

## Project Grant Application

1. Please list all team members, their disciplines, and departments:

Christopher Conley RRT- Manager Respiratory Department

James Lipsey – Director Engineering

2. Briefly, what is your project idea?

Develop a tracheostomy tube holder that.

- Securely holds the tracheostomy tube in place for all patients with a tracheostomy tube.
- Alerts someone if a patient is attempting to remove a tracheostomy tube unexpectedly.
- Prevents someone from removing a tracheostomy tube unexpectedly.

3. What problem does your idea solve?

The prevention of patients accidental or intentional attempting of a decannulation (the removal of the tracheostomy tube from a patients neck ) . In 2022 at Shirley Ryan there were 16 documented unplanned self-decannulations, 14 initiated by patients with mental deficits due to a brain injury and 2 that occurred during an activity.

- Unplanned decannulation of a tracheostomy tube from a patient can be painful and at Shirley Ryan always results in medical personnel being called to put the tube back into the patient to maintain their airway.
- Premature dislodging or removal of the tracheostomy tube whether intentional (with patients that have mental deficits ) or accidental during daily activity( participation in physical and occupational daily activities) can result in a health risk and initiate a medical event for the patient if unexpected removal of the tube results in the patient being unable to maintain normal breathing .
- Patients with a breathing tube in place rely on the tube for maintaining a patent airway allowing them to breathe normal. When the tube is removed or dislodged a physical change in the airway may take place disrupting normal breathing.

4. How are you going to solve the problem (list the steps)- build a better tracheostomy tube holder

- a. Review what opportunities for improvement exist with the current holders that are being used and determine what allows patients to be able to easily remove them.

\*\*Project Grant applicants are strongly encouraged to identify a research partner as appropriate. Melissa Briody (mbriody@sralab.org) can facilitate a research partner for Project Grants as needed.

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- b. Improve the strap feature on a current prototype so that it can withstand the amount of torque required to pull the straps loose.
- c. Create a harness connected to a motion sensor that fits over the flange of a tracheostomy tube and allows it to alarm if it is removed.

### 5. What is the desired outcome for this project?

- Create a tracheostomy tube holder that securely holds the tracheostomy in place during all activity and can easily be removed by caregivers in the event of an emergency.
- Eliminate the patient's ability to remove the tracheostomy tube holder and subsequently removing the tracheostomy tube.
- Create an environment that alerts someone if an attempt is being made by a patient to remove a tracheostomy tube.

How will you determine if you were successful – If we are able to create a workable version of the device that can potentially be used in a more formal study to test its efficiency

### 6. What help do you need?

- Perfecting a prototype
- Sourcing materials

### 7. Amount funding requested: (\$1,000-\$10,000)

Total: \$5000.00

Person hours: 24 to 48 hours

Equipment/Supplies: \$1000.00

### 8. Please attach the following items -A sketch or picture of the idea – See images below

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