

# Interobserver variability in interpretation of Ventilation-Perfusion lung scans (VQ scans)

## Background

In Australia it is estimated that there are about 17,000 new cases of venous thromboembolism (VTE) being diagnosed each year with pulmonary embolism (PE) accounting for 40% of these cases. The clinical symptoms of PE can be mild and non-specific with death being the first symptom in approximately 25% of cases. Better technology and modern tests, including nuclear medicine Ventilation and Perfusion (VQ) scans, have added to the diagnosis and management of PE by improving rates of detection. Some variabilities between readers have been noticed in the interpretation of VQ scans, which has resulted from using advanced imaging techniques (SPECT CT).

## Aim

This study aims to measure the interobserver variability in interpretation of VQ scans and the impact of interobserver variability on patient management and hence standardise an approach and guidelines to interpret VQ. This will increase the accuracy and precision in management of patients with suspected and diagnosed PE and minimise the use of unnecessary anticoagulation with its associated risks.

## Method

50 non-identified standard SPECT/CT VQ scans were blindly reviewed by 4 independent nuclear medicine physicians. Their assessments were graded as positive, negative or equivocal (Figure 1).

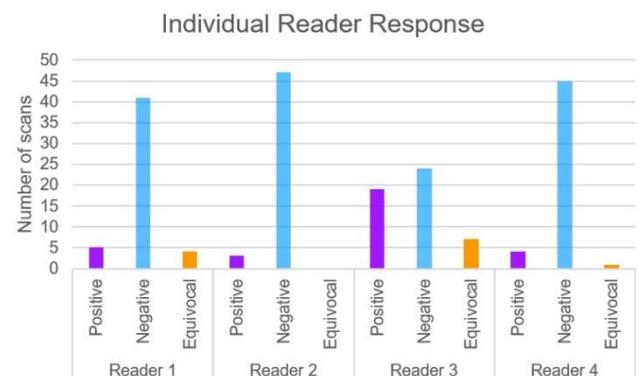


Figure 1 – Chart representing each reader's assessment of the 50 cases

## Interobserver Variability

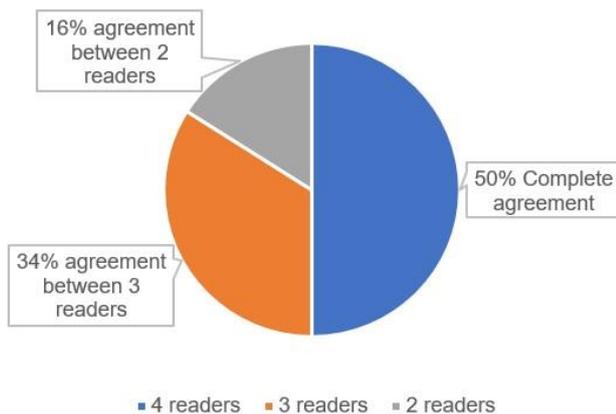


Figure 2 – Chart representing interobserver variability between the 4 readers

## Results

Of the 50 scans analysed, there was complete agreement of results in 50% of cases, with the remainder of cases demonstrating variability in interpretation between observers (Figure 2). Of this 50%, 3 readers agreed on 34% of cases and 2 readers agreed in 16% of cases.

## Conclusion

There is a significant amount of interobserver variability in analysing VQ scans. Hence, there is a need for a standardised approach with guidelines to interpret VQ scans to reduce interobserver variability and improve diagnosis and management of PE. This is an ongoing study with 800 planned subjects.