Don’t Pace Right Past the Sink: Electrophysiology Sterility Practices in the Face of Absent Guidelines

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Purpose

Post-implantation infection of cardiac implantable devices (CIDs) occurs in up to 5.7% of implantations and may manifest as pocket infections, or in more serious cases, endocarditis requiring lead removal. Serially updated guidelines for CID use do not offer recommendations for sterility practices during device implantation. Without well-organized guidelines, sterility practices performed by CID operators may be inconsistent and inadequate. We present data regarding adherence to sterility best practices for CID cases at a tertiary care center.

Methods

Two secret shoppers surveyed sterility practices at a tertiary care center’s cath lab. Procedures observed were all implants and generator exchanges for implantable cardiac defibrillators (ICDs), permanent pacemakers (PPMs) and subcutaneous ICDs (S-ICDs) from April 1st to April 29th, 2016. Recorded events included scrubbing time, use of sterile garb, use of chlorhexidine gluconate site preparation, appropriate and timely antibiotic administration, and staff traffic during the procedure.

Results

35 procedures were observed in the study period. Ninety-seven percent of cases had at least one instance of scrubbing time less than the 6 minute manufacturer recommendation. Mean scrub time for fellows and attendings was 3.9 and 3.2 minutes, respectively. Sterile garb breaches occurred in 13/35 cases (37%) with mask breaches occurring 11 times (31% of cases) and gown breaches 3 times (8.6% of cases). There were 6 cases of 35 (17%) with incorrect use of CHG site prep. Antibiotics were appropriate with use of 1-2 grams of cepazolin based on patient weight substituted with vancomycin in cases of beta-lactam allergy. There were breaches in sterile technique in 3 cases (8.6%) due to operators touching objects outside the sterile field. Sixty percent of cases had traffic breaches due to opening the hallway door more than twice or leaving doors open longer than 30 minutes after the sterile kit was opened.

Conclusions

Sterility procedures in the cath lab are important, but performance is inconsistent. Sterility guidelines specifically for CID implantation may prove a useful tool to reduce infection rates.

Discussion

The American College of Cardiology Foundation, American Heart Association and Heart Rhythm Society (ACCF/AHA/HRS) practice guidelines for device-based therapy of cardiac rhythm abnormalities address pacemaker and ICD indications and follow-up recommendations, but does not mention sterility standards for implantation of these devices. Because transvenous implantation of leads can potentially cause significant peri-procedural infections including endocarditis, creating sterility standards for these procedures may reduce complications and hospital stay for a sizable population of patients with pacing and defibrillating devices. This study has demonstrated that sterility practices in our tertiary care center, and likely many like it, are certainly variable between clinicians and types of cath lab staff. Specific guidelines addressing sterility would provide a standard for more homogenous methods of infection prevention.