European Respiratory Society
Annual Congress 2013

Abstract Number: 3246

Publication Number: P1271

Abstract Group: 9.1. Respiratory Function Technologists/Scientists

Keyword 1: Lung function testing **Keyword 2:** Physiological diagnostic services **Keyword 3:** Spirometry

Title: Biologic quality control variability among pulmonary function testing systems in a large academic outpatient pulmonary function laboratory

Prof. Carl 19432 Mottram mottram.carl@mayo.edu [1] and Prof. Paul 19433 Scanlon scanlon.paul@mayo.edy MD [1]. [1] Pulmonary and Critical Care Medicine, Mayo Clinic, Rochester, MN, United States, 55920 .

Body: Introduction: The Mayo Clinic Pulmonary Function (PF) Laboratory has 24 procedure rooms and provides diagnostic testing to 150-225 pts/day. Twelve rooms have full PF testing systems which participate in a biologic quality control (BioQC) program using 12 normal technologists. The ATS/ERS recommends BioQC testing but do not specify target standard deviation (SD) or coefficient of variation (CV) per test system or across multiple systems. Methodology: We analyzed the data of a sample individual subject across all 12 PF testing systems, then analyzed all 12 BioQC subjects across the same testing systems to characterize the SD and CVs of the systems.

BioQC Results

	VC	FEV1	TLC-Pleth	FRC-Pleth	DLCO
Average (n=140)	Sample Individual BioQC Subject Across All 12 Testing Systems				
SD/CV	0.10/2.98	0.05/1.86	0.08/1.35	0.21/6.07	0.76/3.58
Average (n=130)	Twelve BioQC Subjects Across All 12 Testing Systems				
SD/CV	0.11/3.24	0.07/2.57	0.11/1.97	0.19/6.39	1.075.03

Discussion: It is recommended that laboratories perform BioQC testing on a regular basis; however, there are no guidelines for reproducibility among normal BioQC subjects. In our laboratory, we track the mean, SD, and CV for each BioQC subject. When performing BioQC a value more than two SDs above or below the established mean value prompts trouble-shooting to determine the cause and appropriate corrective action is performed. At that point, BioQC testing is repeated to assure that equipment performance has been brought into range. The values we have provided can be used as reference values, but more importantly, can serve as a model for other laboratories to establish their own local standards for BioQC variability.