

# Lung cancer is one of the most common cancers in people aged 65+ years.

Those living outside a major city or in a disadvantaged area are less likely to receive treatment for lung cancer.

## Lung cancer in patients aged 65+ years: who do we treat and how do we treat them?

Cancer Alliance Queensland, Queensland, Australia | David E Theile, Philippa Youl, John Harrington, Danica Cossio and Shoni Philpot

### Background

Lung cancer is one of the most common cancers diagnosed in Australia. While smoking rates have been decreasing over the past few decades, our ageing population means an increasing number of older adults are diagnosed with cancer. We conducted a population-based analysis to examine treatment received for patients aged 65+ with lung cancer.

### Methods

The Queensland Oncology Repository (QOR) was used to extract data on adults aged 65+ years diagnosed with lung cancer in Queensland from 2007-2016. QOR collates and matches patient-level clinical information from the Queensland Cancer Register, public and private hospital admissions data, pathology, radiology, treatment and mortality data. We examined overall treatment rates, rates of major resection, IV system therapy and radiation therapy. Multivariate modelling was used to examine factors associated with the likelihood of receiving treatment.

### Results

Of 15,316 adults aged 65+ years diagnosed with lung cancer, 61% (n=9,315) received treatment (compared to 85% for patients < 65 years). Patients were less likely to receive treatment if they were Indigenous (p=0.002); lived outside an affluent area (p < 0.001) or a major city (p < 0.001); or had ≥ 2 comorbidities (p < 0.001). The likelihood of receiving treatment decreased with increasing age (p < 0.001). Patients diagnosed from 2012-2016 were about 40% more likely to have had treatment compared to those diagnosed from 2007-2011 (Figure 1).

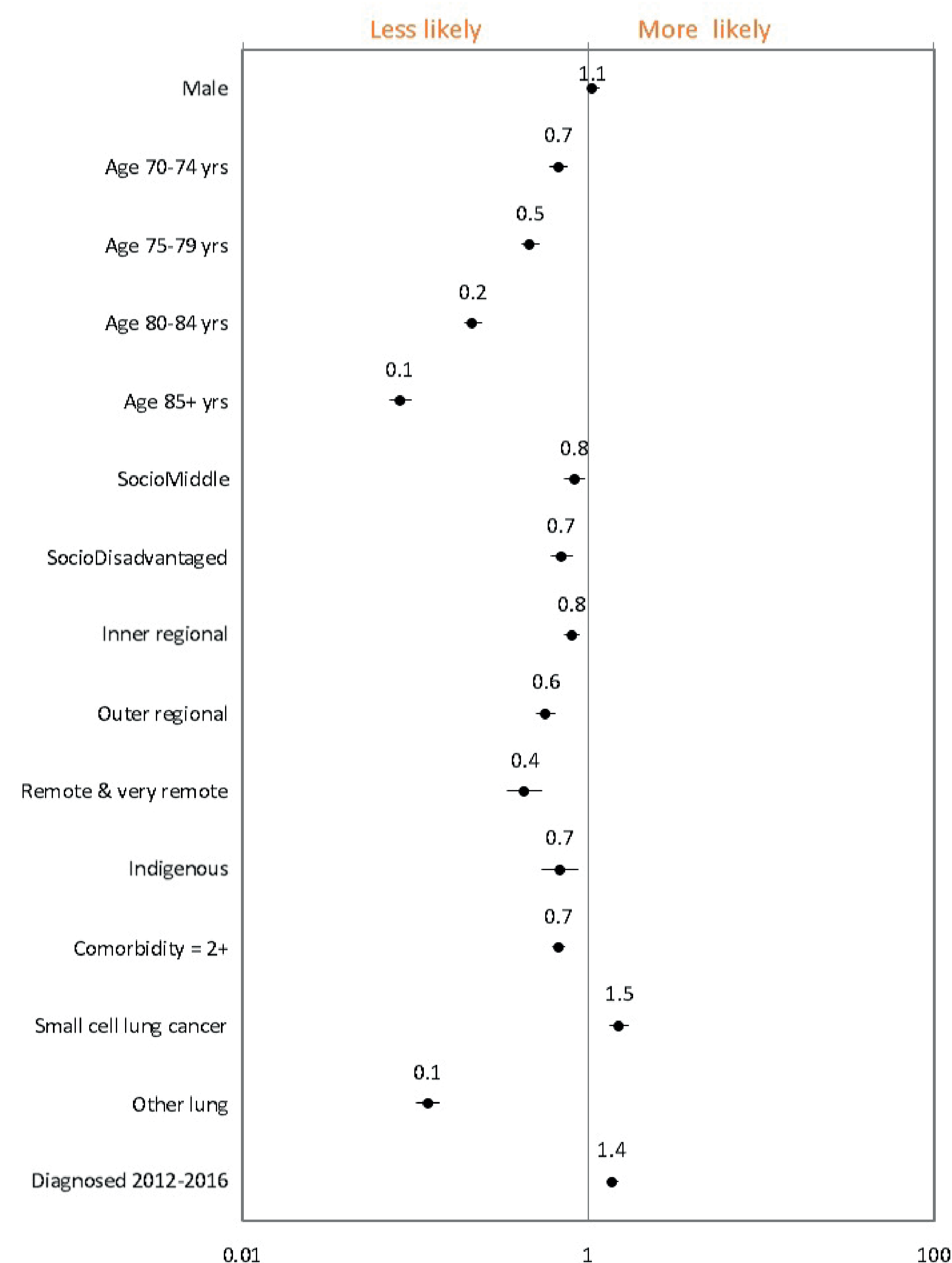


Figure 1: Factors associated with the likelihood of receiving any treatment for lung cancer

Of 12,210 patients aged 65+ years diagnosed with non-small cell lung cancer, 18% (n=2,178) had a major resection. Surgical resection rates increased from 16% for the period 2007-2011 to 20% from 2012-2016 (p<0.001). Over the same two time periods, 30-day mortality fell from 1.8% to 1.0% and 90-day mortality fell from 3.8% to 2.5%

The likelihood of receiving IV systemic therapy decreased with increasing age. Patients living in outer regional and remote/very remote locations were about 40-50% less likely to receive IV systemic therapy compared to those living in a major city (OR=0.60, 95%CI=0.53-0.69 and OR=0.47, 95%CI=0.37-0.60, respectively) (Table 1). A similar pattern was observed for radiation therapy.

Table 1: Factors associated with the likelihood of receiving IV systemic therapy or radiation therapy

Variable	IV systemic therapy (%)	Likelihood of receiving IV systemic therapy		Radiation therapy (%)	Likelihood of receiving radiation therapy	
		OR (95%CI)	P-value		OR (95%CI)	P-value
<b>Sex</b>						
Female (n=5,778) <sup>1</sup>	31%	Ref	<0.001	40%	Ref	<0.001
Male (n=9,538)	34%	1.24 (1.16-1.34)		43%	1.17 (1.09-1.26)	
<b>Age group</b>			<0.001			<0.001
65 - 69 (n=3,719)	53%	Ref		55%	Ref	
70 - 74 (n=3,751)	42%	0.67 (0.61-0.73)		47%	0.75 (0.68-0.82)	
75 - 79 (n=3,258)	31%	0.40 (0.36-0.44)		42%	0.59 (0.54-0.65)	
80 - 84 (n=2,623)	16%	0.16 (0.14-0.18)		32%	0.39 (0.35-0.43)	
85+ (n=1,965)	5%	0.04 (0.03-0.06)		19%	0.18 (0.16-0.21)	
<b>Indigenous status</b>			0.15			0.07
Other than Indigenous <sup>2</sup> (n=14,963)	33%	Ref		42%	Ref	
Indigenous (n=353)	32%	0.84 (0.66-1.07)		37%	0.81 (0.65-1.02)	
<b>Socioeconomic status</b>			0.0004			0.29
Affluent (n=1,603)	35%	Ref		44%	Ref	
Middle (n=9,706)	33%	0.88 (0.77-0.99)		42%	0.92 (0.82-1.03)	
Disadvantaged (n=4,007)	31%	0.76 (0.66-0.88)		40%	0.91 (0.80-1.03)	
<b>Residential location</b>			<0.001			<0.001
Major city (n=9,626)	34%	Ref		44%	Ref	
Inner regional (n=3,685)	35%	0.99 (0.90-1.08)		40%	0.77 (0.71-0.84)	
Outer regional (n=1,601)	23%	0.61 (0.53-0.69)		36%	0.64 (0.57-0.72)	
Remote/very remote (n=4,04)	23%	0.47 (0.37-0.60)		30%	0.49 (0.39-0.61)	
<b>Comorbidities</b>			<0.001			<0.001
0-1 (n=11,134)	35%	Ref		43%	Ref	
2+ (n=4,182)	28%	0.76 (0.70-0.82)		37%	0.81 (0.75-0.87)	
<b>Period of diagnosis</b>			<0.001			0.12
2007 - 2011 (n=6,921)	30%	Ref		41%	Ref	
2012 - 2016 (n=8,395)	35%	1.31 (1.22-1.41)		42%	1.05 (0.99-1.13)	

Notes: <sup>1</sup> Number of patients diagnosed with lung cancer from 2007-2016; <sup>2</sup> Other than Indigenous includes Non-Indigenous and not stated

### Conclusions

Nearly two-thirds of lung cancer patients aged 65+ years received some form of treatment. We observed a significant increase in rates of treatment over time, particularly in surgical resections and the use of IV systemic therapy. The reasons why patients living in rural and disadvantaged areas have significantly lower treatment rates require further investigation.