NATIONAL TRENDS IN PULMONARY EMBOLISM HOSPITALIZATION RATES AND OUTCOMES FOR MEDICARE BENEFICIARIES, 1999-2010

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Background: Pulmonary embolism (PE) is common in older adults and is associated with recurrent PE, death, and long-term morbidity. During the last decade, improved diagnostic capability, prophylaxis initiatives, and home treatment options have become available. Little is known about recent national trends of PE hospitalizations and mortality in the context of these diagnostic and therapeutic advances.

Methods: Inpatient Medicare standard analytic files were used to identify 100% of Fee-For-Service (FFS) patients aged ≥ 65 years who had a principal discharge diagnosis of PE (ICD-9-CM codes 415.11 or 415.13 or 415.19) from 1999-2010. We linked inpatient data with the Medicare denominator file to report PE rates per 100,000 person-years. We determined length of stay, discharge disposition, and mortality (in-hospital, 30-day and 6-month) from corresponding vital status and inpatient files. We used mixed-effects models to calculate adjusted outcomes.

Results: The PE hospitalization rate adjusted for age, sex, and race increased from 129 per 100,000 person-years in 1999 to 302 per 100,000 person-years in 2010, a relative increase of 134% (P<0.0001 for linear trend). The length of hospital stay decreased from 7.6 days in 1999 to 5.8 days in 2010, and the proportion of patients discharged to home decreased from 51.1% to 44.1%, with more patients discharged to home care and skilled nursing facilities during the study period. In-hospital mortality decreased from 8.3% in 1999 to 4.4% in 2010 (P<0.0001), as did risk-adjusted 30-day mortality rates (from 12.3% to 9.1% (P<0.0001)) and 6-month mortality rates (from 23.0% to 19.6% (P<0.0001)), a relative decline of 47.0%, 26.0%, and 14.8%, respectively.

Conclusions: The overall PE hospitalization rate increased substantially from 1999 to 2010, while the in-hospital, 30-day, and 6-month mortality rates declined but remained high. The increase in hospitalization rates is concerning and surprising and requires further investigation.