in 2–3 doses	≥ 6	I	B	
	900–1200 mg i.v. or orally in 2 or 3 divided doses	≥ 6	I	B	
	3 mg/kg/day i.v. or i.m. in 1 or 2 doses	2	I	B	
	Paediatric dosing^d As above				

Enterococcus spp

Antibiotic	Dosage and route	Duration, weeks	Class ^a	Level ^b	Ref. ^c
Beta-lactam and gentamicin-susceptible strains (for resistant isolates see ^{a,b,c})					
Amoxicillin ^a with Gentamidin ^d	200 mg/kg/day Iv. in 4–6 doses	4–6	I	B	68, 129, 135
	3 mg/kg/day Iv. or I.m. in 1 dose	2–6 ^{ee}	I	B	134, 186
	Paediatric doses:^e Ampicillin 300 mg/kg/day Iv. in 4–6 equally divided doses Gentamicin 3 mg/kg/ day Iv. or I.m. in 3 equally divided doses				
Ampicillin with Ceftriaxone	200 mg/kg/day Iv. in 4–6 doses	6	I	B	183– 185
	4 g/day Iv. or I.m. in 2 doses	6	I	B	
	Paediatric doses:^e Amoxicillin as above Ceftriaxone 100 mg/ kg/12 h Iv. or I.m.				
Vancomycin ^f with Gentamidin ^d	30 mg/kg/day Iv. in 2 doses	6	I	C	
	3 mg/kg/day Iv. or I.m. in 1 dose	6	I	C	
	Paediatric doses:^e Vancomycin 40 mg/kg/day Iv. in 2–3 equally divided doses. Gentamicin as above				

TERAPÊUTICA EMPIRICA

Community-acquired native valves or late prosthetic valves (≥ 12 months post surgery) endocarditis

Ampicillin with (Flu)cloxacillin or oxacillin with Gentamicin ^d	12 g/day I.v. in 4–6 doses 12 g/day I.v. in 4–6 doses 3 mg/kg/day I.v. or I.m. in 1 dose	IIa	C	Patients with BCNE should be treated in consultation with an ID specialist.
Vancomycin ^d with Gentamicin ^d	30–60 mg/kg/day I.v. in 2–3 doses 3 mg/kg/day I.v. or I.m. in 1 dose	IIb	C	For penicillin-allergic patients

Early PVE (<12 months post surgery) or nosocomial and non-nosocomial healthcare associated endocarditis

Vancomycin ^d with Gentamicin ^d with Rifampin	30 mg/kg/day I.v. in 2 doses 3 mg/kg/day I.v. or I.m. in 1 dose 900–1200 mg I.v. or orally in 2 or 3 divided doses	IIb	C	Rifampin is only recommended for PVE and it should be started 3–5 days later than vancomycin and gentamicin has been suggested by some experts. In healthcare associated native valve endocarditis, some experts recommend in settings with a prevalence of MRSA infections > 5% the combination of cloxacillin plus vancomycin until they have the final <i>S. aureus</i> identification
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TERAPÊUTICA CIRÚRGICA

Indications for surgery	Timing ^a	Class ^b	Level ^c
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 ^d	Urgent	IIb	C

TERAPÊUTICA CIRÚRGICA

- A El lado direito é mais freq no uso de drogas.
- Nas crianças surge com CC associada.
- *S. aureus* é o agente mais freq.

Recommendation	Class ^a	Level ^b
Surgical treatment should be considered in the following scenarios: • Microorganisms difficult to eradicate (e.g. persistent fungi) or bacteraemia for > 7 days (e.g. <i>S. aureus</i>, <i>P. aeruginosa</i>) despite adequate antimicrobial therapy or • Persistent tricuspid valve vegetations > 20 mm after recurrent pulmonary emboli with or without concomitant right heart failure or • Right HF secondary to severe tricuspid regurgitation with poor response to diuretic therapy	IIa	C

FOLLOW UP

- Não esquecer do risco de recorrência (2-6%)
 - Recaída pelo mm agente
 - Reinfecção por agente diferente ou após 6M

- Factores associados:

▪ Inadequate antibiotic treatment (agent, dose, duration)
▪ Resistant microorganisms, i.e. <i>Brucella</i> spp., <i>Legionella</i> spp., <i>Chlamydia</i> spp., <i>Mycoplasma</i> spp., <i>Mycobacterium</i> spp., <i>Bartonella</i> spp., <i>Coxiella Burnetii</i> , fungi
▪ Polymicrobial infection in an IVDA
▪ Empirical antimicrobial therapy for BCNIE
▪ Periannular extension
▪ Prosthetic valve IE
▪ Persistent metastatic foci of infection (abscesses)
▪ Resistance to conventional antibiotic regimens
▪ Positive valve culture
▪ Persistence of fever at the seventh postoperative day
▪ Chronic dialysis

FOLLOW UP

- Visitas regulares no 1º ano
 - Análises laboratoriais
 - Exames culturais
- Lembrar medidas profiláticas
- Sobrevida de 80-90% ao ano.

OBRIGADA

