

[28] Healthcare Spending and Utilization of Lung Cancer Patients Using 2002-2012 Nationwide Health Insurance Claims Data

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Background:

Over the past decades, lung cancer has one of the highest fatality rates, and is the leading cause of cancer-related mortality and disease burden not only in South Korea but also worldwide. Studies focused on lung cancer are well documented, however, the factors that are associated with healthcare spending and utilization using long periods of large dataset is less researched in this country. The purpose of this study was to investigate how different individual and hospital factors are associated with total, inpatient, outpatient spending and utilizations measured by length of stays and outpatient days among nationwide dead or 5 years follow-up lung cancer patients using 2002-2012 health insurance claims data.

Materials and Methods:

We used nationwide lung cancer patients' health insurance claims during 2002-2012 which accounted for 1,417,380 (673,122 inpatients and 744,258 outpatients). We transposed the dataset into a retrospective cohort design study that the unit of analysis is information of each lung cancer patient. We included patients who newly diagnosed with lung cancer after 2005 and dead or follow-up of 60 months which eventually included patients diagnosed during 2005-2007. Furthermore, this study also excluded patients who had inpatient spending less than KRW 400,000 to minimize bias of real lung cancer patient selection. We then calculated various spending and utilization measures (total, inpatient, outpatient spending, length of stays and outpatient days). Finally we obtained total population for analysis of 53,451 lung cancer patients and matched 916 hospitals. Hospital data included characteristics of the hospital, such as hospital type, teaching status, number of beds, specialists, and nurses. In order to investigate individual and hospital factors associated with healthcare spending and utilization of lung cancer patients, multi-level linear mixed models that avoid problems created by possible nesting of patient level observations within hospital clusters and overestimation of significance were performed.

Results:

Our retrospective cohort design study using nationwide claim data of past decade showed that increase in new lung cancer cases during year 2005 to 2007 (16,654 in 2005, 18,149 in 2006, 18,648 in 2007 which are similar to actual number of patients reported by national cancer center), increased spending and utilization (total spending of KRW 22,883,645 to KRW 27,462,222; inpatient LOS of 51.4 days to 58.8 days;

outpatient utilization of 25.4 days to 26.1 days for patient diagnosed in 2005 and 2007 respectively), and higher proportion of spending and utilization during very first periods after diagnosis and last periods before death or follow-up ends of lung cancer patients (about 70% over total), and higher spending and utilization trend among dead population (5-years survivors: total spending of KRW 24,486,381, inpatient LOS of 39.2 days, outpatient utilization of 40.9 days; Dead population: total spending of KRW 15,936,865~54,945,330, inpatient LOS of 44.4~107.8 days, Outpatient utilization of 9.0~66.0 days). Using the multi-level linear mixed analysis models, we found evidences of differences in the use of healthcare resources among individual and hospital factors that individual with health insurance (2.9% higher in total spending, $P<0.001$; 23.8% higher in outpatient days, $P<0.001$), male (5.6% higher in total spending, $P<0.001$; 8.6% higher in outpatient days, $P<0.001$), 40-79 age group (28.0% to 61.0% higher in total spending, $P<0.001$; 24.8% to 34.0% in LOS, $P<0.001$; 38.9% to 65.8% higher in outpatient days, $P<0.001$) and hospital type with tertiary/large (27.6%, 12.7% higher in total spending), teaching (35.6% higher in total spending, $P<0.001$; 13.4% higher in LOS, $P=0.001$; 21.9% higher in outpatient days, $P<0.001$) had relatively higher spending and utilization among nationwide 5 year follow-up lung cancer patients.

Discussion & Conclusion:

This study might suggest that efficient manner of healthcare policy implementation for patients' spending and utilization in order to maintain financial viability of national health insurance program that the allocation of limited health-care resources demands an agreed rational allocation principle, and consequently priority setting is considerably importance. In addition, healthcare spending and utilization considered to be targeted to under-served population groups that will ensure efficient locus of healthcare service delivery to different sub-population groups. Results of this study might be useful to health policy makers not only in South Korea but also international readers that need to develop a national cancer management strategy that reduce differences in the use of healthcare resources and flexible healthcare benefits plan which might helpful to targeted sub population groups.