UPMC STUDY WITH THE TYRX™ ANTIBACTERIAL ENVELOPE*

Use of the TYRX Antibacterial Envelope as Standard of Care for Cardiac Implantable Electronic Device (CIED) Patients is Associated with Significantly Lower Rates of CIED Infection and Lower Costs to the Healthcare System[1]

DESIGN

The goal of this single-center retrospective cohort study from University of Pittsburgh Medical Center (UPMC) was to evaluate the clinical and economic impact of using the TYRX Antibacterial Envelope as Standard of Care (SoC).[1]

SoC use-calculations included an average cost to treat an infection, the infection rate percentage from the No-TYRX group (patients who were not implanted with the TYRX Antibacterial Envelope), and the acquisition cost of the TYRX Envelopes. The TYRX Antibacterial Envelope cost was $795.00 per unit for pacemakers (PMs) and $895.00 per unit for Implantable Cardioverter Defibrillators (ICDs).[1]

METHODS

Every patient undergoing a CIED implantation in the electrophysiology (EP) laboratory was included in this study (n=1,476). In the 2 years prior to the study, the infection rate in this EP laboratory was between 1% and 2% of procedures. In this study, some implanters (surgeons who implanted the device) used the TYRX Antibacterial Envelope in every patient as a SoC, termed "Yes-TYRX" group (n=365), whereas other implanters did not use it at all, termed "No-TYRX" group (N=1,111).[1]

RESULTS

- 1.7% CIED Infection rate without the TYRX Envelope at 6 months (19 infections, p=0.06)[1]
- 1.9% CIED Infection rate without the TYRX Envelope at 12 months (20 infections, p=0.023)[1]
- 0 CIED Infection rate with the TYRX Envelope at 6 and 12 months (0 infections, p=0.006)[1]
- The average hospital stay was 13 days for treatment of an infection[1]
- 15.7% mortality in patients with a CIED Infection at 6 months compared to 4.5% mortality in patients without a CIED Infection at 6 months, (p=0.021)[1]
- 21.1% mortality in patients with a CIED Infection at 12 months compared to 6.4% mortality in patients without a CIED Infection at 12 months, (p=0.011)†
- If we assume that Yes-TYRX patients experience the same infection rate as actually observed among No-TYRX patients, SoC use of the TYRX Envelope:
  - Prevented an estimated 6.2 infections[1]
  - Avoided treatment costs of ~$340,000, which was comparable to the actual cost of the TYRX Envelopes at $320,000[1]
  - Treatment costs of ~$340,000 include an estimated $54,926 ± $11,374 per patient, and do not include costs to the health care delivery organization (ambulatory care, home care), patient (physician fees, non-covered service fees, co-pays, lost wages/earning potential, travel, lodging, sustenance), and patient family (lost wages, travel, lodging, sustenance)[1]

CONCLUSIONS

Use of the TYRX Antibacterial Envelope as SoC was associated with a significantly lower rate of CIED Infections. CIED Infections result in significant patient and healthcare system burden, high costs, long length of stays, and higher mortality rates.[1]

Financial Implications of Use of TYRX Envelope as a SoC

	n	INFECTION RATE (N)	INFECTION CARE COST**	DIFFERENTIAL COST***
All Patients	365	1.71% (6.20)	$342,854	$23,863
Preoperative Risk Score < 3	179	1.03% (1.85)	$101,708	-$54,729
Preoperative Risk Score ≥ 3	186	2.45% (4.55)	$250,115	$87,560
Early Reintervention	12	6.67% (0.80)	$43,941	$33,453

Hypothetical projection assumes that Yes-TYRX patients experience the same infection rate as actually observed among No-TYRX patients.
**Infection Care Cost = Number Infected X Cost of Infection; ***Differential Cost = Infection Care Cost minus Cost of TYRX Envelope as a SoC

1. Shariff N et al. *J Cardio Electrophysiol.* 2015. Online publication.

*Study performed utilizing the TYRX™ Non-Absorbable Antibacterial Envelope.

† The 12-month mortality rates were not published in the paper, but the senior author provided permission for our use.

Medtronic TYRX, Inc. 1 Deer Park Drive, Suite G | Monmouth Junction, NJ | Medtronic CRHF/ Infection Control
TYRX Customer Service: 800.848.9300 Technical Support/Services: 800.505.4636 (Brady) and 800.723.4636 (Tachy) | www.TYRX.com
UC201506944aEN

Medtronic