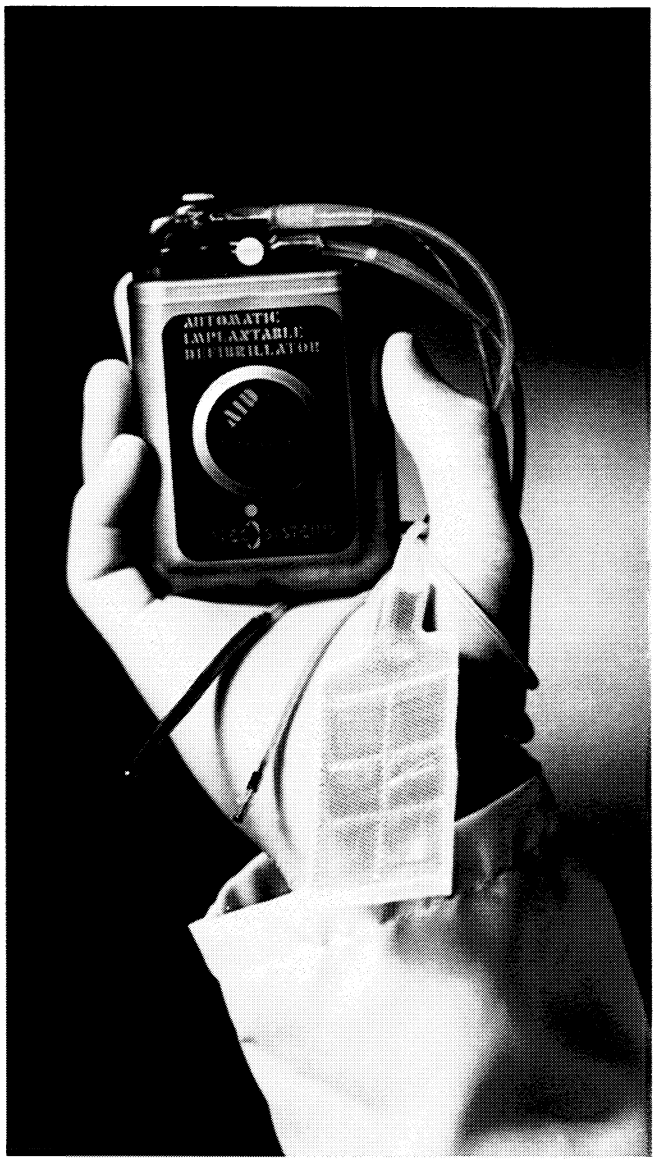

Implantable Heart Aid

The device pictured, a spinoff from miniaturized space circuitry, is a human-implantable heart assist system that could annually prevent thousands of deaths caused by erratic heart actions known to the medical profession as arrhythmias. Called AID®-B and produced by Intec Systems, Pittsburgh, Pennsylvania, it is a second generation version of the AID implantable automatic pulse generator used for several years.

The original AID was designed to correct the heart condition known as ventricular fibrillation (VF), in which the heart loses its ability to pump blood, causing death or brain damage in a matter of minutes. The implanted AID consisted of a microcomputer, a power source and two electrodes for sensing heart activity. Monitoring the heart continuously, the device was capable of recognizing the onset of VF and delivering a corrective electrical countershock to restore rhythmic heartbeat. It was, in effect, a miniaturized version of the defibrillator used by emergency squads and hospitals, with the advantage of being permanently available to patients with high risk of experiencing VF. The AID pulse generator was developed by Intec Systems and Medrad Incorporated, also of Pittsburgh, in conjunction with Drs. Michel Morowski and Morton Mower, both of Sinai Hospital, Baltimore, Maryland. NASA funded an independent design review of the pulse generator, conducted by the Applied Physics Laboratory of The Johns Hopkins University, Howard County, Maryland.

The AID device was highly successful in correcting VF. However, because the sensing circuitry was designed specifically for that purpose, it sometimes failed to detect another form of arrhythmia known as ventricular tachycardia (VT). Therefore, the AID team—Drs. Morowski/Mower and Intec Systems—developed the more advanced AID-B, formally known as the Implantable Automatic Cardioverter-Defibrillator. The second generation device has four sensing electrodes rather than two and it detects and corrects a broader spectrum of arrhythmias, including VT as well as VF. It also has an audio speaker that can be externally activated to determine the status of the device, and it has an internal counter to record the number of countershocks delivered; this information, important to the attending physician, can be telemetered to an external receiver.

The AID-B was introduced to clinical study in the spring of 1982 and by June 1983 there were 231 documented life-saving situations wherein spontaneous arrythmias were detected and automatically converted by the device. By the spring of 1984, some 300 implantations had been effected and the implant rate was about 30 a month. Under a grant from NASA, Intec Systems and the Applied Physics Laboratory of The Johns Hopkins University are developing a still more advanced model.

®AID is a registered trademark of Medrad Incorporated.