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Title: Recent trends of hospital admission characteristics for COPD and asthma in England from 1998 to 2011

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Body: Background It is known that hospital admissions of COPD and asthma are increasing, but characteristics of these admissions over years are unclear. Aims Hospital admission characteristics in the recent 10 years in England were examined and policy implications were discussed. Methods This is an ecological study carried out at the national level. Data were extracted from Hospital Episode Statistics and National Statistics between 1998 and 2011. Primary diagnosis of hospital admissions was used and ICD-10 codes ranging from J40 to J44 plus J47 for COPD and J45-J46 for asthma were included. Linear regression models were performed on yearly changes and 95% confidence intervals were estimated. Results Generally, hospital admissions have increased for both COPD and asthma (both P<0.001). More than 90% admissions for both diseases were from emergency calls. The waiting list has been shortened for asthma (P=0.009) but not COPD (P=0.727). The bed days have been significantly decreased for both COPD (Coef -0.00003, 95%CI -0.00006 to -0.00001, P=0.008) and asthma (Coef 0.00014, 95%CI 0.00011 to 0.00016). Same was observed for length of stay (Coef -0.097, 95%CI -0.182 to -0.012 for COPD and Coef -1.11, 95%CI -1.54 to -0.68 for asthma, respectively). Additionally, a delay in mean age was observed for asthma (P=0.027) but it did not change for COPD (P=0.06). Population size has grown (Coef 3.51, 95%CI 3.21 to 3.80) but a decrease was found in children under 15 (Coef -0.00002, 95%CI -0.00002 to -9.30). Conclusions Management for both COPD and asthma may have been improved. Further exploration on geographic variations and changes of risk factors including population attributable risks is expected next.