A cost-effectiveness analysis of the TYRX® antimicrobial envelope and its impact on the reduction of CIED infection

Authors: Melanie R Burg1, William Camilleri1, Janice Azzopardi1, Darryl Portelli1, Eliezer Zahra1, Robert G Xuereb1, Mark A Sammut1, Oscar Aquilina1

1Mater Dei Hospital, Tal-Qroqq, Malta

Introduction

Antimicrobial mesh envelopes are a recent addition to the armamentarium against cardiac implantable electronic device (CIED) infection.

Aim

To determine major CIED infection rates (defined as infection requiring device extraction) before and after the introduction of the TYRX-A envelope locally. We also determine the cost-effectiveness of the envelope as standard of care in our local healthcare system.

Methods

A retrospective analysis of patients who underwent high risk procedures (high voltage generator change, system revision, or device upgrade). The YES-TYRX group (n=38) received an envelope in 2016. The NO-TYRX group (n=24) were patients from 2013 who served as the control group.

Results

At 12 months follow-up, 0 of 38 (0%) in the YES-TYRX group developed major infection, whereas 3 of 24 (12.5%) in the NO-TYRX group did (P=0.025). The cost for a TYRX-A envelope is € 1200, amounting to €45,600 spent on envelopes in the YES-TYRX group. The cost of major infection in 1 patient is estimated at €19,520 (cost of device extraction, an average 13 day hospital stay, 6 weeks of antibiotics, and a new device). Based on our findings, 4.75 (12.5%x38) patients in the YES-TYRX group would have had a major infection had the envelope not been used. This would have cost €19,520x4.75 = €92,720 - more than twice the amount spent on 38 envelopes.

Conclusion

The adoption of the TYRX-A envelope as part of a new standard operating procedure has lowered our infection rates and appears to be a cost-effective strategy.