



# Teaching Auscultation With A Bluetooth Connected Stethoscope

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# Learning Objectives

- ▶ Discuss features of a Bluetooth connected Stethoscope
- ▶ Evaluate the utility of a Bluetooth connected stethoscope in nursing education

## Disclosure

- ▶ There is no sponsorship or commercial support provided for this presentation.
- ▶ Commercial product names mentioned are not for endorsement of any specific product, but to provide the actual method and mechanism for the use of a Bluetooth connected stethoscope

# What The Research Says .....

- Healthy heart sounds versus cardiac murmurs
- Real-time instructor feedback and diagnostic proficiency
- High student to patient ratio and the difficulty of simultaneous listening
- The ability to learn from recordings of heart and lung sounds

# The Old Way



# The New Way



# Stethoscope Features

- Usual tubing and ear pieces
- Normal diaphragm and bell
- Electronics between the tubing and the bell
- Features on the stethoscope
  - Volume control
  - On/off for BlueTooth connectivity
- When not “on”, can use like any stethoscope

# Stethoscope Features

- BlueTooth connectivity to mobile device (iOS/Android)
- Secure sign-on to app
- Record heart and lung sounds
- Visual waveforms of sounds
- Live stream to a a second device
  - Remote location
  - Connect via email/send a URL



# Dashboard

## Unnamed Cardiac 1a

Birthdate: ----

None

[Edit Profile](#)

Recordings [Sharing](#) [Activity](#)

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DATE

Jan 22, 2017 - 6:25 AM

LOCATION

None

RECORDING BY

Digger

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Zoom [1x](#) [2x](#) [4x](#)

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Notes

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# Current Approaches and Challenges

- Students and faculty use a double-headed stethoscope
- Close physical proximity between the student, the faculty, and the patient
- Must be with each student to hear what they are hearing



# Implementing Bluetooth Stethoscope

- First year, second semester ADN students
- Small groups of students and an instructor (6:1)
- A stethoscope and iPod touch per student
- Review for both faculty and students on using the stethoscope
- Deployment of stethoscopes in clinical area
  
- \*FDA and HIPAA

# Student and Faculty Experiences

## STUDENTS

- Excited to use stethoscopes
- Initiated patient teaching skill (use of play-back)
- Stethoscopes felt heavy
- Own mobile device

## FACULTY

- Logistics of stethoscopes
- Arrangements at facility
- Time needed for change/adaptation
- Support of clinical instructors

# Changing Student Skills



- Accuracy of interpretation of both heart and lung sounds improved
- Better able to distinguish when extra or missing systoles were present in heart sounds
- Greater accuracy in identification of adventitious sounds

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