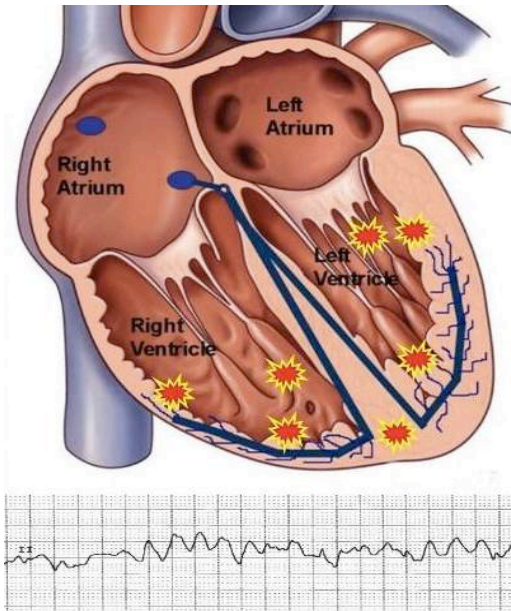
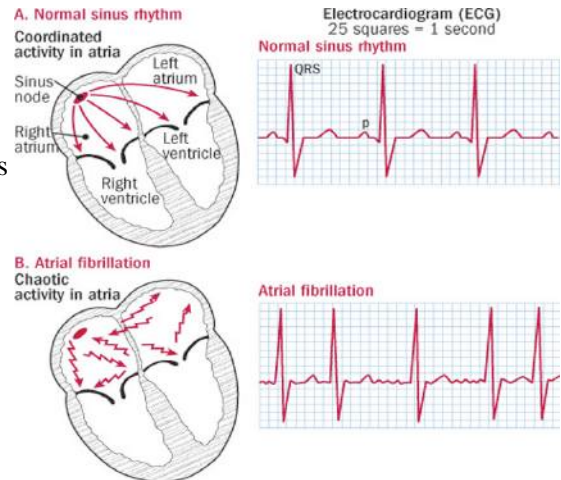


Implantable Cardioverter-Defibrillator (ICD)

Atrial fibrillation (AF or A-fib) is an abnormal heart rhythm characterized by rapid and irregular beating. Often it starts as brief periods of abnormal beating which become longer and possibly constant over time. Most episodes have no symptoms. Occasionally there may be heart palpitations, fainting, shortness of breath, or chest pain. The disease increases the risk of heart failure, dementia, and stroke (Wikipedia). See figure on the right from <www.health.harvard.edu/heart-health/atrial-fibrillation-common-serious-treatable>.



Ventricular fibrillation (VF or V-fib), an emergency that requires immediate medical attention, causes the person to collapse within seconds. It's the most frequent cause of sudden cardiac death. Emergency treatment includes cardiopulmonary resuscitation (CPR) and defibrillation. V-Fib is a condition in which there is uncoordinated contraction of the cardiac muscle of the ventricles, making them quiver rather than contract properly. As the ventricles quiver uselessly and stop pumping blood, blood pressure plummets and blood supply to vital organs is cut off. Figure on the left <www.washingtonra.com/21.html> shows ventricular tachycardia and fibrillation originating from the ventricular muscle tissue. An ECG strip of ventricular fibrillation as a result of this chaotic ventricular electrical activity.

Cardioversion is a medical procedure by which an abnormally fast heart rate (tachycardia) or cardiac arrhythmia is converted to a normal rhythm using electricity or drugs. Synchronized electrical cardioversion uses a therapeutic dose of electric current to the heart at a specific moment in the cardiac cycle. **Defibrillation** is a common treatment for life-threatening cardiac dysrhythmias, ventricular fibrillation and pulseless ventricular tachycardia. Defibrillation consists of delivering a therapeutic dose of electrical energy to the heart with a device called a defibrillator.

Implantable Cardioverter-Defibrillator (ICD) is an implantable device able to perform pacing of the heart, cardioversion, and defibrillation. The device is capable of correcting most life-threatening cardiac arrhythmias. The ICD is the first-line treatment and prophylactic therapy for patients at risk for sudden cardiac death due to ventricular fibrillation and ventricular tachycardia. Current devices can be programmed to detect abnormal heart rhythms and deliver therapy via programmable antitachycardia pacing in addition to low-energy and high-energy shocks. See figure on the right from <www.drugs.com/health-guide/implantable-cardioverter-defibrillator-icd.html>.

