

# Infective Endocarditis



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# Infective Endocarditis

## New guidelines ESC 2015

1. Prevention
2. The “Endocarditis Team”
3. Diagnosis
4. ***Treatment***
5. Specific situations

## General principles :

- (1) The indications and pattern of use of aminoglycosides have changed. They are no longer recommended in staphylococcal NVE because their clinical benefits have not been demonstrated, but they can increase renal toxicity; when they are indicated in other conditions, aminoglycosides should be given in a single daily dose to reduce nephrotoxicity

- (2) Rifampin should be used only in foreign body infections such as PVE after 3–5 days of effective antibiotic therapy, once the bacteraemia has been cleared.
- (3) Daptomycin and fosfomycin have been recommended for treating staphylococcal endocarditis and netilmicin for treating penicillin-susceptible oral and digestive streptococci,

## Antibiotic treatment

### Oral *Streptococci* and *Streptococcus bovis* group

Antibiotic	Dosage and route	Duration (weeks)	Class	Level
<b>Strains penicillin-susceptible (MIC <math>\leq 0.125</math> mg/L) oral and digestive streptococci</b>				
<b>Standard treatment: 4-week duration</b>				
Penicillin G	12–18 million U/day i.v. either in 4–6 doses or continuously	4	I	B
<i>or</i>				
Amoxicillin	100–200 mg/kg/day i.v. in 4–6 doses	4	I	B
<i>or</i>				
Ceftriaxone	2 g/day i.v. or i.m. in 1 dose	4	I	B
<b>In beta-lactam allergic patients</b>				
Vancomycin	30 mg/kg/day i.v. in 2 doses	4	I	C



## Antibiotic treatment

### Oral *Streptococci* and *Streptococcus bovis* group

Antibiotic	Dosage and route	Duration (weeks)	Class	Level
<b>Strains relatively resistant to penicillin (MIC 0.250–2 mg/l)</b>				
<b>Standard treatment</b>				
Penicillin G	24 million U/day i.v. either in 4–6 doses or continuously	4	I	B
<i>or</i>				
Amoxicillin	200 mg/kg/day i.v. in 4–6 doses	4	I	B
<i>or</i>				
Ceftriaxone	2 g/day i.v. or i.m. in 1 dose	4	I	B
<i>with</i>				
Gentamicin	3 mg/kg/day i.v. or i.m. in 1 dose	2	I	B
<b>In beta-lactam allergic patients</b>				
Vancomycin	30 mg/kg/day i.v. in 2 doses	4	I	C
<i>with</i>				
Gentamicin	3 mg/kg/day i.v. or i.m. in 1 dose	2	I	C

## Antibiotic treatment *Staphylococcus* spp. Native valves

Antibiotic	Dosage and route	Duration (weeks)	Class	Level
<b>Native valves</b>				
<b>Methicillin-susceptible staphylococci</b>				
(Flu)cloxacillin or oxacillin	12 g/day i.v. in 4–6 doses	4–6	I	B
Alternative therapy				
Cotrimoxazole WITH Clindamycin	Sulfamethoxazole 4800 mg/day and Trimethoprim 960 mg/day (i.v. in 4–6 doses) 1800 mg/day IV in 3 doses	1 i.v. + 5 oral intake 1	IIb	C
<b>Penicillin-allergic patients or methicillin-resistant staphylococci</b>				
Vancomycin	30–60 mg/kg/day i.v. in 2–3 doses	4–6	I	B
Alternative therapy				
Daptomycin	10 mg/kg/day i.v. once daily	4–6	IIa	C
Alternative therapy				
Cotrimoxazole WITH Clindamycin	Sulfamethoxazole 4800 mg/day and Trimethoprim 960 mg/day (i.v. in 4–6 doses) 1800 mg/day IV in 3 doses	1 i.v. + 5 oral intake 1	IIb	C

## Antibiotic treatment *Staphylococcus* spp. Prosthetic valves

Antibiotic	Dosage and route	Duration (weeks)	Class	Level
Prosthetic valves				
Methicillin-susceptible staphylococci				
(Flu) cloxacillin or oxacillin	12 g/day i.v. in 4-6 doses	≥6	I	B
WITH Rifampin	900-1200 mg i.v. or orally in 2 or 3 divided doses	≥6		
AND Gentamicin	3 mg/kg/day i.v. or i.m. in 1 or 2 doses	2		
Penicillin-allergic patients and methicillin-resistant staphylococci				
Vancomycin	30-60 mg/kg/day i.v. in 2-3 doses	≥6	I	B
WITH Rifampin	900-1200 mg i.v. or orally in 2 or 3 divided doses	≥6		
AND Gentamicin	3 mg/kg/day i.v. or i.m. in 1 or 2 doses	2		



## Antibiotic treatment *Enterococcus* spp.

Antibiotic	Dosage and route	Duration weeks	Class	Level
Beta-lactam and gentamicin-susceptible strains				
Amoxicillin <i>with</i> Gentamicin	200 mg/kg/day i.v. in 4–6 doses	4–6	I	B
	3 mg/kg/day i.v. or i.m. in 1 dose	2–6		
	<b>or</b>			
Ampicillin <i>with</i> Ceftriaxone	200 mg/kg/day i.v. in 4–6 doses	6	I	B
	4 g/day i.v. or i.m. in 2 doses	6		
	<b>or</b>			
Vancomycin <i>with</i> Gentamicin	30 mg/kg/day i.v. in 2 doses	6	I	C
	3 mg/kg/day i.v. or i.m. in 1 dose	6		

## Antibiotic therapy

### Empirical treatment

Antibiotic	Dosage and route	Class	Level
Community-acquired NVE or late PVE (≥12 months post surgery)			
Ampicillin WITH (Flu)cloxacillin or oxacillin WITH Gentamicin	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
Vancomycin WITH Gentamicin	30–60 mg/kg/day i.v. in 2–3 doses  3 mg/kg/day i.v. or i.m. in 1 dose		
Early PVE (<12 months post surgery) or nosocomial and non-nosocomial healthcare associated endocarditis			
Vancomycin WITH Gentamicin 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

## Indications and timing of surgery

Indications for surgery	Timing	Class	Level
<b>1. Heart Failure</b>			
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
<b>2. Uncontrolled infection</b>			
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
<b>3. Prevention of embolism</b>			
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

Thank you