

Title: Heart Sound Monitoring Device Incorporated into a Pacemaker or Implantable Cardioverter Defibrillator

Invention Summary	<p>This invention incorporates a heart sound monitoring device with a pacemaker or implantable cardioverter defibrillator (ICD). The monitoring device may include a portion which resides within the case of a pacemaker generator and a portion that resides within a pacemaker lead. The sound monitoring device would listen for the third heart sound and provide telemetric data transmission to a clinician or a monitoring device that may be used to adjust a patient's medication.</p>
Market Applications	<p>This invention can leverage off the burgeoning pacemaker and ICD market and may be used to position a high value entry into this market. A significant portion of the \$3 billion pacemaker market could benefit from inclusion of this type of sensing modality. In addition, many analysts foresee the future of the pacemaker market being driven by this type of technology to enhance rate adaptivity and diagnostic capability.</p>
Features, Benefits & Advantages	<p>The clinical importance of the third heart sound is becoming widely accepted and appears to be the earliest clue to left ventricular failure. Despite this importance, there is no current method of providing continuous recordings of this sound in conjunction with implanted pacemakers and ICD's. The state of the art for listening to and recording heart sounds involves the use of a stethoscope or phonocardiograph, yet the stethoscope is unreliable because of the variability in discerning the subtle third heart sound across clinicians and, while the phonocardiograph is more reliable, it is an acute recording of the sound and must be performed in the clinic. This invention provides chronic recording and analysis of the third heart sound via an implanted monitoring device. This information can be available to a clinician via telemetry so the clinician may adjust therapeutic protocols to meet the changing needs of the patient.</p>
Intellectual Property & Development Status	<p>This concept-stage invention is the basis for one of the design projects for the Bioengineering 3801/4801 Design Class sequence, and will be further developed in that context. It is available for developmental research support/licensing under either exclusive or non-exclusive terms.</p>
Related Research	<ul style="list-style-type: none"> • http://utahinternalmedicine.com/pageview.aspx?id=14440 • http://utahhealthsciences.net/pageview.aspx?menu=4030&id=14372
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