

## Lung cancer screening: The pulmonologist, the thoracic surgeon and working together in a team

Lung cancer is the most common cancer and the most common cause of cancer-related mortality globally.<sup>1</sup> Across the world and all stages of disease, evidence consistently shows that early diagnosis and intervention yields the greatest survival benefit and lowest rates of recurrence.<sup>2</sup> Treatment of lung cancer is multi-modal, with surgical, radiation and chemo/immunotherapy treatments available. Amongst these treatment modalities surgery maintains the greatest overall prognostic benefit.<sup>3–5</sup>

Across the Asia-Pacific region, there is a concerning lack of consensus on lung cancer, with respect to screening, prevention (smoking cessation) and management.<sup>6</sup> The contemporary infrastructure even in the affluent countries of the region are struggling to manage the current burden of disease and provide appropriate access to care, a trend that has been exacerbated by the COVID-19 pandemic.<sup>7</sup> For example, Korea is a highly developed nation, but maintains one of the highest incidence and mortality rates for lung cancer in the Asia-Pacific region.<sup>8</sup> Less than half of the nations in the region have conducted screening trials and consequently there is no robust regional evidence for screening and the changes it will create.<sup>6</sup> Within the region Australia and New Zealand (NZ) are driving change; with NZ banning the sale of cigarettes to anyone born after 2009, and Australia introducing a national lung cancer screening program.

Screening programs in developed countries have demonstrated promising results, showing an overall decrease of 7% in all-cause mortality and a 20% decrease in lung cancer specific mortality in screened populations.<sup>9,10</sup> Traditionally the majority of lung cancers are diagnosed in late stages (III–IV), where the prognosis remains guarded independent of intervention. Screening programs shift the stage of diagnosis significantly, with up to 85% of screened cancers being stage I.<sup>9</sup>

Low-dose CT screening in high-risk individuals has identified up to 23% of patients as having a malignancy, compared to 0.7% with plain film x-ray. Consequently with the proposed introduction of lung cancer screening in Australia, there will undoubtedly be a dramatic increase in the number of cancers detected, compared to the current climate without screening.<sup>9,10</sup>

Morally and medically the need for lung cancer screening is undeniable. However, the question must be

### Key points

- Lung cancer remains the most common cancer globally.
- It is frequently associated with mortality.
- Lung cancer screening will enable early detection of lung cancer.
- This process will require considerable expansion of current infrastructure, particularly thoracic surgical services.
- Thoracic surgeons should collaborate closely with pulmonologists in the diagnosis and management of lung cancers following lung cancer screening.

asked; do we have the infrastructure and other facilities to manage patients who are diagnosed with possible lung cancer following screening? The gold standard of management for early-stage lung cancer remains lung resection, so one would expect with increased recognition of early cancer, there will be an imminent rise in the number of surgeries performed.

The premise of diagnosing early lung cancer and improving the outcomes of patients with lung cancer should remain a global priority. However, with the increased recognition of suspicious lung lesions (lung cancers or otherwise) there must be sufficient infrastructure in place to accommodate the consequences of screening. Delays to treatment of 42 days have been shown to increase recurrence rates, upstage disease and reduce survival.<sup>11</sup> Internationally, the National Institute of Health and Care Excellence (NICE) guidelines recommend intervention within 31 days from the decision to treat, and the Society of British Thoracic Surgeons (BTS) suggests treatment should be commenced within 8 weeks of initial consult.<sup>12</sup>

Contemporary Australian data examining the Queensland thoracic surgical service has demonstrated that prior to the COVID-19 pandemic, the wait time from CT scanning to surgery was 80 days. Concerningly, during the pandemic this increased to 96 days and consequently there was a greater rate of pathological upstaging.<sup>13</sup> While Victorian data shows an average time to intervention of

14 days, the overall national surgical capacity and performance remains unclear.<sup>13,14</sup>

With the existing lengthy delays to curative lung cancer surgery in certain regions of Australia, the introduction of a national lung cancer screening program may place further strain on already saturated services. This may hinder the proposed benefits of screening while escalating further the prolonged wait times and pathological upstaging. A more efficient model of care is required to deal with the impending changes, which will require advocacy and planning. We are facing a unique opportunity to pre-empt a crisis and expand the cardiothoracic surgical specialty.

In the current Australian system, contrary to international practices, the investigation of lung nodules and cancers is the domain of the respiratory physician. The BTS and NICE advocate for rapid diagnosis and management of lung lesions and recommend the early involvement of a thoracic/cardiothoracic Surgeon.<sup>12,15</sup>

Cancer Australia's 'Report on Lung cancer Screening Enquiry', has predicted an increased work load subsequent to the introduction of screening, yet does not include a plan to deal with this increase.<sup>16</sup> Traditional multi-disciplinary team management pathways need to evolve to enable a more streamlined treatment pathway. Early involvement of a surgeon allows identification of patients unlikely to progress to surgery, or with unresectable disease which could then be streamlined down a medical management pathway, lead by a respiratory or oncology physician.

Late involvement of surgeons in care offers little opportunity for them to minimize delays to surgery. Early surgical referral offers an opportunity for thoracic surgeons to become more active in the diagnosis and investigation of lung lesions. With the use of minimally invasive techniques and navigational bronchoscopy, surgeons may be able to significantly decrease the time to surgery. Surgeons performing a biopsy could utilize immediate frozen-section histological analysis, which if malignant could result in immediate completion of oncological resection in the same session. This could eliminate delays from sampling to resection, reducing the reliance on other specialties. This leaves respiratory physicians and interventional radiologists free to biopsy the non-surgical patients in a shorter timeframe. Delays to intervention reduce survival and increases recurrence, so surgeons should strive for 'same day resections', where possible.

While not all countries in the Asia-Pacific region will currently have the resources to introduce national screening programs or re-design the current diagnostic/management algorithm, improvements in medical care may make this feasible in future. The Australian program can serve as a guide for other nations to follow and improve upon. We must re-think and re-design how we manage lung cancer as a team, in order to provide optimal, cost-effective and equitable care.

## KEYWORDS

cardiothoracic surgery, lung cancer screening, lung nodule, respiratory medicine, thoracic surgery

## ACKNOWLEDGEMENT

Open access publishing facilitated by James Cook University, as part of the Wiley - James Cook University agreement via the Council of Australian University Librarians.

## CONFLICT OF INTEREST STATEMENT

None declared.

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**How to cite this article:** Kirk F, He C, Stroebel A. Lung cancer screening: The pulmonologist, the thoracic surgeon and working together in a team. *Respirology.* 2023;28(6):515–7. <https://doi.org/10.1111/resp.14496>