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Creation and characterization of a Québec lung cancer patient cohort using clinical administrative data

English summary

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Québec

SUMMARY

Creation and characterization of a Québec lung cancer patient cohort using clinical administrative data

INESSS has undertaken a project to explore the potential of clinical administrative data as a lever for improving cancer care. This project has three components: the creation and characterization of a Québec-wide cohort of lung cancer patients, the description of their care trajectories in the 'real world' setting, and the assessment of certain innovative therapies in Québec.

The present report addresses the first component. Since the Québec Cancer Registry (QCR) is not yet operational, a lung cancer patient cohort was created using clinical administrative databases (CADs). A pool of cohort candidates was first extracted from databases for hospitalization (MED-ECHO – *Maintenance et exploitation des données pour l'étude de la clientèle hospitalière*), mortality (RED-D – *Registre des événements démographiques – Fichier des décès*), and physician fee-for-service billing (SMOD – *Services rémunérés à l'acte*). Candidates were then subjected to a selection algorithm consisting of two exclusion steps and five inclusion steps. The final cohort derived from this algorithm includes a total of 133,468 incident lung cancer cases and covers the period from 2001-2002 to 2016-2017.

There are certain limitations to creating a cancer case cohort using CADs, such as the fact that cancer cases have to be inferred rather than directly identified as they would be in a cancer case registry. Although there is no benchmark reference for definitively ruling on the validity of this cohort, validation tests were performed. The results were consistent with those expected for a valid cohort.

Lung cancer incidence, mortality and overall survival statistics were then generated from the constructed cohort using the CADs. It is important to emphasize that the characterization of the lung cancer cohort constitutes the first component of a Québec portrait on lung cancer in connection with clinical practices, that it was not carried out for the purpose of population surveillance and that it does not replace data from the *Registre québécois du cancer*. Considering the limitations associated with the cohort creation method, the results obtained point to the following findings:

<u>Most recent period (2016 or 2014-2016)</u>

Findings for Québec as a whole

- Close to 10,000 new cases of lung cancer are diagnosed annually in Québec (9,752 new cases in 2016).
- The median (and mean) age at diagnosis of people with lung cancer is 70.7 years.

- Lung cancer affects disproportionally more people living in geographic Census data dissemination areas with an unfavourable material deprivation index than living in dissemination areas with a favourable index.
- Among people diagnosed with lung cancer, approximately 6,500 lung cancer deaths and 8,000 all-cause deaths occur annually.
- Québec is among the Canadian provinces and territories with the highest lung cancer age-standardized incidence rates (ASIRs) and age-standardized mortality rates (ASMRs).
- Median overall survival for Québec as a whole is 12.2 months, and the 5-year survival rate is 24.1% (Kaplan-Meier method).

Findings according to sex

- The annual number of new lung cancer cases in women and men is similar. However, the ASIR is higher in men than in women.
- More men than women die of lung cancer annually. The all-cause and lung cancer ASMRs are also higher in men than in women.
- Median age-adjusted overall survival is 4.5 months longer in women than in men (14.9 vs. 10.4 months).

Findings according to health and social services region

- There is significant inter-regional heterogeneity in the ASIRs and ASMRs.
- Overall survival in most of the regions is not different from that for Québec as a whole.

Trends over time

Findings for Québec as a whole

- The lung cancer ASIR in Québec remained stable between 2002-2004 and 2014-2016.
- Fewer and fewer people with lung cancer have been dying from the disease, but other causes of death seem to have limited the overall decline in mortality for these individuals (the lung cancer ASMR decreased, but the all-cause ASMR remained stable between 2006-2007 and 2014-2016).
- Median overall survival for people with lung cancer increased by approximately 50% between 2002-2004 and 2014-2016.

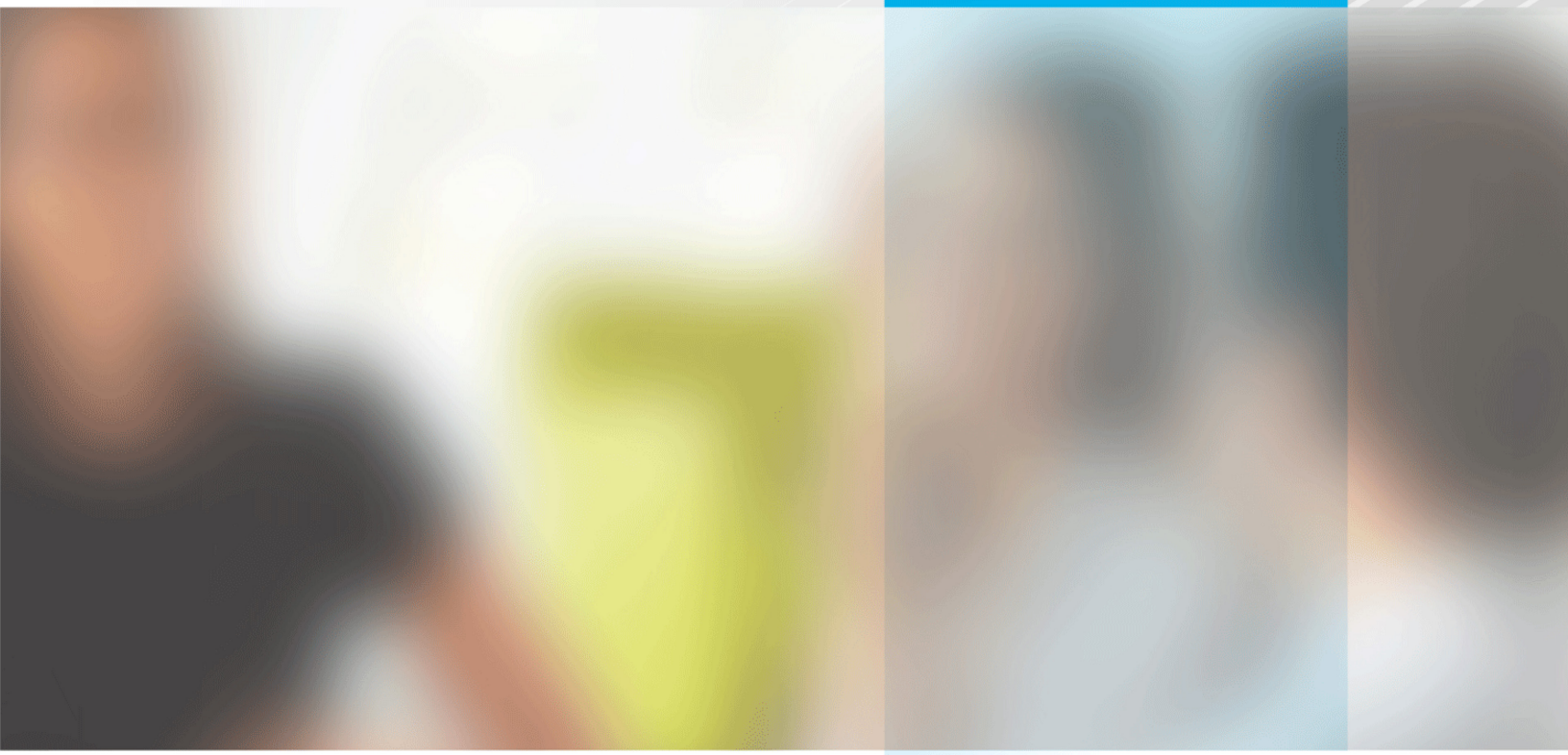
Findings according to sex

- Between 2002-2004 and 2014-2016, the lung cancer ASIR increased in women and decreased in men.
- Among men, the lung cancer ASMR and all-cause ASMR have gradually declined over the years.

- Among women, the lung cancer ASMR was relatively stable between 2006-2007 and 2014-2016, with the all-cause ASMR increasing slightly during this time.
- Overall survival increased over time in both sexes, but the increase in women is greater than in men.

Findings according to health and social services region

- The ASIR was stable in most regions of Québec between 2002-2004 and 2014-2016.
- The lung cancer ASMR has decreased over time in about one-third of the regions of Québec.
- Between 2002-2004 and 2014-2016, overall survival increased in most regions of Québec.



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