Table 1S. Main results of some studies that compared the impacts of different COPD airflow limitation (AFL) staging classifications in predicting survival, mortality and other clinical outcomes.

Reference	Miller, Pedersen, & Dirksen (2007)	Miller and Pedersen (2010)	Pedone et al. (2013)	Turkeshi et al. (2015)	Hegendorfer et al. (2017)	Huang et al. (2018)
Yr of publication	.2007	.2010	.2012	.2015	.2016	.2018
Aims	.To test whether raw FEV_1 or $FEV_1/Height^2$ was better than $FEV_{1\%pred}$ for predicting survival	.To explore the relationship between different expressions of FEV_1 and all-cause mortality	.To compare the prognostic implications of 3 different expressions of FEV_1 in an unselected elderly population	.To investigate the short term prognostic value of $FEV_1/Height^3$ for all-cause mortality	.To assess and compare the predictive value of 5 expressions of FEV_1 for all-cause mortality, unplanned hospitalization, decline in physical/mental status	.To evaluate the staging COPD performance of 7 expressions of FEV_1 in predicting the risks of some clinical outcomes
Study design	.Retrospective .Longitudinal follow-up	.Retrospective .Longitudinal follow-up	.Retrospective .Longitudinal follow-up	.Retrospective observational .Longitudinal follow-up: 3 Yrs/until death	. Retrospective observational .Longitudinal follow-up: 3 Yrs/until death	Retrospective .Longitudinal follow-up ($\geq$1 Yr/until death)
N° of COPD (M/F)	.1095 (451/644)	.1095 (451/644)	.318 (250/68)	.54 (?/?)	.54 (?/?)	.296 (279/17)
Control-groups	.NA	.25872	.475 non-COPD [Post-BD $FEV_1/FVC > LLN$] (207/268)	.447	.447	.NA
Age (Yrs)	.61.8±9.9[a]	.> 20 .COPD: 61.8±9.9[a]	.COPD: > 65 .COPD: 72.9±5.52[a] .non-COPD: 73.2±6.29[a]	.≥ 80 .84.8±3.7[a]	.≥ 80 .84.8±3.7[a]	.40-95[b] .71±14[a]
BD test practice	.300 µg of salbutamol and 0.06 mg of ipratropium bromide .2 weeks of ICS	.COPD group: 300 µg of salbutamol and 0.06 mg of ipratropium bromide .COPD group: 2 weeks of ICS	.Yes (fenoterol)	No	.No	.Yes (if available, n=240)
COPD definition	.Pre-BD $FEV_1/FVC < 89\%_{pred}$	.Pre-BD $FEV_1/FVC < 89\%_{pred}$	.Post-BD $FEV_1/FVC < LLN$	.NR	.NR	.$FEV_1/FVC < LLN$
Used FEV_1	.NR	.NR	.Post-BD	.Pre-BD	.Pre-BD	.Post-BD, if available
FEV_1 expressions [applied cut off points]	.FEV_1 raw .$FEV_{1\%pred}$.$FEV_{1z\text{-}score}$.$FEV_1/Height^2$	.FEV_1 raw .$FEV_{1\%pred}$.$FEV_{1z\text{-}score}$.$FEV_1/Height^2$.$FEV_1/Height^3$.$FEV_{1Quotient}$	.$FEV_{1\%pred}$.$FEV_1/Height^3$.$FEV_{1Quotient}$	.$FEV_1/Height^3$	.$FEV_{1\%pred}$.$FEV_1/Height^2$.$FEV_1/Height^3$.$FEV_{1Quotient}$	.$FEV_{1\%pred}$.$FEV_{1\%pred}$ [quartiles] .$FEV_{1z\text{-}score}$ [quartiles] .$FEV_1/Height^2$ [quartiles; cut off] .$FEV_1/Height^3$ [quartiles] .$FEV_{1Quotient}$ [quartiles]

Table 1S. Continued.						
Reference	**Miller, Pedersen, & Dirksen (2007)**	**Miller and Pedersen (2010)**	**Pedone et al. (2013)**	**Turkeshi et al. (2015)**	**Hegendorfer et al. (2017)**	**Huang et al. (2018)**
Number of stages	.5 ($FEV_{1\%pred}$ - GOLD 2005 **(NIHNHLBI, 2005)**) .4 ($FEV_1/Height^2$: 0.5; 0.4; 0.3)	.10 (1 to 10 deciles)	.5 (worst, 2nd, 3rd, 4th, best quintiles)	.2 (≤ the lowest quartile and the rest)	.4 (1st, 2nd, 3rd and 4th quartiles)	.4 (1;2;3;4)
Outcomes	.AFL severity .Survival	.All-cause mortality	.Prognostic implications (NR) .Mortality risk at 5, 10 and 15 Yrs	.All-cause mortality at 3 Yrs .Unplanned hospitalization .Decline in physical status .Decline in mental status	.All-cause mortality at 5 Yrs .Unplanned hospitalization .Decline in physical status .Decline in mental status	.SAE .All-cause mortality
Mains results	**COPD AFL severity** .$FEV_{1\%pred}$ [GOLD] Light*: 40.05%[c] Severe*: 59.94%[c] .$FEV_1/Height^2$: Light*: 54.14%[c] Severe*:45.86%[c] **COPD survival** .$FEV_{1\%pred}$: not as good as either raw FEV_1 or $FEV_1/Height^2$ at predicting survival. .$FEV_1/Height^2$: stratify COPD subjects into survival groups better than GOLD criteria without recourse to other data such as arterial gases. .$FEV_1/Height^2$: better than both raw FEV_1 and $FEV_{1\%pred}$ for expressing degree of lung function impairment	**AUC for predicting survival** .$FEV_{1Quotient}$: 0.631 [0.624-0.637][d] (p: NR) .$FEV_1/Height^3$:0.626 [0.619-0.633][d] .$FEV_1/Height^2$:0.621 [0.614-0.628][d] .raw FEV_1:0.606 [0.599-0.612][d] .$FEV_{1\%pred}$: 0.586 [0.579-0.592][d] .$FEV_{1z-score}$: 0.571[e] **Cox regression analysis** .The best model for predicting survival was with $FEV_{1Quotient}$ followed by $FEV_1/Height^3$ and $FEV_1/Height^2$ then $FEV_{1\%pred}$ (p<0.05) **Data from a single sex** .$FEV_{1Quotient}$: no advantage over raw FEV_1	**COPD group** .$FEV_{1\%pred}$ compared to $FEV_1/Height^3$ and $FEV_{1Quotient}$: weaker association with mortality. . $FEV_{1Quotient}$: stronger association with mortality. . $FEV_{1Quotient}$: better performance compared to $FEV_1/Height^3$ in predicting mortality.	.$FEV_1/Height^3$: associated with all-cause mortality and hospitalizations as well as decline in physical and mental functioning .$FEV_1/Height^3$: takes into account body size variability and does not require reference equation.	**Predicting all cause mortality and hospitalization** .$FEV_1/Height^3$: highest relative IDI **Physical and mental decline** .Only $FEV_1/Height^3$ was independently associated with physical decline (adjusted OR= 1.93) .$FEV_{1Quotient}$: highest adjusted OR (2.80) and highest relative IDI (0.348) for mental decline .$FEV_{1Quotient}$: best performance in predicting mental decline compared with $FEV_{1\%pred}$, followed closely by $FEV_1/Height^3$ and $FEV_1/Height^2$	**SAE** .Staging based on $FEV_{1Qoutient}$ and $FEV_1/Height^2$ [quartiles]: discriminated the risk of SAE .Staging based on $FEV_{1\%pred}$ [GOLD] and $FEV_{1z-score}$ [quartiles]: stratified unsatisfactorily the risks of SAE **All-cause mortality** .$FEV_{1\%pred}$ [quartiles], $FEV_{1Quotient}$ [quartiles] and $FEV_1/Height^2$ [cut off]: stratified the mortality risk

Table 1S. Continued.						
Reference	**Miller, Pedersen, & Dirksen (2007)**	**Miller and Pedersen (2010)**	**Pedone et al. (2013)**	**Turkeshi et al. (2015)**	**Hegendorfer et al. (2017)**	**Huang et al. (2018)**
Conclusions	.$FEV_1/Height^2$: better related to survival in COPD than $FEV_{1\%pred}$. .$FEV_1/Height^2$: best method for expressing degree of FEV_1 impairment	.$FEV_{1\%pred}$: not ideal for expressing lung function impairment .$FEV_{1Quotient}$: best method, with $FEV_1/Height^3$ being the next alternative	.$FEV_{1Quotient}$ and $FEV_1/Height^3$: appealing way of standardizing the FEV_1 .$FEV_{1\%pred}$: not the best prognostic indicator in elderly people with COPD	.Low $FEV_1/Height^3$: associated with all-cause mortality and higher risk of hospitalizations as well as decline in physical and mental functioning .$FEV_1/Height^3$: more suitable for use in elderly	.$FEV_1/Height^3$ and $FEV_{1Quotient}$: better at predicting all-cause mortality, hospitalization and physical and mental decline	.Staging severity based on $FEV_{1\%pred}$ [GOLD]: predicted inadequately the risks of adverse outcomes .Staging severity based on $FEV_{1Quotient}$ [quartiles]: predicted the risks of SAE and mortality and well stratified the differences in survival

AUC: area under the curve. **BD**: bronchodilator. **COPD**: chronic obstructive pulmonary disease. **F**: female. **FEV₁**: forced expiratory volume in one second. **Quotient**: lowest sex-specific first percentile (0.5 L for males). **FVC**: forced vital capacity. **GOLD**: global initiative for chronic obstructive lung disease. **ICS**: inhaled corticosteroids. **IDI**: integrative discrimination index. **LLN**: lower limit of normal. **M**: male. **N°**: number. **NA**: non-applied. **NR**: not-reported. **OR**: odds-ratio. **p**: probability. **SAE**: severe acute exacerbation. **SD**: standard deviation. **Yr**: year. **%pred**: % of the predicted value.

Data were:
 [a]Mean±SD
 [b]Minimum-maximum
 [c]Percentage
 [d]Mean (Confidence interval)
 [e]Mean

Notes: *"light" : $FEV_{1\%pred}$ at stage 0, 1 and 2 of GOLD 2005 **(NIHNHLBI, 2005)** or $FEV_1/Height^2 > 0.4$ L/m²
 *"severe": $FEV_{1\%pred}$ at stage 3 and 4 of GOLD 2005 **(NIHNHLBI, 2005)** or $FEV_1/Height^2 \leq 0.4$ L/m²

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