

Recycling pacemakers may alleviate burden of heart disease across the globe

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Millions worldwide die each year because they can't afford a pacemaker. Meanwhile heart patients in the United States say they'd be willing to donate theirs after death to someone in need.

In the current issue of *Circulation*, experts at the University of Michigan Cardiovascular Center examine the legality and logistics of collecting pacemakers, after they are removed for burial or cremation, for sterilization and reuse across the globe.

Small humanitarian efforts have shown reusing pacemakers is safe and effective with little risk of infection and patients live as long, and as well, with a recycled [pacemaker](#) as those who get new ones, authors say.

It's a novel approach for treating cardiovascular disease which remains the world's leading cause of death.

"Establishing a validated pacemaker reutilization program could transform a currently wasted resource into an opportunity for a new life for many citizens in the world," says study senior author Kim A. Eagle, M.D., cardiologist and a director of the U-M Cardiovascular Center.

Each year 1 million to 2 million people worldwide die due to lack of access to pacemakers. But 84 percent of patients surveyed at the UM would donate their pacemaker for reuse.

Through partnerships, the U-M hopes to make the concept of recycling

pacemakers a life-saving reality for those who cannot afford them.

Pacemakers are implanted to correct a slow heartbeat. A slow heart rate can be caused by heart attacks, conductive diseases or old age and lead to fainting and fatigue.

Some foreign manufacturers have reduced the cost of pacemakers to as little as \$800, a price that still makes it out of reach in poor nations.

"Despite the substantial cost reduction, a new pacemaker is often more than the annual income of the average worker in underdeveloped nations," Eagle says.

Poor nations have not been able to afford the electrophysiology technology that has reduced cardiac deaths in industrialized nations, while unhealthy lifestyle, as well as infectious diseases, contribute to escalating rates of heart disease worldwide.

In recent decades, industrialized nations have seen a drop in deaths from heart attacks and strokes, but those in low- and middle-income nations continue to experience an epidemic of [cardiovascular disease](#).

For instance, in South America and Central America, the parasitic infection Chagas disease can disrupt connections in the heart. Chagas can affect 20 million people, and a study revealed that 72 percent pacemaker recipients in Brazil had been infected at some point in their lives.

Growing evidence and support laid the groundwork for Project My Heart—Your Heart, a collaborative between citizens, physicians and funeral directors of Michigan, the U-M Cardiovascular Center and World Medical Relief, Inc., a Detroit-based non-profit organization that specializes in the delivery of used medical equipment.

Pacemakers removed before burial or cremations are rarely returned to the manufacturer and instead are stored at funeral homes with no apparent use. In a U-M survey of Michigan funeral home directors 89 percent said they were willing to donate devices to charitable organizations if given the opportunity.

A model program

According to study authors, after families consent, donated devices will be sent by the funeral home in a free postage-paid envelope to the U-M for assessment of battery longevity. Funeral directors can request packages from U-M.

If the device has a battery life greater than 70 percent, it will be sterilized and old patient information will be erased, with the ultimate goal of allocating devices to institutions throughout the world with assistance from WMR. "Of primary concern when discussing reuse of devices is the possibility of infection," says lead author Timir Baman, M.D., a U-M cardiology fellow.

"However, U-M physicians have examined previous studies involving device reutilization and found the overall infection rate of less than 2 percent is similar to that of new device implantation."

More information: My Heart – Your Heart
www.myheartyourheart.org

Provided by University of Michigan Health System

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