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Title: Comparison of different predicted and lower limit of normal (LLN) values in ventilation disorders detection

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Body: Aim: To estimate the agreement of Russian equations (Klement), ECCS and NhanesIII spirometry evaluating systems in determining the types of ventilation abnormalities by predicted and LLN (5th percentile) values. Materials and methods: The study enrolled 7,779 Caucasians examined in pulmonary clinics of St.Petersburg Pavlov's State Medical University in 2005-2011: 3,584 males (mean age 47.40±0.25, mean height 175.44±0.18) and 4,195 females (mean age 49.66±0.20, mean height 162.29±0.10). The cases that can not be classified as norm, obstruction or restriction, were accumulated in the "mixed" group.

				Cohen's kappa		
	Klement (1)	ECCS (2)	NHANES III (3)	1-2	2-3	1-3
Norm: FEV1/FVC≥0.7; FVC>80%Pred; FVC≥LLN						
FEV1>80%Pred	2978 (0.38)	3146 (0.40)	2383 (0.31)	0.85 (0.83-0.87)	0.66 (0.64-0.68)	0.74 (0.73-0.76)
FEV1≥LLN	3586 (0.46)	3415 (0.44)	2301 (0.30)	0.86 (0.85-0.88)	0.52 (0.50-0.54)	0.46 (0.44-0.48)
Obstruction: FEV1/FVC<0.7						
FEV1≤80%Pred	2765 (0.36)	2710 (0.35)	2855 (0.37)	0.87 (0.84-0.90)	0.74 (0.70-0.78)	0.82 (0.78-0.85)
FEV1<LLN	2506 (0.32)	2508 (0.32)	2836 (0.36)	0.91 (0.90-0.93)	0.55 (0.51-0.59)	0.55 (0.51-0.59)
Restriction: FEV1/FVC≥0.7						
FVC≤80%Pred	1247 (0.16)	1089 (0.14)	2035 (0.26)	0.85 (0.83-0.87)	0.56 (0.54-0.58)	0.64 (0.62-0.66)
FVC<LLN	784 (0.10)	921 (0.12)	2160 (0.28)	0.87 (0.85-0.89)	0.44 (0.42-0.46)	0.38 (0.36-0.40)
Mixed						

%Pred	789 (0.10)	834 (0.11)	506 (0.06)			
LLN	903 (0.12)	935 (0.12)	482 (0.06)			

Conclusion: The best agreement was obtained by ECCS and Klement systems both in predicted values and LLN. NhanesIII significantly differs from both Klement and ECCS in LLN for all groups. In predicted values these three systems agreed in obstruction but still generally disagree in norm and restriction.