Post-Mortem Cardiac Device Retrieval for Re-Use in Third World Nations: Views of the General Public & Patient Population

University of Michigan Hospitals
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Outline

- Introduction / Background Information
- Hypothesis
- Methods
- Results
- Conclusions
- Looking forward
Cardiovascular disease is the #1 cause of mortality world-wide, causing nearly 20 million deaths annually.
Introduction: Cardiovascular Disease Burden

The overwhelming majority of deaths due to CVD occur in low and middle income countries.

Introduction:
Brady-arrhythmias and Chagas Disease
Introduction: Brady-arrhythmias and Chagas Disease

Chagas Disease is a significant risk factor for conduction disease in many South American countries.
Introduction:
Brady-arrhythmias and Human African Trypanosomiasis

HAT is a significant risk factor for conduction disease in many African countries
Introduction: Disparities in Health Care

Many countries have little or no access to electrophysiologic healthcare

Introduction: Brady-arrhythmia Related Mortality

- 1 million people are dying annually due to brady-arrhythmias
Introduction: Bridging the Gap

- Novel methods of delivering costly electrophysiologic healthcare to impoverished nations are needed.
- We believe that post-mortem pacemaker utilization is a safe, efficacious, and ethically responsible means of delivering electrophysiological healthcare to those in great need.
- The views and opinions of private citizens encompass a pivotal aspect of any pacemaker reuse initiative.
Hypothesis

- We believe that the General Public and Patient Population would approve of a pacemaker reuse program if such a program were implemented.
The purpose of this study is to determine the views of the public, as well as patient population, regarding post-mortem retrieval and donation of pacemakers (PMs) and implantable defibrillators (ICDs).
Methods

- Created anonymous 28 Question Survey to assess Patient/Public Opinion regarding philanthropic reuse of implantable cardiac devices (pacemakers and defibrillators) in Low and Middle Income Countries
- Survey questions were adapted from previous study examining device donation\(^1\)
- Obtained approval to distribute and collect surveys for analysis from University of Michigan Institutional Review Board

Methods:
General Population Distribution and Collection

- General Population: individuals in the waiting rooms of the General Medicine Clinics at the University of Michigan’s University Hospital, Ann Arbor, MI
- Research Assistant (RA) approached individuals during clinic hours over a 3 month period
- Subjects were asked to complete an anonymous survey as a part of a research study
- Consenting subjects:
  - Provided survey and pen for temporary use
  - Instructed to fill out the survey
  - Return completed survey and pen to the RA.*

*Subjects could also return surveys to the clerk or could leave the completed survey in a designated “Completed Surveys”
Methods: Patient Population Distribution and Collection

- **Patient Population**: Individuals with Implantable Cardioverter Defibrillators (ICDs) or Pacemakers (PMs) who are seen in the University of Michigan Cardiac Device Clinic.

- **Surveys were provided to the Cardiac Device Clinic Clerks over a 3 month period**.

- **When patients checked in, they were given the option to fill out the anonymous survey while they were waiting to be seen**.

- **Consenting Subjects**:  
  - Provided survey and pen for temporary use  
  - Returned completed survey and pen to the Clerk prior to check-out.
Methods:
Data Analysis

- Survey data entered into 2 separate Microsoft Excel spreadsheets
- Data was analyzed using SPSS
  - Simple descriptive statistics
  - T-tests for continuous variables
  - Chi-Square tests for categorical variables
  - $p \leq 0.05$
Results

- 1009 subjects of the general population in the University of Michigan Internal Medicine clinics
  - ~2600 subjects were approached
  - Goal: 1000 subjects

- 100 patients with ICDs / PMs
  - ~300 patients were approached
  - Goal: 100 patients
Results:

“If I had a loved one with a PM or ICD and he or she passed away, my wishes concerning his / her device include ANY of the following:"

- Donate to those in need in 3rd world countries*
- Donate to manufacturer for technology improvement*
- Donate to veterinarian for use in animal hospitals*

*Responses were not mutually exclusive.

P<0.01 87
P=0.80 58
P=0.10 37

% In Favor
Results: General Population

“Donating the Device Would Help Me Cope with the Loss of a Loved One”

- Disagree: 19.9%
- Neutral: 35.5%
- Agree: 44.5%

^Responses were mutually exclusive
Results

- Willingness to consent for device removal and donation was not associated with age, sex or ethnicity (P>0.20)
Conclusions

- The majority of patients and the general population would be in favor of an ICD/PM reuse program.
- A higher percentage of patients with devices were in favor of a reuse program as compared to the general public.
- Interest in a reuse program was not related to age, gender or ethnicity.
Limitations

- Study limited to one medical center: results may differ at other institutions as well as other countries
- Subjects had to be literate: cannot assume results could be generalized to illiterate populations*
- Patient population limited in size

*2 blind subjects: Survey read by RA to subject, completed by RA w/ subject’s responses
Looking Forward: Where do we go from here?

- Patients and the General Public have substantial enthusiasm for an ICD/PM retrieval-reuse program.
- A program for device retrieval, sterilization, and reuse would be supported by citizens.
- We need to examine the views of funeral directors as they have the ability to consent and extract devices for donation.
Dear Sir,

I am Teresita Pantaleon asking for your pity. I am a charity patient at the Philippine Heart Center. My doctor says I need ₱80,000 for a pacemaker in order to live. I know it is impossible for me to get this money. I have tried and tried my best already but I can't raise the amount.

I wrote to Congress and they gave me a referral to PCSO. I got a ₱15,000 guarantee letter from PCSO, but this has expired already last March 15. I also went to Radio Veritas and was able to raise ₱4,200 but my cheque has also expired (since I couldn't raise the other funds). I went to the Rizal Capital and our governor gave me ₱500. I spent the money to go to the Senate, but I didn't get a response from our senators.

The truth is I am just waiting for my death. I have given up hope of ever getting a new pacemaker. My pacemaker expires this year and my chest is always in pain. Please help me, I still want to live.

Sincerely, Teresita.
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