

ERROR CODE ANALYSIS CAN IMPROVE QUALITY OF RESPIRATORY FUNCTION TESTING.

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When measuring respiratory function we aim to satisfy guidelines for measurement as set by the American Thoracic Society (ATS) and supported by the ANZSRS.

How well this is achieved can be determined with error code analysis. Staff members have worked in respiratory investigation for < 2yrs (2) and >15 yrs (3).

Methods: Respiratory function is measured using Sensormedics Vmax 22 and 29C. Binary error codes are generated for every test performed in the laboratory. From these, any component not satisfying ATS guidelines can be identified. Eighteen error categories are tested: Spirometry (6 categories), Lung Volumes (7 categories) and DLCO (5 categories). These are collated monthly for 1) grouped laboratory (RIU) data and 2) individual operators. Data from January to April were analysed retrospectively. Oral and written feedback and reinforcement have been given from May 2005, when areas needing technical improvement were identified.

Results: For the RIU, ATS criteria for reproducibility was satisfied for FVC in >92% of tests, FEV1 and TLC >95% and DLCO >88% of tests, with no significant change over 10 months. Mean tests/month =152. Following feedback, error rates improved significantly in the following measures: PEF (18%-11% p=0.03 by chi-square test); spirometry end of test criteria, 2 seconds of no flow (50%-23%, p<0.0001) and 6 second exhalation, (28%-15%, p=0.005); breath hold time (40%-19%, p<0.001) and IVC compared to best (39%-29%, p=0.001) for DLCO; and in plethysmography, panting rate (14%-1%, p=0.002).

Conclusion: Respiratory function is measured accurately and reproducibly, however some error code categories require further improvement. Closer adherence to ATS guidelines was seen in both new and experienced staff. Error analysis for individuals has helped identify gaps in new staff training. Feedback following error code analysis has improved the quality of respiratory function testing in this laboratory.

Key words: Respiratory function, ATS guidelines.