

# **Sleep Lab Monitor - Progress Report 13**

1/23/09-1/30/09

## **Project Title:**

A combined Thermistor, Pressure, and CO<sub>2</sub> device for use in the Sleep Laboratory

## **Team Members:**

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## **Client:**

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## **Problem Statement:**

There are three measurements taken from each breath during polysomnography. The following devices are used: a thermistor to detect temperature difference between inhaled and exhaled air, pressure sensors that show a flattening pressure profile during upper airway narrowing, and CO<sub>2</sub> sampling tubes to sense End Tidal CO<sub>2</sub>. These three measurements are taken from two different devices placed under the child's nose, with two prongs going into each nostril. This method can be inaccurate if a nostril was to become obstructed, and each device may not sample from both nostrils as well as the mouth. Moreover, the current apparatus may be uncomfortable for the child as well as insecure on the child's face. This could cause a disruption of sleep and a possibility of the devices becoming unfastened during the night. To solve these problems, the goal is to design and develop a prototype that combines these three measuring devices into one apparatus that samples from both of the nostrils as well as the mouth, and attaches to the child in both a durable and comfortable fashion.

## **Reinstatement of Team Goals from Last Week:**

None-First week of class

## **Summary of Team Accomplishments:**

1. First team meeting on 1/23/09 12:00p
  - a. Assigned new team roles
  - b. Compared schedules to set up client meetings/advisor meetings
  - c. Discussed topics/questions to bring up at first client meeting
  - d. Assigned background research for alternative ways to attach thermistors to cannula
2. Scheduled all client meetings for the semester
3. First client meeting on 1/28/09 2:30-3:00p
  - a. Set up goals for the semester
    - i. Find/attach grasslead connectors to thermistor wires
    - ii. Test existing prototype
    - iii. Acquire smaller thermistors
    - iv. Design more durable attachment of thermistors to cannula
    - v. Design more rounded edges for attachment piece
  - b. Alternative/long-term goals
    - i. Test the different breath patterns (i.e. right nostril, left nostril, oral) to measure the EtCO<sub>2</sub> differences
    - ii. Consider trying to design a clip-on thermistor device for a more durable attachment of each thermistor to a harder surface
    - iii. Work on an CAD drawing to submit to companies for manufacture

## **Statement of Team Goals for Upcoming Week:**

1. Set up Prototype testing in the Sleep lab
2. Continue to do background research
3. Have a team meeting to discuss modification alternatives for prototype

## **Project Schedule**

1/23/09-1/30/09: First client meeting, background research for modifying current prototype

1/31/09 – 2/6/09: Perform background research

2/7/09 – 2/13/09: Background research, test current prototype, modification alternatives

2/14/09 – 2/20/09: Continue to brainstorm for modification ideas

2/21/09 – 2/27/09: Work on design and choose design modification alternatives

2/28/09 – 3/6/09: Complete Mid Semester Presentations

3/7/09 – 3/27/09: Develop modifications and build new prototype

3/28/09 – 4/24/09: Test modified prototype

4/25/09 – 5/1/09: Complete and give Final Presentation, submit notebooks and paper

**Team Difficulties:**

None

**Expenses:**

None

**Activities and Individual Accomplishments:**

Team Meeting 1/23: 1 hour

Client Meeting 1/28: 0.5 hour

Nicole – 3.5: Scheduled advisor and client meetings, background research

Jason – 3: Background research

Lindsey – 3 hours: Background research

Robyn – 3 hours: Background Research

**Total hours for this week: 14**

**Cumulative hours to date: 14**

<b>Sleep Lab Monitor Gantt Chart Spring 2009</b>												Completed:			
												In Progress/Planned:			
	1/23	1/30	2/6	2/13	2/20	2/27	3/6	3/13	3/20	3/27	4/3	4/10	4/17	4/24	5/1
Background research	Completed	In Progress	In Progress	In Progress											
Test Current Prototype			In Progress	In Progress											
Client Meetings	Completed		In Progress		In Progress	In Progress		In Progress		In Progress			In Progress		
Meetings with Professors/Tech															
Brainstorm design		In Progress	In Progress	In Progress											
Design Modification alternatives/mat				In Progress	In Progress										
Midsemester presentation					In Progress	In Progress	In Progress								
Finalize design ideas							In Progress								
Ordering materials							In Progress	In Progress	In Progress						
Construct modified prototype								In Progress	In Progress	In Progress					
Test modified prototype & Materials									In Progress	In Progress	In Progress	In Progress			
Plan final poster presentation													In Progress	In Progress	
Write final paper												In Progress	In Progress	In Progress	
Final advisor meeting															In Progress

