and examine the association between sociodemographic characteristics and sources of communication, adjusting for clinical and health belief factors as covariates. RESULTS/ANTICIPATED RESULTS: This study is in progress. It is anticipated that the most overall prevalent method of communication about genetic testing will be via the media. In multivariate models, it is anticipated that women who are younger, Black, have a lower education, have lower income, and no health insurance are more likely to receive communication about genetic testing from a source other than a health professional or not at all. After adjusting for clinical and health belief factors such as co-morbid conditions, having a primary care physician, and general knowledge about genetic testing, there may be some association between the above mentioned sociodemographic factors and receiving communication about genetic testing via a healthcare professional. DISCUSSION/SIGNIFICANCE: Reporting on the association between sociodemographic factors and sources of communication can aid in an intervention design to better promote genetic testing. This can be most beneficial among vulnerable groups like Black women to better understand their own genetic risk of cancer and to make informed decisions about their health.

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The impact of asymmetric lung injury on gas and pressures distribution in a mechanical ventilation model with implementation of compartmentalized inspiratory hold*

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OBJECTIVES/GOALS: Asymmetries in lung pathophysiology can result in a maldistribution of gas between regions of the lungs which may generate dangerous pressures that are not observable by clinicians. Our study aims to demonstrate and quantify this through use of high-fidelity simulators to represent a range of commonly encountered clinical pathologies. METHODS/STUDY POPULATION: A benchtop study was performed with two high-fidelity breathing simulators, each representing one lung. This system allows for real-time monitoring of pressure and lung dynamics in a two-lung asymmetric injury model. One simulator was set to a fixed compliance and a resistance. A second simulator had a range of compliance and resistance values. Data were collected for 15 different test cases across a distribution of asymmetries. Each test case is run for 30 cycles. At the end of each ventilatory cycle, a short expiratory hold is performed, allowing pressure in the lung simulator, tubing, and ventilator circuit to equilibrate between cycles. RESULTS/ANTICIPATED RESULTS: Maldistribution of tidal volume was demonstrated when the compliance ratio between lung models (CL1/CL2) was 0.2 and the resistance ratio (RL1/RL2) was 10 with 23.9% (99% CI: 23.9-24.0%) of the gas volume distributed to lung 1 (103 mL L1 vs 327 mL in L2). Additionally, the injured lung when compared with the normal lung experienced higher peak pressures (12.8 cm H2O vs. 6.9 cm H2O, L1 and L2 respectively) and higher compartmentalized plateau pressures (11.5 cm H2O vs. 6.8 cm H2O, L1 and L2 respectively). DISCUSSION/SIGNIFICANCE: We demonstrate significant maldistribution of volume and pressures between two lungs in an asymmetric injury model. This study suggests significant impact of asymmetry in current lung-protective mechanical ventilation strategies and calls for better understanding of case-specific pathophysiologic changes affecting each of the two lungs.

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Developing a Digitally Integrated Endotracheal Tube for Neonates to Improve Safety and Respiratory Function

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OBJECTIVES/GOALS: Neonatal endotracheal tubes (ETTs) are usually uncuffed to avoid subglottic stenosis and other complications, but cuffed ETTs allow better ventilation. Our goal was to detect and control pressure in the cuff below the limit of occluding venous flow to minimize the risk of subglottic stenosis. METHODS/STUDY POPULATION: We designed a pressure sensor to fit on a 2.5 ETT for prototype testing in 8 age adult female rabbits. Eight uncuffed age- and sex- matched rabbits served as control. Study duration was 2 hours during which pressure in the cuff was limited by novel sensor (intervention) or auscultation (control). Anesthesia was maintained with sevoflurane. Ventilation was provided mechanically. Subsequently the tracheae were removed, sectioned crosswise, and compared histologically for mucosal damage. RESULTS/ANTICIPATED RESULTS: Preliminary data demonstrated an almost 30% greater amount of intact mucosa in the intervention group. The sensor also provided data on heart rate and respiratory rate, although this signal was not optimal. After filing an invention disclosure and provisional patent, we are refining our device to include multiple compartments for local control of cuff pressure and applying for a STTR Phase I/II application. DISCUSSION/SIGNIFICANCE: Ventilation in neonates with uncuffed ETTs can be suboptimal due to leak around the tube, but cuffed ETTs pose the threat of subglottic stenosis and other complications. We have designed a prototype cuffed ETT with a sensor to maintain low cuff pressure while preventing leaks and largely avoiding damage to the tracheal mucosa.

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Decreased Contraction Rate, Altered Calcium Transients, and Increased Proliferation seen in Patient-specific iPSC-CMs Modeling Ebsteins Anomaly and Left Ventricular Noncompaction

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OBJECTIVES/GOALS: In a familial case where 10 of 17 members inherited EA/LVNC in an autosomal dominant pattern, we discovered a novel, damaging missense variant in the gene KLHL26 that segregates with disease and comprises an altered electrostatic surface profile, likely decoupling the CUL3-interactome. We hypothesize that this KLHL26 variant is etiologic of EA/LVNC. METHODS/

https://doi.org/10.1017/cts.2022.209 Published online by Cambridge University Press