



Pulmonary Edema Measurement Provides Alert to Worsening Heart Failure

Technology No. z04067

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Pulmonary Edema in Heart Failure Patients

One of the major problems facing patients with heart failure is pulmonary edema. It is now possible to monitor the extent of pulmonary edema by measuring impedance from the existing hardware of a cardiac rhythm management (CRM) device such as a cardiac pacemaker, a cardiac resynchronization therapy device (CRT-D) or an implantable cardioverter defibrillator (ICD). By taking advantage of the body's natural electrophysiology, decreases in the impedance between the lead and devices indicate increases in fluid buildup in the lungs. By calibrating this impedance, doctors can receive real-time information about the level of pulmonary edema in a patient, thus alerting them to worsening heart failure.

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Measuring Lung Impedance to Assess Pulmonary Edema

This device, designed to measure the impedance across the lungs, can be used in patients with implanted heart failure CRM devices. This is a legacy method available to patients implanted with devices that do not include specialized edema impedance circuits or bipolar leads. This method captures the current injected by the CRM device in the left ventricle and the voltage from surface skin electrodes. With these two measurements a monitoring station can calculate the impedance and can signal real-time information on the severity of the patient's pulmonary edema. This method is similar to the current practice of remote pacemaker follow up via telephone line. This will allow the patient to record this data and report it to the physician with a familiar process.

BENEFITS OF VOLTAGE PICK UPS ALONG PACEMAKER LEADS FOR MEASURING PULMONARY EDEMA:

- Measuring impedance allows doctors to assess the extent of pulmonary edema from preplaced pacemaker, CRT-D or implantable cardioverter defibrillator leads in heart failure patients
- Measuring current from single lead allows wider range of patients access to measurements
- Patient familiarity and ease of use with method
- Surface skin electrode can be used to make accurate pulmonary edema calculations
- Alerts physician to worsening heart failure

Researchers: Robert P Patterson, PhD Emeritus Professor, Department of Physical Medicine and Rehabilitation

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