



PHILIPS

Image Guided
Therapy

Heart Rhythm
Management

CIED infection care pathway Quality improvement toolkit

Improve guideline adherence. Save lives now.

Why establish a CIED infection care pathway?

CIED infection is a significant public health problem often underdiagnosed and is associated with increased morbidity, mortality and costs



1 in 20

CIED patients will develop a CIED infection in over 3 years¹



Diagnosis

of CIED infection can be difficult as presentation varies^{2,3}



Up to 35%

1-year mortality rate with CIED infection⁴



50-100%

infection relapse with antibiotic treatment alone^{5,6}

Major gap in guideline adherence exists

> 8 in 10

CIED infection patients are not treated according to Class 1 guidelines⁸

Early lead extraction

is associated with a 42.9% lower risk of death⁸

7x decrease

in 30-day mortality with extraction vs. antibiotics alone⁴

Planning the CIED infection care pathway

Philips will assist in the planning process with available resources

1

Identify the team

Identify the champions and multidisciplinary specialists to formulate the CIED infection care pathway.

2

Gather the team

Hold CIED infection care pathway team meetings to establish the pathway and lay out an implementation plan.

3

Implement plan

Deploy awareness, education and quality improvement plans to hospital system and beyond to include surrounding community providers and patients.

4

Evaluate

Ongoing assessment, communication and improvement by the CIED infection care pathway team.

CIED infection pathway team:



General cardiologists



Electrophysiologists



Infectious disease specialists



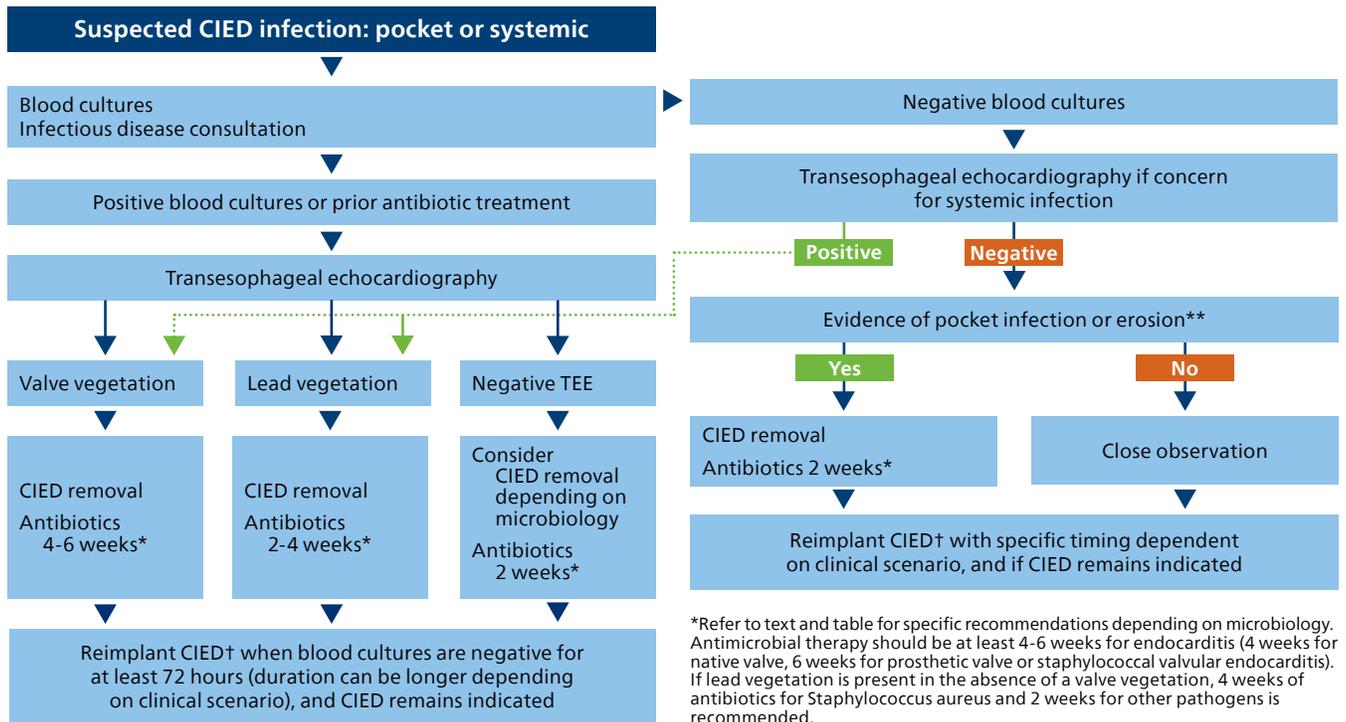
Cardiac surgeons



Internal medicine specialists

Management of suspected CIED infection

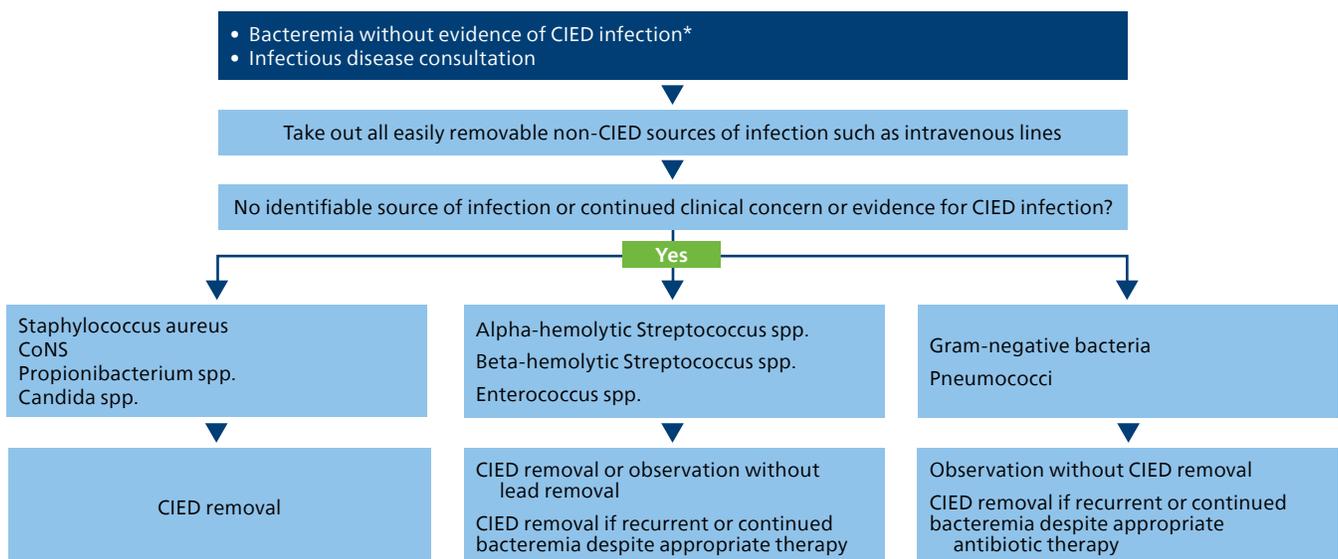
Infection diagnosis and treatment



This information is directly from the 2017 HRS Consensus Statement.⁷

Management of bacteremia without evidence of CIED infection

Infection diagnosis and treatment



This information is directly from the 2017 HRS Consensus Statement.⁷

CIED infection care pathway implementation resources

Below are tools Philips offers to help support planning and implementation of your CIED infection quality improvement program.



HCP education presentations for Grand Rounds and CEU

- ✓ D021391 Grand Rounds presentation
- ✓ D058999 CEU presentation



EP fellow and training programs

- ✓ D021391 Grand Rounds presentation
- ✓ D058999 CEU presentation
- ✓ D059035 CRM Presentation



HRS CIED pocket guides

- ✓ D040224 2017 HRS Consensus pocket guide
- ✓ D053322 HRS brochure for non-extractors



Website resources

- ✓ www.upbeat.org/CIEDManagement
- ✓ www.deviceinfection.com



Patient education

- ✓ D059328 HRS patient infographic
- ✓ D020583 'What's in your pocket' booklet
- ✓ D023608 Patient risk vs. risk brochure



Hospital administrator

- ✓ D059321 Value Dossier short deck
- ✓ D059597 Value Dossier one-pager
- ✓ D059900 Value Dossier brochure
- ✓ D059035 CRM presentation



EMR (Tools to help implement an EMR system in order to flag potential infection patients)

- ✓ D045671 Using EMR to fight CIED infection - committee deck
- ✓ D041246 Yale EPIC Q&A
- ✓ D042305 EPIC go-live plan

Who is on your CIED infection care pathway team?

General cardiologists _____

Electrophysiologists _____

Infectious disease specialists _____

Cardiac surgeons _____

Internal medicine specialists _____

Quality improvement specialists _____

Case managers _____

Hospital administrators _____

Device clinic nurses _____

- Dai, M., et al. (2019, Sep). Trends of Cardiovascular Implantable Electronic Device Infection in 3 Decades: A Population-Based Study. *JACC Clin Electrophysiol*, 5(9), 1071-1080. <https://doi.org/10.1016/j.jacep.2019.06.016>
- Blomström-Lundqvist, C., et al. (2020, Jun 1). European Heart Rhythm Association (EHRA) international consensus document on how to prevent, diagnose, and treat cardiac implantable electronic device infections- endorsed by the Heart Rhythm Society (HRS), the Asia Pacific Heart Rhythm Society (APHRS), the Latin American Heart Rhythm Society (LAHRS), International Society for Cardiovascular Infectious Diseases (ISCVID), and the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) in collaboration with the European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J*, 41(21), 2012-2032. <https://doi.org/10.1093/eurheartj/ehaa010>
- Sandoe, J. A., et al. (2015, Feb). Guidelines for the diagnosis, prevention and management of implantable cardiac electronic device infection. Report of a joint Working Party project on behalf of the British Society for Antimicrobial Chemotherapy (BSAC, host organization), British Heart Rhythm Society (BHRS), British Cardiovascular Society (BCS), British Heart Valve Society (BHVS) and British Society for Echocardiography (BSE). *J Antimicrob Chemother*, 70(2), 325-359. <https://doi.org/10.1093/jac/dku383>
- Le, K. Y., et al. (2011, Nov). Impact of timing of device removal on mortality in patients with cardiovascular implantable electronic device infections. *Heart Rhythm*, 8(11), 1678-1685. <https://doi.org/10.1016/j.hrthm.2011.05.015>
- del Río, A., et al. (2003, Oct). Surgical treatment of pacemaker and defibrillator lead endocarditis: the impact of electrode lead extraction on outcome. *Chest*, 124(4), 1451-1459. <https://doi.org/10.1378/chest.124.4.1451>
- Tan, E. M., et al. (2017, Jun 1). Outcomes in Patients With Cardiovascular Implantable Electronic Device Infection Managed With Chronic Antibiotic Suppression. *Clin Infect Dis*, 64(11), 1516-1521. <https://doi.org/10.1093/cid/cix181>
- Kusumoto, F. M., et al. (2017, Dec). 2017 HRS expert consensus statement on cardiovascular implantable electronic device lead management and extraction. *Heart Rhythm*, 14(12), e503-e551. <https://doi.org/10.1016/j.hrthm.2017.09.001>
- Pokorney, Sean D., et al. "Low Rates of Guideline Directed Care Associated with Higher Mortality in Patients with Infections of Pacemakers and Implantable Cardioverter Defibrillators." ACC 2022 Late Breaker Clinical Study Presentation. April 3, 2022.

