

Real-world outcomes in resected stage IB-IIIa EGFR-mutated NSCLC in Canada: analysis from the POTENT study



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Study Overview

- The POTENT study evaluated the prevalence/frequency of the epidermal growth factor mutation (EGFRm), clinical outcomes, treatment, and testing patterns among patients with early-stage resected non-small-cell lung cancer (NSCLC) living in Canada.

Objectives

- Primary:**
 - To estimate the prevalence/frequency of EGFR-sensitizing mutations (common and uncommon)
 - To describe treatment patterns
 - To assess overall survival (OS)
- Secondary:**
 - To describe demographic and clinical characteristics, recurrence outcomes, and testing methods
- Exploratory:**
 - To assess disease-free survival (DFS)

Conclusions

- Real-world data provide critical context to clinical trials and inform treatment and reimbursement decisions.
- The current study found that patients with resected IB-IIIa EGFRm NSCLC had suboptimal outcomes despite adjuvant chemotherapy. DFS at 2 years was consistent with 2-year DFS results in the placebo arm of the ADAURA trial (stage IB, 71%; stage II, 56%, and stage IIIa, 32%).¹
- These results highlight the need for improved therapeutic options for early-stage patients with resected NSCLC.

Plain language summary

Why did we perform this research?
In Canada, recent real-world outcomes data for patients with NSCLC who are EGFRm are limited to advanced and metastatic patient populations.^{2,3} It is important to understand the characteristics, treatment, and outcomes of patients with resected, early-stage EGFRm NSCLC given the recent results of the ADAURA trial of adjuvant osimertinib¹ and upcoming results for adjuvant immunotherapy⁴.

How did we perform this research?
The study was a retrospective, longitudinal, observational study that involved three Canadian cancer centres and data derived from the pan-Canadian Lung Cancer Observational Study (PALEOS) registry. Data were collected for EGFRm status, treatment, survival outcomes, and site of relapse.

What were the findings of this research and what are the implications?
The study found EGFRm frequency to be 22%. Among these patients, survival outcomes were similar to historical reports of 5-year OS rates.⁴ At the time of first disease recurrence, almost 90% of tumours involved distant sites. These findings suggest that new adjuvant treatment options are needed for resected early-stage EGFRm NSCLC. These data may inform the treatment decisions of clinicians as well as the reimbursement decisions of payers.

Where can I access more information?
Additional information on this study can be obtained from the corresponding and lead author, Dr. M.S. Kuruvilla (Sara.Kuruvilla@lhsc.on.ca).

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Background

- Most patients with advanced NSCLC who have EGFR driver mutations benefit from EGFR-targeted tyrosine kinase inhibitor (EGFR-TKI) therapy.⁵
- In the ADAURA trial of patients with resected early-stage (IB-IIIa) EGFRm NSCLC, adjuvant treatment with the EGFR-TKI osimertinib was associated with significant improvement of DFS compared with placebo (hazard ratio: 0.20; 99.12% CI: 0.14, 0.30; $P < 0.001$).¹
- Despite current standard of care, the risk of disease recurrence after surgery and adjuvant chemotherapy remains high across disease stages. There is a paucity of literature examining the heterogeneous early-stage resected patient population in terms of their treatment, outcomes, and variations related to biomarker status.

Results

Baseline Characteristics

- Among 440 patients with stage IB-IIIa NSCLC whose tumours had EGFR reflex testing, 95 (22%) were EGFRm (Table 1).
- Among the patients with EGFRm tumours, the mean age was 65 years and 66% were female; of those with known ethnicity, 23% were Asian (Table 1).
- Across all patients, 12.5% with stage IB disease, 75.0% with stage II, and 82.4% with stage IIIa received adjuvant therapy (Table 1).

22% of patients were EGFRm

Table 1. Baseline characteristics of EGFRm patients*

Variable	n (%), N = 93*	Variable	No. of Patients (%), N = 93*			
Cancer Centre		Mutation				
Princess Margaret	41 (44.1)	Common**	57 (61.3)			
London	31 (33.3)	Uncommon	36 (38.7)			
William Osler	21 (22.6)	Result of Surgery				
Sex, female	61 (65.6)	R0	91 (97.8)			
Age at Diagnosis, mean (SD)	65 (7.5)	R1	1 (1.1)			
Race		R2	1 (1.1)			
East or South-East Asian	14 (15.1)	Recurrence				
Caucasian	11 (11.8)	Locoregional	5 (5.3)			
Central Asian	4 (4.3)	Metastatic	30 (32.3)			
Asian (NOS)	2 (2.2)	No recurrence	58 (62.4)			
North American	1 (1.1)	CNS at First Recurrence/Patients with Metastatic Recurrence	5/30 (16.7)			
South Asian	1 (1.1)	IB	3/9 (33.3)			
Other	3 (3.2)	II	1/11 (9.0)			
Unknown	57 (61.2)	IIIa	1/10 (10.0)			
Stage at Diagnosis		Adjuvant Type(s)				
Stage IB	48 (51.6)	Stage IB (n = 48)	Stage II (n = 28)	Stage IIIa (n = 17)	Total (N = 93)	
Stage II	28 (30.1)	Chemotherapy and RT	1 (2.1)	0 (0.0)	4 (23.5)	5 (5.4)
Stage IIIa	17 (18.3)	Chemotherapy and no RT	5 (10.4)	21 (75.0)	10 (58.8)	36 (38.7)
		No chemotherapy or RT	42 (87.5)	7 (25.0)	3 (17.6)	52 (55.9)

Abbreviations: CNS = central nervous system; EGFRm = epidermal growth factor mutation positive; NOS = not otherwise specified; RT = radiotherapy; SD = standard deviation.
* Two patients were excluded due to insufficient data; ** Common mutations: exon 19 deletion, L858R.

Clinical Outcomes

- Median follow-up was 29 months.
- The number of DFS events at 2 years, median DFS, and the probability of being alive at 2 years are summarized in Table 2.
- At 2 years, DFS was 84.6%, 53.9%, and 35.9% for patients with stage IB, II, and IIIa disease, respectively (Figure 1D).
- Patients who did not receive adjuvant chemotherapy had longer DFS than those who did receive such therapy (Table 2). Adjuvant chemotherapy was more commonly used among patients diagnosed at later disease stages.
- Patients diagnosed with stage IB disease had higher OS and DFS rates at both 2 and 4 years than those diagnosed with stage II and IIIa disease (Figures 1C and 1D) and combined stage II/IIIa patients (Table 2).
- At the time of first recurrence, 85.7% of tumours involved distant sites; among these distant first recurrences, central nervous system metastasis occurred in 33% of stage IB, 9% of stage II, and 10% of stage IIIa patients.

At 2 years, DFS was 84.6% for stage IB, 53.9% for stage II, and 35% for stage IIIa patients

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Methods

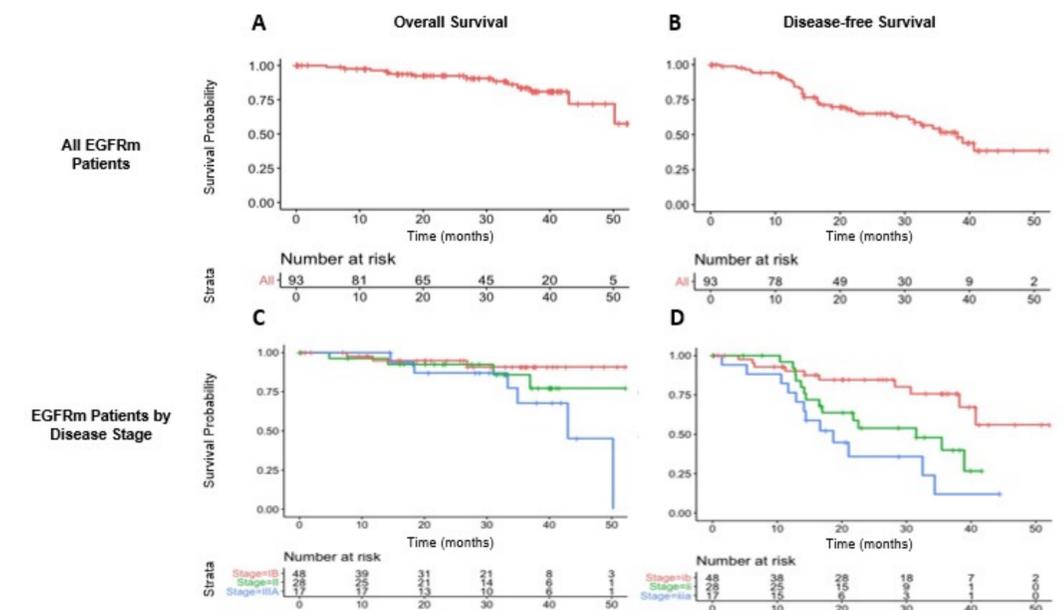
- A retrospective, longitudinal, observational study was conducted at three Canadian cancer centres. Each centre had routine reflex testing during study time period. Reflex testing is a policy that does not require physicians to order the required test for individual patients; the pathologist orders and provides samples for molecular testing.
- Included patients were adults diagnosed with stage IB to IIIa (AJCC 7th edition) NSCLC between January 2016 and December 2019 (study time period) who had undergone resection; patients who had received neo-adjuvant treatment were excluded.
- Data were collected on EGFRm status, treatment, and clinical outcomes. The clinical outcomes included DFS and OS (stratified by age at diagnosis) and site of relapse categorized as local-regional or distant metastatic disease.
- Data were derived from the pan-Canadian Lung Cancer Observational Study (PALEOS) registry.
- Ethics approval was obtained from each of the three participating cancer centres.

Table 2. Survival outcomes*

Variable	No. of Patients (No. of DFS Events at 2 Years)	Median DFS in Months (95% CI)	Probability of Being Alive at 2 Years (95% CI)
Stage			
IB	48 (10)	NR (38.2-NE)	0.95 (0.88-1.00)
II	28 (14)	31.5 (17.0-NE)	0.92 (0.83-1.00)
IIIa	17 (12)	18.7 (14.1-NE)	0.87 (0.72-1.00)
II and IIIa combined	45 (26)	22.6 (16.6-38.9)	0.90 (0.82-1.00)
Mutation Type			
Common mutation**	57 (22)	38.2 (32.5-NE)	0.94 (0.88-1.00)
Uncommon mutation	36 (14)	38.9 (21.0-NE)	0.88 (0.78-1.00)
Surgical Resection			
R0	91 (35)	38.2 (31.5-NE)	0.92 (0.87-0.98)
R1	1 (1)	17 (NE-NE)	NA
R2	1 (0)	NR (NE-NE)	NA
Adjuvant Chemotherapy			
Did not receive	51 (14)	40.7 (38.2-NE)	0.90 (0.82-1.00)
Received	42 (22)	31.5 (18.7-NE)	0.95 (0.93-1.00)

Abbreviations: CI = confidence interval; DFS = disease-free survival; NA = not available; NE = not evaluable (due to insufficient events); NR = not reported.
* Two patients were excluded due to insufficient data.
** Common mutations: exon 19 deletion, L858R.

Figure 1. OS and DFS among all EGFRm patients (A, B) and stratified by disease stage (C, D)



Abbreviations: EGFR = epidermal growth factor receptor mutation positive; DFS = disease-free survival; OS = overall survival.

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Disclosures

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