

Bronchoalveolar Lavage Trap

Group 17

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Team: Laura Zeitler (Team Leader)

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Problem Statement:

In order to diagnose respiratory problems in immunosuppressed patients, bronchoalveolar lavage is used to obtain a bronchiole fluid sample. A bronchoscope is guided through the respiratory tract and wedged into a bronchiole, which is then flushed with saline solution. The solution is then extracted with a vacuum and accumulates in the sterile collection trap. In the current procedural setup, the lavage trap is free-hanging and unstable. Manipulation of the bronchoscope and surrounding movement can displace the trap resulting in loss of sample to the vacuum line. To prevent unnecessary expense and patient inconvenience from sample loss, a new trap needs to be developed.

Last Week's Goals

- Determine proper dimensions for final prototype from vacuum testing on initial prototype
- Finalize Solidworks model
- Submit design to rapid prototyping lab

Summary of Accomplishments

- Solidworks drawing is almost complete
- The rough prototype was tested at the vacuum in the hospital.
 - Time needed to lose sample in unrestricted trap was determined to be less than 2 seconds
 - Using large metal ball, trap needed to be tipped between 80-90 degrees to suck ball up
 - The rough prototype with metal ball effectively stopped the vacuum pressure and cut water flow when tipped 90 degrees with less than 10ml of sample lost
 - The rough prototype with lighter ball effectively stopped the vacuum pressure and cut water flow when tipped 90 degrees with less than 2ml of sample lost
 - Pinching the tube was sufficient to bring ball back to original position
 - In a rapid tipping test with lighter ball, using a 90 degree rotation, the ball stopped the suction and less than 1ml of water was lost

This Week's Goals

- Finish dimensions and Solidworks threads for final prototype
 - Meet with Amit to get help with cap threads
- Submit design to rapid prototyping lab

Project Difficulties

We are having trouble with the Solidworks cap threads, but Amit is going to help us on Friday April 10th.

Activities

Collaboration Group Activities		
Date	Activity	Duration
4/3/2009	Group and Advisor Meeting	1 hour
4/3/2009	Hospital Vacuum Testing	1 hour 15 minutes

Team Member	Date	Activity	Duration
Ali Johnson	4/3/2009	Solidworks drawing	30 min
	4/9/2009	Dimension determination of Solidworks	30 min
Kim Kamer	4/9/2009	BSAC Meeting	30 min
Laura Zeitler	4/3/2009	Solidworks drawing	2 hours 15 min
	4/8/2009	Solidworks attempt at cap threads	1 hour 30 min
	4/9/2009	Progress Report	30 min
Elise Larson	4/9/2009	Hospital Correspondence	15 min

Expenses

Date	Item	Cost	Comments
3/19/09	Miscellaneous Prototype Supplies	\$3.70	American Science and Surplus Store

