

Diagnosis and Management of Infective Endocarditis (IE)

Standard Operating Procedure (SOP)

Special Region (1)

Union of Myanmar

Version: 1.0

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Approved by: Internal Medicine Unit

1. Purpose

To provide a standardized, evidence-based approach for the diagnosis, risk stratification, and management of infective endocarditis in SR-1 healthcare settings.

2. Definition

Infective endocarditis is a microbial infection of the endocardial surface of the heart, typically involving heart valves.

3. Classification

- Native Valve IE
- Prosthetic Valve IE
- Device-related IE
- Acute IE
- Subacute IE

4. Etiology

Common organisms include *Streptococcus viridans*, *Staphylococcus aureus*, *Enterococcus*, and HACEK organisms.

5. Risk Factors

- Rheumatic heart disease
- Prosthetic valves
- Congenital heart disease
- Previous IE
- IV drug use
- Poor dental hygiene

6. Clinical Features

- Fever
- Fatigue
- Weight loss
- New murmur
- Heart failure

Peripheral signs:

- Janeway lesions, Osler nodes, Roth spots and Splinter hemorrhages

7. Diagnosis

Use Modified Duke Criteria.

1. Major Criteria

1.1 Positive Blood Cultures (Typical Organisms)

At least one of the following:

Two separate positive blood cultures for:

- *Streptococcus viridans*
- *Staphylococcus aureus*
- Enterococcus (without primary focus)
- HACEK organisms

OR

- Persistently positive cultures:
- ≥ 2 positive cultures >12 hours apart
- OR 3/3 or majority of ≥ 4 cultures

1.2 Evidence of Endocardial Involvement

Positive echocardiogram showing:

- Vegetation
- Abscess
- New prosthetic valve dehiscence

OR

- New valvular regurgitation (important!)

2. Minor Criteria

- Fever $\geq 38^{\circ}\text{C}$
- Predisposing heart condition (e.g., RHD) or IV drug use
- Vascular phenomena:
 - Emboli (brain, lung, spleen)
 - Janeway lesions
- Immunologic phenomena:
 - Osler nodes
 - Roth spots
 - Glomerulonephritis
- Microbiological evidence (not meeting major criteria)

Diagnosis	Criteria
Definite IE	2 Major OR 1 Major + 3 Minor OR 5 Minor
Possible IE	1 Major + 1 Minor OR 3 Minor
Rejected IE	Alternative diagnosis OR resolution with short antibiotics

8. Investigations

- Blood cultures (3 sets before antibiotics)
- CBC, CRP
- Renal function
- Echocardiography (TTE/TEE)

9. Initial Management

- Oxygen if needed
- IV access
- Treat sepsis

10. Antibiotic therapy

Empirical antibiotics

Clinical Scenario	Likely Organisms	Recommended Regimen
Native Valve IE (Community-acquired, stable)	Streptococcus viridans, MSSA	Ceftriaxone 2 g IV daily ± Gentamicin 3 mg/kg/day
Native Valve IE (Severe / Sepsis / Unknown source)	MRSA, MSSA, Streptococcus	Vancomycin 15–20 mg/kg IV BD ± Gentamicin
Healthcare-associated IE	MRSA, CoNS, Enterococcus	Vancomycin + Ceftriaxone ± Gentamicin
Prosthetic Valve IE (Early <1 year)	CoNS, MRSA, Gram-negative	Vancomycin + Gentamicin + Rifampicin
Prosthetic Valve IE (Late >1 year)	Streptococcus, Staphylococcus	Vancomycin + Ceftriaxone
IV Drug User (Right-sided IE)	Staphylococcus aureus (often MRSA)	Flucloxacillin ± Gentamicin or Moxifloxacin ± Gentamicin
Culture-negative IE	Fastidious organisms (HACEK, prior antibiotics)	Vancomycin + Ceftriaxone

Targeted Therapy

Based on culture results (4–6 weeks IV therapy).

11. Monitoring

- Temperature daily
- Blood cultures until negative
- Renal function twice weekly

12. Surgery Indications

- Heart failure
- Persistent infection
- Large vegetations
- Abscess

13. Prophylaxis

Give IE prophylaxis ONLY to high-risk patients undergoing invasive dental procedures involving gingiva or mucosa.

High risk patients are:

1. Previous Infective Endocarditis
2. Prosthetic Valve or Prosthetic Material
3. Congenital Heart Disease (High-Risk Only)
 - a. Uncorrected cyanotic CHD
 - b. CHD repaired with prosthetic material (especially early after repair)
 - c. Residual defects near prosthetic material
4. Ventricular Assist Devices
 - a. Includes LVAD and other mechanical circulatory support

Regimen: Amoxicillin 2 g before dental procedures (or azithromycin 500 mg or clarithromycin 500 mg 1 hour before procedure if allergic to penicillin).

14. References

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