



Dr Anthony Rotman, lead researcher and ENT surgeon

Avant Foundation grant recipients

Monash Health: Home spirometry to monitor patients with airway stenosis

Telehealth has a myriad of potential benefits, including improving the quality of healthcare. It can also promote the safe timing of intervention before any critical patient deterioration can occur.

This research will examine if the use of home-based spirometry, which is the testing of airway/lung function, and two patient-reported outcome measure questionnaires, are adequate for distanced monitoring in the management of laryngotracheal stenosis.

"Laryngology deals with disorders of the voice, airway and swallow mechanisms," explains Dr Anthony Rotman. "Being able to help patients with these vital functions in a practical way spurred my interest in this area, particularly 'laryngotracheal stenosis', or narrowing of the airway."

Monitoring patients remotely

Laryngotracheal stenosis is a chronic condition which requires multiple hospital visits for direct visualisation of the airway in clinic, as well as intermittent surgical intervention in the operating theatre. This condition and its management persists for many years with significant physical and psychosocial impacts on those affected.

Being able to remotely monitor patients from rural areas with airway stenosis would be a shift in management paradigms, which normally relies on face-to-face review and outpatient endoscopy.

In this study, a hand-held, ultrasonic, bluetooth-enabled spirometer device and patient-reported outcome measures will replace traditional monitoring. Expected improvements related to this project include:

- reduced patient travel time for face-to-face appointments
- reduced cost
- reduced personal exposure to community-acquired infections, including COVID
- reduced discomfort of repeated endoscopic procedures in clinic.

Better quality healthcare

Furthermore, testing will track patient disease in an objective manner, improving quality of healthcare and consequently, reducing the burden on the hospital system. If successful, it will also improve the accuracy of timing of surgical intervention, minimising patient risk of unnecessary anaesthetic and airway interventions and the associated pain and time off work. As a result, this would reduce the burden on the surgical waitlist.



As a practising ENT surgeon with a subspecialty interest in laryngology and airway stenosis, this research is an important part of my ongoing practice development to optimise care for my patients."

"Spirometry has proven accuracy and if this study can demonstrate the ability to remotely monitor patients, it will permit a safer, more convenient and affordable way for airway monitoring."

While this project will predominantly target rural and regional patients, it can also be used to expand care to metropolitan patients, as well as informing future studies in other forms of laryngotracheal stenosis.

Dr Rotman of Monash Health was the lead researcher of the project that received an Avant Foundation grant. He is an ENT surgeon based at Southern Health in Melbourne.