Tracheoesophageal Prosthesis Insufflator

Computer Integrated Surgery II, Project 13

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Overview

-- Summary

-- Significance

-- Status of Deliverables

-- Updated Schedule

-- Status on Dependencies

-- Questions
Summary

- Develop a portable insufflator that will drive air through the TEP so that patient can circumvent direct blockage of stoma
Significance

- Patients lose speech capability after total laryngectomy

-- Speech restored via tracheoesophageal prosthesis (TEP)

- Operation by blocking of stoma can be inconvenient or tiresome
## Deliverables: Status

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Expected</th>
<th>Maximum</th>
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</thead>
<tbody>
<tr>
<td>CAD/Pad sketch of components</td>
<td>Rough prototype of insufflator</td>
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Deliverables: Status

CAD/Pad sketch of components: In Progress/Done
Rough prototype of insufflator: In Progress

- CAD in progress
- Sketch: Next slide
- Prototype: Construction in progress, one part en route
- Safety detach, safety button
- Pressure measurement & adjustment

connector head

surgical tubing: 1/2"

QD - twist lock

1/8" to 1/4" adapter

Push button valve
Pressure regulator valve

CO2 charger

12g CO2 cartridge

D: Tubing diameter: matches A
C: Length of connector

D: Flange: Flanges
- secures into TEP
- but can be easily removed
Deliverables: Status

- Improved prototype with custom-built parts: In Progress
- Tested on voluntary patients: On Hold
- Portable, belt-worn: Eliminated

- Eliminate rough prototype. Get it right from the start.
- In discussion with Dr. Richmond for testing
- Make it portable in the first place.
## Deliverables: Status

<table>
<thead>
<tr>
<th>Description</th>
<th>Status</th>
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<tbody>
<tr>
<td>Polish into sell-able condition</td>
<td>Not Yet Met</td>
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<tr>
<td>World domination</td>
<td>Not Yet Met</td>
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Previous Schedule

Design Sketch
Material Acquisition
Initial Prototype
Rapid Prototyping
Testing
Revisions
Revised Schedule
## Dependencies

<table>
<thead>
<tr>
<th>Dependency</th>
<th>Reason for dependency</th>
<th>Impact</th>
<th>Resolution</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEP device</td>
<td>Output tubing interface</td>
<td>No interface</td>
<td>Resolved</td>
<td>N/A</td>
</tr>
<tr>
<td>Rapid Prototyping</td>
<td>Costs, qualifications</td>
<td>Less streamlined design</td>
<td>Almost Resolved</td>
<td>Do without</td>
</tr>
<tr>
<td>Voluntary Patient testing</td>
<td>Ethics</td>
<td>Cannot test device</td>
<td>Considering Alternative</td>
<td>Perform on realistic model</td>
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</table>
Questions?

Be even more gentle.