# TAUROPACE™ TECHNOLOGY OVERVIEW

CIED INFECTION CONTROL

# CLINICAL IMPACT & COST OF CARDIAC DEVICE INFECTION

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| THE PROBLEM. | THE IMPACT. | THE SOLUTION. |
|---|---|---|
| ■ Infections occur in **1-4%**[1,2] of all Cardiac Implantable Electronic Device (CIED) implants | ■ **50%**[5] Mortality at 3 years | ■ TAUROPACE™ reduces infection[8] |
| ■ **22 – 56%**[3,4] of patients are considered to be at increased risk for CIED infection | ■ **59,477€**[6] incremental cost to treat a major CIED infection | ■ TAUROPACE™ enhances wound healing[9] |
| | ■ **10,000€**[7] Average hospital margin loss per CIED infection | ■ **No** antibiotic **No** resistance[10] |
| | | ■ **67 – 100%**[8] reduction of CIED infection risk in all patients |

1. Polyzos KA et al. *Europace*. 2015;17:767-77. 2. Elissa Rennert-May DC, et al. *Heart Rhythm*. 2020. 3. Mittal S et al. *Heart Rhythm*. 2014;11(4):595-601. 4. Eby E et al. *EP Europace*.2018;20(s1):i106. 5. Sohail MR et al. *PACE*. 2015;38(2):231-239. 6. Ludwig S, et al. *J Comp Eff Res*. 2018;7:483-492. 7. WIDO data on file at CAU medical Faculty 8. Henke J, et al. *European Journal of Arrhythmia & Electrophysiology*. 2022;8. 9. Wu L et al. *Ann Transl Med*. 2021;9:1010. 10. Radakovic S, et al. . *Antibiotics*. 2020;9:166.

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## Risk Factors

- older patients
- more comorbidities
- more generator substitutions
- more complex devices (heavier, bulkier)
- more leads
- longer duration of procedure
- catheter laboratory vs. operational theatre
- antibiotic resistance



1. Greenspon AJ, et. al. *Pacing Clin Electrophysiol*. 2018;41:495-503.
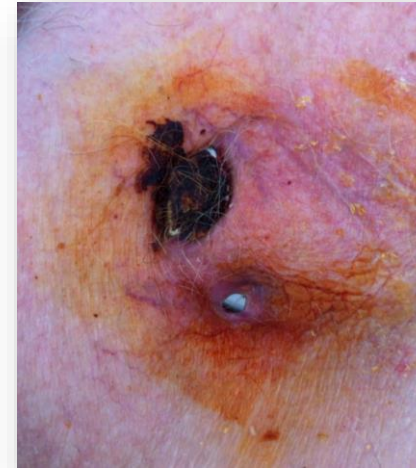
# CURRENT PROPHYLAXIS FOR CARDIAC DEVICE INFECTION

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## PRE-OPERATIVELY[1,2]

- preoperative antibiotic administration in **90%** of all Cardiac Implantable Electronic Device (CIED) implants with cephalosporins or vancomycin

**ROUTINELY**

## PERI-OPERATIVELY[1,2]

- approximately **75-90%** conduct perioperative antibiotic or antimicrobial pocket (surgical site) irrigation

**TYPICALLY**
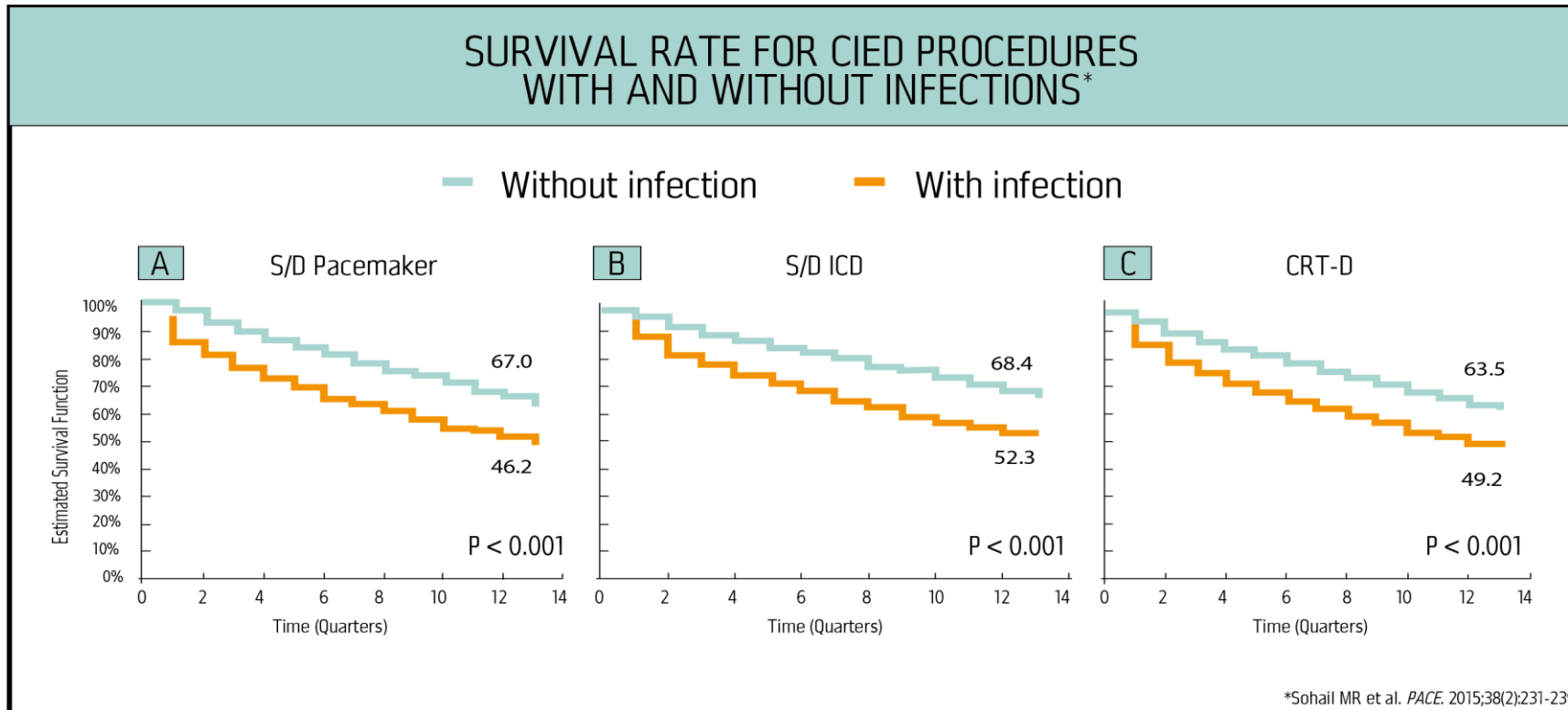
## POST-OPERATIVELY[1,2]

- prolonged antibiotic therapy postoperatively
- Postoperative IV antibiotic administration

**OCCASIONALLY**

1. Blomstrom-Lundqvist C. et al *Eur Heart J*. 2020. 2.Blomstrom-Lundqvist C and Ostrowska B. *Europace*. 2021;23:iv11-9.

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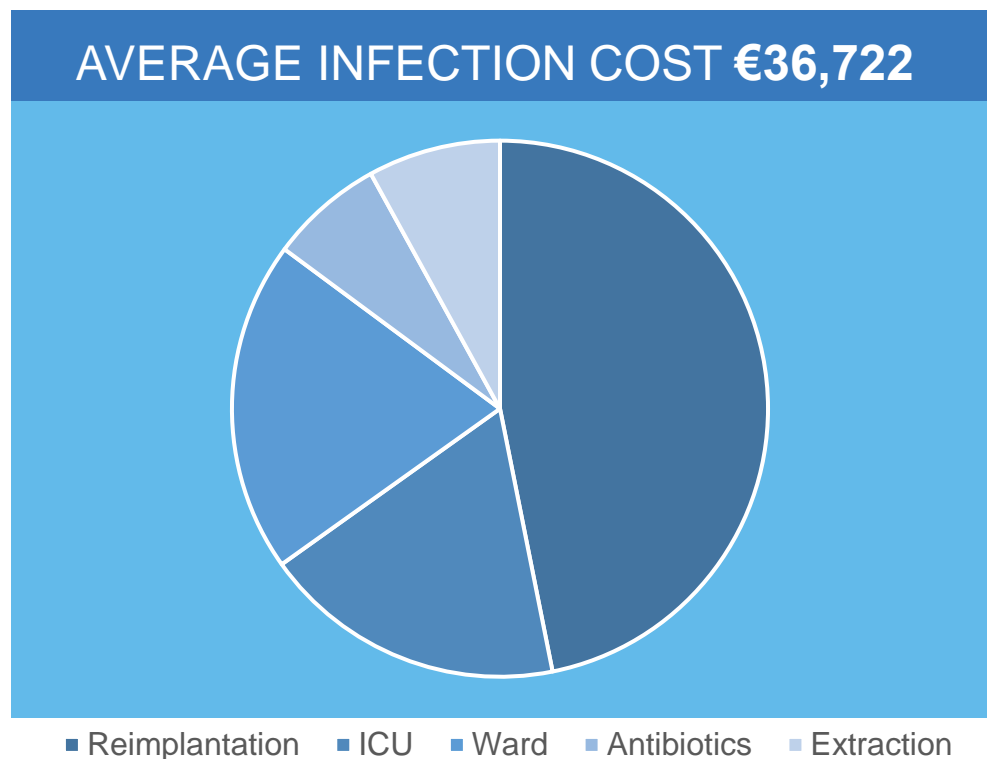CE 0344

# CARDIAC DEVICE INFECTION: MORTALITY RATES

- Retrospective cohort study of 200,219 Medicare fee-for-service patients admitted for CIED generator implantation, replacement, or revision surgery

- ~50% mortality at 3 years in patients with CIED Infections

## SURVIVAL RATE FOR CIED PROCEDURES WITH AND WITHOUT INFECTIONS*

— Without infection    — With infection

**A** S/D Pacemaker — 67.0, 46.2, P < 0.001

**B** S/D ICD — 68.4, 52.3, P < 0.001

**C** CRT-D — 63.5, 49.2, P < 0.001

*Sohail MR et al. PACE. 2015;38(2):231-239.*

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# DEVICE RELATED INFECTION COSTS IN EUROPE[1]

**€36,722** COST OF INFECTION (PROVIDER PERSPECTIVE)
**~26-29 days** AVERAGE LENGTH OF HOSPITAL STAY

## AVERAGE INFECTION COST €36,722



■ Reimplantation  ■ ICU  ■ Ward  ■ Antibiotics  ■ Extraction

| CRT-D | ICD | PM |
|-------|-----|-----|
| **€44,000** | **€41,000** | **€22,000** |

Re-implantation makes up **≈50%** of device infection cost, so treatment of infections with High Power devices has a higher cost than Low Power devices, due to the more expensive reimplantation

1. Ahsan et al. *Europace.* 2014;16(10):1482-1489.

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# DEVICE RELATED INFECTION COSTS IN EUROPE[1]

**€59,419** INCREMENTAL COST OF MAJOR CIED INFECTION (PAYER PERSPECTIVE)

**€31,493 – 33,777** COST FOR CIED POCKET INFECTION (PRIMARY IMPLANT – REVISION)



■ MAJOR  ■ REVISION  ■ PRIMARY

| MAJOR | FIRST | REVISION |
|---|---|---|
| **€59,419** | **€31,493** | **€33,777** |
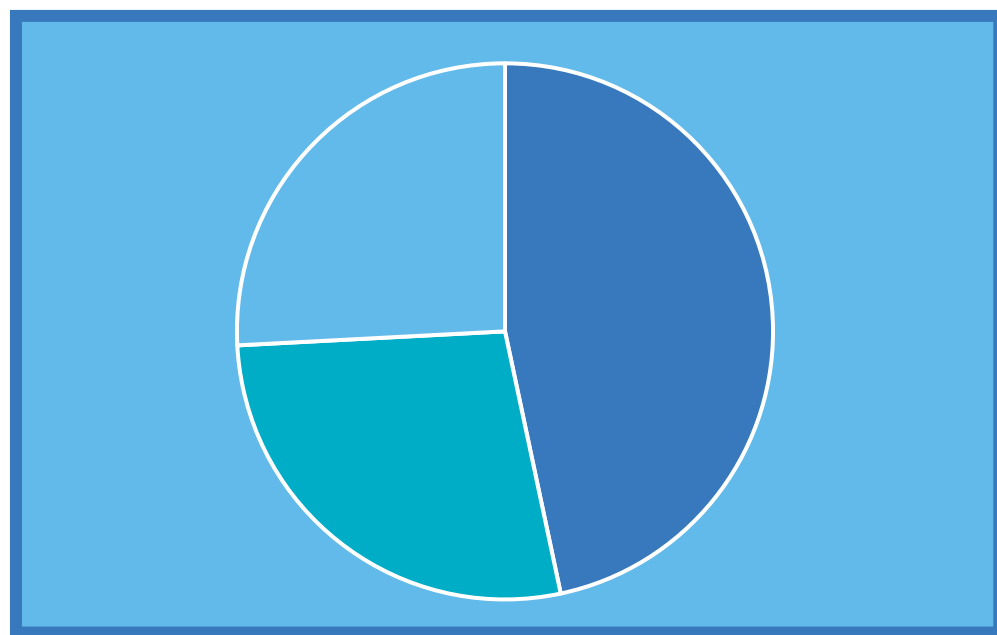
Re-hospitalization makes up **≈50%** of major infection cost. Treatment of major infections has a higher cost than pocket infections, due to the prolonged course of infective endocarditis treatment

1. Ludwig S, et al. *J Comp Eff Res.* 2018;7:483-492.

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# TAUROPACE™
# CARDIAC DEVICE IRRIGATION

- Locally delivered, adjunctive antimicrobial protection **prevents CIED infections**

- Polyvinylpyrrolidone locally elutes taurolidine to reach MIC tissue concentrations **within 2 hours of use**

- Does **no**t contain **antibiotics**
  **No resistance** patterns observed

- Liquid solution – **no** foreign body nidus for potential **infection**

- After delivering all **antimicrobial actions**, Taurine is the only leftover – **Taurine enhances wound healing**

Henke J, et al. *European Journal of Arrhythmia & Electrophysiology*. 2022;8.
Wu L et al. *Ann Transl Med.* 2021;9:1010.
Radakovic S, et al. . *Antibiotics.* 2020;9:166