



Media release

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Nuclear imaging trial aiming to clear up airway diagnosis

Hunter respiratory researchers are turning to nuclear medicine for a more advanced approach to phenotyping chronic diseases like asthma and chronic obstructive pulmonary disorder (COPD), and identifying patients likely to respond to therapies.

With the first patient enrolled this week, the new study will assess lung function in real time, using a radioactive functional ventilation tracer called Technegas in concert with pulmonary perfusion imaging and Low Dose CT imaging. Technegas is traditionally used for patients suspected of having a pulmonary embolism (clot) or to rule out lung abnormalities.

Cyclopharm, the producers of Technegas, are funding the \$665,000 trial as a collaboration with the University of Newcastle and Hunter Medical Research Institute.

Professor Peter Gibson, co-leader of the HMRI VIVA Research Program, says that new methods for treating respiratory illness recognise there are differences in disease pathology between individual patients.

“These approaches require a detailed understanding of the disease mechanisms, however current lung function tests provide limited insight into changes in lung ventilation,” Professor Gibson explains.

“Objective measurement techniques are required that can predict whether individuals are likely to respond to a targeted treatment and allow monitoring of treatment response.”

Study participants will breathe in Technegas and undergo three-dimensional nuclear medicine imaging in parallel with a Low Dose CT scan. The combined scans will illustrate detailed images of airspaces and blood vessels in the lungs. Of the 100 patients recruited, 30 will have a follow-up image taken to provide important insights into early treatment response.

“As part of this study we will evaluate the use of Cyclopharm’s Technegas technology combined with quantitative lung imaging techniques as an objective assessment that allows us to characterise asthma and COPD disease subgroups,” co-investigator Professor Vanessa McDonald says. “We hope this will lead to an important advance in precision-based medicine of asthma and COPD.”

James McBrayer, CEO and Managing Director of Cyclopharm, said the company was proud to be collaborating with such an exceptional group of clinicians and researchers in the field of respiratory medicine.

“With the advent of complementary technology in the field of nuclear medicine and hybrid imaging, we are seeing our Technegas technology used in new and inventive applications.

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“This initiative has the potential to lead toward new methodologies in diagnosing and managing patients suffering from a variety of respiratory diseases.”

Nuclear imaging expert Dr Natalie Rutherford and clinician researchers Professor Peter Wark and Associate Professor Chris Grainge are also involved in the study.

Professor Robert Callister, Deputy Pro Vice Chancellor (Research) in the University of Newcastle’s Faculty of Health and Medicine, said it shows how industry can work together with researchers and clinicians.

“Many of the treatments we provide for patients depend crucially on being able to make accurate measurements. This project shows how industry partners, basic scientists and clinicians can put their heads together and devise innovative ways to measure specific aspects of lung anatomy before and after a treatment.”

Hunter Medical Research Institute Director Professor Michael Nilsson believes the study will also provide hope for respiratory patients with specific disease sub-types, for whom standard treatments are ineffective, by clearing the path for targeted therapies.

“By taking an imaging modality that has been well-proven in clinical use for over 30 years and employing it for accurate diagnosis in a new disease area, this is a perfect example of translational research. It’s a safe, faster and cost-effective way of getting personalised treatments embedded in clinical practice,” he said.

** Professor Peter Gibson is co-director of the HMRI VIVA program. Professor Vanessa McDonald is co-leader of the NHMRC Centre for Research Excellence in Severe Asthma. HMRI partners with the University of Newcastle, Hunter New England Health and the community.*

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