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| **Use of FEV1% predicted to guide further testing for lung volume reduction**  |
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| **Introduction/Aim:** To evaluate the relationship between FEV1% predicted and RV% predicted in order to identify patients with COPD most likely to be suitable for lung volume reduction (RV predicted > 175%).**Methods:** All lung function tests performed at Peninsula Health between January 2015 and August 2023 were extracted, yielding 49,855 spirometry tests. Of these tests, only 2314 (4.6%) included body plethysmography. To define a population of COPD patients, these tests were filtered by (i) age greater than 40 years (ii) Forced expiratory ratio (FER) less than 60% and (iii) Cigarette pack years greater than 10. Patients with duplicate testing days were included only on the first occasion, resulting in 372 patients with COPD and dual spirometry and plethysmography. The relationship between spirometry and gas trapping was then examined using univariate and multivariate linear regression. **Results:** Baseline group characteristics are shown in Table 1.

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| **Parameter** | **Mean ± SD** | **Range (min-max)** |
| Age (yrs) | 68.6 ± 9.8 | 40-93 |
| BMI (kg.m2) | 26 ± 6.2 | 12-53  |
| FEV1 (% predicted) | 44 ± 16.8 | 14-107 |
| FVC (% predicted) | 81 ± 20.9 | 26-164 |
| FER (%) | 41 ± 11.3 | 17-60 |
| TLC (% predicted) | 118 ± 22.4 | 64-248 |
| RV (% predicted)  | 180 ± 60.3 | 41-449 |
| DLCO (%predicted) | 44 ± 17.7 | 8-112 |
| KCO (% predicted) | 56 ± 21.9 | 7-129  |

Severe gas trapping (RV predicted > 175%) was observed in 50% of tests (n=185). Age, BMI, FER and FEV1 were all significant negative predictors of RV% predicted, but the strongest corelation was with FEV1%, r=-0.653, p<0.001.

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| **FEV1 %predicted** | **< 30** | **30 – 39** | **40 – 49** | **50 – 59** | **60-69** | **> 70** |
| Number of tests | 84 | 93 | 68 | 46 | 53 | 28 |
| Tests with RV predicted > 175% | 72 (86%) | 63 (68%) | 34 (50%) | 9 (20%) | 7 (3%) | 0 (0%) |

**Conclusions:** 1 Body plethysmography appears to be underutilized in this population.2 Severe gas trapping was surprisingly common (50% of COPD patients).3 The degree of hyperinflation can be predicted by the FEV1% predicted and is uncommon if FEV1% is greater than 50%. **Grant Support:** nil **Key words:** FEV1, RV, lung volume reduction  |