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Title: Invasive and noninvasive ventilation in adults hospitalized with asthma in Portugal – Nationwide data from 2000-2010

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Body: Introduction: Few studies have addressed the use and outcomes of invasive (IV) and noninvasive positive pressure ventilation (NPPV) in severe asthma exacerbations. Objective: To describe the use of IV and NPPV in patients hospitalized due to asthma in Portugal from 2000 to 2010. Methods: Retrospective study of inpatient records with principal diagnosis of asthma, age ≥ 18 years, in acute care hospitals of the national healthcare system (N=85) in mainland Portugal, with discharges between 2000 and 2010 (N=17 446). Analysis of all episodes that included IV and NPPV that were identified using ICD-9-CM (codes 93.9x and 96.7x). The Charlson/Deyo index, a comorbidity risk adjustment measurement, was used. Results: In 1 041 episodes (6%) ventilatory support was needed: NPPV 2.3% and IV 3.6%. NPPV use increased from 17 to 79 cases, mainly after 2007, while IV use decreased over the years. Length of stay (days) was similar in both ventilation procedures. Mortality for IV was significantly higher than for NPPV (15% vs. 2.2%).

Characteristics of adults hospitalized with asthma who needed NPPV or IV

	NPPV (N=407)	IV (N=634)
Gender: Male/Female	115 (28.3%)/292 (71.7%)	284 (44.8%)/350 (55.2%)
Age: Median (P25-75)	64.9 (57.0-75.0)	52.2 (37.0-69.0)
Comorbidities: Charlson/Deyo index	0.93	0.49
No comorbidities	169 (41.5%)	427 (67.4%)
Length of stay (days): Median (P25-P75)	9.0 (6.0-13.0)	8.0 (4.0-16.0)
In-hospital mortality (N=104, 10%)	9 (2.2%)	95 (15%)

Conclusion: NPPV is increasingly used in severe asthma exacerbations. Patients treated with NPPV have a

lower mortality rate despite of being older and having an increased comorbidity risk index. Prospective studies are strongly needed.