



## Research paper

## Prospective analysis of patient reported symptoms and quality of life in patients with incurable lung cancer treated in a rapid access clinic



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## ABSTRACT

**Introduction:** The Vancouver Rapid Access (VARA) clinic was designed to provide palliative radiotherapy and holistic care to patients with incurable lung cancer. Analysis of the pilot phase demonstrated improved radiotherapy wait-times and access to supportive services compared to standard practice. This study aims to prospectively assess the impact of the clinic on patient reported symptoms and quality of life.

**Materials and methods:** Patient assessments are completed at baseline and by a telephone follow up four-weeks later using Likert scales adapted from the Edmonton Symptom Assessment System (scale 0–10) and European Organization for Research and Treatment of Cancer questionnaires (scale 1–4). Patient reported outcomes at follow-up are compared to baseline using wilcoxon signed-rank test for categorical variables and paired sample *t*-test for continuous variables.

**Results:** Baseline data was collected on 125 patients, 109 received palliative radiotherapy (87%). At the 4 week follow up, 22 patients had died. Seventy-one of the remaining 103 patients completed the follow-up questionnaire, resulting in a 69% response rate among survivors. The mean patient reported overall health score, improved from 4.8 to 6.1 ( $p < 0.01$ ). All respiratory symptoms except chest pain ( $p = 0.06$ ) were associated with a statistically significant improvement after the clinic, whereas all respiratory symptoms improved post radiotherapy. Mean bone pain scores decreased from 5.5 to 2.7 ( $p < 0.01$ ). Assessment of symptoms secondary to brain metastases is limited by small patient numbers.

**Conclusion:** The VARA clinic provides timely access to palliative radiotherapy and supportive services resulting in improved patient reported outcomes. Despite a high symptom and disease burden, patients report improved overall health and palliation of respiratory symptoms and bony pain. The studies completed on the VARA clinic to date, continue to support its value in our center.

### 1. Introduction

Seventy percent of patients with lung cancer will present with advanced disease [1]. Many of these cancers are incurable, either due to the presence of metastases or because of a patient's inability to undergo curative treatments because of the extent of their local disease, performance status, or medical co-morbidities. Unfortunately, this population often has a profound burden of symptoms. In the setting of a limited life expectancy, treatment goals include symptom control and improvement of quality of life [2]. In 2010, an important phase III trial demonstrated that incorporating palliative care early in the management of this patient population in addition to standard oncologic care

resulted in an improvement in both quality of life and overall survival [3]. This study has prompted the World Health Organization, National Comprehensive Cancer Network, and American Society of Clinical Oncology to endorse the integration of palliative care at the time of lung cancer diagnosis [4–7].

In order to improve the access to supportive care for patients with newly diagnosed incurable lung cancer, the BC Cancer Agency – Vancouver Center developed a multidisciplinary rapid access palliative radiotherapy clinic in 2011. The clinic format and logistics have been described in detail previously [8]. In brief, referrals for the Vancouver Rapid Access (VARA) clinic are triaged by a nurse practitioner. At the first clinic visit, the patient is assessed by a registered nurse with

Abbreviations: VARA, Vancouver Rapid Access; ESAS, Edmonton Symptom Assessment System; PPS, Palliative Performance Status

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radiotherapy expertise, followed by a medical assessment by a nurse practitioner and reviewed with the radiation oncologist and multi-disciplinary team members. If palliative radiotherapy is indicated, the patient is planned and treated that day. Additional services are tailored to the needs of the patient and caregivers, and may include assessment by a respiratory therapist, optimization of medications for symptom management, referrals to medical oncology, dieticians, or counseling services, as well as a discussion of advanced care planning, connection to home care services and palliative care services.

A prior analysis of the VARA clinic identified decreased wait-times for radiotherapy, improved patient access to supportive care services, and improved radiation oncologist workload, when compared to standard practice [8]. From a logistical perspective, the VARA clinic was a success; however, the actual impact on patient outcomes was uncertain. The purpose of this study was to prospectively evaluate the outcomes of the patients assessed at the VARA clinic. Particular aspects of interest included performance status, patient reported overall health, and palliation of symptoms requiring palliative radiotherapy.

## 2. Materials and methods

### 2.1. Assessment tools

The primary patient outcomes of interest included performance status, overall health, and symptoms that were potentially amenable to palliative radiotherapy, such as respiratory symptoms from chest disease, pain from bone metastases, and neurologic symptoms from brain metastases. In order to create an assessment that was easy both to deliver and complete, for a group of unwell patients, specific questions of interest were selected from the Edmonton Symptom Assessment System (ESAS) and the EORTC-QLQ Quality of Life Questionnaires specific for lung cancer (QLQ-LC13), bone metastases (QLQ-BM22) and brain metastases (QLQ-BN20) [9–12]. ESAS questions involved ranking symptoms on an 11 point scale, 0 indicating an ‘absence’ of symptoms, 10 indicating the ‘worst possible symptom’. EORTC style questions assessed the persistence of symptoms over the past week, 1 indicating ‘not at all’ and 4 indicating ‘very much’. In addition to patient reported outcomes, patient demographics, tumor characteristics, palliative performance scale (PPS) [13], analgesic use, oxygen requirements, and radiotherapy details were collected.

### 2.2. Data collection

Prospective data collection began March 22, 2013. A baseline assessment was completed by the patient and primary caregiver, usually with the nurse practitioner, or another health care provider. The follow-up assessment was completed by telephone four weeks following radiotherapy by the nurse practitioner. For patients who did not have radiotherapy, follow up was performed four weeks post clinic visit. Patients were informed to expect this follow-up call at the time of their initial visit. In the event that a patient was too ill to answer the survey, questions that could be reliably answered were completed by the primary caregiver. At the time of analysis, a retrospective chart review was performed to obtain dates of death and follow up for all patients with a baseline assessment to perform survival analysis. This project was approved by the joint BC Cancer Agency and University of British Columbia Research Ethics Board.

### 2.3. Statistical analysis

SPSS version 14.0 was used to facilitate statistical analysis. Patient demographics, tumor characteristics and treatment details were assessed using descriptive statistics. Pre and post patient outcomes were assessed using Wilcoxon signed rank test and paired sample *t*-test for categorical and continuous variables, respectively. A sensitivity analysis was conducted on patients who were symptomatic and received

**Table 1**

Baseline patient characteristics and treatment details of 125 patients assessed at the VARA clinic. NSCLC: Non-small cell lung cancer; SCLC: small cell lung cancer; PPS: Palliative Performance Scale.

Median Age	71 (range 45–99)
Gender (male)	54%
Stage II NSCLC	1%
Stage III NSCLC	17%
Stage IV NSCLC	67%
Extensive Stage SCLC	15%
Median PPS	50 (range 10–100)
Weight loss > 10%	32%
Oxygen Dependent	16%
On an Opioid	42%
Received Palliative Radiotherapy	87%
Received chemotherapy after VARA	30%

radiotherapy. Overall survival was assessed using the Kaplan-Meier method.

## 3. Results

### 3.1. Patient characteristics and treatment details

Between March 22, 2013 and July 4, 2014, 161 patients were assessed in VARA. A baseline assessment was documented on 125 patients and forms the cohort for this study. At the time of telephone follow-up, 22 deaths had occurred. Among remaining survivors, 71 patients participated in the follow-up survey, resulting in a 69% response rate (71/103). The reason for not completing the follow-up survey was only documented in 14 cases. In these 14 cases, 86% were not reachable by phone; the remaining 2 patients were contacted but too unwell to complete the survey. Table 1 describes the baseline patient characteristics and treatment details. The majority of patients had non-small cell lung cancer (NSCLC) and metastatic disease. Half of the patients had a PPS of 50 or less, 82% had at least one hospital visit related to their cancer prior to their VARA appointment.

A total of 109 patients (87%) received palliative radiotherapy. Two patients were referred for curative intent treatment. The median wait-time from consultation to radiotherapy was 0 days with 83 (76%) patients receiving radiotherapy on the same day as their consultation. Twenty-four patients received radiotherapy to more than one anatomic site on their first visit. Of the patients who had palliative radiotherapy, the most common sites irradiated were the chest (57%), bone (37%) and brain (20%). Among the 63 courses of lung radiotherapy delivered, 2000cGy in 5 fractions was the most common regimen (54%) followed by 3000cGy in 10 fractions (16%). Forty-nine courses of radiotherapy to bone metastases were delivered; 800cGy in 1 fraction was the most common regimen (51%) followed by 2000cGy in 5 fractions (43%). Twenty-two patients received whole brain radiotherapy, the most common fractionation was 3000cGy in 10 fractions (50%) followed by 2000cGy in 5 fractions (27%). Three courses of chest radiotherapy were not completed: two declined to continue after their first fraction, one became acutely unwell after their third fraction. All courses of bone and brain radiotherapy were completed.

### 3.2. Patient reported outcomes pre and post VARA

Table 2 highlights the PPS and mean symptom scores reported by VARA patients at the initial consultation and 4-week post-treatment follow-up phone call. The median follow-up time was 42 days following the first clinic visit (range: 27–77). Of the 58 patients who had a documented pre and post PPS, the majority remained stable (68%); 8 patients (14%) declined. Mean self reported overall health scores increased, with 24 (53%) of the 45 patients with pre and post results reporting an improvement in overall health; 9 (20%) patients reported a decline.

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