Errori Comuni nella Terapia Antibiotica Ragionata e Mirata

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Disclosures

Consultant/advisory board/speaker fees

- Pfizer, MSD, Angelini, Tillots,
- Menarini, Thermo Fisher, Shionogi
- BioTest, Nordic Pharma, InfectoPharma
- Gilead Sciences, GSK, Hikma, Advanz, Correvio

Research grant

- Pfizer, MSD, Shionogi

Sbaglio & Errore

- **Primo Livello**
  - **Diagnostico**
    - Clinico
    - Microbiologico
- **Secondo Livello**
  - **Terapeutico**
- **Terzo Livello**
  - **Relapse / Recidiva**

- **Strategia clinica**
- **Epidemiologia locale**
- **Microbiologia**
- **Farmacologia**
- **Gestione del territorio**

Antibiotic Failure

Cunha BA, Ortega AM, Med Clin North Am 1995;79(3):663-72

- **Most common causes of antibiotic drug failure**
  - Drug fevers
  - Untreatable infectious diseases
    - Colonization & Infection
  - Noninfectious diseases
  - Incorrect or inadequate spectrum
  - Emergence of resistant organisms
  - Superinfections
  - Drug interactions

Asymptomatic bacteriuria

Intrabdominal Infections

- **The most common mistake made with apparent antibiotic failure**
  - Change or add additional antibiotics

Ten Common Mistakes in ICU Use of Antibiotics

Adamkova V Roxhl Chir 2024;103(3):79-83

- Over-prescribing
- Under-prescribing
- Overlooking toxicities
- Overlooking interactions
- Fungal Infections Diagnostics & Treatment Strategies

- (Not performing on antibiotic-free days)

The Issue of Empiric Treatment

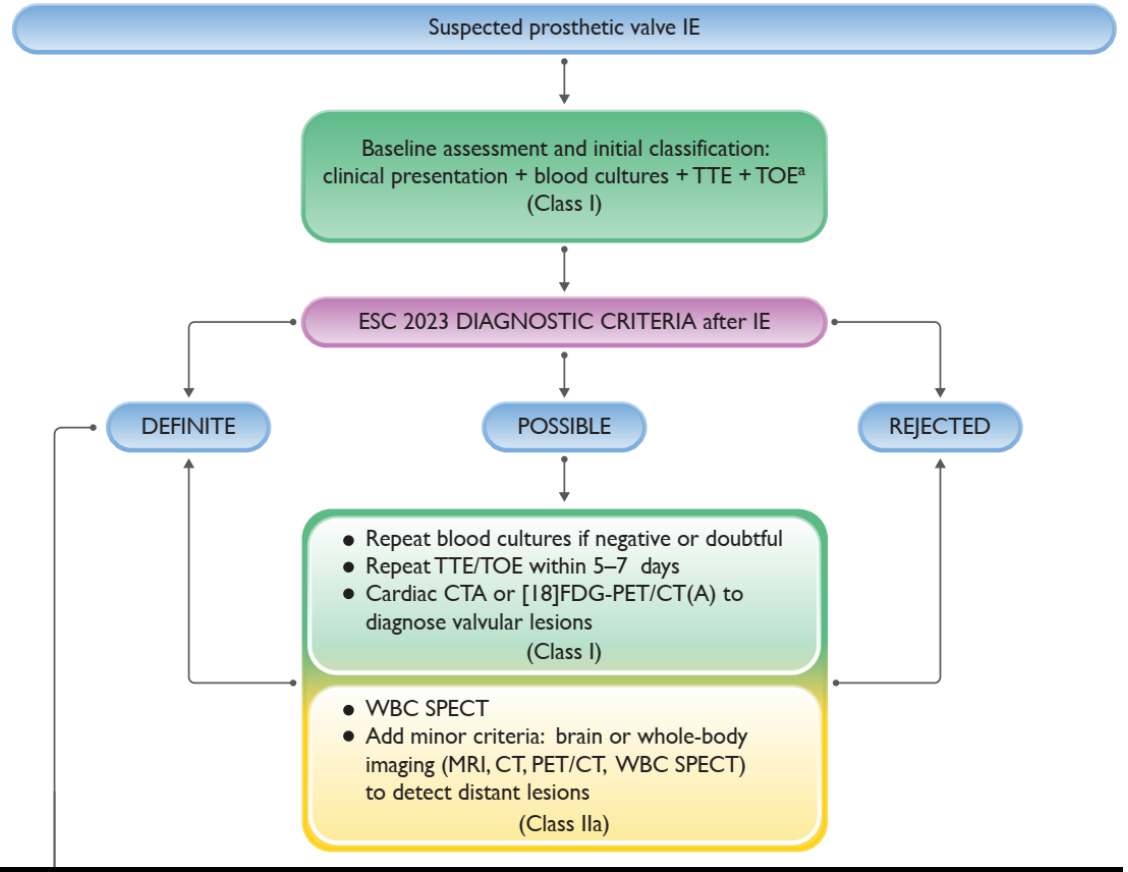
- **Plenty of Expert Opinions**
- **Different risk factors**
- **Plenty of treatment algorhytms**
- **Issue of local epidemiology**
  - 20% as threshold
- **How much empiric in the era of fast microbiology?**
- **Timings of treatment**

Microbiologia

- **Sensibilità e specificità diagnostica**
  - Fast-track microbiology & colturali
- **Stewardship delle Emocolture**
  - Metrica e appropriatezza
- **Diagnostica delle endocarditi infettive**
  - Linee Guida 2023
- **Infezioni osteoarticolari**

ESC European Society of Cardiology
European Heart Journal (2023) **00**, 1–95
https://doi.org/10.1093/eurheartj/ehad193
ESC GUIDELINES

2023 ESC Guidelines for the management of endocarditis



Meta-analysis: 86% sensitivity and 84% specificity for [18F]FDG-PET/CT in PVE

Farmacologia

- Dosaggio
- Infusione
- Interazioni
- Albuminemia & Funzione Renale
- TDM
  - One or Two legs?

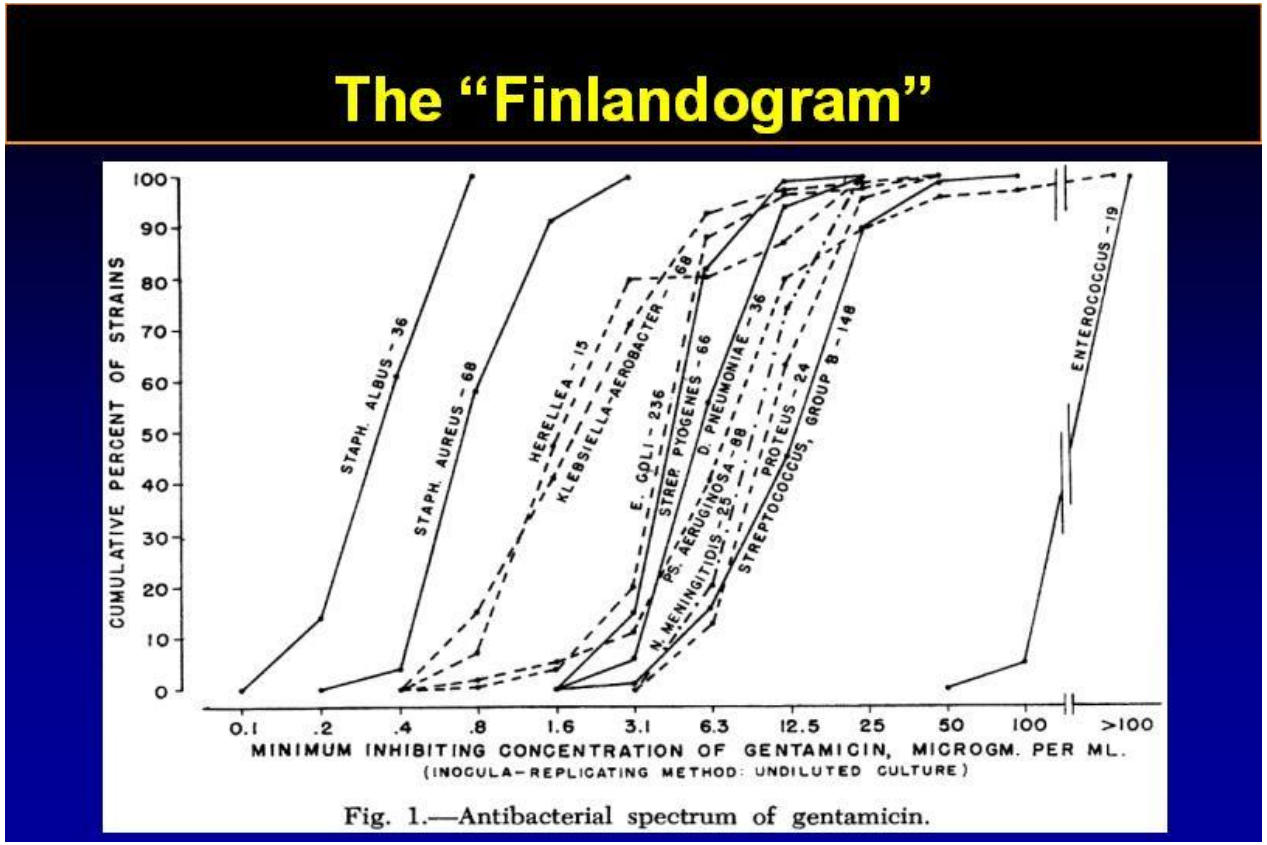


Fig. 1.—Antibacterial spectrum of gentamicin.

Evaluating Antibiotic Prophylaxis Adherence: Implications For Surgical Site Infections And Wound Care Management

Velozo BC et al. J Tissue Viability 2024;33(3):412-417

- **527 participants recruited, a 30-day follow-up was completed by 78.7 % (n = 415)**
  - Incidence of SSI **9.4 % (n = 39)**
  - Dehiscence most prevalent complication **64.1 % (n = 25)**
  - Increased exudate **51.3 % (n = 20)**
- **Low adherence to the antibiotic prophylaxis protocol** **1.7 % (n = 7)**
- **Increased risk of SSI for every protocol mistake made** **60%**
- **Excessive antibiotic treatment** **17.8 % (n = 74)**
- **Overall mortality rate** **13.5 % (n = 56)**
- **Deaths attributed to SSI** **1% (n=4)**
- → **Pressing global necessity to enhance antibiotic management**

Oral Neomycin and Bacitracin are Effective in Preventing Surgical Site Infections in Elective Colorectal Surgery: A Multicentre, Randomized, Parallel, Single-blinded Trial (COLORAL-1)

Arezzo A et al. Updates Surg 2021;73(5):1775-1786

- **OIVA Group (N = 100) & IVA (N = 104)**
  - Oral Neomycin and Bacitracin 24 h before surgery + IV Amox/Clav
- **Mechanical Bowel Preparation**
  - According to local habits, not changed for the study
- **SSI Significant Reduction:** **p = 0.010**
- **3 SSIs (3.4%)**
  - OIVA 3 (3.4%)
  - IVA 14 (14.4%)
  - No difference was observed in terms of anastomotic leak
-

Real-Life Perspectives

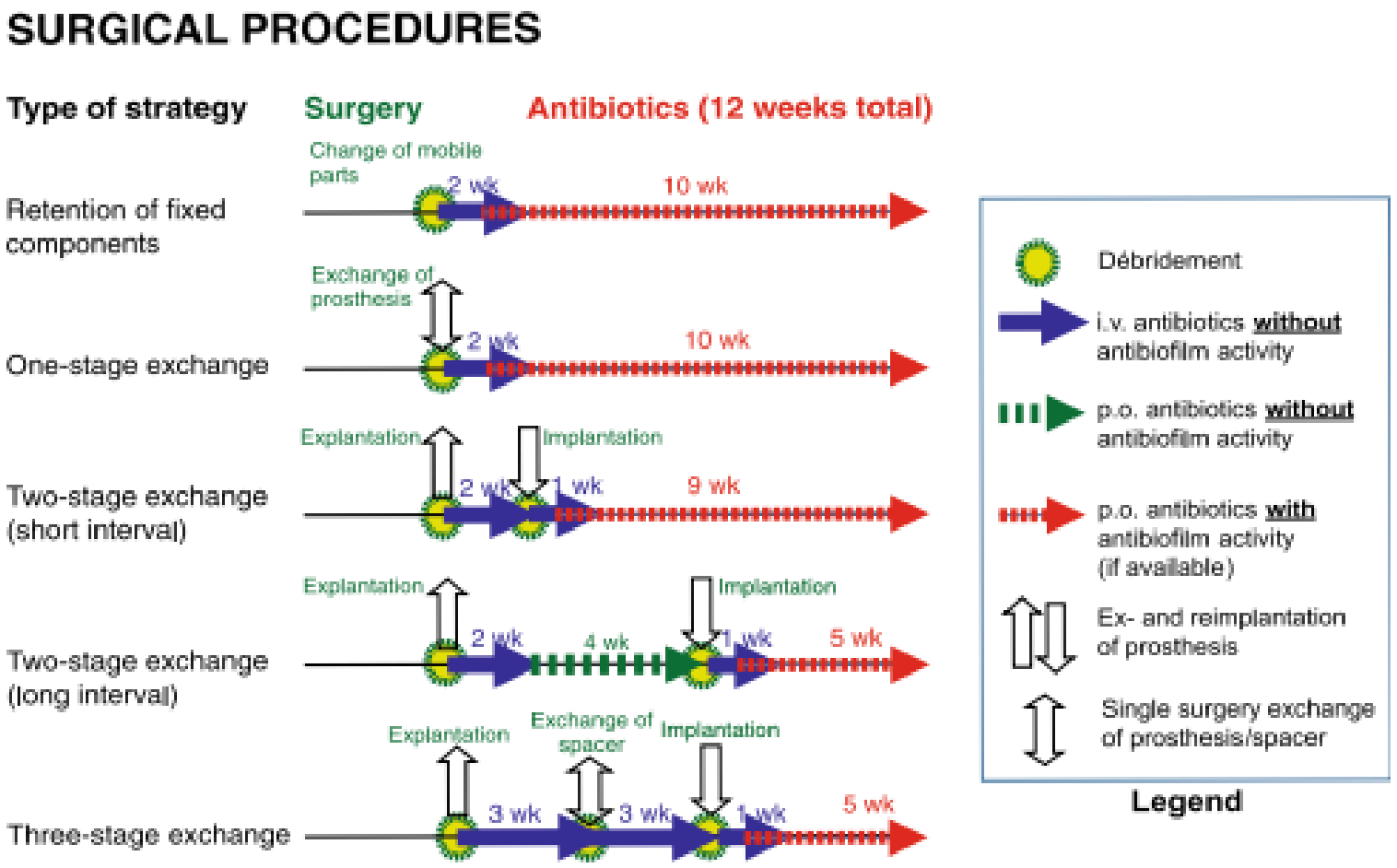
Common Errors in Treatment of Periprosthetic Joint Infection
Li C & Trampuz A Int Orthop 2020;44(1):3-14

- Conservative treatment with antibiotics in early infections
- Antibiotic treatment prior to microbiological diagnosis
- Errors in selection of antibiotics
- Failure to individualize treatment
- Arthroscopic lavage for PJI treatment
- Insufficient debridement or incomplete exchange of implants
- High-pressure pulse lavage during surgery
- Errors using antibiotic-loaded cement spacers
- Antibiotic «holiday» and joint aspiration before re-implantation in two-stage exchange surgery
- Inadequate management of soft tissues
- Lack of multidisciplinary teamwork

Common Errors in Treatment of Periprosthetic Joint Infection

Li C & Trampuz A

Int Orthop2020;44(1):3-14



Low Utilization of Lead Extraction Among Patients With Infective Endocarditis and Implanted Cardiac Electronic Devices

Sciria CT et al. J Am Coll Cardiol 2023;81(17):1714-1725

After adjustment for comorbidities, TLE associated with significantly lower mortality
adjusted OR: 0.47; 95% CI: 0.37-0.60 by multivariable logistic regression, and
adjusted OR: 0.51; 95% CI: 0.40-0.66 by propensity score matching

→ Utilization of lead extraction among patients with CIEDs and endocarditis is low
→ Lead extraction management is associated with significantly lower mortality

Staphylococcus aureus Bacteraemia, Cardiac Implantable Electronic Device, Extraction, & Risk of Recurrent Infection

Berge A et al. Infect Dis (Lond) 2024;56(7):543-553

→ Low extraction rates & few recurrences

→ Possible caution with extraction

Undetected pocket infection

Undetected changes on the CIED

No definite endocarditis

Key Priorities for Implementation of the 2023 ESC Guidelines for the Management of Endocarditis in Low-Resource Settings

Borger MA et al. Eur Heart J Qual Care Clin Outcomes 2025

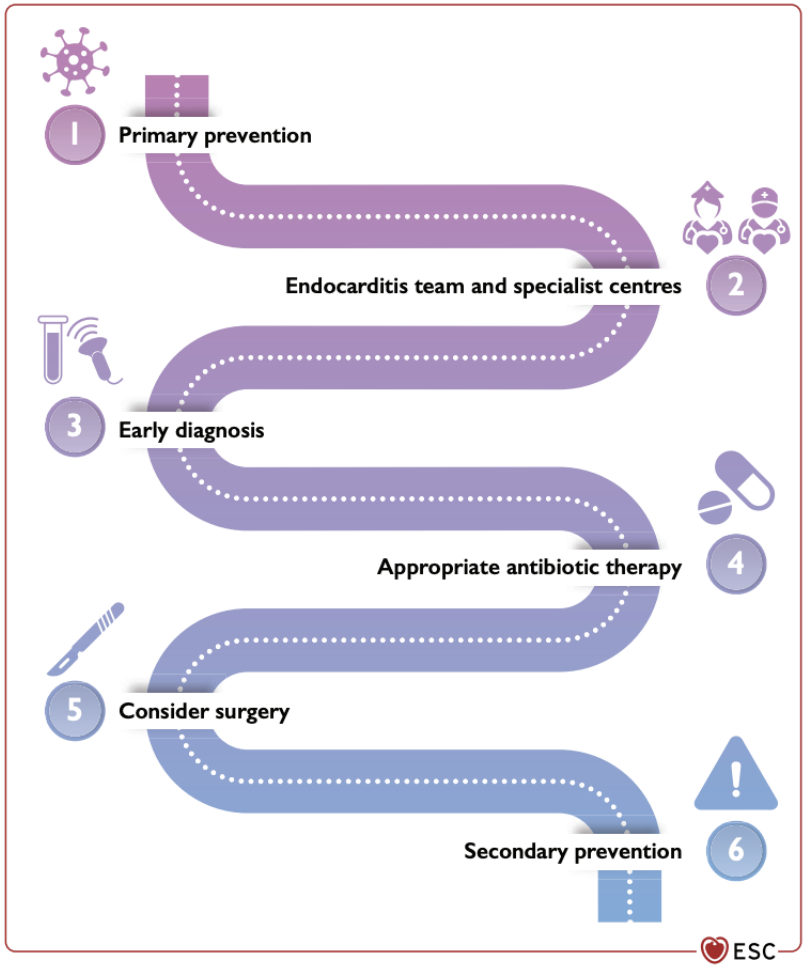


Figure 2 The six key priorities for the implementation of the 2023 ESC Guidelines for the management of endocarditis in low-resource settings.

Health Economic Evaluation of Antimicrobial Stewardship, Procalcitonin Testing, and Rapid Blood Culture Identification in Sepsis Care: A 90-Day Model-Based, Cost-Utility Analysis
Sligl WI et al. Pharmacoecon Open. 2024 Nov 19

- **Decision tree model-based cost-effectiveness analysis**
  - Two ICUs in Alberta with 727 adult critically ill patients
- **Primary outcome: Cost per sepsis case**
- **Secondary outcomes:**
  - Readmission rates, *Clostridioides difficile* infections, mortality, and lengths of stay
- **Lower mean expected cost in the intervention group**
- **$110,580 Vs. $125,745, with a difference of $15,165**
- **No statistically significant differences in quality adjusted life years (QALYs)**
- **The bundled intervention of ASP, PCT, and BCID**
  - Potentially cost-effective
  - Substantial decision uncertainty

Antibiotic Stewardship in the ICU: Time to Shift into Overdrive

Mokrani D et al. Ann Intensive Care 2023;13(1):39

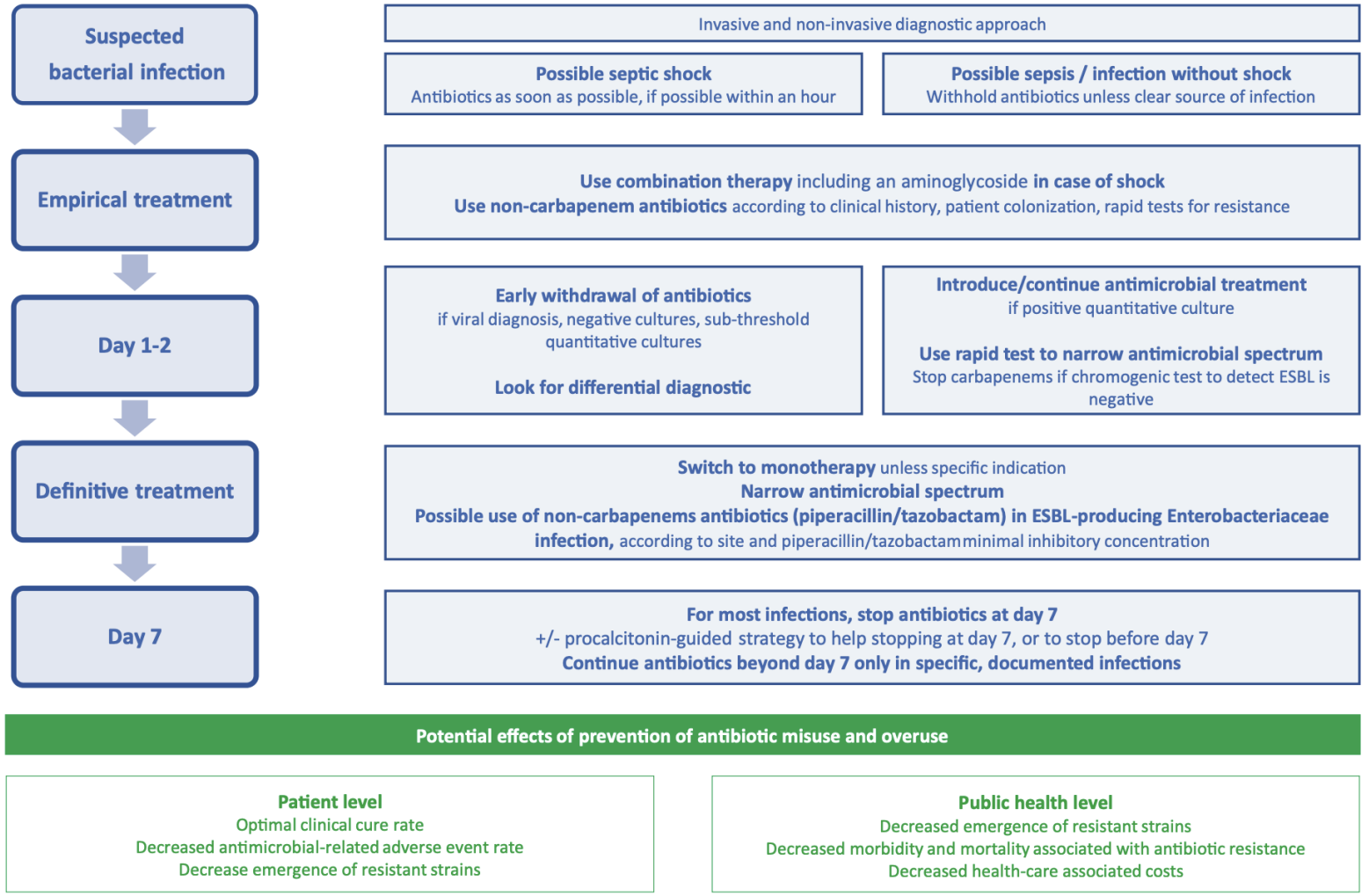
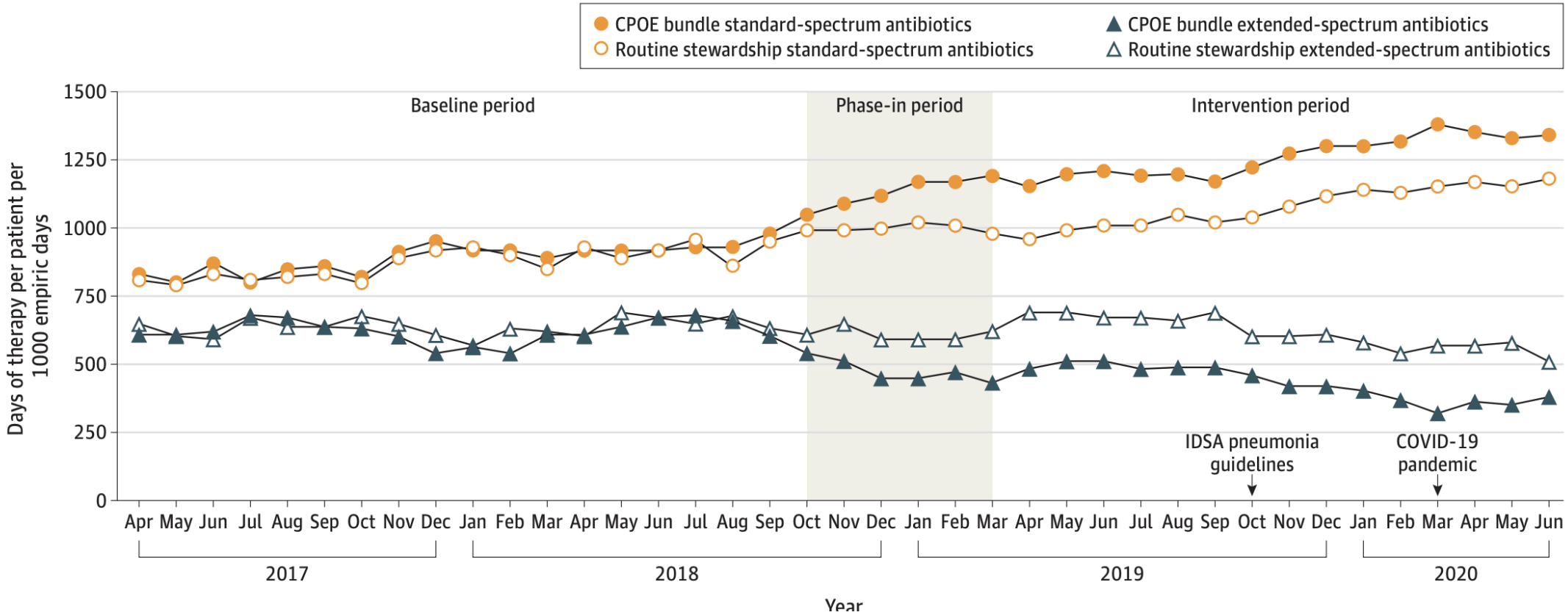


Fig. 2 Proposed algorithm to decrease antimicrobial consumption in the ICU (in blue) and potential beneficial effects of reducing antibiotics consumption (in green). *ESBL* extended-spectrum beta-lactamase

Stewardship of Pneumonia in ICU: The INSPIRE Randomized Trial

Figure 2. Monthly Empiric Extended- and Standard-Spectrum Antibiotic Days of Therapy in the Computerized Provider Order Entry (CPOE) Bundle vs Routine Stewardship Across the Baseline and Intervention Periods

A Extended and standard-spectrum empiric days of therapy in patients with pneumonia



Personal Opinion: Areas of Improvement

- **Appropriate consideration of:**
  - Differential diagnosis
  - Individualization of diagnosis and treatment
- **Follow guidelines**
- **Tricks & Timings**
  - Local Epidemiology and patomorphosis
- **Build a treatment strategy rather than adiminister drugs**
  - De-escalation and duration of treatment