TrachTalk - An Independently Operable Tracheostomy Cuff Controller

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Clinical Need:

Patients reliant on mechanical ventilation are often unable to speak due to an inflated cuff which obstructs their airways

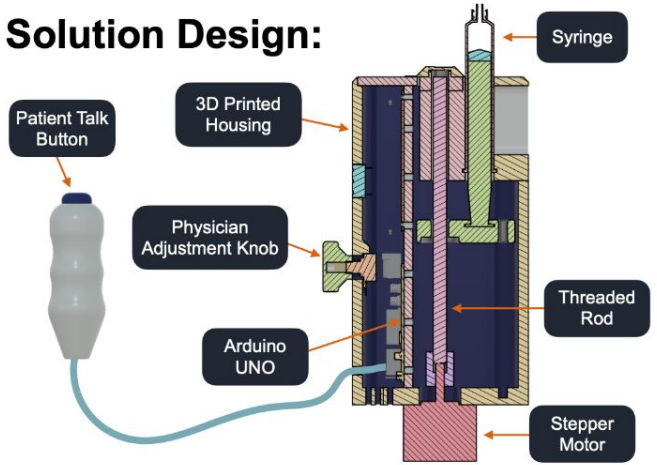
TrachTalk allows for rapid adjustment of the cuff, allowing the patient to control their speech independently

Greatly improves patient QOL and enables pediatric speech development

Design Inputs:

- ✓ **R1:** Cuff can be inflated to a pressure of 22.5 ± 2.5 cmH2O
- ✓ **R2:** Cuff must fully actuate within 10 seconds
- ✓ **R3:** Syringe volume displacement can inflate a cuff to between Ø9.6 and Ø16.4 mm.

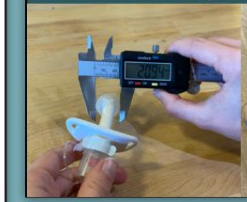
Solution Design:



Solution Build:

Verification Testing:

Diameter Testing



Pressure Testing

Testing Results:

Req.	Test	Ideal Value	Result	Outcome
R1	V1	22.5	19.0	FAIL
R2		10	16.6	FAIL
R3	V2			PASS

Future Revisions:

- Improved positioning control
- Trach Cuff Pressure Monitoring
- Universal Cuff Connector

Impact:

- Patient independence
- Developmental advancement