Hospital-based multidisciplinary lung cancer care in Australia: a survey of the landscape in 2021

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ABSTRACT
Introduction Lung cancer is the leading cause of cancer death in Australia and has the highest cancer burden. Numerous reports describe variations in lung cancer care and outcomes across Australia. There are no data assessing compliance with treatment guidelines and little is known about lung cancer multidisciplinary team (MDT) infrastructure around Australia.

Methods Clinicians from institutions treating lung cancer were invited to complete an online survey regarding the local infrastructure for lung cancer care and contemporary issues affecting lung cancer.

Results Responses from 79 separate institutions were obtained representing 72% of all known institutions treating lung cancer in Australia. Most (93.6%) held at least one MDT meeting although recommended core membership was only achieved for 42/73 (57.5%) sites. There was no thoracic surgery representation in 17/73 (23.3%) of MDTs and surgery was less represented in regional and low case volume centres. Specialist nurses were present in just 37/79 (46.8%) of all sites. Access to diagnostic and treatment facilities was limited for some institutions. IT infrastructure was variable and most sites (69%) do not perform regular audits against guidelines. The COVID-19 pandemic has driven most sites to incorporate virtual MDT meetings, with variable impact around the country. Clinician support for a national data-driven approach to improving lung cancer care was unanimous.

Discussion This survey demonstrates variations in infrastructure support, provision and membership of lung cancer MDTs, in particular thoracic surgery and specialist lung cancer nurses. This heterogeneity may contribute to some of the well-documented variations in lung cancer outcomes in Australia.

INTRODUCTION
Lung cancer is the fifth most commonly diagnosed cancer and the leading cause of cancer death in Australia.1 There were more than 13,200 cases diagnosed in Australia in 2020. It has a 19% 5-year survival rate2 as most patients present with incurable disease where 42% of cases are diagnosed at stage 4 (most advanced) and 29% of cases are not staged at all.2 Lung cancer accounts for 9.1% of all cancers but is responsible for 18% of deaths from all cancers in Australia and 18.6% of the cancer burden.1

Lung cancer diagnosis and care is becoming increasingly complex, with a greater array of diagnostics and therapies than ever before. There are clear, evidence-based national guidelines which outline the expected standards of care and infrastructure available for patients with lung cancer, through the Optimal Care Pathway for People with Lung Cancer (OCP) and the Lung Cancer Framework Principle of Best Practice.3 4 These guidelines recommend timely access to critical interventions such as positron emission tomography-CT (PET-CT), endobronchial ultrasound (EBUS), thoracic surgeons with expertise in lung cancer and consideration for clinical trials. Due to the complexities of lung cancer management, the guidelines also recommend that every patient be discussed by a lung cancer multidisciplinary team (MDT), regardless of the patient’s geographic location. The OCP specifies MDT membership including a ‘core’ team, who attend all meetings either in person or remotely, and an extended team.3

Key messages
► The adequacy, resources and infrastructure for treating lung cancer in Australia is not known and may be associated with variations in patient outcomes.
► This national survey highlights widespread deficiencies in staffing at multidisciplinary team (MDT) meetings and access to critical diagnostics and treatment modalities; just 47% of all institutions have a specialist nurse and 23% have no access to thoracic surgery at MDT.
► This service heterogeneity may contribute to some of the well-documented variations in lung cancer outcome in Australia, highlighting urgent need to address these shortfalls.


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Diagnostic and treatment delays worsen outcomes for lung cancer\textsuperscript{5} and outcomes vary across the country.\textsuperscript{5} Australian and international data indicate wide variances in care between centres even in standard, established therapies.\textsuperscript{6} Data from two states in Australia (Victoria and New South Wales) consistently demonstrate similar findings: variations in care and outcomes between Indigenous and non-Indigenous Australians, rural and metropolitan patients, public and private centres and those of differing socioeconomic status.\textsuperscript{7,8} At least some of these variations result from differing infrastructure to investigate and treat lung cancer across Australia’s hospitals.

Identifying gaps in care and ways to improve service delivery requires data to drive changes in practice. There are no Australian data assessing compliance with the guidelines, nor national data on the quality of care or outcomes for lung cancer at the patient level. At the most basic level, understanding the ‘who’ and ‘where’ of lung cancer treatment provision is important, yet little is currently known about the infrastructure of lung cancer care around Australia. This study, therefore, aimed to identify institutions treating patients with lung cancer in Australia, and survey infrastructure support and multidisciplinary care.

\section*{METHODS}

MDT lead clinicians at institutions from all states and territories across Australia were invited to complete a voluntary online Qualtrics questionnaire survey. We identified institutions and MDT leads via multiple sources including the Lung Foundation Australia (LFA) website,\textsuperscript{9} national professional bodies, lung cancer clinical and research interest groups and personal networks. The survey was open from 22 January 2021 to 7 July 2021.

Only one response per institution was required to avoid duplication. Variables included: institution characteristics (public/private; metropolitan/regional); estimated numbers of new lung cancers seen annually; MDT frequency, MDT team composition (see table 1), meeting set-up (face-to-face; virtual); diagnostic and treatment services on-site, information technology (IT) support for MDT meetings; staff and infrastructure support; impact of the COVID-19 pandemic; attitudes towards a potential Australian lung cancer clinical quality registry (CQR). Responses to statement questions were structured using 0–10 Likert scales. Case volume was defined as low (≤59 new cases annually) or high (≥100 new cases annually). A copy of the survey is provided as an online supplemental file.

\section*{Patient and public involvement}

Consumer representation influenced the concept and planning for this project as part of a wider effort towards identifying and alleviating variations in outcomes for lung cancer in Australia.

\section*{RESULTS}

The LFA MDT database identified 86 institutions with a lung cancer MDT. The survey received a total of 96 responses, 13 were excluded due to incomplete survey data (in all cases respondents restarted and completed a separate response) and 4 were removed for duplication (multiple respondents from same organisation). This left a total of 79 valid responses from separate institutions across all Australian states and territories. This included 23 institutions that were not included on the LFA database. The possible denominator for lung cancer MDTs in Australia could therefore reach 109 centres, suggesting a survey response rate of at least 72.4\% for Australian lung cancer MDTs.

A summary of the data is presented in table 1. The denominator for responses varied as not all questions were answered by every respondent. Fifty-five institutions identified themselves as metropolitan and 24 regional with state breakdown as follows: Victoria 26, New South Wales 23, Queensland 13, Western Australia 10, South
Australia 2, Tasmania 2, Northern Territory 2 and Australian Capital Territory 1. Every public tertiary hospital in Australia responded. More than two thirds of sites (70.2%) estimated an annual new caseload of ≥100.

Five (6.3%) institutions reported no MDT meeting, one institution did not comment on MDT status. Of these, 4/5 were public, 3/5 regional, 1/5 reported a new annual caseload of 100–199 and 4/5 reported a new annual caseload <50. Most MDTs met weekly, but around half of regional and low volume centres met fortnightly.

**Personnel and MDT membership**

Lung cancer nurse specialists (LCNS) were employed in 37/79 (46.8%) sites, with a slightly lower proportion employed in regional areas. For those institutions with an LCNS, the median full-time equivalent (FTE) was 0.8 (range 0.2–1.5). The total FTE for LCNS reported for all institutions across Australia was 37 (with 27 FTE within metropolitan sites). Just over a quarter (27.3%) of low case volume sites (<99/year) had less representation from thoracic surgery, nuclear medicine, specialist nurses and administrative support (table 3 and figure 1B).

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Summary of responses from each Australian institution identified as managing lung cancer patients about the functioning of the local lung cancer multidisciplinary team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total n (%)</td>
<td>Metropolitan n (%)</td>
</tr>
<tr>
<td>Total no institutions*</td>
<td>79</td>
</tr>
<tr>
<td>Public</td>
<td>65 (82.3)</td>
</tr>
<tr>
<td>Private</td>
<td>14 (17.7)</td>
</tr>
<tr>
<td>Has regular MDT</td>
<td>73/78 (93.6)</td>
</tr>
<tr>
<td>No regular MDT</td>
<td>5/78</td>
</tr>
<tr>
<td>Estimate annual lung cancer cases for all centres</td>
<td></td>
</tr>
<tr>
<td>0–49</td>
<td>8/78 (10.3)</td>
</tr>
<tr>
<td>50–99</td>
<td>15/78 (19.2)</td>
</tr>
<tr>
<td>100–199</td>
<td>27/78 (34.6)</td>
</tr>
<tr>
<td>&gt;200</td>
<td>28/78 (35.9)</td>
</tr>
<tr>
<td>Specialist lung cancer nurse for all centres</td>
<td>37/79 (46.8)</td>
</tr>
<tr>
<td>If yes FTE (median)</td>
<td>0.8</td>
</tr>
<tr>
<td>Frequency of MDT</td>
<td></td>
</tr>
<tr>
<td>Weekly</td>
<td>49/71 (69.0)</td>
</tr>
<tr>
<td>Fortnightly</td>
<td>22/71 (31.0)</td>
</tr>
<tr>
<td>Core MDT members per OCP guidelines</td>
<td>42/73 (57.5)</td>
</tr>
<tr>
<td>QA against National guidelines</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>15/71 (21.1)</td>
</tr>
<tr>
<td>Very infrequent</td>
<td>11/71 (15.5)</td>
</tr>
<tr>
<td>Yes, ad hoc</td>
<td>23/71 (32.4)</td>
</tr>
<tr>
<td>Yes, regularly</td>
<td>22/71 (31.0)</td>
</tr>
</tbody>
</table>

All data presented as n=N (%) unless otherwise stated.

*The denominator for responses varied as not all questions were answered by every respondent.

FTE, (fraction of) full time equivalent; MDT, multidisciplinary team; OCP, Optimal Care Pathway; QA, quality assurance.

Figure 1 Per cent of lung cancer MDT attendance representation from subspecialty discipline in Australia, stratified by (A) metropolitan and regional institutions, and (B) high and low volume annual case numbers. MDT, multidisciplinary team.
Clinical infrastructure

All 73 MDTs provided information on availability of diagnostic and treatment services. Medical oncology and palliative care services were available on all sites, with respiratory not available at one institution. PET-CT was available on site for 56/73 (76.7%) and EBUS bronchoscopy for 58/73 (79.5%). EBUS was less available in regional areas (metropolitan vs regional 46/53 vs 12/20, \( \chi^2 \) statistic 6.38, p=0.012). Thoracic surgery was on site for 56/73 (76.7%) institutions, external beam radiotherapy 56/73 (76.7%) and stereotactic ablative radiotherapy 48/73 (65.8%). One regional site commented on an ‘ad hoc service with minimal resources’ and a private site reported ‘fragmented care with no nurse’.

IT support

Three MDTs reported no routine data collection and 6/73 (8.2%) reported no routine IT support. For those MDTs which routinely collected data, 37/73 (46.8%) used commercial third-party software and 27/73 (34.1%) used standalone databases (eg, Microsoft Excel or Access). Over one-third of MDTs (30/73, 41.1%) reported no dedicated administrative support and data entry was performed by clinicians (consultants, fellows and registrars) in 53/73 MDTs (72.6%), or by an LCNS in 12/73 MDTs (16.4%).

Multi-institution MDTs

Collaboration across different institutions was evident: 9/73 sites commented on combined MDTs with larger institutions, 12/73 sites relying on other institutions for PET-CT and EBUS services and eight sites referring patients off site for radiation oncology and/or thoracic surgery. Further, 37/73 institutions reported having an LCNS on site, although 43/73 MDTs had LCNS representation.

Impact from the COVID-19 pandemic

There was a bimodal distribution of reported impact from the COVID-19 pandemic on lung cancer care, with a mean of 3 (range 0–5) across the 73 sites. The highest impact was reported by 39.1% of sites, and the highest impact was reported by 23.5% of sites. The impact was most evident in case presentations and service delivery. Twelve institutions commented on delays in case presentation and two that they had noted a stage shift to more advanced cases.

Table 3 Summary of responses from each Australian institution identified as managing lung cancer patients, stratified by high (≥100) or low (≤99) annual case volume

<table>
<thead>
<tr>
<th>Annual cases n/N (%)</th>
<th>Low (≤99)</th>
<th>High (≥100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no institutions†</td>
<td>23 (55)</td>
<td>55 (99)</td>
</tr>
<tr>
<td>Public</td>
<td>15 (65.2)</td>
<td>49 (89.1)</td>
</tr>
<tr>
<td>Private</td>
<td>8 (34.8)*</td>
<td>6 (10.9)</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>12 (55)</td>
<td>42 (76.4)</td>
</tr>
<tr>
<td>Regional</td>
<td>11 (47.8)</td>
<td>13 (23.6)</td>
</tr>
<tr>
<td>Has regular MDT</td>
<td>19 (82.6)</td>
<td>54 (98.2)</td>
</tr>
<tr>
<td>No regular MDT</td>
<td>4 (17.4)</td>
<td>15 (23.8)</td>
</tr>
<tr>
<td>Weekly</td>
<td>7 (38.9)</td>
<td>42 (76.4)</td>
</tr>
<tr>
<td>Fortnightly</td>
<td>11 (47.8)*</td>
<td>11 (20.0)</td>
</tr>
<tr>
<td>EBUS on site</td>
<td>8 (34.8)*</td>
<td>50 (90.9)</td>
</tr>
<tr>
<td>Medical oncology on site</td>
<td>20 (87.0)</td>
<td>53 (96.4)</td>
</tr>
<tr>
<td>Radiation oncology on site</td>
<td>14 (60.9)</td>
<td>42 (76.4)</td>
</tr>
<tr>
<td>Specialist lung cancer nurse on site</td>
<td>6 (22.7)*</td>
<td>33 (62.3)</td>
</tr>
<tr>
<td>If yes FTE (median)</td>
<td>0.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Core MDT members per OCP guidelines</td>
<td>8/21 (38.1)</td>
<td>34/53 (64.2)</td>
</tr>
<tr>
<td>Full recommended MDT attendance per OCP guidelines</td>
<td>0/21</td>
<td>0/53</td>
</tr>
<tr>
<td>QA against National guidelines</td>
<td>None</td>
<td>7/17 (41.2)</td>
</tr>
<tr>
<td>Very infrequent</td>
<td>3 (17.6)</td>
<td>12 (22.6)</td>
</tr>
<tr>
<td>Yes, ad hoc</td>
<td>4 (23.5)</td>
<td>9 (17.0)</td>
</tr>
<tr>
<td>Yes, regularly</td>
<td>3 (17.6)</td>
<td>23 (43.3)</td>
</tr>
</tbody>
</table>

All data presented as n (%).
*P<0.05, compared with high volume.
†The denominator for responses varied as not all questions were answered by every respondent.
EBUS, endobronchial ultrasound; FTE, (fraction of) full time equivalent; MDT, multidisciplinary team; OCP, Optimal Care Pathway; QA, quality assurance.
disease at presentation; one site noted an increase in referrals. Fourteen sites noted impact on service delivery with delays in access to diagnostic investigations and treatment. One institution commented that ‘patients did not attend surgery’ and one Victorian institution reported, ‘significant impact (on services) during the second wave’.

Attitudes towards a national lung cancer CQR

Regarding a national lung cancer CQR, 75 responses were received; there was strong support for a national registry (median score of 10 out of 10). Respondents indicated they felt the need for a national effort to improve lung cancer care is urgent (median score 9 out of 10).

DISCUSSION

This is the first Australia-wide survey of lung cancer services and care, representing up to 72% of all institutions known to treat lung cancer in Australia across all states and territories. Most responding sites were public and 70% reported seeing more than 100 cases per year. The results indicate important variations in the infrastructure for investigating and managing lung cancer.

No institutions had full recommended MDT membership, only 57% fulfilled recommended core membership and five institutions did not host a lung cancer MDT. Commonly missing groups included LCNSs (53.2%), MDT co-ordinators (42.5%), nuclear medicine (35.6%) and thoracic surgery (23.3%). Lung cancer MDT discussion improves a range of outcomes including staging, clinical decision making, better utilisation and uptake of treatments and survival and at least 50 prostate cancer nurses in Australia.18 19

Australia are well recognised in breast and prostate cancer with an estimated 400 breast cancer nurses and at least 50 prostate cancer nurses in Australia.18 19 Federal commitment to fund five FTE LCNS in the 2021 Budget is welcome, but considering the burden of disease from lung cancer in Australia, the need for a significant uplift in the number of specialist lung cancer nurses remains.

Nearly one-quarter of MDTs (23%) had no thoracic surgery representation despite the direct influence of surgical resection rates on survival in lung cancer.20 21 The initial National Lung Cancer Audit reports for England and Wales demonstrated considerable variation in access to thoracic surgery, with subsequent changes leading to notable improvements resection rates.22

Site location was associated with infrastructure variations. Collaboration across sites appears to address some gaps for MDTs without on-site access to key investigations and treatments, however, regional and low volume centres demonstrated likely clinically important differences in access to EBUS bronchoscopy and thoracic surgery. Low volume sites reported less representation at MDT from thoracic surgery, nuclear medicine, specialist nurses and administrative support, and less frequent MDT meetings. This may worsen outcomes including survival, particularly for early stage lung cancer.24 Time delays may also affect regional patients due to travel required for investigations and/or curative treatment.

This survey identified 23 institutions not documented in the LFA database. Of these, 70% were public hospitals, 48% low volume centres (0–49 cases a year) and 10 regional centres. This likely, at least in part, represents expanding health services within local health networks across different jurisdictions. In turn, this reflects the dynamic landscape of lung cancer care, as new MDTs are established and grow to serve changing populations. Although intermittent snapshots of MDT care are of interest and paint a broad picture, they are unlikely to drive better patient outcomes in themselves. Rapid advances in lung cancer therapies, superimposed on continuously evolving demographics, mean that a ‘real-time’ national CQR should be the goal. Increased healthcare access for patients with lung cancer is undoubtedly important, and the establishment of new MDTs is welcome. At the same time, healthcare resource planning should be cognisant of research from other areas of medicine (including lung cancer surgery) demonstrating that high case volume is associated with better outcomes across a wide range of procedures and conditions.25 26

Although UK data demonstrates a correlation between quality of lung cancer services and 1-year survival rates,27 evidence to determine optimal lung cancer MDT case volumes is lacking. A recent consensus statement from Spain describes quality indicator requirements for a lung cancer MDT but does not make recommendations on case volume.28 This supports the urgent need to assess and ensure the quality of lung cancer services is adequate across all centres in Australia, to be able to track MDT
delivery and outcomes over time and to support newly established MDTs.

The COVID-19 pandemic has driven innovations in models of care. Most centres had transitioned to either hybrid or fully virtual meetings, with only 12 sites continuing face-to-face meetings, some citing benefit and some drawback(s) with these approaches. This survey was not designed to investigate the impact in detail, although the free-text comments supported other recent reports that have demonstrated a decline in diagnostic procedures performed for lung cancer along with lower rates of diagnosis, reduction in clinical trial participation and increased 30-day mortality.14,29

It is perhaps surprising that many centres do not practice regular quality assurance (QA) against accepted standards of care. Fewer than one-third of MDTs reported a regular QA process. This survey identifies a number of areas which could be targeted to improve adherence to national and international standards of care for lung cancer.2 For example, dedicated MDT coordinators and commercial databases with IT support would likely improve data integrity. Clinicians clearly recognise the limitations in the data systems at present, and the value that a high-quality, uniform and linked data platform could provide.30 In this survey, the support for a national approach to auditing lung cancer care in Australia was strong, unanimous and urgent.

This survey has important limitations to consider. To reduce the volume of free text, the survey was designed with specific, focused questions, restricting the flexibility and depth of responses. To avoid duplication, the responses were not anonymised, which may have introduced responder bias. The survey did not specifically reference a guideline as a gold standard (but listed the full possible extended MDT membership). The second edition of the OCP for people with lung cancer was published June 202131 and this survey closed on 7 July 2021, suggesting there will have been little confusion with the updated guidelines. Further, the suggested core MDT membership has not changed in the latest version.

The strength of this survey is its reach - likely representing over at least 70% of all institutions treating lung cancer in Australia. It represents an important first step towards improving lung cancer care. Multidisciplinary models of care overcome barriers to treatment, improve adherence to guidelines and are more likely to improve the quality of care for patients.31 The data from this survey provide a basis for review of Australian lung cancer services to improve collaboration across sites, reduce delays and improve access to timely investigation and treatment. Virtual platforms could improve MDT attendance and fill gaps in subspecialties across sites. The survey has quantified two major gaps in expertise—access to thoracic surgery support at MDTs and the lack of LCNS at almost half of all sites—both require urgent attention.

This survey of front-line clinicians who provide lung cancer care in Australia demonstrates variations in infrastructure support, provision and membership of lung cancer MDTs. This service heterogeneity may contribute to some of the well-documented variations in lung cancer outcome in Australia. Our survey respondents identified critical access issues to thoracic surgery and specialist lung cancer nurses and, for the first time, strong and unanimous support for a national CQR.

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Provenance and peer review Not commissioned; externally peer reviewed.

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REFERENCES
Introduction

Q1 We would be grateful if you could spend less than 5 minutes of your time to complete this survey which is designed to provide a snapshot of the current status of lung cancer care and MDTs around Australia.

- These data will help inform vital services planning for lung cancer care and will directly inform ongoing discussions with Government about lung cancer care across Australia.
- We are only asking for one response from each institution; we suggest it is the lead clinician for the lung cancer MDT.
- Participation is voluntary. You have the right to withdraw from the study at any point without penalty. Apart from giving up your time, we do not expect that there will be any risks or inconveniences associated with taking part in this study.
- Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number HRE______). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email hrec@curtin.edu.au.
- The name of your institution is needed to avoid duplicates. We will not use the name of your institution in any data summaries or reports. Data will be held at Curtin University and an anonymised summary report passed to Lung Foundation Australia, and other interested parties. Thank you for your time.

Investigator team:

Chief Investigator: 
Co-investigator: 

☐ By checking this box, you consent to proceeding with this survey and agree to have the data you provide stored and analysed as described above.

End of Block: Intro
Q2
**Regarding your place of work where you care for lung cancer patients:**
Please provide the name of your institution (essential to avoid duplicates)
________________________________________________________________

Q3 Please confirm if your institution where you care for lung cancer patients is public or private.

- Public (1)
- Private (2)

Q4 In which State or Territory is your institution based?

- ACT (1)
- NSW (2)
- NT (3)
- QLD (4)
- SA (5)
- TAS (6)
- VIC (7)
- WA (8)
Q5 Where is your institution located?

- Rural (1)
- Regional (2)
- Metro (3)

End of Block: Regarding your place of work where you care for lung cancer patients

Start of Block: More detail about your lung cancer service

Q6 Approximately how many new lung cancer cases does your institution see a year?

- 0-49 (1)
- 50-99 (2)
- 100-199 (3)
- >200 (4)

Q7 More detail about your lung cancer services:

Does your institution have a regular lung cancer MDT?

- Yes (1)
- No (2)

Display This Question:
If More detail about your lung cancer services: Does your institution have a regular lung cancer MDT? = Yes
Q8 How often is your MDT?

- Weekly (1)
- Every 2 weeks (2)
- Monthly (3)
- Other (4) ________________________________________________

Display This Question:
If More detail about your lung cancer services: Does your institution have a regular lung cancer MDT? = Yes

Q9 What IT / software program does your MDT use? (Select all that apply)

- None (1)
- Excel (2)
- Access (3)
- RedCap (4)
- Own database (5)
- Commercial program (please name) (6)

Display This Question:
If More detail about your lung cancer services: Does your institution have a regular lung cancer MDT? = Yes
Q24 Who performs data entry of clinical information during / from the MDT (tick all that apply)

- Clinicians - Consultant, Fellow, Registrars (1)
- Nurse specialist (2)
- MDT coordinator / admin support (3)
- Other (4) ________________________________________________

Display This Question:
If More detail about your lung cancer services: Does your institution have a regular lung cancer MDT? = Yes

Q10 Please provide additional comments about the IT support for your MDT / links to electronic patient records.

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

Display This Question:
If More detail about your lung cancer services: Does your institution have a regular lung cancer MDT? = Yes

Q22 Does your MDT perform a regular audit of practice against local / national guidelines?

- Yes, regularly (1)
- Yes, ad hoc (2)
- Very infrequently (3)
- No (4)
Q23 Does your MDT perform regular quality control of data entry?

- Yes, regularly (1)
- Yes, ad hoc (2)
- Very infrequently (3)
- No (4)

Q25 Does your MDT act as a means for recruitment to clinical trials

- Yes - frequently (1)
- Yes - ad hoc, infrequent (2)
- No - no formal or regular process for this (3)
- Other comment (4) ____________________________________________

End of Block: More detail about your lung cancer service

Start of Block: Your lung cancer team and resources

Q11

Your lung cancer team and resources:
Does your institution have a dedicated specialist lung cancer nurse?

- No (1)
- Yes - please state full time equivalent / number of sessions a week (2)
Q12 Who regularly attends your lung cancer MDT? (tick all that apply)

- Respiratory physician (1)
- Medical oncology (2)
- Radiation oncology (3)
- Radiology (4)
- Nuclear medicine (5)
- Histopathology (6)
- Lung cancer specialist nurse (7)
- Palliative care consultant (8)
- Palliative care nurse (9)
- Thoracic surgeon (10)
- MDT admin / coordinator (11)
- Trainee doctors (12)
- Clinical psychologist (13)
- Clinical trials coordinator (14)
- Dietician (15)
- Pharmacist (16)
- Physiotherapist (17)
- Social Worker (18)
Q13 What services are available on site in your institution for lung cancer patients? (Tick all that apply.)

☐ EBUS bronchoscopy (1)
☐ Thoracic surgery (2)
☐ Medical oncology (3)
☐ Radiation oncology - XBRT (4)
☐ Radiation oncology - SABR (7)
☐ Palliative care (8)
☐ PET-CT (9)

Q14 Do you have any other comments about lung cancer services in your institution?

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End of Block: Your lung cancer team and resources

Start of Block: Block 5

Q20
National lung cancer clinical quality registry

Discussions are on-going with the Federal Government regarding the establishment of a national lung cancer registry.

This would be designed to provide national data on lung cancer care and to use such data to drive changes in clinical quality, where needed.
On a scale from 0-10, how supportive are you of such a proposed national lung cancer clinical quality registry?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)
Q21
Please tell us how urgent a need you think there is for a concerted national approach to improving lung cancer care and services in Australia.

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

End of Block: Block 5

Start of Block: Lastly - impact of COVID-19
Q15 Lastly - impact of COVID-19:

Please advise how COVID-19 has impacted the lung cancer patient care in your institution?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

Q16 Please comment on the above if appropriate

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Q17 Please advise how COVID-19 has impacted on the running of your MDT.

☐ None - no impact (1)

☐ Minimal impact or change (2)

☐ Meeting now entirely online (Teams / Zoom etc.) (3)

☐ Meeting now hybrid (face to face and online) (4)

☐ Other comments / innovations / changes: (5)

__________________________________________________________________________

☐ Moderate impact / changes (6)

__________________________________________________________________________

☐ Severe impact / changes (7)

__________________________________________________________________________
Q18 Thank you for your contribution to helping us inform vital services planning for lung cancer care and ongoing discussions with Government about lung cancer services across Australia.

We would like to contact you regarding the results of this survey and of future work towards more harmonised lung cancer services.

Please provide your email address if you are willing to be contacted.