

## Cardioversion and its Medication

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### Abstract

Cardioversion may be a procedure by which an abnormally fast pulse (tachycardia) or other arrhythmia is converted to a traditional rhythm using electricity or drugs. Synchronized electrical cardioversion uses a therapeutic dose of electrical current to the guts at a selected moment within the cycle, restoring the activity of the conduction system of the guts. (Defibrillation uses a therapeutic dose of electrical current to the guts at a random moment within the cycle, and is that the best resuscitation measure for asystole related to fibrillation and pulseless ventricular tachycardia.) Pharmacologic cardioversion, also called chemical cardioversion, uses antiarrhythmia medication rather than an electric shock.

**Keywords:** Cardioversion, Antiarrhythmia, Heart

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### Introduction

The pads are placed on the chest of the patient, or one is placed on the chest and one on the rear. These are connected by cables to a machine which has the combined functions of an ECG monitor and therefore the electrical function of a defibrillator. If the patient is conscious, various drugs are often wont to help sedate the patient and make the procedure more tolerable. However, if the patient is hemodynamically unstable or unconscious, the shock is given immediately upon confirmation of the arrhythmia. When synchronized electrical cardioversion is performed as an elective procedure, the shocks are often performed in conjunction with drug therapy until sinus rhythm is attained. After the procedure, the patient is monitored to make sure stability of the sinus rhythm.

Synchronized electrical cardioversion is employed to treat hemodynamically unstable supraventricular (or narrow complex) tachycardias, including fibrillation and atrial flutter. it's also utilized in the emergent treatment of wide complex tachycardias, including ventricular tachycardia, when a pulse is present. Pulseless ventricular tachycardia and fibrillation are treated with unsynchronized shocks mentioned as defibrillation. Electrical therapy is inappropriate for sinus tachycardia, which should be a neighborhood of the medical diagnosis.

### Medication

Drugs that are effective at maintaining normal rhythm after electric cardioversion also can be used for pharmacological cardioversion. Drugs like amiodarone, diltiazem, verapamil and metoprolol are frequently given before cardioversion to decrease the guts rate, stabilize the patient and increase the prospect that cardioversion is successful.

There are various classes of agents that are best for pharmacological cardioversion.

Class I agents are sodium (Na) channel blockers (which slow conduction by blocking the Na<sup>+</sup> channel) and are divided into 3 subclasses a, b and c. Class Ia slows phase 0 depolarization within the ventricles and increases absolutely the biological time. Procainamide, quinidine and disopyramide are Class Ia agents. Class Ib drugs lengthen phase 3 repolarization. They include lidocaine, mexiletine and phenytoin. Class Ic greatly slow phase 0 depolarization within the ventricles (however unlike Ia haven't any effect on the refractory period). Flecainide, moricizine and propafenone are Class Ic agents.

Class II agents are beta blockers which inhibit SA and AV node depolarization and slow pulse. They also decrease cardiac oxygen demand and may prevent cardiac remodeling. Not all beta blockers are the same; some are cardio selective (affecting only beta 1 receptors) while others are non-selective (affecting beta 1 and a couple of receptors). Beta blockers that focus on the beta-1 receptor are called cardio selective because beta-1 is liable for increasing heart rate; hence a beta-adrenergic blocker will slow the guts rate.

Class III agents (prolong repolarization by blocking outward K<sup>+</sup> current): amiodarone and sotalol are effective class III agents. Ibutilide is another Class III agent but features a different mechanism of action (acts to market influx of sodium through slow-sodium channels). it's been shown to be effective in acute cardioversion of recent-onset fibrillation and atrial flutter.

Class IV drugs are calcium (Ca) channel blockers. They work by inhibiting the nerve impulse of the SA and AV nodes.

If the patient is stable, adenosine could also be administered first, because the medicine performs a kind of "chemical cardioversion" and should stabilize the guts and let it resume normal function on its own without using electricity.

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