PHILIPS

Physician Q&A

# Using electronic medical records to **fight CIED infection**


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**Introduction:**
The ACC, AHA, HRS and EHRA Cardiac Societies Agree: The presence of a systemic infection, pocket Infection, or endocarditis is a Class I indication to remove all hardware. Despite this, 65% of patients with CIED infection may be under-treated and at risk for recurring infection, endocarditis or death.[1]

Dr. Arnold Giedrimas and his IT Team at Charlton Memorial Hospital in Fall River, MA developed a Clinical Program within Epic EMR to better identify and treat CIED infection, which can present in a variety of ways, including positive blood cultures.[2]

Southcoast Health's experience is inspiring more physicians to connect the dots between cardiac implantable devices and potential infection. This is a conversation with Jude Clancy, MD and Ryan Donovan, PA of Yale New Haven Hospital about their experience using the Epic system to help identify device infection patients:



## Q: What are your thoughts on using the Epic system to identify potential CIED infection?

A: Dr. Giedrimas and his IT team at Southcoast deserve major thanks for their work. **We've seen too many late consults that were too advanced to save.** Using Epic as an adjunct to the consult system for device bacteremia detection has great potential. It will save lives – period. That's another Christmas, birthday party or anniversary.

Here at Yale New Haven Hospital, we're a 1,500 bed hospital in a 2,500 bed system as well as a huge teaching institution. Not only can we impact our patients directly with earlier infection detection and better care, but there's an intern, resident, PA or student in our system that will take the experience with them and save a life.

## Q: Tell me about the first patient you identified for extraction.

A: An 80-year-old with heart block and a pacer from 2011 who presented with fevers to 104 degrees. He was found to have Klebsiella bacteremia and because he had his implant recorded he popped up in our Epic InBasket. When we reviewed the chart we noted that the plan was for IV antibiotics as an outpatient and possible discharge. His EP had not been consulted and he had not had a TEE.

## Q: Is it possible that this patient would have been missed? Why?

A: When we called to discuss the case with the team caring for him, they were about to discharge him. Some thought had been given to TEE, but nothing planned. It was also a gram negative organism, so it was not flying super high even on infectious disease (ID) radar. His cardiologist – a truly good physician and caring clinician – questioned the need for extraction. **He wanted the best care for his patient, but was not well informed about the potentially dangerous combination of infection and device.**

## Q: How did the case go?

A: The patient did great. We performed a straightforward system extraction. The leads were removed with lead locking devices and traction after establishing temporary pacing. He had a permanent system re-implanted on the contralateral side three days later and went home the next day after that.

## Q: What do you think extracting the device system meant for the patient?

A: While it wasn't a gram positive organism, we still may have saved his life. I'm glad I don't have to know what might have happened. Even though this was an elderly man and his middle-aged son, they were still "dad and kid." That struck me and drove this one home. With my investment in the project, this one was personal.

## Q: What do you think it meant for the hospital?

A: I think it meant the hospital did not discharge a patient without a very possible cure, and one who would have been a complete setup for relapse and readmission. We're a tertiary teaching institution – there is no excuse aside from lack of awareness, and we all know there's no guarantee this would have been correctly caught clinically on readmission. Not every hospital has a strong lead management program, and that's ok, but when you have the problem of device infection, and you have good experience with the correct therapy, it's frustrating to think that everyone doesn't get correct treatment.

## Q: Do you have any intention to share outcomes with the hospital?

A: Yes. There's actually a poster presentation at Yale, and we've been asked to submit the case. I also plan to keep an eye on any future cases based on repeat admits and/or delay of care, and, secondarily, financial impact.

## Q: Where do you see this heading? What are the possibilities?

A: I think it's obvious that this is just a small clinical example of our culture of technology as a society. We see technology helping us catch things constantly to avoid human error or ignorance as a fail point. Easily this could be expanded to orthopedic implants, ports and dialysis catheters. It really demonstrates the true power of the EMR and its value.

## Q: What would you say to other institutions considering implementing this in their hospital?

A: It's a no brainer. Do it. If you've got a physician champion and can find an IT analyst to own it, the rest is easy. While the project may be up and running and available to all, there's a lot of work left to do. This only touches on bacteremia. As happy as I am that we've made some catches, it bothers me that a patient in our system had a blood stream infection but the tool failed because their cardiac implant has yet to be recorded. **We need more smart clinical and IT people to be aware of the power of these tools and the potential to improve on them.**

1. D021403-03 Infection Infographic. Spectranetics data on file, 2017.
2. Baddour LM, Epstein AE, Erickson CC, Knight BP, Levison ME, Lockhart PB, Masoudi FA, Okum EJ, Wilson WR, Beerman LB, Bolger AF, Estes NA, 3rd, Gewitz M, Newburger JW, Schron EB, Taubert KA. Update on cardiovascular implantable electronic device infections and their management: a scientific statement from the American Heart Association. *Circulation*. 2010;121 :458-47 7.



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