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Reducing Wait Time for Lung Cancer Diagnosis and Treatment: Impact of a Multidisciplinary, Centralized Referral Program

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Abstract

Background: A multidisciplinary, centralized referral program was established at our institution in 2014 to reduce delays in lung cancer diagnosis and treatment following diagnostic imaging observed with the traditional, primary care provider–led referral process. The main objectives of this retrospective cohort study were to determine if referral to a Thoracic Triage Panel (TTP): 1) expedites lung cancer diagnosis and treatment initiation; and 2) leads to more appropriate specialist consultation.

Methods: Patients with a diagnosis of lung cancer and initial diagnostic imaging between March 1, 2015, and February 29, 2016, at a Memorial University–affiliated tertiary care centre in St John's, Newfoundland, were identified and grouped according to whether they were referred to the TTP or managed through a traditional referral process. Wait times (in days) from first abnormal imaging to biopsy and treatment initiation were recorded. Statistical analysis was performed using the Wilcoxon rank-sum test.

Results: A total of 133 patients who met inclusion criteria were identified. Seventy-nine patients were referred to the TTP and 54 were managed by traditional means. There was a statistically significant reduction in median wait times for patients referred to the TTP. Wait time from first abnormal imaging to biopsy decreased from 61.5 to 36.0 days ($P < .0001$). Wait time from first abnormal imaging to treatment initiation decreased from 118.0 to 80.0 days ($P < .001$). The percentage of specialist consultations that led to treatment was also greater for patients referred to the TTP.

Conclusions: A collaborative, centralized intake and referral program helps to reduce wait time for diagnosis and treatment of lung cancer.

Résumé

Contexte : Notre établissement a mis sur pied un programme d'aiguillage centralisé et multidisciplinaire en 2014 afin de réduire les temps d'attente pour le diagnostic et le traitement du cancer du poumon à la suite d'un examen d'imagerie diagnostique dans le cadre du processus habituel d'aiguillage par le dispensateur de soins primaires. La présente étude de cohorte rétrospective vise principalement à déterminer si l'aiguillage vers un groupe de triage thoracique permet d'accélérer le diagnostic du cancer du poumon et le début du traitement, et s'il mène à une consultation plus appropriée de spécialistes.

Méthodes : Les patients qui ont reçu un diagnostic de cancer du poumon et subi un examen d'imagerie diagnostique initial entre le 1^{er} mars 2015 et le 29 février 2016 dans un centre de soins tertiaires affilié à l'Université Memorial de St John's, à Terre-Neuve, ont été identifiés et regroupés selon qu'ils ont été aiguillés vers le groupe de triage thoracique ou qu'ils ont suivi le processus d'aiguillage habituel. Les temps d'attente (en jours) entre le premier examen d'imagerie dont les résultats sont anormaux à la biopsie et le début du traitement ont été calculés. Une analyse statistique a été effectuée à l'aide du test des rangs de Wilcoxon.

Résultats : En tout, 133 patients satisfaisaient aux critères d'inclusion de l'étude. De ce nombre, 79 ont été aiguillés vers le groupe de triage thoracique, et 54 ont suivi le processus d'orientation habituel. Une réduction du temps d'attente médian, significative sur le plan statistique, a été constatée pour les patients aiguillés vers le groupe de triage. Le temps d'attente du premier examen d'imagerie anormal à la biopsie est passé de 61,5 à 36,0 jours ($P < 0,0001$). Le temps d'attente du premier examen d'imagerie anormal au début du traitement est passé de 118,0

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à 80,0 jours ($P < 0,001$). Le pourcentage de consultations auprès d'un spécialiste avant le traitement était également plus élevé chez les patients aiguillés vers le groupe de triage.

Conclusions : Un programme d'aiguillage centralisé et collaboratif peut aider à réduire les temps d'attente pour le diagnostic et le traitement du cancer du poumon.

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Key Words: Lung cancer; Wait time; Multidisciplinary triage panel; Nurse navigation; Rapid outpatient diagnosis

The pathway for diagnosis of a suspected lung cancer is complex and wait times for individual diagnostic procedures and specialist appointments can be lengthy. Minimizing wait times reduces patients' emotional distress as well as health care costs incurred in the work-up period [1,2]. Furthermore, mortality is highly dependent on disease stage, with 5-year survival rates plummeting from 49% in stage IA to 1% in stage IV non-small cell lung cancer [3]. Studies investigating the effect of timely care suggest reducing wait time for diagnosis and treatment of lung cancer may help to improve outcomes [4].

A clinical audit of diagnostic imaging wait times in the diagnosis of lung cancer performed at our institution in 2009 demonstrated that prolonged wait times for computed tomography (CT)-guided biopsy resulted in tumour upstaging at time of diagnosis [5]. The hiring of additional CT technologists and extension of CT operating hours resulted in shorter wait times and less upstaging from first abnormal imaging to follow-up CT. However, these interventions had no significant impact on wait time and upstaging from follow-up CT to CT-guided biopsy, which continued to be delayed by inefficiencies including inappropriate specialist referrals. These delays necessitated further intervention to facilitate early collaboration and consensus of specialists in lung cancer care.

A Thoracic Triage Panel (TTP) was established at our institution in 2014 to reduce wait time and improve patient flow through lung cancer diagnosis and treatment. The key components of this centralized referral program include nurse navigation, weekly multidisciplinary meetings, and regular communication with the primary care provider (PCP). The nurse navigator coordinates patient care and acts as the contact person for patients and clinicians involved in the program. A working group of thoracic specialists including radiology, respirology, medical and radiation oncology, thoracic surgery, and pathology meets weekly to review new and ongoing cases, to determine optimal course for diagnosis and treatment, and to coordinate appropriate investigations and referrals. Communication with the PCP occurs via standardized forms at time of referral, initial review by the TTP, and discharge from the program.

The main objectives of this study are to determine if the TTP reduces wait time for lung cancer diagnosis and treatment and leads to more appropriate specialist consultation than the traditional, PCP-led referral process. Once validated, our multidisciplinary, centralized referral model may be adopted by other institutions across the country as an adjunct

to primary and secondary prevention strategies aimed at reducing the burden of lung cancer in Canada [6].

Methods

Design and Setting

A retrospective cohort study was conducted at the Health Sciences Centre (including the Dr H. Bliss Murphy Cancer Centre) and St Clare's Mercy Hospital, both Memorial University-affiliated tertiary care centres located in St John's, Newfoundland.

Study Population

Adult patients of any age and sex with a plain film or CT study reported as concerning for lung cancer between March 1, 2015, and February 29, 2016, and a pathological diagnosis of primary lung cancer were included. All lung cancer subtypes including small cell and non-small cell lung cancers were included.

Patients admitted to hospital for any duration of the work-up or treatment of their lung cancer were excluded to avoid confounding from expedited inpatient investigations and referrals.

Full approval for this study was granted by the Human Research Ethics Board at Memorial University of Newfoundland before study initiation.

Thoracic Triage Panel

Referral to the TTP is initiated when a plain film or CT study reported as concerning for lung cancer is identified by the reporting radiologist and faxed to the TTP for review. The TTP then sends a referral form to the PCP (Supplemental Appendix S1). Completion and return of this form following acquisition of consent for referral to the TTP are required for successful entry into the program. Upon receipt of the completed referral form, a nurse navigator makes immediate telephone contact with the patient. Patients are reviewed by the TTP within 7 days of referral at weekly meetings. Following initial review, a follow-up form is sent to the PCP informing him or her of the investigations and specialist consults arranged (Supplemental Appendix S2). Finally, the TTP sends a summary to the PCP after final review and discharge from the program (Supplemental

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