

## Spirometry case study

The following worked example illustrates how to appropriately determine a change in spirometry over time in an individual. The use of appropriate alignment with robust predicted equations allows for changes with age to be accounted for. This example highlights that a significant decline in lung function can occur in individuals whose lung function remains within the normal range of the broader population.

A female worker, of Aboriginal ancestry, 170.5 cm tall enters the quarrying setting workforce at age 25.5 years. The Global Lung Function Initiative Spirometry 'Other' predictive equations are used as per Australian and New Zealand Society of Respiratory Science recommendations.

Her lung function on entering the workforce was:

- > FEV1 3.48 L (103.1% predicted LLN = 2.74 L)
- > FVC 3.94 L (100.8% predicted LLN = 3.16 L)
- > FEV1/FVC 0.88 (101.7% predicted LLN = 0.762)

Her spirometry is within normal limits. She does not report taking any respiratory medications.

At age 30 years her respiratory health is reassessed. There are no reported symptoms, she does not report taking any respiratory medications and her lung function is:

- > FEV1 3.31 L (95.1% predicted LLN = 2.65 L)
- > FVC 3.87 L (99.4% predicted LLN = 3.15 L)
- > FEV1/FVC 0.81 (95.2% predicted LLN = 0.750)

Her lung function remains within normal limits. Her change in FEV1 (% predicted) over the 5 year period is 8.0% (103.1% - 95.1%) and within acceptable limits.

At age 33.6 years she changes employers and undergoes a repeat assessment. She has no reported symptoms and does not report taking any respiratory medications. Her spirometry is:

- > FEV1 2.85 L (87.6% predicted LLN = 2.599 L)
- > FVC 3.79 L (98.0% predicted LLN = 3.131 L)
- > FEV1/FVC 0.75 (81.9% predicted LLN = 0.741)

Her spirometry is within normal limits. Her change in lung function since entering the quarrying sector workforce at age 25 years is 15.5% (103.1% 87.6% – after adjusting for age related changes by using the GLLI predicted equations). Based on the recommendations (above) her age related longitudinal decline over the 8.1 years of employment exceeds 10.0%. She should be referred to a respiratory physician for further assessment.