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Head and Neck Cancer Surgery in Ontario Briefing Note November 19, 2015

What we know

Head and neck cancers include oral cavity, larynx/hypopharynx and salivary gland cancers. The treatment of these cancers is complex and requires multidisciplinary health care teams. Head and neck cancers together account for 5% of cancers in the United States, but they represent a large worldwide burden of disease because treatment can impact a patient's ability to breathe, speak and swallow.

Head and neck cancers affect thousands of Canadians:

- Oral cavity cancer (including the oropharynx subsite) is the 13th most common newly diagnosed cancer and the 15th most common cause of death due to cancer for adults; recently published data estimate that 4,000 Canadians (2,700 men and 1,300 women) would be diagnosed with oral cavity cancer in 2012, and another 1,150 Canadians (800 men and 350 women) would die of the disease.
- Cancer of the larynx and hypopharynx is the 21st most common newly diagnosed cancer and the 20th most common cause of death due to cancer in Canada.
- Salivary gland tumours account for just over 0.5% of all malignancies, and approximately 5% of all head and neck cancers.

There has been a major shift to concentrate head and neck cancer surgery at nine large-volume centres in six cities in Ontario. Informal operationalization of the standard in Cancer Care Ontario's 2009 *Head and Neck Cancer Standards*, which recommended a minimum of 80 cases per year for hospitals performing head and neck cancer surgery, was one of the driving forces behind the change. However, based on studies performed at ICES, cancer care is not being delivered consistently to all patients in Ontario; significant variations exist in access, treatment and outcomes. Depending on someone's age, the Local Health Integration Network (LHIN) where someone lives at the time of diagnosis and the LHIN where services are received, patients are receiving different care.

On November 19, 2015, ICES released *Head and Neck Cancer Surgery in Ontario, 2003-2010: An ICES Atlas*. The Atlas presents information on surgery and related health services provided to persons in Ontario who were newly diagnosed with cancer of the oral cavity, larynx/hypopharynx or salivary gland between 2003 and 2010. The Atlas also describes how patient factors (i.e., age, sex, socioeconomic status, place of residence) and provider factors (i.e., surgical specialty and the type and location of hospitals delivering services) relate to the health care services those patients received.

What the Atlas tells us

The incidence of head and neck cancers is changing:

- Overall, the number of individuals with head and neck cancers in Ontario has increased from 10.9 per 100,000 people in 1993 to 11.6 per 100,000 people in 2010; noting that some cancers have increased (e.g., oropharynx and salivary gland) while others have decreased (e.g., larynx/hypopharynx).

- There has been a 12% annual decrease in the incidence of larynx/hypopharynx cancers, a moderate annual increase of 5% in the incidence of salivary gland cancers and a significant annual increase of 13% in the incidence of oropharynx cancers.
 - The dramatic rise in oropharynx cancers in Ontario mirrors trends observed in the United States and Europe and is linked to the rise in the sexually transmitted human papillomavirus (HPV).
- There has been a rise in the incidence of head and neck cancers with advanced age, particularly among those aged 65 years or older.
 - For example, approximately one half of newly diagnosed oral cavity cancers occurred in persons aged 65 or older, one quarter in people 55-64 and one quarter in those younger than 55.
- There is a disproportionately higher incidence of oral cavity and larynx/hypopharynx cancers in lower-income neighbourhoods (20% and 67% higher than the highest-income neighbourhoods, respectively).

There are variations in the use of services by patient age, LHIN of residence and LHIN of treatment:

- The variations could be due to differences in referral patterns, treatment approaches among high-volume treatment centres, training received by head and neck oncologists and access to resources.
- The probability of undergoing surgery was lower for those aged 75 or older (67%) compared to the 18-54, 55-64, 65-69 and 70-74 year old age groups (all above 80%).
- The proportion of oral cancer patients who had surgery for their disease ranged from a low of 77% among those living in the South East LHIN at the time of diagnosis to a high of 91% among those who resided in the South West LHIN.
- Even among those LHINs with the highest-volume treatment centres, there were significant variations in practice:
 - Approximately half of patients undergoing an oral cavity resection in Ontario received a free flap (when tissue is taken from one part of the body and transplanted to another to close a surgical site after removal of a cancer) in the 2-year period surrounding their procedure, but rates were significantly lower in the South East and Hamilton Niagara Haldimand Brant LHINs (14% and 35%, respectively).
 - There were significant variations across the LHINs in the use of palliative care services by patients with head and neck cancers which may reflect differences in the availability of these services; for example, larynx/hypopharynx resection patients in Waterloo Wellington LHIN received a palliative care consultation one third of the time; Central West LHIN patients were provided zero consultations.
 - More than 25% of larynx/hypopharynx cancer surgery patients received chemotherapy as part of their treatment, but the rates varied from over one third of patients in South West LHIN, to 0% in Central West LHIN.

There is strong evidence that higher-volume surgeons and hospitals are associated with better outcomes for patients:

- The small proportions of oral cavity and larynx/hypopharynx cases treated outside of the network of designated sites (10% and less than 3%, respectively) have worse outcomes.
- Hospital volumes were more important than surgeon volumes, every additional 25 cases performed by a hospital is associated with a 2.4% improvement in patient survival.

Where do we go from here?

As the Ontario population ages and more people live long enough to develop head and neck cancers, there is likely to be increased demand for health care services to treat these cancers. The growing number of survivors will lead to increased costs over time in the areas of imaging, follow up and further treatment, as well as the management of complications and side effects from treatment. Noting that the Atlas found lower rates of surgery for older patients in some cases, vigilance is warranted to ensure there is no age-based inequity in the provision of treatment.

Despite the movement of head and neck cancer surgeries to high volume centres in Ontario, there are unexplained variations in care. Further research is necessary to understand differences in access to specialist care and head and neck cancer treatment patterns across the LHINs. Variations in care may be reduced by the development of quality performance metrics and Disease Care Pathways, both of which are currently being developed by Cancer Care Ontario.

There is room to improve the quality of delivered care, and surgeons should play a critical role in the design and implementation of programs aimed at making improvements. While the Atlas addresses the health system structures and treatment processes of head and neck cancer care in Ontario, it does not assess how variations in care affect outcomes. Future research could focus on understanding the relationships between these factors and survival outcomes.

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