Association between Telemedicine Use and Overall Mortality and Relative Rates of Health Services Usage among a Matched Cohort of Lung Cancer Patients in Ontario (2008-2017): A Population-Based Recurrent Event Analysis using Administrative Data

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ABSTRACT:
The use of telemedicine in northern and rural populations has the potential to improve patient and provider access that is challenged by factors associated with geography and rurality. Lung cancer remains a major source of cancer morbidity and mortality in these populations, is frequently diagnosed at later stages, and often has poor outcomes. Using administrative data, the purpose of this study was to assess the impact of telemedicine use by oncologist specialists on overall patient mortality and health services utilization (defined as Emergency Department admissions ED) in a cohort of lung cancer patients who received telemedicine access at some point during care when compared to a matched control group of similar patients who did not. We conducted this population-based retrospective matched cohort study of lung cancer patients in Ontario, Canada. The *Ontario Cancer Registry (OCR)* was used to identify all adult lung cancer patients (≥18 years of age) and the year of first diagnosis, which ranged from January 2008 to June 2017. We linked this data, using a unique encoded identifier, to a number of health administrative databases housed at ICES that allowed us to derive overall mortality and ED use. Our final cohort of 804 matched pairs appeared sufficiently balanced on all matching characteristics. While univariate analyses suggested an increased mortality rate and more ED admissions for the OTN group (OTN HR 1.17 (95% CI 1.04-1.32); and ED admissions RR 1.33 (95% CI 1.19-1.50)), rates were substantially attenuated following adjustment (Adjusted OTN HR 1.08 (95% CI 0.94-1.24); ED admissions RR 1.04 (95% CI 0.94-1.14)). There were significant associations with clinico-pathological and socio-demographic variables and both outcome measures. Despite the limitations of our administrative study, the use of telemedicine in lung cancer patients may improve access and does not appear to substantively impact mortality or ED admission rate.