

# Improved Method of Producing Audible Output for Physiological Monitoring

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## ABSTRACT

Oxygen concentration and heart rate measurements are often reported audibly, which can lead to a very cacophonous and confusing environment for clinicians. Researchers at the University of California, Davis and Dartmouth College have developed a novel apparatus that can communicate changes in physiological parameters such as oxygen saturation and heart rate as discrete audible packets that are intuitive to learn.

## FULL DESCRIPTION

The traditional method of making pulse oximeter output audible is to play a pitch with every heartbeat. The pitch varies continuously as a function of oxygen saturation. This method contributes to a stressful situation of information overload because a pitch is heard every heartbeat (twice per second if a patient's heart rate is 120 beats per minute). Additionally it is difficult to perceive absolute values, especially when parameters vary continuously. Because different clinical scenarios are associated with different desired ranges of oxygen saturation as well as changes in oxygen saturation through time, it becomes even more difficult to know whether a particular pitch represents a safe or dangerous blood oxygenation level.

Researchers at the University of California, Davis and Dartmouth College have developed a simple and stress-free method to monitor oxygen saturation and heart rate in patients. This novel apparatus provides status updates, the frequency of which can be tailored to specific clinical monitoring needs. Each update is presented as a discrete audible information packet, containing information both about the desired target state as well as the current state. Demining whether the current state deviates significantly from the desired state is a matter of discriminating between sounds that can be intuitively understood. This method and device helps create an environment where clinicians need not memorize absolute values of pitch, but rather simply need to discriminate between different levels of urgency.

## APPLICATIONS

Medical monitoring devices in clinical settings.

Personal fitness devices.

## FEATURES/BENEFITS

Simple and intuitive to learn and use.

Sounds are pleasing to the ear.

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## INVENTORS

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## OTHER INFORMATION

### KEYWORDS

audible, fitness, health,  
heart rate, monitoring,  
oximetry, physiological,  
sound

### CATEGORIZED AS

- **Biotechnology**
  - Health
- **Medical**
  - Devices
- **Sensors & Instrumentation**
  - Biosensors
  - Medical

### RELATED CASES

2012-540-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	<a href="#">9,918,679</a>	03/20/2018	2012-540

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