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Continuing Medical Implementation

Bridging the Care Gap



Cardiac Procedures

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Implantable Defibrillator (AICD)

Implantable defibrillators or automatic, implantable cardioverter-defibrillators are complex electrical devices designed to monitor the hearts rhythm and deliver lifesaving electrical therapy should the patient suffer a life threatening arrhythmia. Patients with weakened hearts from whatever cause are at increased risk for cardiac rhythm disturbances or arrhythmias. These may be symptomatic or asymptomatic. Arrhythmias from the lower chamber or ventricle may be intermittent or continuous, regular or irregular. Some of these can be life threatening. The most dangerous are sustained ventricular tachycardia (VT), a fast continuous rhythm coming from the ventricle (usually left ventricle) and ventricular fibrillation (VFIB), a totally irregular and erratic rhythm. In ventricular tachycardia the patient may remain conscious and experience mild to severe symptoms of dizziness, shortness of breath or chest pain. If the VT is sufficiently fast the patient may lose consciousness. In ventricular fibrillation the ventricles do not pump blood effectively and loss of consciousness occurs. Unless resuscitative measures are applied promptly, the patient will not survive.

An AICD is inserted like a pacemaker with an electrical lead implanted into the right ventricle of the heart via the large veins leading from the arm to the heart. The device is implanted under the skin below the collarbone and is about the size of a large pacemaker. The circuitry of the AICD continuously monitors the heart's rhythm. If a patient develops an excessively fast pulse the AICD delivers an internal shock designed to restore normal rhythm. The AICD continues to monitor and may deliver multiple shocks if the first ones are ineffective. AICDs also have backup pacing capability to deal with excessively slow heart rates. Some AICDs also have leads implanted into the right atrium or left ventricle to provide dual chamber pacing and/or resynchronization therapy.

AICDs are not indicated for all patients with heart failure. Indications for AICDs include patient with symptomatic sustained or non-sustained VT and patients with recurrent VFIB. It has been shown that AICDs may be of benefit in patients without symptomatic ventricular arrhythmia. Selection criteria in these cases include patients with weakened left ventricles (LVEF \leq 30%) who also have a widened QRS complex (IVCD) usually greater than 0.15 seconds.

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