



UNIVERSITE DE SOUSSE
FACULTE DE MEDECINE IBN EL JAZZAR SOUSSE
AMICALE DES ENSEIGNANTS



30^{èmes} JOURNEES MEDICALES DU CENTRE

Sousse 1 - 2 Novembre 2012
Faculté de Médecine Ibn El Jazjar Sousse



Programme Scientifique

AGE BASED PREDICTION BIAS IN SPIROMETRY REFERENCE EQUATIONS

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Introduction. Prediction bias in spirometry reference equations can arise in various ways, especially when rounding age to integers.

Aim. To assess the bias arising from this source.

Methods. Spirometric data from 38 Tunisian adults (18 female) were measured and analysed. Local reference equations were applied. The effects on predicted values of using whole-year age versus decimal age were quantified by two ways:

i) Δ **variable predicted** = 100 x predicted value calculated using age (decimal year minus whole year)

ii) Δ **variable measured/predicted**: measured spirometric variable expressed as a percentage of the predicted value calculated using age (decimal year minus whole year).

Results. Using age in whole years rather than decimal age introduced biases with a Δ variable predicted equal to -1.4 ± 0.8 ; -1.5 ± 0.8 ; -0.1 ± 0.0 ; -1.3 ± 0.7 ; -1.9 ± 1.0 ; -1.9 ± 1.0 , respectively for FEV₁, FVC, FEV₁/FVC, FEF_{25%}, FEF_{50%} and for FEF_{25-75%}. The Δ variable measured/predicted was equal to 0.33 ± 0.20 ; 0.32 ± 0.19 ; 0.06 ± 0.03 ; 0.56 ± 0.41 ; 0.28 ± 0.19 and 0.30 ± 0.20 respectively for FEV₁, FVC, FEV₁/FVC, FEF_{25%}, FEF_{50%} and for FEF_{25-75%}.

Conclusion. Recording age accurately reduces bias further.

Abbreviations: FEV₁: first second forced expiratory volume; FVC: forced vital capacity; FEFx%FVC: forced expiratory flow when x% of FVC has been exhaled.