18.00 - 19.30

CARDIOPATIE VALVOLARI ED ENDOCARDITI: UPDATE 2026

Moderatori: **C. Cianfrocca, Roma - A. Posteraro, Tivoli - RM**

Profilassi e terapia antibiotica, gestione dello shock settico e complicanze. Update 2026

Nicola Petrosillo MD, FESCMID

Infettivologo, Fondazione Policlinico Universitario Campus Bio-Medico

COI

Negli ultimi due anni rapporti di finanziamento con i seguenti soggetti portatori di interessi commerciali in ambito sanitario:

Takeda, Valneva, Q-Linea, Tillots

ESC European Society of Cardiology
European Heart Journal (2023) **44**, 3948–4042
https://doi.org/10.1093/eurheartj/ehad193

Table 3 New recommendations

Recommendation	Class	Level
Section 3. Recommendation Table 1 — Recommendations for antibiotic prophylaxis in patients with cardiovascular diseases undergoing oro-dental procedures at increased risk of infective endocarditis		
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

Populations at risk of infective endocarditis

The groups of individuals at high risk of IE in whom antibiotic prophylaxis is recommended or should be considered include the following:

(i) Patients with previous IE

(ii) Patients with surgically implanted prosthetic valves, with transcatheter implanted prosthetic valves, and with any material used for cardiac valve repair

(iii) Patients with congenital heart disease (CHD) (not including isolated congenital valve abnormalities)

(iv) Patients with ventricular assist devices as destination therapy

Patients at intermediate risk of IE include those with:

(i) rheumatic heart disease (RHD);

(ii) non-rheumatic degenerative valve disease;

(iii) congenital valve abnormalities including bicuspid aortic valve disease;

(iv) cardiovascular implanted electronic devices (CIEDs);

(v) hypertrophic cardiomyopathy.

ESC European Society of Cardiology
European Heart Journal (2023) **44**, 3948–4042
https://doi.org/10.1093/eurheartj/ehad193

Section 3. Recommendation Table 2 — Recommendations for infective endocarditis prevention in high-risk patients

Systemic antibiotic prophylaxis may be considered for high-risk patients undergoing an invasive diagnostic or therapeutic procedure of the respiratory, gastrointestinal, genitourinary tract, skin, or musculoskeletal systems.	IIb	C

ESC European Society of Cardiology
European Heart Journal (2023) **44**, 3948–4042
https://doi.org/10.1093/eurheartj/ehad193

Section 3. Recommendation Table 3 — Recommendations for infective endocarditis prevention in cardiac procedures		
Optimal pre-procedural aseptic measures of the site of implantation is recommended to prevent CIED	**I**	**B**
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**

Table 6 Prophylactic antibiotic regime for high-risk dental procedures

Situation	Antibiotic	Single-dose 30–60 min before procedure	
		Adults	Children
No allergy to penicillin or ampicillin	Amoxicillin	2 g orally	50 mg/kg orally
	Ampicillin	2 g i.m. or i.v.	50 mg/kg i.v. or i.m.
	Cefazolin or ceftriaxone	1 g i.m. or i.v.	50 mg/kg i.v. or i.m.
Allergy to penicillin or ampicillin	Cephalexin[a,b]	2 g orally	50 mg/kg orally
	Azithromycin or clarithromycin	500 mg orally	15 mg/kg orally
	Doxycycline	100 mg orally	<45 kg, 2.2 mg/kg orally >45 kg, 100 mg orally
	Cefazolin or ceftriaxone[b]	1 g i.m. or i.v.	50 mg/kg i.v. or i.m.

- ✓ At-risk dental procedures include dental extractions, oral surgery procedures (including periodontal surgery, implant surgery, and oral biopsies), and dental procedures involving manipulation of the gingival or periapical region of the teeth (including scaling and root canal procedures).
- ✓ Implant placement procedures, and invasive dental procedures on established implants, however, should be covered by antibiotic prophylaxis in those at high risk of IE.
- ✓ The main target for antibiotic prophylaxis is oral streptococci.

Treatment of Infective Endocarditis

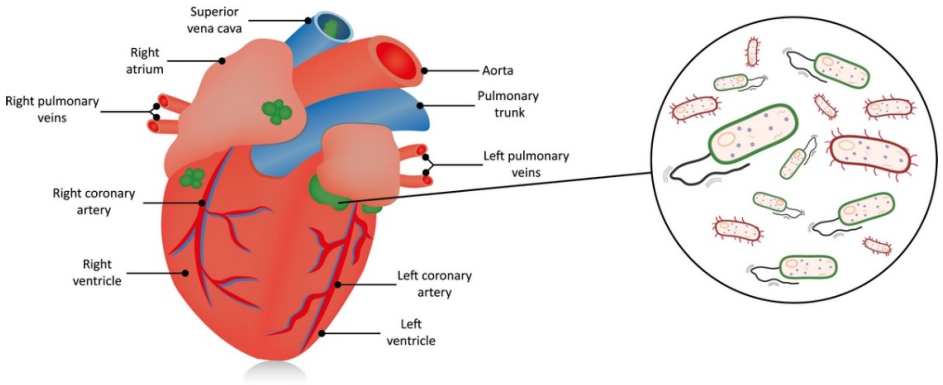
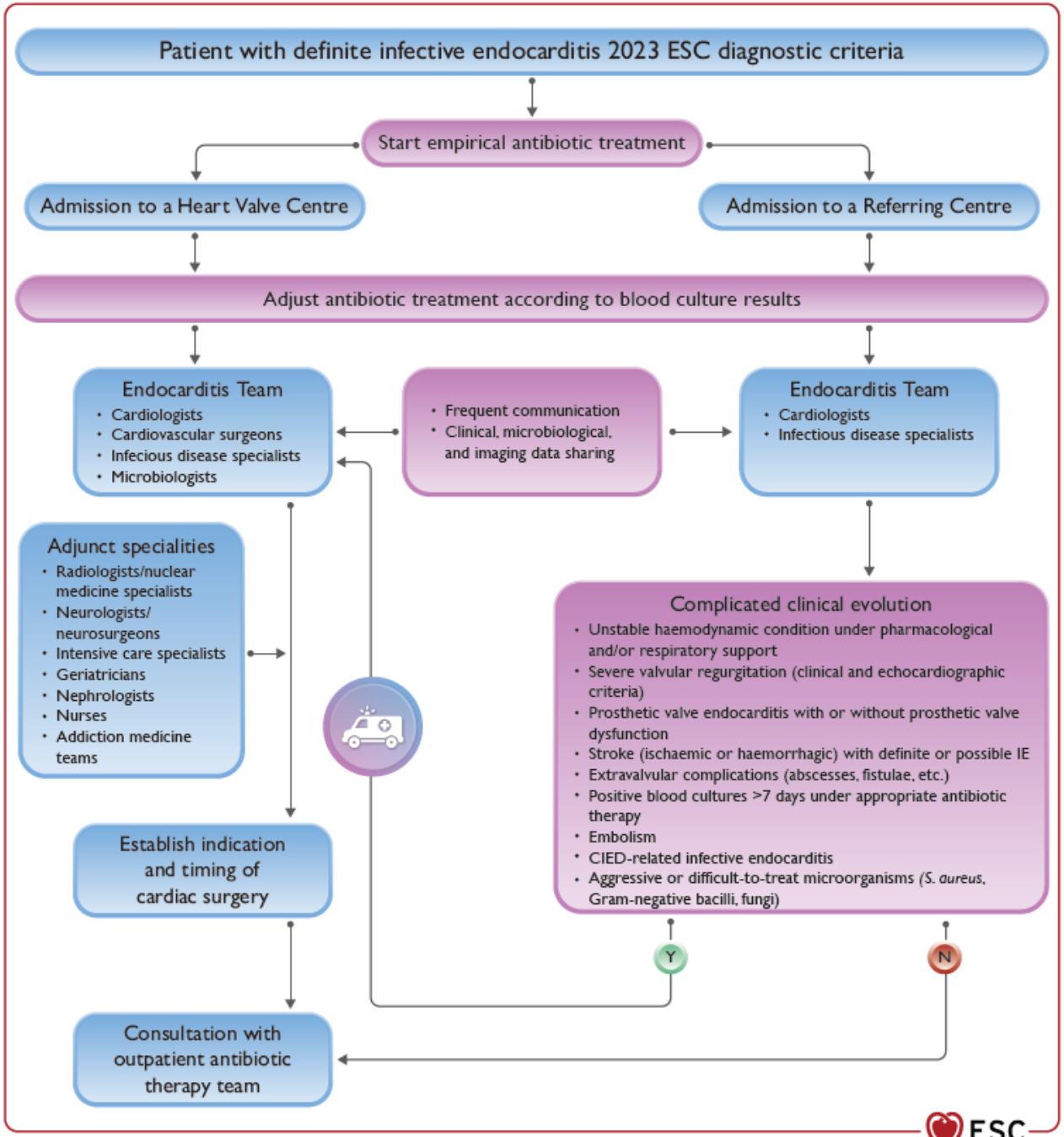


Table 7 **Members of the Endocarditis Team**

	Heart Valve Centre
Core members	• Cardiologists. • Cardiac imaging experts. • Cardiovascular surgeons. • Infectious disease specialist (or internal medicine specialist with expertise in infectious diseases). • Microbiologist. • Specialist in outpatient parenteral antibiotic treatment.
Adjunct specialities	• Radiologist and nuclear medicine specialist. • Pharmacologist. • Neurologist and neurosurgeon. • Nephrologist. • Anaesthesiologists. • Critical care. • Multidisciplinary addiction medicine teams. • Geriatricians. • Social worker. • Nurses. • Pathologist.

Recommendation Table 4 — Recommendations for the Endocarditis Team

Recommendations	Class[a]	Level[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.[36–41,122,123,125,126]	I	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.[36–41,122,123,125,126]	I	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
Cardiologists
Cardiovascular surgeons
Infecious disease specialists
Microbiologists
Frequent communication
Clinical, microbiological, and imaging data sharing
Endocarditis Team
Cardiologists
Infectious disease specialists
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)
Y
N
Establish indication and timing of cardiac surgery
Consultation with outpatient antibiotic therapy team
ESC

General principles

- ✓ **Successful treatment of IE relies on microbial eradication by antimicrobial drugs.**
- ✓ **Surgery contributes by removing infected material.**
- ✓ **Bactericidal regimens are more effective than bacteriostatic therapy.**
- ✓ **Aminoglycosides synergize with cell wall inhibitors (i.e. beta-lactams and glycopeptides) for bactericidal activity and are useful for shortening the duration of therapy (e.g. oral streptococci) and eradicating problematic organisms. However, the side effects of aminoglycosides should be taken into consideration.**

General principles

- ✓ One major hindrance to drug-induced killing is bacterial antibiotic tolerance.
- ✓ Tolerant microbes are not resistant (i.e. they are still susceptible to growth inhibition by the drug) but escape drug-induced killing and may resume growth after treatment discontinuation.
- ✓ Slow-growing and dormant microbes display phenotypic tolerance towards most antimicrobials (except rifampin to some extent).
- ✓ They are present in vegetations and biofilms (complex communities of bacteria residing within an exopolysaccharide matrix that adheres to a surface, e.g. in PVE), and justify the need for prolonged therapy to fully sterilize infected heart valves.

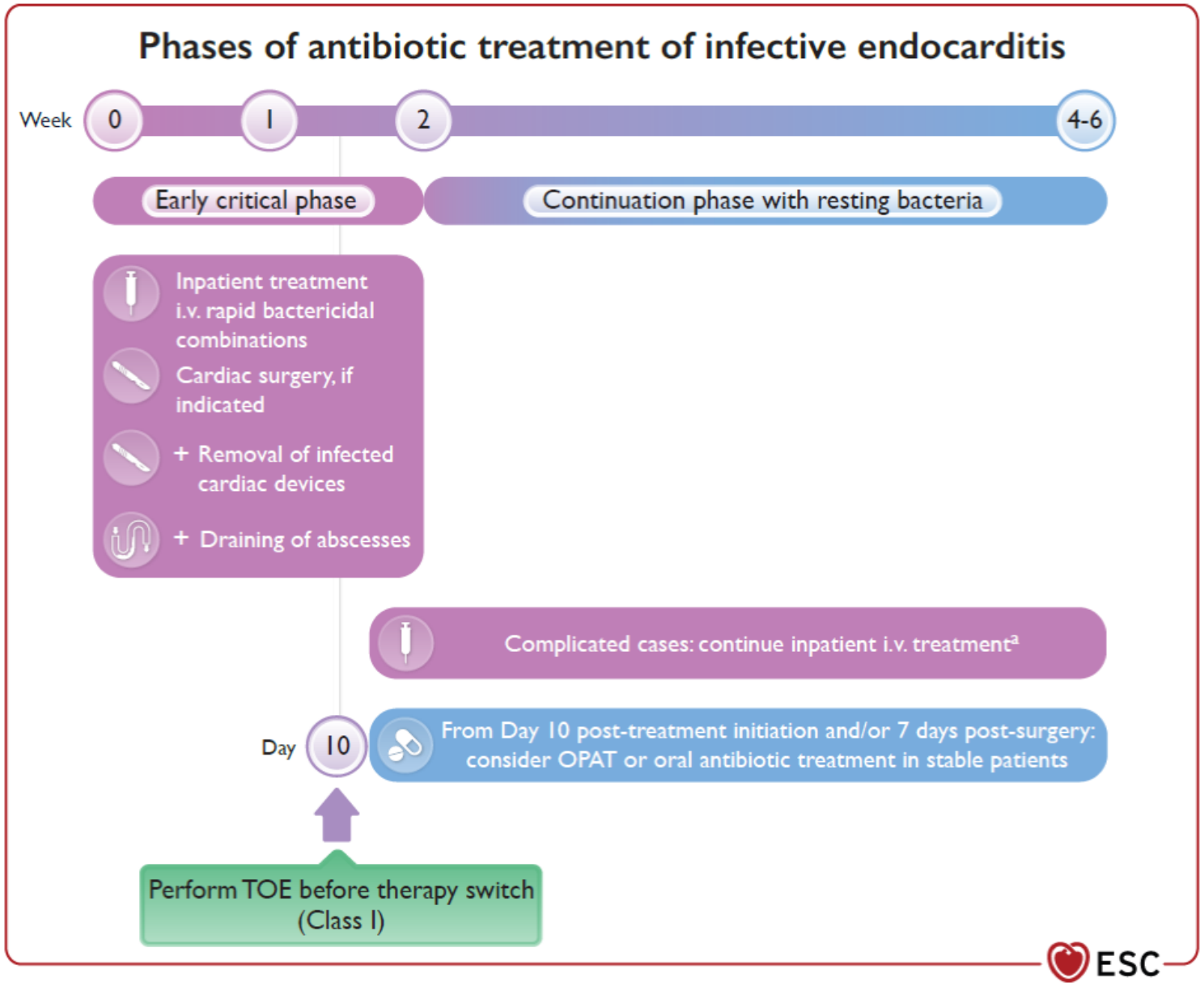


Figure 8 Phases of antibiotic treatment for infective endocarditis in relation to outpatient parenteral antibiotic therapy and partial oral endocarditis treatment. i.v., intravenous: OPAT, outpatient parenteral antibiotic treatment; TOE, transoesophageal echocardiography. [a]Criteria for switching to OPAT or partial oral treatment of endocarditis are given in the Supplementary data online, Table S8.

Complications

1. **Heart failure**

2. **Uncontrolled infection (locally uncontrolled, septic shock**

3. **High risk of embolism or established embolism**

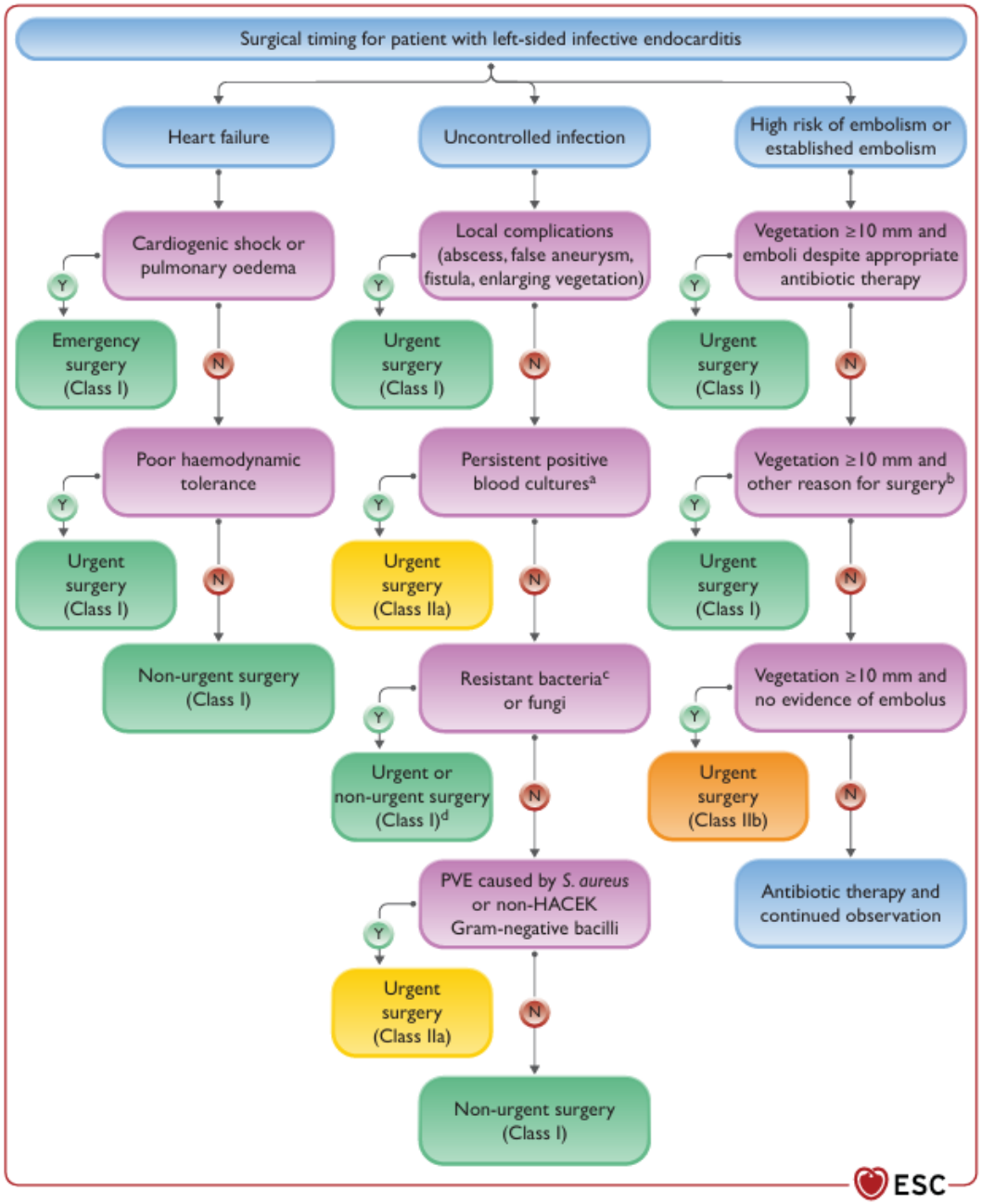


Figure 10 Proposed surgical timing for infective endocarditis. HACEK, *Haemophilus*, *Aggregatibacter*, *Cardiobacterium*, *Eikenella*, and *Kingella*; PVE, prosthetic valve endocarditis. Surgery timing: emergency, within 24 h. Urgent, within 3–5 days. Non-urgent, within same hospital admission. [a]Despite appropriate antibiotic therapy for >1 week and control of septic embolic foci. [b]E.g. patients with significant valvular dysfunction that is, or is not, a direct result of endocarditis process. [c]*S. aureus* (methicillin resistant and non-methicillin resistant), vancomycin-resistant enterococci, non-HACEK Gram-negative bacteria and fungi. [d]Urgent for *S. aureus*, non-urgent for others.

Sepsis is a syndrome defined conceptually as the development of life-threatening organ dysfunction resulting from a dysregulated host response to infection.

Singer M et al. JAMA 2016; 315: 801–10.

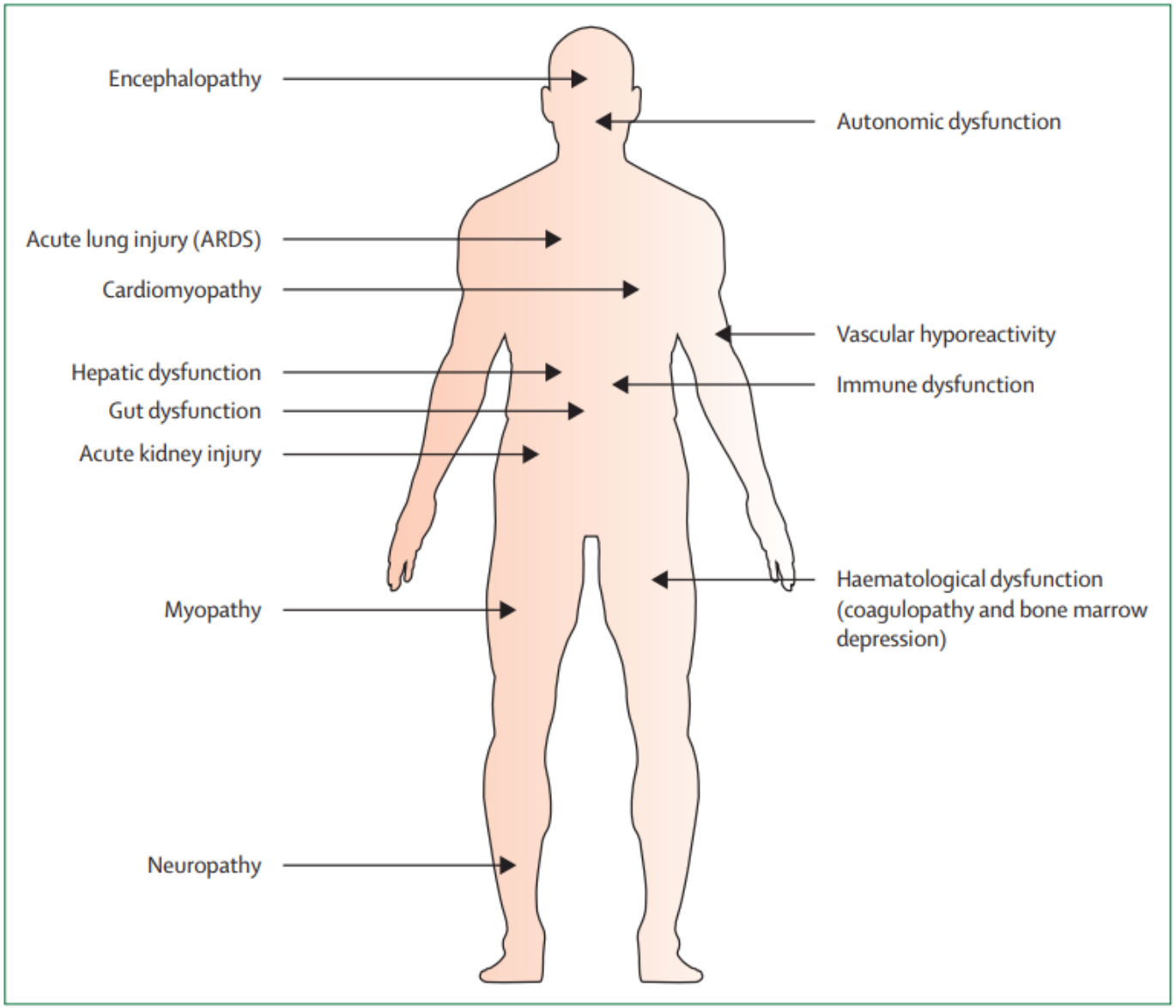


Figure 1: **Organ dysfunctions in sepsis**
Created in BioRender. Singer, M (2025) https://BioRender.com/l1o1l55. ARDS=acute respiratory distress syndrome.

Singer M et al. Lancet.2026:S0140-6736(25)02422-5

Many challenges persist in clinical practice.

- **Diagnosis can be problematic, especially at first presentation and in patients with multimorbidity and/or communication issues.**
- **Infection might not be verified until positive microbiological results return.**
- **Nonetheless, causative organisms are often unidentified; therefore, infection is presumed and frequently overdiagnosed.**
- **Furthermore, acute organ dysfunction might be difficult to distinguish from pre-existing chronicity, and attributable to infection.**

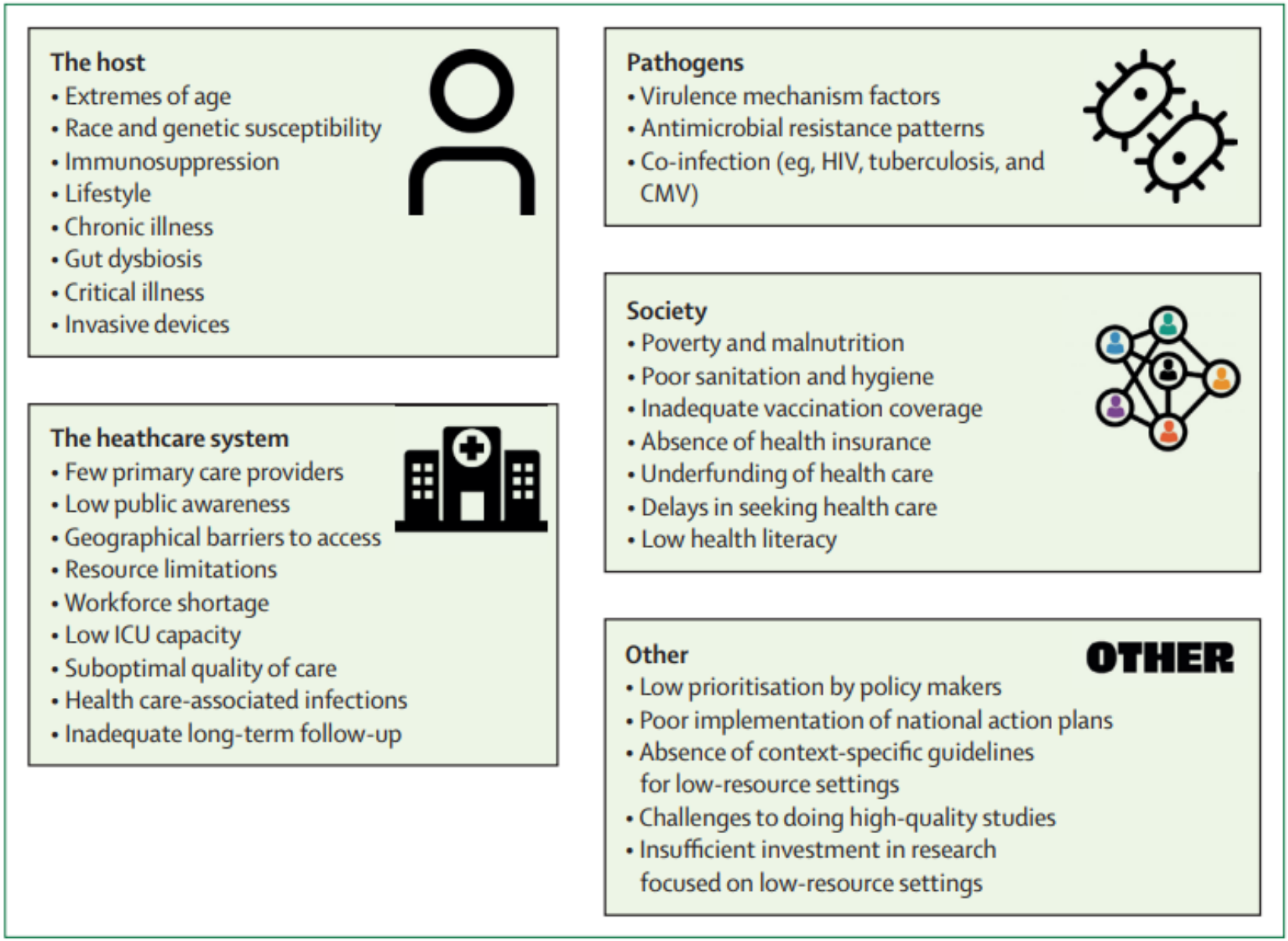


Figure 2: **Risk factors for infection and progression to sepsis**

ICU=intensive care unit. CMV=cytomegalovirus.

Singer M et al. Lancet.2026:S0140-6736(25)02422-5

- **Sepsis is a time-sensitive condition: prompt identification and treatment are key.**

- **No single best screening tool exists as settings and presentations vary.**

- **Most approaches alert to signs and symptoms of infection, including markers of systemic inflammation, clinical deterioration with bedside early warning scores such as the National Early Warning Score-2 and quick Sequential Organ Failure Assessment, and illness severity (organ dysfunction and lactate).**

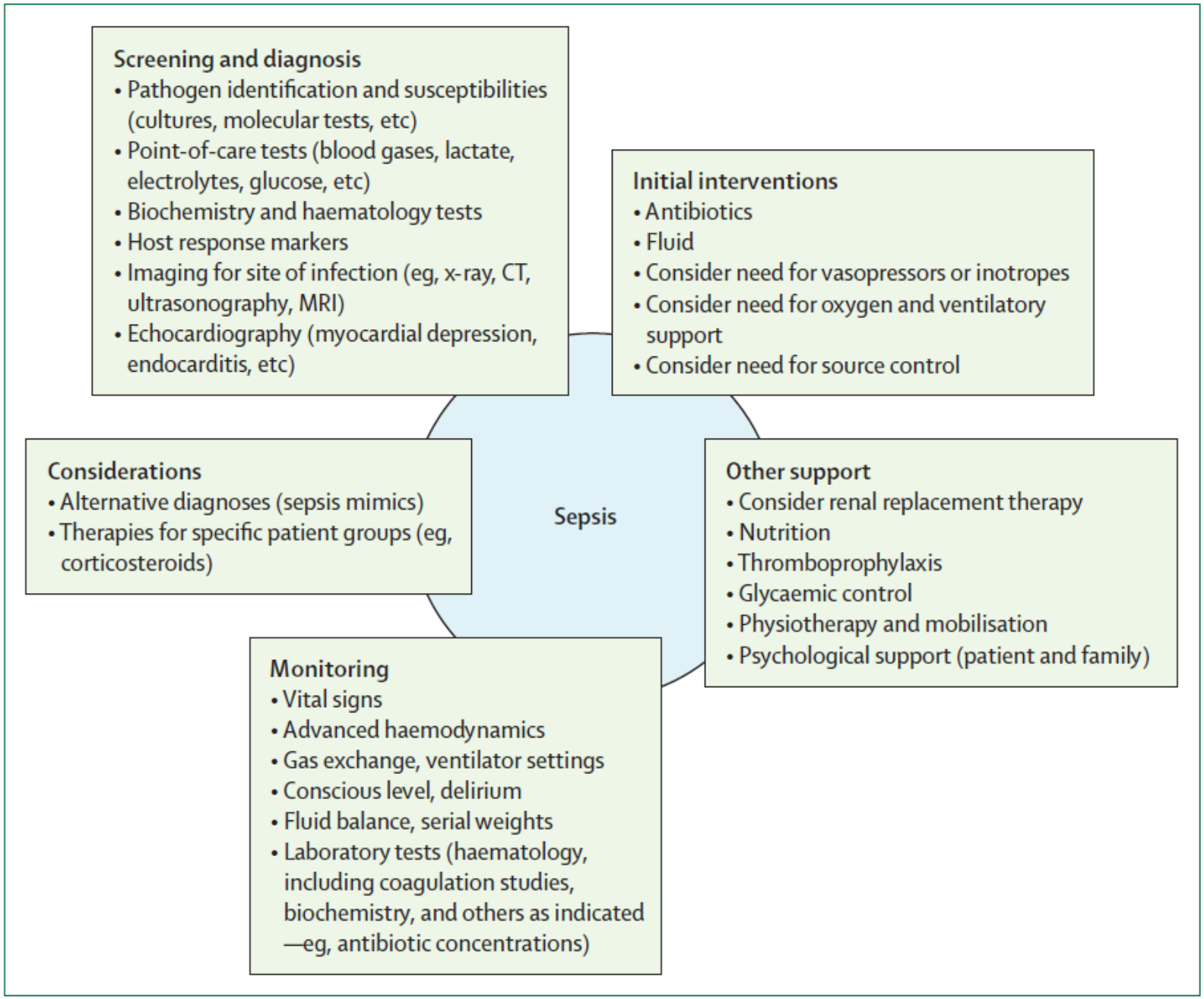


Figure 5: **Sepsis management summary**
Created in BioRender. Singer, M (2025) https://BioRender.com/dx0h1z2.

Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock 2026

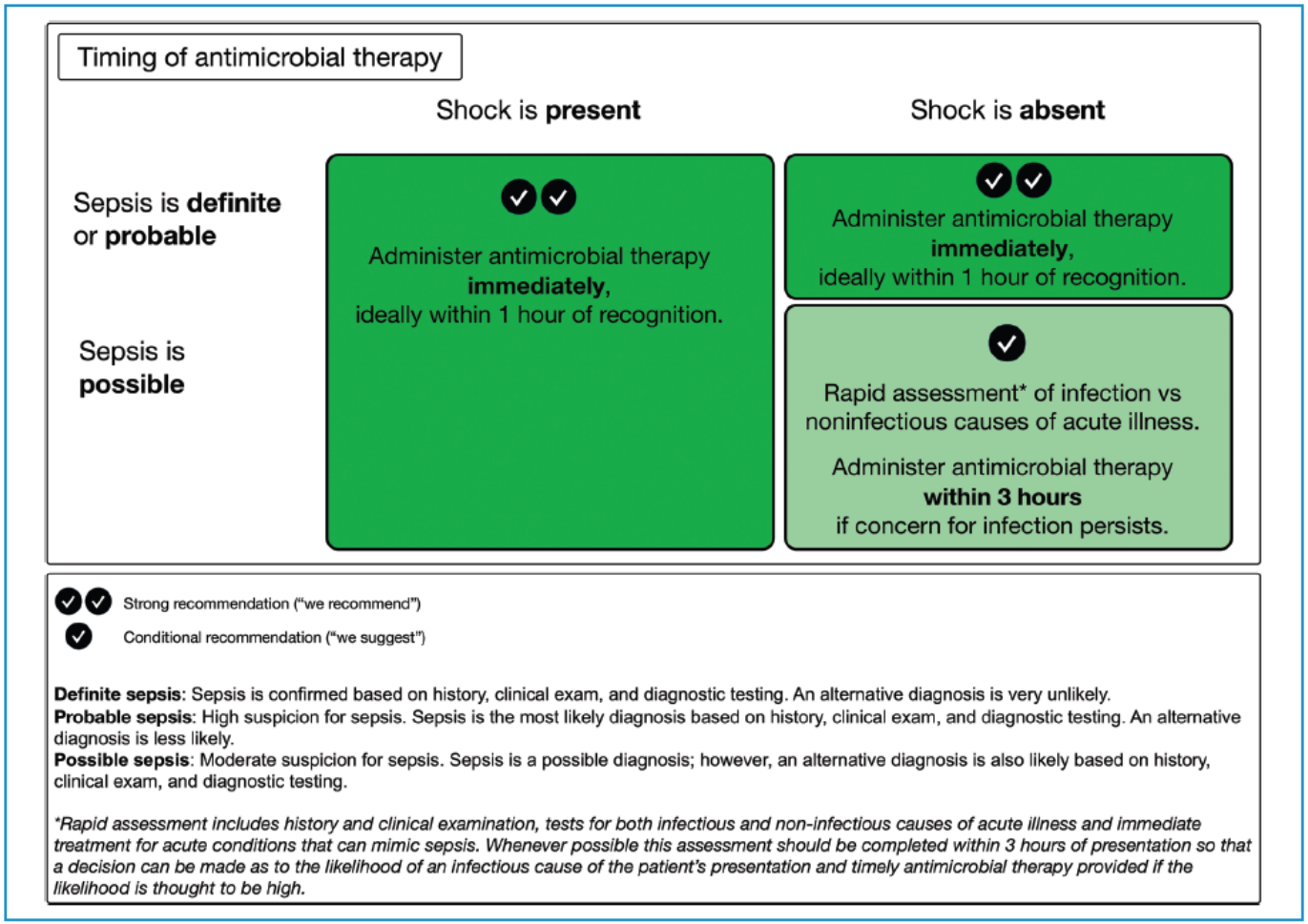


Figure 2. Antimicrobial timing framework.

Prescott HC et al. Crit Care Med 2026;54(4):725-812.