It is proposed that trachea tissue be tested to ascertain the influence nasal mask conditions have on normal mechanical breathing stresses have on airway surface liquid. Also quantify the effect elevated air pressure has on the airway liquid fluid supply from epithelial cells.

Research Hypothesis

Normally tidal breathing exerts cyclic mechanical stresses on airway epithelial cells which regulates airway liquid levels through cellular purinergic pathways. Elevated air pressure disrupts this sensing and can lead to the occurrence of negative symptoms. Additionally, air elevated pressure can also compress nasal erectile tissue leading to changes in blood flow and hence heat supply as well as increase nasal volume which has a negative effect on heat and water mass transfer.

Heated Humidification

Heated humidification is often used to condition inhaled air and minimise negative symptoms by eliminating the need for the airway mucosa to provide or recover heat or moisture. Extensive clinical research has proven the benefits of heated humidification in reducing some of these therapy’s negative side effects; however, understanding of why these therapies often create negative symptoms has yet to be determined.

Proposed Tissue Test

It is proposed that trachea tissue be tested to ascertain the influence nasal mask conditions have the regulatory influence normal mechanical breathing stresses have on airway surface liquid. Also quantify the effect elevated air pressure has on the airway liquid fluid supply from epithelial cells.