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Title: Predictors of readmission in patients on home mechanical ventilation (HMV)

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Body: OBJECTIVES: There are few studies that examine which factors determine the readmission of patients on HMV. Our objective was to study the variables related to this fact to determine which aspects should be monitored more closely. METHODS: Prospective observational study over a period of 10 years. We collected clinical variables during hospitalization and data related to treatment adherence and the date of hospital readmission. Bivariate analysis and a Cox multivariate model were performed RESULTS: We included 214 patients (55.6% women, mean age 63.8 years± 13.3). 50% required hospital readmission and the median time to readmission was 170 weeks (144.1 to 195.8). Readmission was not related to the presence of comorbidities, morbid obesity, situation at the start of ventilation (chronic respiratory vs. acute respiratory failure) or main diagnosis that led to the start of HMV. During follow-up readmission was associated with poor adherence to HMV (46.7% vs 29.9%, p = 0.017), previous admissions, previous respiratory failure and a poor quality of life. Predictors of readmission were also worse PaO_2 control and $PaCO_2$ control, greater number of previous admissions and poorer lung function. The multivariate model identified as independent predictors of readmission: Poor adherence to HMV (OR 1.7, CI 95% 1.1. -2.6), $PaCO_2$ control (OR: 1.03, 95% CI 1 to 1.06) and the level of dyspnea at follow up(OR:2.3,95%:1,5-3,3). CONCLUSIONS: 1.-In our experience, a high percentage of patients on HMV required hospital readmission. 2. - Readmissions does not appear to be directly related to comorbidities neither the initial results of HMV and appear related to poor treatment adherence and severity of respiratory failure.