

# Research Review

## EDUCATIONAL SERIES

### Lung Cancer – Diagnosis in Primary Care

#### In this review:

- Lung cancer in NZ
- Diagnosing lung cancer
- Ethnic disparities

#### Take home points

*Lung cancer is a leading cause of cancer mortality in NZ*

*Early detection/treatment improves prognosis – minimising delays is critical*

*Large ethnic disparities exist*

*≤2 weeks from raised index of suspicion at primary care to specialist referral*

*Provide thorough, appropriate patient information throughout the process*

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*Disclaimer: This publication is an independent review of significant research in lung cancer. It provides summaries and opinions of published data that are the opinion of the writer rather than that of the scientific journal or research group. It is suggested the reader reviews the full trial data before forming a final conclusion on any recommendations.*

#### About Research Review

Research Review is an independent medical publishing organisation producing electronic publications in a wide variety of specialist areas.

Research Review publications are intended for New Zealand medical professionals.

#### About this review

Lung cancer is a major cause of cancer mortality in New Zealand. The incidences and mortality rates closely reflect historical cigarette smoking and tobacco control initiatives, but the role of exposure to other carcinogens (e.g. asbestos, marijuana) should not be underestimated.<sup>1,2</sup> The incidences are highest among ethnic populations and low socioeconomic groups. Lung cancer is also associated with significant economic burden, with direct costs reported to be \$18–28 million in 2002, in addition to substantial indirect costs.<sup>3</sup>

This publication examines the issues surrounding diagnosis of lung cancer in NZ, particularly ethnic disparities, and details the identification of suspected cases in the primary care setting. The aim of this publication is to provide NZ GPs with a comprehensive, yet easy-to-digest, reference to assist in the prompt diagnosis and treatment of patients presenting with symptoms suggestive of lung cancer. The information contained in this publication reflects current best evidence and practice as outlined by the New Zealand Guidelines Group, UK National Institute of Clinical Excellence (NICE) and published papers relevant to the NZ setting.

#### Lung Cancer in New Zealand

The lung cancer rate among NZ males in 2007 was 36.3 per 100,000, with a mortality rate of 30.3 per 100,000, making it the leading cause of cancer death in this population.<sup>4</sup> The respective rates were lower in NZ women at 25.1 and 20.4 per 100,000, respectively, but it was still their second highest cause of cancer death. The reported cumulative relative survival rate at 2 years is 18%, with only a 31% chance of surviving the first year.<sup>5</sup> Among those who survive for 4 years, 92.5% survive to the end of the fifth year.

There is a strong association between earlier stage at diagnosis and survival. While most patients will initially present to primary care with lung cancer symptoms, a high proportion of lung cancer diagnoses are being made after presentation to secondary care, usually with advanced symptoms. One study has reported that 36% of lung cancer diagnoses made in Auckland in 2004 were made after patients presented to an emergency department, mostly (67%) for respiratory symptoms.<sup>6</sup> One way to help lower lung cancer mortality in this country is to identify patients with suspected lung cancer in the earlier stages of the disease – i.e. in the primary care setting.

#### Diagnosing lung cancer

Identifying patients for further lung cancer investigation is a critical component in diagnosing the disease early to improve prognosis with appropriate treatment. The incidence of lung cancer is low among individuals aged <50 years, and it peaks at around 80 years of age.<sup>7</sup> Around 90% of lung cancers are attributable to smoking. Lung cancer should also be suspected in all patients with prior asbestos exposure and recent-onset chest pain, dyspnoea or unexplained systemic symptoms. Asbestos exposure increases lung cancer risk by a factor of 8, and when combined with a 20 pack-year smoking habit (which is associated with an ~20-fold increased risk), the risk is increased by a factor of around 160. Underlying conditions such as bronchiectasis and interstitial lung disease also increase the risk by a factor of around 2.8. Chest x-ray is the principal primary care investigation for patients with suspected lung cancer. An algorithm for the referral of patients presenting to primary care with signs/symptoms suggestive of lung cancer is presented in the figure.

- An urgent chest x-ray should be obtained for patients who present with:
  - unexplained, persistent (>3 weeks) signs and symptoms (see the figure)
  - signs or symptoms for any duration if high-risk factors present (see the table)
    - Chest x-ray report should be available within 1 week.
  - haemoptysis ('red-flag' symptom) as a single presentation (unless asymptomatic in a young patient)
    - Referral for bronchoscopy should also be considered.
    - Size of haemoptysis is not proportional to potential severity of underlying disorder.
  - a history of asbestos-exposure when lung cancer is suspected
    - An urgent referral should be made if there is evidence of pleural effusion, pleural mass or any suspicious lung pathology.

Good communication with patients is key in all primary care settings, and lung cancer is no exception. Patients must be kept informed during all the processes involved in diagnosing and treating lung cancer. It must also be recognised that false negative chest x-rays do occur. One UK case series found that among lung cancer patients who had at least one chest x-ray requested from primary care during the year prior to diagnosis, 23% had a negative result.<sup>8</sup>

Once a patient has been referred by their primary care practitioner, diagnosis, staging and treatment are undertaken. These involve investigations such as bronchoscopy, CT with fine-needle aspiration, PET scans and endotracheal ultrasonography (EBUS), after which a multidisciplinary team meets and devises an appropriate treatment plan consisting of chemotherapy, surgery and/or radiotherapy. The timelines for these processes will be released shortly as part of new National Standards for Lung Cancer Management.

## Good practice points

- Record and regularly update smoking status in case notes of all patients
- Sputum cytology is NOT a discriminatory investigation for patients with suspected lung cancer
- Urgent chest x-rays should be completed and reported within 1 week
- If initial chest x-ray shows consolidation in a patient with risk factors, a repeat chest x-ray is indicated within 6 weeks to confirm resolution

**Table. Risk factors for lung cancer<sup>8,10</sup>**

### High-risk factors

Current or ex-tobacco smokers  
Smoking-related COPD  
Prior asbestos exposure  
History of cancer

### Additional risk factors

Occupational exposure to dust or microscopic particles (e.g. wood, dust, silica)  
Known carcinogen exposure (e.g. radon, chromium, nickel)  
Medical history of COPD, silicosis, tuberculosis  
Family history of cancer  
COPD - chronic obstructive pulmonary disease

## Ethnic disparities

In NZ, ethnic disparities are seen not only in the incidences of lung cancer, but also in the outcomes.<sup>1,4</sup> Māori have higher incidences than non-Māori for many types of cancer, with lung cancer featuring prominently in this respect. The lung cancer registration rate among Māori in 2007 was >3 times greater than for non-Māori at 82.8 (vs. 25.8) per 100,000, and this magnitude of difference has been consistent for a number of years.<sup>11</sup> The respective lung cancer registration rates in 2007 for Māori men and women were 87.6 and 78.3 per 100,000. Māori are also more likely to be diagnosed at a later stage than non-Māori, which is likely to be the main driving factor behind the greater mortality incidence ratio for Māori of 95% reported for 1996–2001 (vs. 85% for non-Māori). Mortality rates among Māori men declined by 26.5% between 1997 and 2007, but have remained similar among Māori women.

Like Māori, lung cancer is more prevalent in Pacific men.<sup>12</sup> Moreover, lung cancer was the leading cause of cancer mortality among Pacific men between 1996 and 2000. For Pacific women, while the lung cancer registration rates were comparable with the general NZ population during this period, the rate steadily increased from 1991 to 2004.<sup>13</sup> Moreover, lung cancer was the leading cause of cancer mortality among Pacific women aged ≥65 years during 1996–2000.

In NZ Asian populations, individuals aged ≥65 years categorised as 'other Asian' had a lung cancer mortality rate 1.5 times greater than the general NZ population.<sup>14</sup> Lung cancer registration rates between 1997 and 2001 were higher for those categorised as 'other Asian' than for Chinese and Indian.

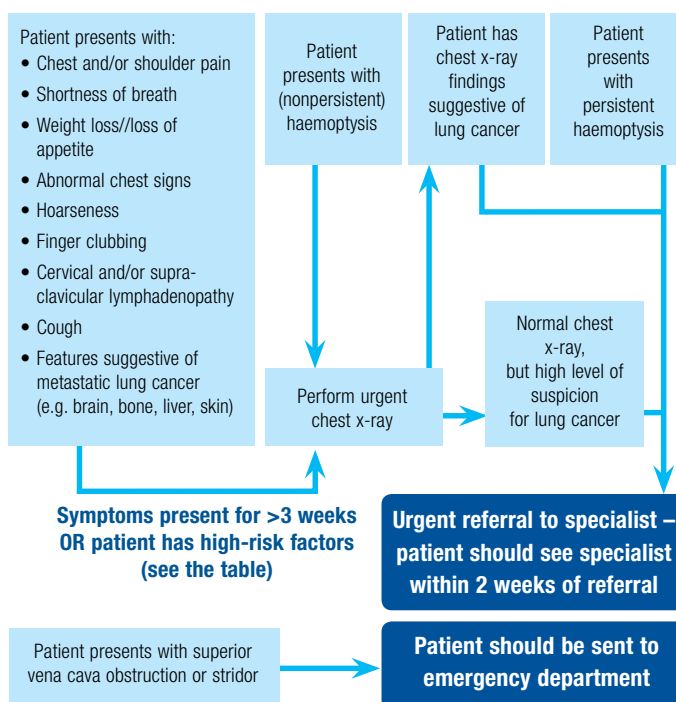
While some of the disparities can be explained by the lower relative socioeconomic status seen in minority ethnic groups in NZ, it is likely that higher tobacco use among Māori and Pacific people is an important contributor to the increased incidence of lung cancer in these populations.<sup>13,15,16</sup> Actions designed to address these differences in socioeconomic status are likely to be an important component of reducing ethnic inequalities in health.

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**Figure. Algorithm for lung cancer patients presenting to primary care**

Adapted from NICE CG27 - Referral guidelines for suspected cancer in adults and children<sup>10</sup>



## Conclusions

- Lung cancer is a major contributor to cancer mortality in NZ, particularly among Māori and Pacific people.
- Incidence disparities are driven largely by the high number of smokers in these populations
- Mortality disparities are due largely to a large number of cases not being diagnosed until the disease is well advanced.
- Awareness of risk factors and signs/symptoms needs to be raised in at-risk populations
- Patients with lung cancer need to be identified early and receive prompt care.

Once a patient presents to their primary care provider with signs/symptoms of lung cancer:

- Urgent chest x-ray should be obtained if indicated.
- Urgent referral to specialist – patient should see specialist within 2 weeks of referral.
- Patients presenting with superior vena cava obstruction or stridor should be sent straight to an emergency department.
- Once a decision to refer has been made, a first specialist appointment should take place within 14 days - CT should have been undertaken and results available by then.
- All further diagnostic/staging investigations should be completed (with results available) in time for a first multidisciplinary team meeting.
- Patients should be kept well informed in a manner appropriate to their individual needs.



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