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The Validity of Medicare Claims-based Codes to Identify Nontuberculous Mycobacterial Infection in Patients with Bronchiectasis

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Background: Nontuberculous mycobacteria (NTM) is a disease of increasing incidence, causing permanent airway damage leading to destructive pulmonary disease. Medicare claims-based codes have been used to identify NTM infection and to evaluate trends in diagnosis and disease outcomes. However, claims-based codes to identify NTM infection have not been validated.

Methods: We linked patients with a bronchiectasis diagnosis (ICD-9-CM 494.0 or 494.1) excluding cystic fibrosis from the national 2006-2014 Centers for Medicare and Medicaid (Medicare) data to the U.S. Bronchiectasis Research Registry (BRR). The BRR is a national prospective cohort of patients with bronchiectasis, that collects detailed clinical, laboratory, microbiology and radiology data annually. We included BRR patients from 7 geographically varied sites, matched to Medicare data using social security numbers or deterministic matching by date of birth, and sex as well as associated physician up to 3 visit dates. Using one or more positive culture for any disease-causing NTM species in the BRR as the gold standard, we validated NTM claims codes (ICD-9-CM 031.0, 031.1, 031.2, 031.8 or 031.9) for identification of NTM infection.

Results: Among 530 Medicare patients who are also in the BRR at the 7 sites, 459 (86.6%) were matched. Matched subjects had a mean age of 73.7 years (SD 6.2), were mostly female (82.4%), non-Hispanic (98.1%) and white (96.8%). Using one or more claims +/- 6 and +/- 12 months of a positive BRR culture, claims codes had a sensitivity of 95.8% (95% CI: 91.8, 99.8) and 100% (95% CI: 96.2, 100) respectively. Using any positive BRR culture +/- 6 and +/- 12 months of a claim, culture had a PPV of 96.3% (95% CI: 93.4, 99.2) and 100% (95% CI: 97.8, 100) respectively.

Conclusion: To our knowledge, our study was the first to validate Medicare claims codes for pulmonary NTM in bronchiectasis patients. Our results indicate that claims may be used to identify NTM infection in the high-risk setting of bronchiectasis.