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Title: Outcome of Patients Diagnosed with Lung Cancer in Upper South Island Region

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Introduction:

Lung cancer is the fifth most common type of cancer in NZ, but the leading cause of cancer death, with approximately 1700 deaths each year. The rate of death from lung cancer is equal to the deaths from breast, bowel and prostate cancers combined. Lung cancer can be broadly classified by cell type into small cell (SCLC) and non-small cell (NSCLC). The degree to which the cancer has advanced is measured by staging the cancer from stage I, with the best prognosis, to stage IV, which indicates that there are distant metastases.

Unfortunately NZ has a lower lung cancer survival rate than comparable countries. Five-year survival in NZ is only 10.2% - and this number has not improved over the last 15 years. In comparison, 5-year survival in Australia is 13%, and it is nearing 17% in both Canada and the USA. One factor which contributes to our lower survival rate is that many patients have advanced disease on presentation. In addition, NZ has lower treatment rates than many other countries and delays in receiving treatment are common.

There are ethnic disparities among lung cancer outcomes in NZ. Both Maori and Pacific Islanders have higher rates of lung cancer and higher mortality among patients with lung cancer. They are also more likely to have locally advanced disease at diagnosis.

Aim:

To develop a more accurate picture of current practice and outcomes for lung cancer patients in the Upper South Island region and to identify barriers in the patient journey that can be targeted to improve implementation of National Service Standards, leading to improved patient outcomes in the future.

Methods:

Outcome data was audited from patients from Upper South Island DHBs with a diagnosis of lung cancer who were discussed at a Christchurch Hospital Lung Cancer MDM (multi-disciplinary meeting) in 2012. Only cases of primary lung cancer were included. Data was collected by accessing patient notes on Concerto. Information gathered included demographics, diagnosis, MDM outcome, treatment and survival. Survival was calculated from referral date where possible. Once the data was collated, statistical analysis was performed using IBM SPSS Statistics Version 22. A total of 33 patients discussed at an MDM were excluded from analysis. Reasons for this included having a diagnosis which was not primary lung cancer, no evidence of cancer, or indeterminate lung nodule(s) which did not progress in a way consistent with cancer.

Results:

In total, 279 patients with primary lung cancer were included. The majority (65%) were NZ European, with 16 NZ Maori patients (6%). Nearly all had a smoking history – 30% were current smokers and 62% were ex-smokers. The average age was 70 years, with the majority of patients aged between 50 and 89. In terms of diagnosis, 79% had NSCLC and 10% had SCLC, with the remaining having no tissue diagnosis or other lung cancer types. Of those with NSCLC, 62% had

adenocarcinoma and 30% had squamous cell carcinoma. Nearly half of the patients had metastatic disease (stage IV cancer) at the time of their MDM.

At the MDM, approximately one-third of the patients were classified as curative and two-thirds as palliative. Significantly more SCLC than NSCLC patients were classified as palliative. In total two-thirds of patients were recommended by the MDM to be referred for treatment. Of these patients, a quarter did not receive the treatment recommended. This was most often due to decisions by cardiothoracic or oncology specialists, but patient decision was also a common reason. Patients who were determined to be for curative treatment were 80% likely to receive the same treatment as that recommended by the MDM.

Overall 80% of patients received treatment – 22% received medical oncology, 61% received radiation therapy, and 17% received surgery. Of those treated, three-quarters received a single treatment modality, and one-quarter received two or more modalities. SCLC patients were significantly more likely to be treated by medical oncology. Stage IV cancers were significantly more likely than lower stages to be treated with medical and radiation oncology.

Total 1-year survival was 46.6% and 2-year survival was 32.6%. Survival rates at both 1 and 2-years was significantly lower for SCLC patients compared to NSCLC patients. Survival also decreased significantly with increasing cancer stage, as expected.

The NZ Maori patients had an average age of 65, so were significantly younger than the NZ European patients. There were no significant differences between NZ Maori and NZ Europeans in smoking history, tumour type or staging. NZ Maori were significantly more likely to be treated with medical oncology. There was no significant difference in survival rates at 1 and 2-years.

Conclusion:

This study revealed the characteristics of lung cancer patients in the Upper South Island. The main goal was to develop a better picture of current patient outcomes in order to identify barriers in the patient journey. Overall the results were consistent with previous studies done within NZ and worldwide. Results suggest that intervention rates for patients with potentially curable disease do appear to have improved in our region.

A key barrier which was identified was lack of early detection. Nearly half the patients had stage IV cancer at diagnosis. This confirms what previous studies have shown, which is that lung cancer often presents late with incurable disease. However this study did not specifically look at reasons why early detection did not occur. A two-pronged approach for future research is required. There needs to be further studies into how to identify patients at earlier stages of disease, so that they have a better chance of survival with current treatment modalities. In addition, research is needed into treatments that might increase survival in late stage disease.

There were few significant differences found between NZ Europeans and NZ Maori. This is encouraging, because previous studies have shown NZ Maori to present later and have worse outcomes. However it is limited by the low numbers of patients who identified as NZ Maori (N = 16). Factors contributing to this include the demographics of the Upper SI region, with Maori making up only 7.8% of the population (2013 Census), and the large percentage of patients with no ethnicity identified (19%). This means that few conclusions can be drawn from this study regarding NZ Maori lung cancer outcomes in comparison to NZ Europeans.