Victorian Lung Cancer Service Redesign Project: variation between rural and metropolitan outcomes

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Introduction

Lung cancer is the fifth most commonly diagnosed cancer and foremost cause of cancer death in Australia¹. Current projections indicate 12,271 Australians are likely to be diagnosed with lung cancer in 2018² and that this is estimated to increase to 160,000 by 2028³. The five-year relative survival of 17% for those diagnosed with lung cancer is extremely poor compared with the 65%-to 95% survival rates for those diagnosed with prostate, breast, colorectal and melanoma cancer⁴. Nationally, only 11.7% of lung cancer patients are diagnosed with stage 1 disease compared with 42.8% for breast, 35.9% for prostate and 22.1% for colorectal cancer⁵. Moreover, 28% of lung cancer patients in Australia are not staged at diagnosis⁶, potentially missing out on curative treatment options. A further 20% receive no treatment, while only one in two patients has access to best practice lung Multi-Disciplinary Team (MDT) care⁷.

Delays in the delivery of lung cancer care may be influenced by a number of health system factors. Critical appraisal of the literature has identified a number of factors responsible for inopportune management, including inappropriate specialist referral, a multitude of diagnostic investigations and health services attended to attain a lung cancer diagnosis⁸. A recent review of the factors responsible for delays in the delivery of acute care reported inadequate access to conclusive lung cancer diagnostic procedures and results as the primary cause (78%) of delays in 106 out of a 136 cases⁹. Other factors such as inequitable entry, poor communication, clerical delays and ineffective care coordination may cause further delays in the timeliness of lung cancer care¹⁰,¹¹. Such challenges are magnified for those in regional and rural Australia where approximately half of all those diagnosed with clinical stage III and IV lung cancer reside¹². Restricted lung cancer diagnostic services in regional compared to urban regions limit the potential of early lesion detection¹³. Moreover, ready access to treatment is more limited in rural localities with patients frequently needing to travel greater distances to receive specialist treatment¹⁴. The recognised workforce shortage of lung cancer specialists in rural regions may further exacerbate delays in care delivery¹⁵.

The Victorian Lung Cancer Service Redesign Program (VLCSRP) was established in 2016 to support development of local redesign projects to decrease delays in the diagnosis and treatment of lung cancer. Five redesign projects were conducted at three regional and two metropolitan health services in Victoria. Each project consisted of five clearly defined phases, a set up phase, diagnostic
phase, solution phase, implementation and evaluation phase and a sustainability phase. This paper distinguishes important variation in outcomes between the two regions.

Methods

The Victorian Lung Cancer Registry (VLCR) was engaged to support a consistent approach to data collection and project evaluation. National and local site specific ethics approval to collect the required data from participating health services was obtained. Patients with a new diagnosis of primary lung cancer were prospectively enrolled over a six-month pre-implementation period (September 2016 to February 2017) and a six-month period of progressive local intervention implementation (from March to August 2017). A total of 205 subjects from all participating health services were recruited in the pre-implementation period and 224 in the implementation period. Summary statistics and time series analysis were performed to analyse indicator performance over a six-month period of observation pre-implementation (n=205) and a six-month period of local intervention implementation (n=224).

Service redesign methodologies were used to understand baseline performance and systematically improve processes by eliminating waste \(^{23-25}\), improving flow \(^{25-27}\) and ensuring all processes added value for the patient \(^{28}\). A multidisciplinary diagnostic and solution workshop was conducted at each participating health service. Local service gaps, areas of variation and barriers to timeliness of care were identified. Root cause analysis was conducted and areas of data driven variation \(^{21}\) prioritised for improvement. Clinician led, evidenced based design solutions were generated to address the identified gaps and improve the efficiency and effectiveness of services. The Principles for best practice management of lung cancer in Australia were integrated into the solution design \(^{29}\). Pilot design solutions were tested using Plan-Do-Study-Act (PDSA) iterative cycles, to better understand contributions to performance improvement \(^{30}\).

A series of Community of Practice forums were held over the life of the project to support collaborative learning, facilitate joint problem solving and propagate best practice improvements in the delivery of lung cancer care.

Results

Regional subjects in the implementation period were more likely to be born in Australia (89% vs 61%) than their metropolitan counterparts. In regional areas from pre-implementation to implementation, clinical staging revealed an 11% increase in those diagnosed with stage I disease and a 17% decrease in those diagnosed with stage IV disease. The proportion of subjects with clinical stage not recorded in the medical record was greater in regional compared to metropolitan Victoria in both the pre-implementation (45% vs 29%) and implementation periods (41% vs 32%).

A comparison of the data from the pre-implementation and implementation periods revealed a reduction in the median time from referral to first specialist appointment with the metropolitan interval falling from 6 (IQR 0, 14) to 2 (IQR 0, 7) days and the regional interval from 9 (IQR 3, 20) to 6 (IQR 1, 14) days. Regional subjects experienced a noteworthy reduction in the first specialist appointment to Positron Emission Tomography (PET) scan interval, with a median decrease from 16 (IQR6, 27) days to 12.0 (IQR 5, 27) days. Both metropolitan and regional subjects experienced a slight reduction in the median interval time from diagnosis to first treatment. There was a substantial increase in the proportion with a documented Multidisciplinary Meeting (MDM) in the medical record across both metropolitan (65% vs. 72%) and regional (50% vs 60%) areas. Supportive care screening tool was poorly documented across regional and metropolitan Victoria.
Conclusion

This study showed important differences in the performance of selected lung cancer indicators between metropolitan and regional Victoria.

References


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Presenter

Geraldine Largey is currently employed as Manager of Research and Special Projects at the Southern Melbourne Integrated Cancer Service, in Victoria. Geraldine has had an eclectic career pathway to date, holding a variety of senior positions in healthcare management, health service redesign, research, quality improvement and project management. Within her current role, Geraldine works in partnership with a wide and varied group of stakeholders to create a cancer care network which is flexible, sustainable, affordable and truly person centred. From 2016-2018, she led the Lung Cancer Service Redesign Program across five health services in Victoria promoting innovative utilisation of evidence to facilitate redesign of systems, processes, pathways and models for cancer care. In 2017-2018, Geraldine worked collaboratively with cancer researchers from Victoria, New South Wales and Queensland on a project led by Monash University, seeking to compare lung cancer diagnostic and treatment pathways for CALD and Anglo-Australian patients. Over the last two years, Geraldine worked with the Sydney Catalyst Translational Cancer Research Centre and clinicians from other states to develop a national consensus statement on lung cancer diagnostic intervals and data collection points that resulted in her co-authoring an ensuing article that was published in the medical journal of Respirology in 2018.