SMICS

Southern Melbourne
Integrated Cancer Service

Peninsula Health, Lung Referral Pathways

Project Report

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Introduction

Cancer Australia highlights that lung cancer is a leading cause of mortality in Australia, with approximately 8,100 deaths from the disease in 2010. Furthermore it reveals that by the time many patients are diagnosed, it is too late for curative treatment[1]. It is well recognised that the large number of health professionals involved in cancer care both within health services and across the different sectors, increase the opportunity for delays along the patient journey[2]. The National Service Improvement Framework for cancer supports these views reinforcing the critical need to develop systems to improve the coordination of cancer care delivery[3].

Such evidence emphasises the need to map referral pathways to better determine whether care is being delivered in a timely and coordinated manner. While the lung tumour steam, Patient Management Framework (PMF) outlines seven critical steps in the patient journey for the delivery of the optimal care, further work is required to clearly articulate current cancer referral pathways[4]. Hence in partnership with Peninsula Health, SMICS agreed to map the lung cancer service referral pathways across the complete patient journey including the initial referral, diagnosis, acute and ongoing medical treatment, specialist nurse needs, supportive care needs, follow up care and relevant palliative care needs for each patient.

Purpose

- to document referral pathways currently used by those affected by lung cancer
- to identify opportunities for improvements in current referral practices
- to inform the development of future guidelines and alternate models of care that may facilitate more effective integration and coordination of care across the lung cancer care pathway.

Methodology

A project plan and medical record audit survey tool using SurveyMonkey, were developed in August 2010.

The patient cohort chosen for the project were those patients diagnosed with lung cancer during the calendar years of 2009 to 2010 who had completed or almost completed their various treatment modalities by August 2011. The aim of auditing this group of patients was to identify recent referral practices across the lung tumour stream at Peninsula Health (PH).

To optimise data collection, the SMICS cancer data and information analyst identified patients with a diagnosis of lung cancer within the specified timeframe (from the recorded multidisciplinary team information at Frankston Hospital) and contacted the Health Information Manager at PH to arrange for the identified records to be available for audit on agreed dates. Additionally, permission was sought from two of the respiratory specialists at PH to collect data from their private practices on the selected cohort patient's date of referral from GP and date of first specialist appointment. The Victorian Admitted Episode Data and local iPM data were further analysed to determine the number of treatment interventions and the acute length of stay.

The mixture of public to private referral of lung cancer patients at Peninsula Health made pathway identification more challenging. Consequently only 25 of the 48 medical records reviewed between the 25 August and 7 September 2011 were eligible for audit. Data collected was entered directly into the survey tool. A survey number was assigned to each medical record to ensure all information collected remained non-identifiable. Survey responses were numbered 1-25. A separate Excel spreadsheet was developed to enable identification of the medical record should clarification be required.

Mapping Report

Of the 25 medical records audited, 96% of patients (n=24) received the majority of their treatment at the Southern Melbourne Integrated Cancer Service. The remaining 4% (n=1) received the majority of their treatment at the Western Central Melbourne Integrated Cancer Service.

A small amount of demographic information was collected including the age and gender of each patient, the patient status, that is whether they were alive or deceased at the time of audit and the residential postcode.

Age and Gender

The age range of the patients included in the audit was 57-88, with an average age of 71 years. Of the 25 medical records audited, 60% (n=15) of the patients were male gender and 40% were female (n=10).

Patient Status

Of the 25 patients who had their medical records audited, 64% (n=16) were deceased and 36% were alive at the time of the audit.

Graph 1 shows the number of patients alive at 1 month, 3 month, 6 month and 12 month intervals post diagnosis. In summary, 92% (n=23) of the patient cohort (n=25) were alive after 1 month, 76% (n=19) after 3 months, 44 % (n=11) after 6 months, 40% (n=10) after 1 year and 36% (n=9) at the time of audit.

This one-year survival rate of 40% correlates closely with the 38% one-year survival rate for lung cancer patients, published by the Cancer Council Victoria[5].
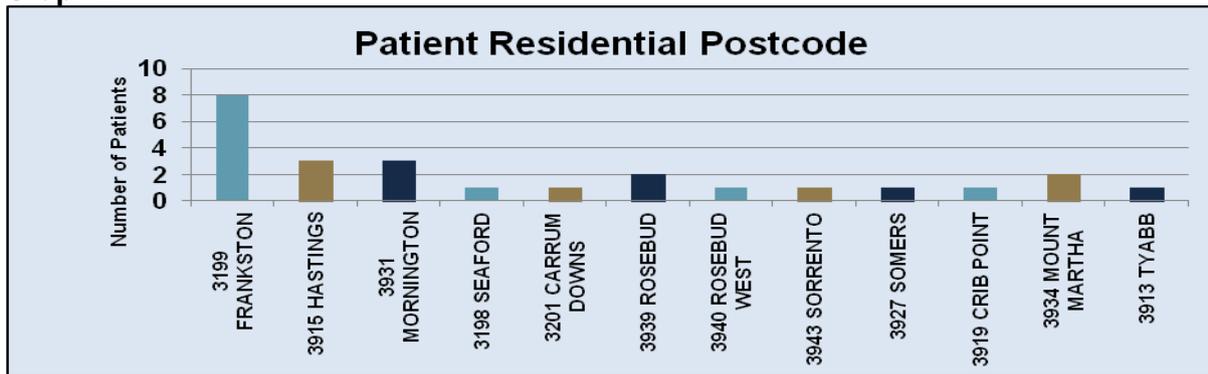
Graph 1
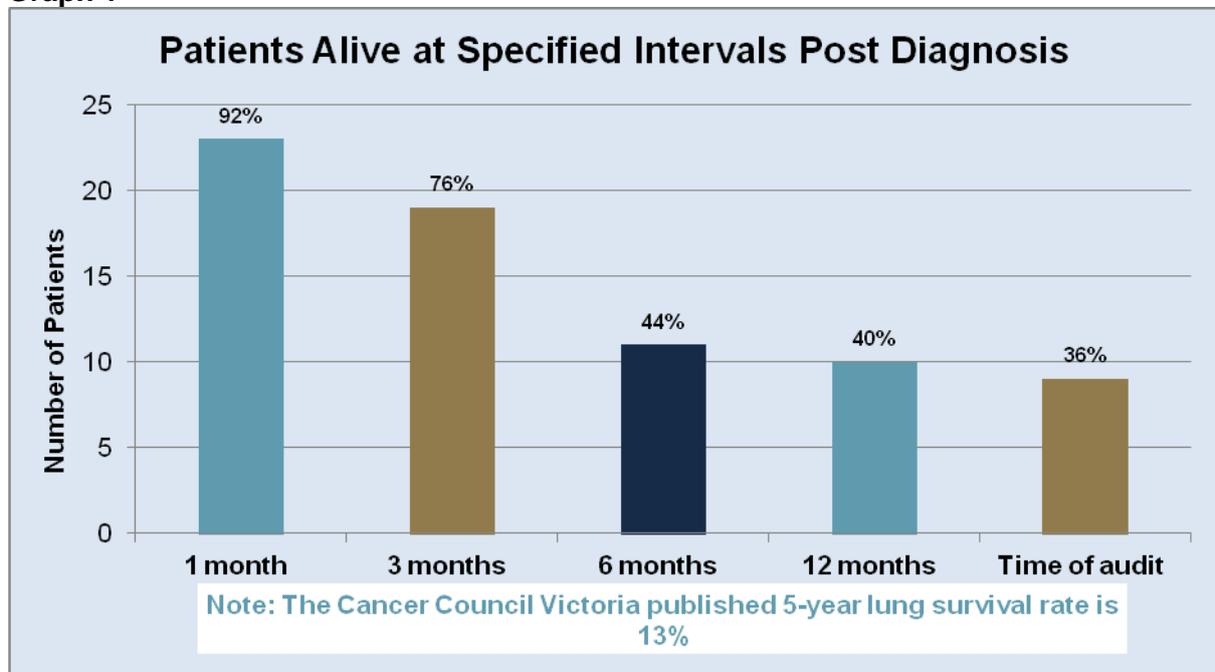
Patient Residential Postcode

The majority of patients audited, resided in the Frankston (n=8), Hastings (n=3) and Mornington (n=3) catchment areas. Graph 2 shows the residential postcode of the 25 patients who were included in the medical record audit.
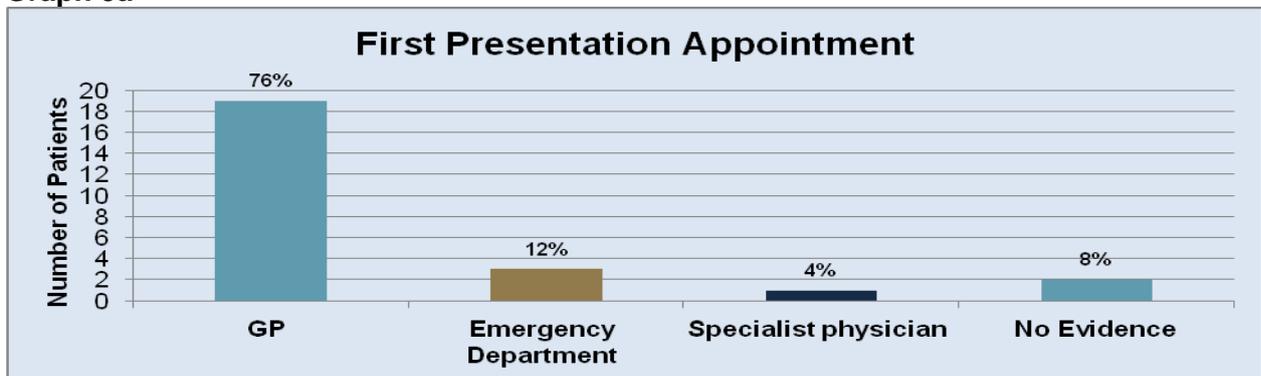
Graph 2

First Clinician Appointment

Graph 3a shows 76% (n=19) of the selected patient cohort (n=25), had their first clinical appointment with a general practitioner, 12% (n=3) with an emergency department medical officer and 4% (n=1) with a thoracic physician in his private rooms. In 8% (n=2) of cases there was no documented evidence of the patient's first presentation appointment.
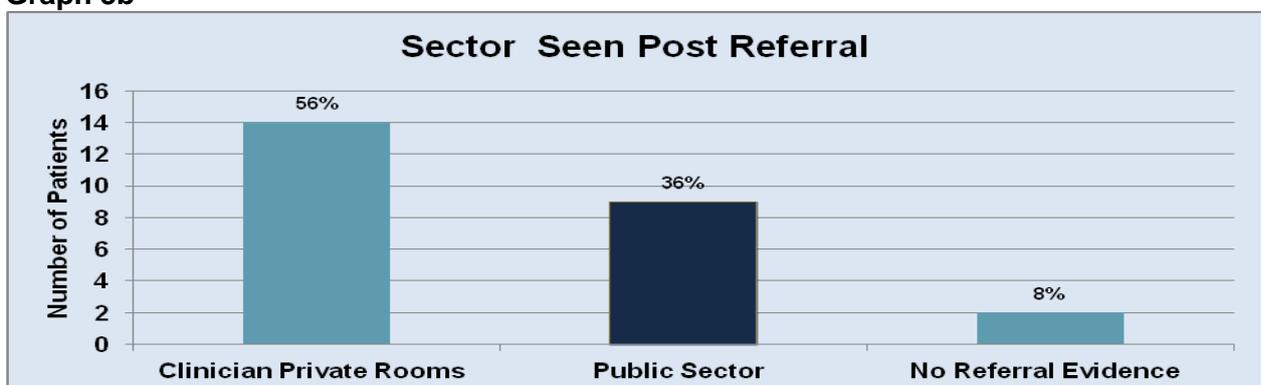
Graph 3a

Sector Seen Post Referral

Graph 3b shows that of the 56% (n=14) of the patient cohort (n=25) post initial referral, were seen in a clinicians private rooms, 36% (n=9) were seen in the public sector and in 8% of cases there was no documented evidence of the patients initial referral.
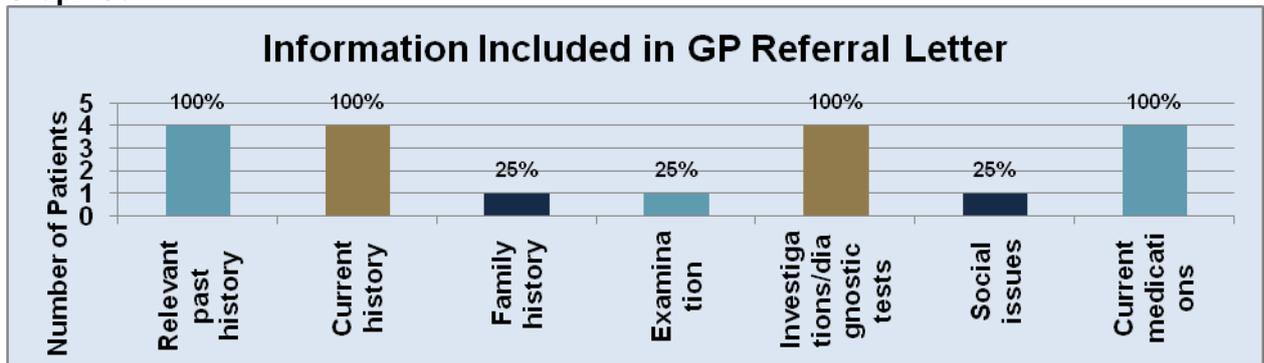
Graph 3b

Referral Letter

Only 16% (n=4) of the medical records audited, had a referral letter filed. Graph 3c shows 100% of this patient group (n=4) had information on relevant past history, current history, diagnostic tests and current medications included in their referral letter. An additional 25% (n=1) of patients had details of their clinical examination, family and social history included.
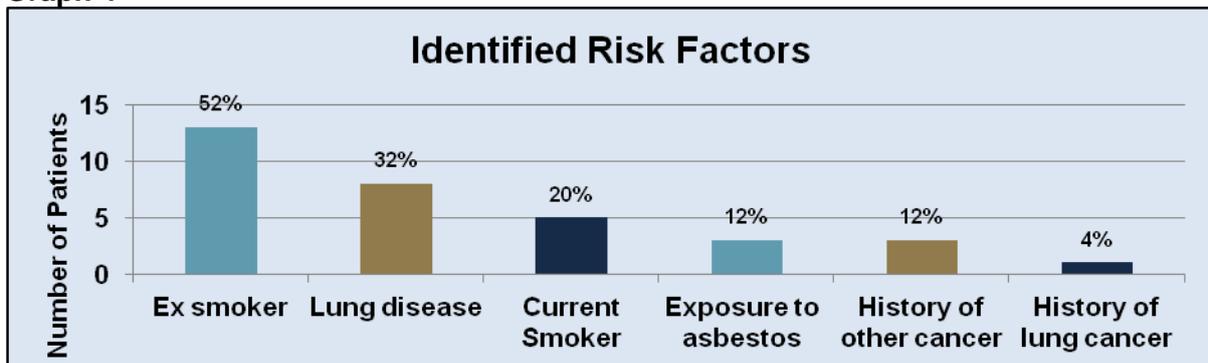
Graph 3c

Information Included in GP Referral Letter

Number of Patients

Relevant past history	100%
Current history	100%
Family history	25%
Examination	25%
Investigations/diagnostic tests	100%
Social issues	25%
Current medications	100%

Risk Factors

Graph 4 shows 52% (n=13) of the total patient cohort (n=25) audited were ex smokers, 32% (n=8) had lung disease, 20% (n=5) were current smokers, 12% (n=3) had exposure to asbestos fibers, 12% (n=3) had a past history of other cancers and 4% (n=1) had a past history of lung cancer.

Graph 4

Identified Risk Factors

Number of Patients

Ex smoker	52%
Lung disease	32%
Current Smoker	20%
Exposure to asbestos	12%
History of other cancer	12%
History of lung cancer	4%

Nature of Lung Cancer Diagnosed

On the initial presentation for the episode of care audited, graph 5a shows 68% (n=17) of patients were diagnosed with a new primary cancer, 28% (n=7) with metastatic disease and 4% (n=1) with recurrent disease.

Graph 5a

Nature of Cancer Diagnosed

Number of Patients

|	
New primary cancer	68%
Metastatic disease	28%
Recurrence of disease	4%
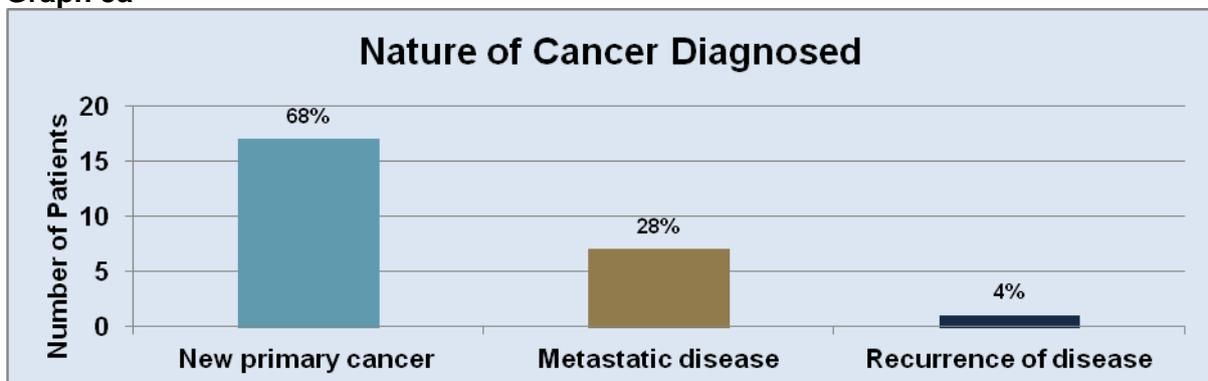
Type of Lung Cancer Diagnosed

Out of the 25 medical records audited, 52% (n=13) of patients were diagnosed with non-small cell lung carcinoma, 20% (n=5) with small cell lung cancer and 8% (n=2) with mesothelioma.

An additional 20% (n=5) of patients had no documented evidence in their medical record of the type of lung cancer diagnosed.
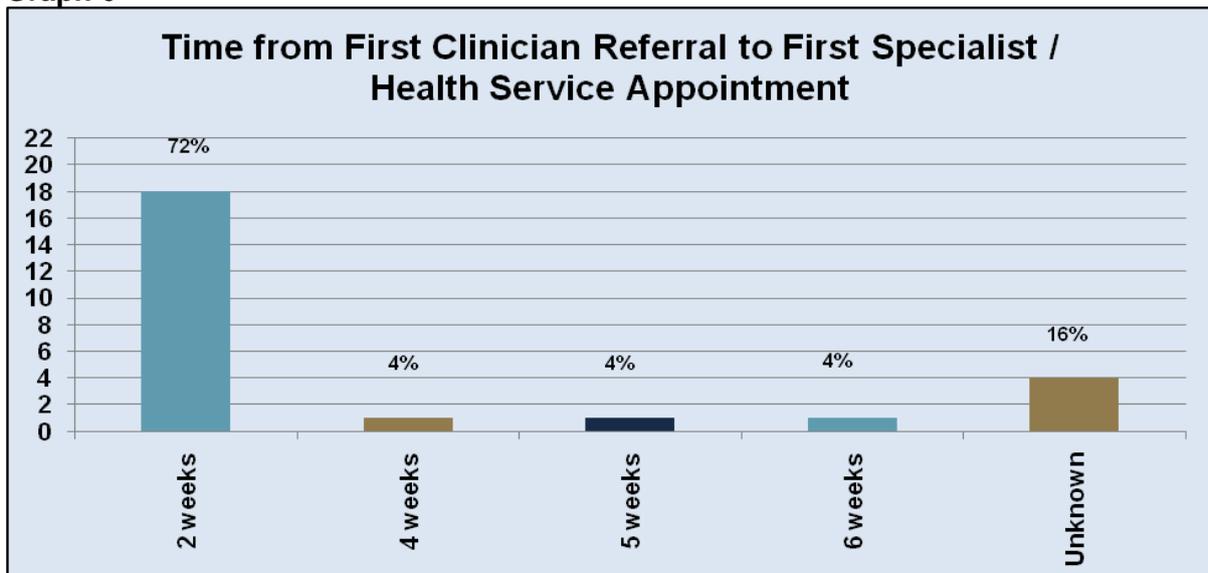
Graph 5b
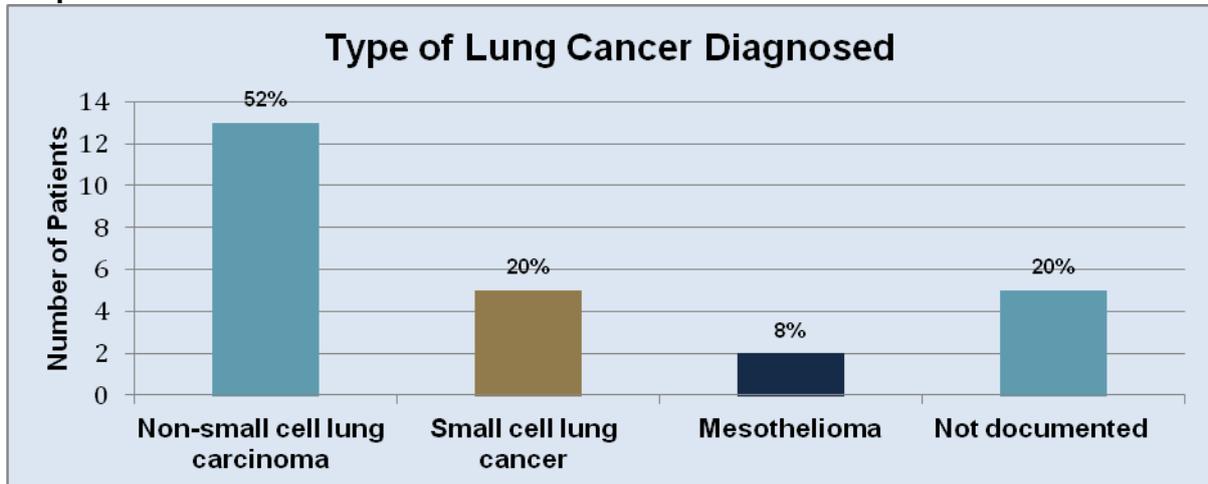
Time from Referral to Specialist / Health Service Appointment

Referral date in the context of this measurement relates to: the date the patient was referred by his / her GP to a clinicians rooms or health service for an appointment (n=17); the date the patient self presented to Peninsula Health (PH) and was referred by an ED medical officer to an inpatient specialist (n=3); the date the patient was referred directly from a clinician rooms to PH for admission (n=1). The remaining 16% (n=4) of cases had no documented referral date in the medical record, to enable this timeframe to be measured.

Graph 6 shows of the 25 medical records audited, 72% (n=18) of patients had their first specialist/health service appointment within 2 weeks of referral, 4% (n-1) within 4 weeks, 4% (n-1) within 5 weeks and 4% (n-1) within 6 weeks.

Graph 6

Time from Date of Referral to Diagnosis

Referral date in the context of this measurement relates to: the date the patient was referred by his / her GP to a clinicians rooms or health service for an appointment; the date the patient self presented to Peninsula Health (PH) and was referred by an ED medical officer to

an inpatient specialist; the date the patient was referred directly from a clinician rooms to PH for admission.

Graph 7 shows of the 25 patients audited, 28% (n=7) were diagnosed within 1-7 days of referral, 20% (n=5) within 2 weeks, 12% (n=3) within 3 weeks, 4% (n=1) within 5 weeks, 8% (n=2) within 7 weeks, 4% (n=1) within 9 weeks and 8% (n=2) > 10 weeks. In 16% (n=4) of cases there was no evidence of a documented referral date in the patient's medical record to enable this interval to be measured. Five of the patients diagnosed within 1-7 days were referred by their GP to a specialist pre diagnosis and two post diagnosis.

Graph 7
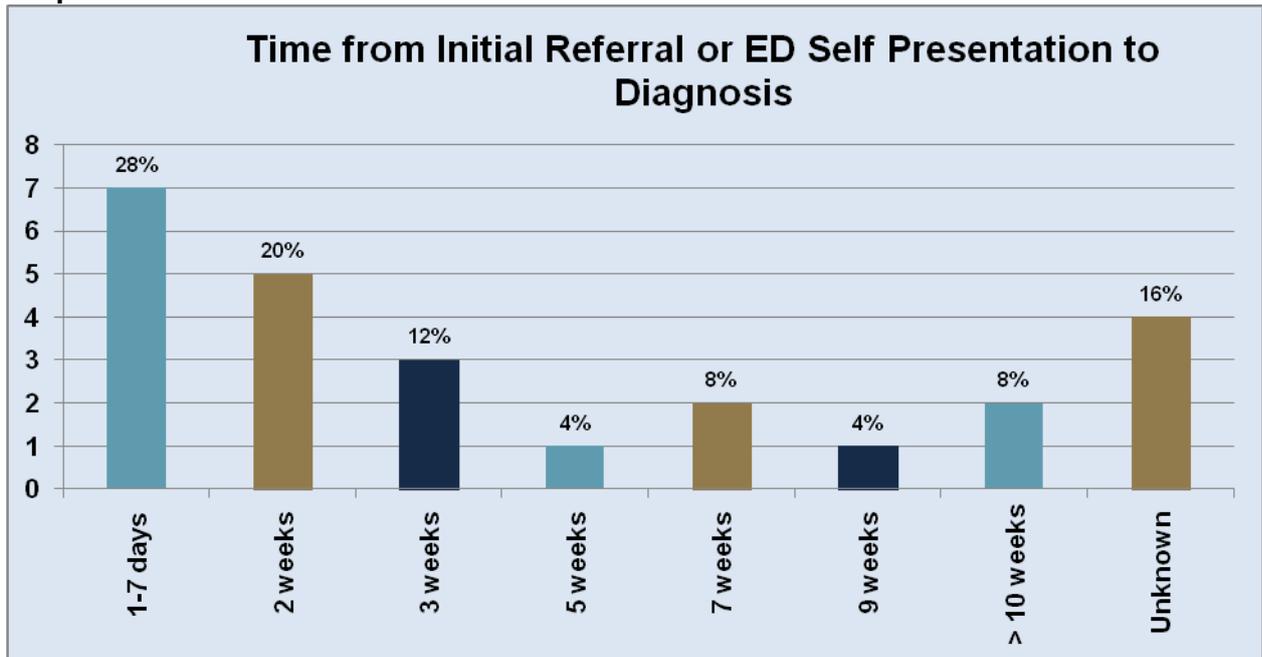
Time from Initial Presentation to Specialist to Initial Treatment Decision
The initial treatment decision in the context of this measurement is defined as the earliest documented decision recorded in the medical record that relates to the patient's treatment plan. The recorded start date of interventional or palliative therapies is not considered equivalent to the initial treatment decision date, for the purpose of this measurement.

Graph 8 shows of the 25 medical records audited, 8% (n=2) of patients had an initial treatment decision made within 1 week of their specialist appointment, 32% (n=8) within 2 weeks, 12% (n=3) within 3 weeks, 4% (n=1) within 4 weeks, 16% (n=4) within 6 weeks, 4% (n=1) within 8 weeks and 4% (n=1) within 10 weeks. In 20% (n=5) of cases the initial treatment decision was not recorded in the medical record and therefore this timeframe could not be accurately measured.
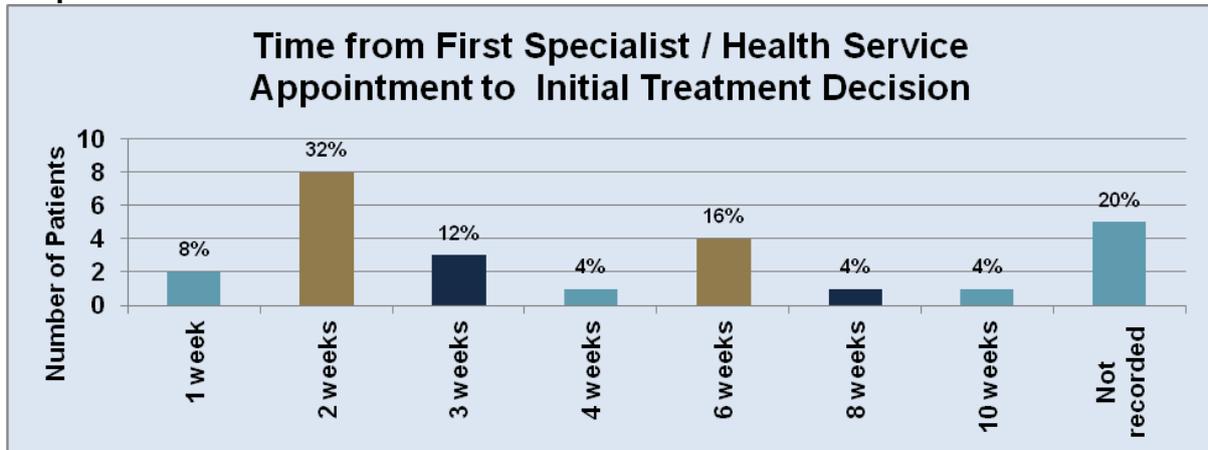
The Patient Management Framework for the lung tumour stream states the "time from initial presentation to specialist, to diagnosis and staging and then to initial treatment decision should be no more than four weeks" (p.10)[4].

A total of 56% (n=14) of the patient cohort (n=25) audited had an initial treatment decision made within the recommended timeframe of no more than 4 weeks.
In 24% (n=6) of cases documentation in the medical record suggests, acute illness warranting inpatient admission, ongoing outpatient investigations and subsequent referrals between specialists, as possible reasons for a delay of more than 4 weeks between the

patients first specialist appointment and treatment decision. The remaining 20% (n=5) of cases had no documented evidence in the medical record of an initial treatment decision.
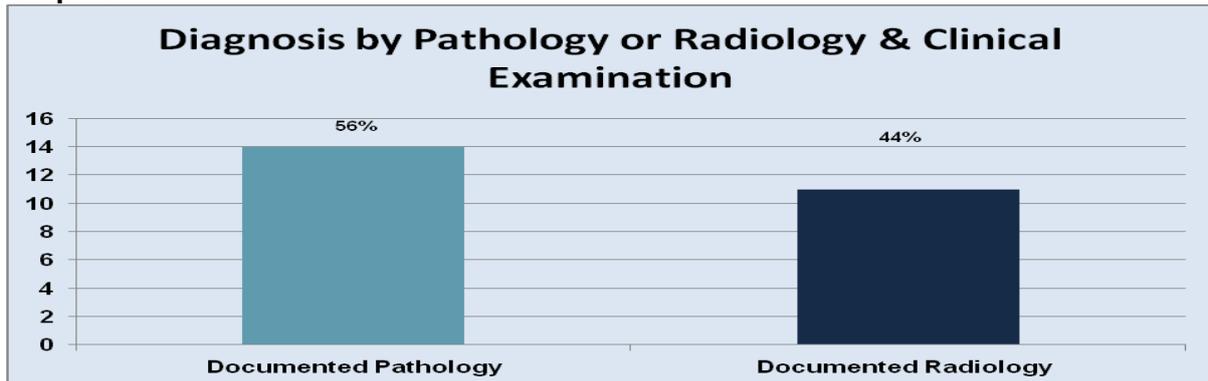
Graph 8

Time from First Specialist / Health Service Appointment to Initial Treatment Decision

Y-axis: Number of Patients (0 to 10)

- 1 week: 2 (8%)
- 2 weeks: 8 (32%)
- 3 weeks: 3 (12%)
- 4 weeks: 1 (4%)
- 6 weeks: 4 (16%)
- 8 weeks: 1 (4%)
- 10 weeks: 1 (4%)
- Not recorded: 5 (20%)

Diagnosis by Pathology and Radiology

Graph 9 shows 56% (n=14) of the selected patient cohort (n=25) were diagnosed by a documented pathology result and 44% (n=11) by a documented radiology result.
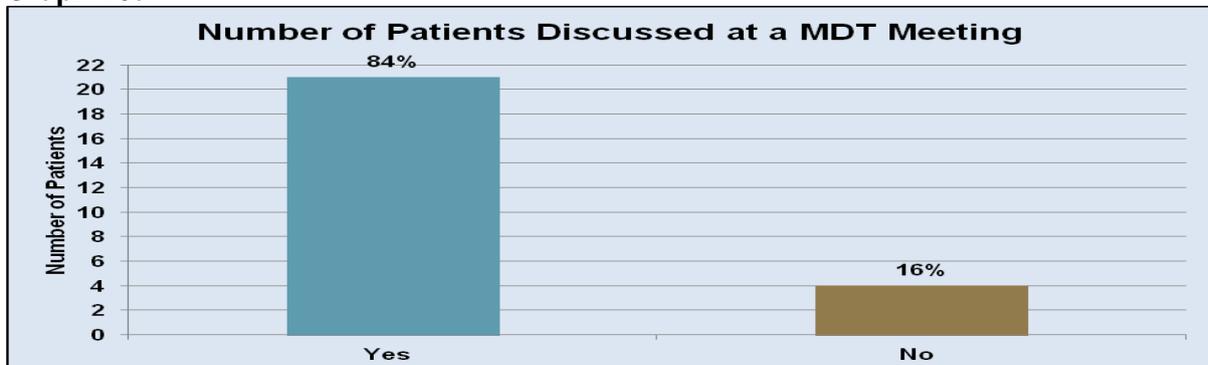
Graph 9

Diagnosis by Pathology or Radiology & Clinical Examination

Y-axis: 0 to 16

- Documented Pathology: 14 (56%)
- Documented Radiology: 11 (44%)

Patients Referred to a Multidisciplinary Team (MDT) for Discussion

The medical record audit revealed that 84% (n=21) of the patient cohort (n=25), had documented evidence of a referral to an MDT and 16% (n=4) had none (graph 10a).

Graph 10a

Number of Patients Discussed at a MDT Meeting

Y-axis: Number of Patients (0 to 22)

- Yes: 21 (84%)
- No: 4 (16%)

Stage of MDT Referral, Action of Recommendations & Staging Documentation

Graph 10b demonstrates of the 21 patients referred to an MDT meeting for discussion, 81% (n=17) were referred before treatment started and 14% (n=3) after treatment had started. In

the remaining 5% (n=1) of cases there was no treatment start date recorded in the medical record, to enable the stage of MDT referral to be determined.

Evidence collected from the medical record shows that MDT recommendations were actioned in 19 out of 21 cases referred for discussion. In the later 2 cases, 1 patient refused the treatment recommended by the MDT clinicians and 1 patient's health status declined, before the recommended MDT action could be initiated. There was no documented evidence on the MDT form relating to lung tumour staging for the 21 patients referred to an MDT meeting for discussion.

The Patient Management Framework for the lung tumour stream states, "*optimally all patients with suspected lung cancer should be discussed in a multidisciplinary setting before treatment starts*" (p.11)[4].

Data analysis shows that 81% (n=17) of the 21 patients were referred to an MDT for discussion, before the start of treatment.

Graph 10b
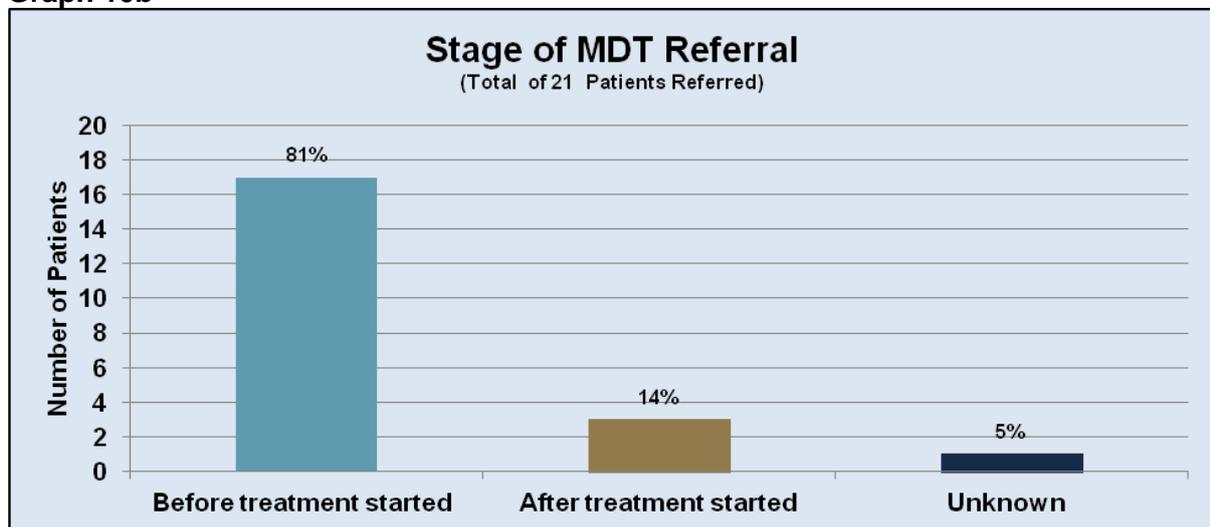
Specialist Appointments 1-5
Specialist appointments 1-5, refer to the clinician the patient saw during the diagnostic or staging part of their disease process (graph 11).

At their first specialist appointment 68% (n=17) of patients saw a respiratory physician, 8% (n=2) saw a medical oncologist, 16% (n=4) saw a radiation oncologist, 4% (n=1) saw a cardiothoracic surgeon and 4% (n=1) saw a hepatobiliary surgeon.

At their second appointment 12% (n=3) of patients saw a respiratory physician, 24% (n=6) a medical oncologist, 4% (n=1) a cardiothoracic surgeon and 4% (n=1) an anaesthetic consultant in his rooms.

At their third appointment 4% (n=1) of patients saw a respiratory physician, 8% (n=2) a radiation oncologist and 4% (n=1) a cardiologist.

At the fourth appointment 4% (n=1) of patients saw a medical oncologist and 4% (n=1) saw a radiation oncologist. An additional 4% (n=1) of patients saw a radiation oncologist at their fifth appointment.

Graph 11

**Specialist Seen by Patient at Appointments 1-5**
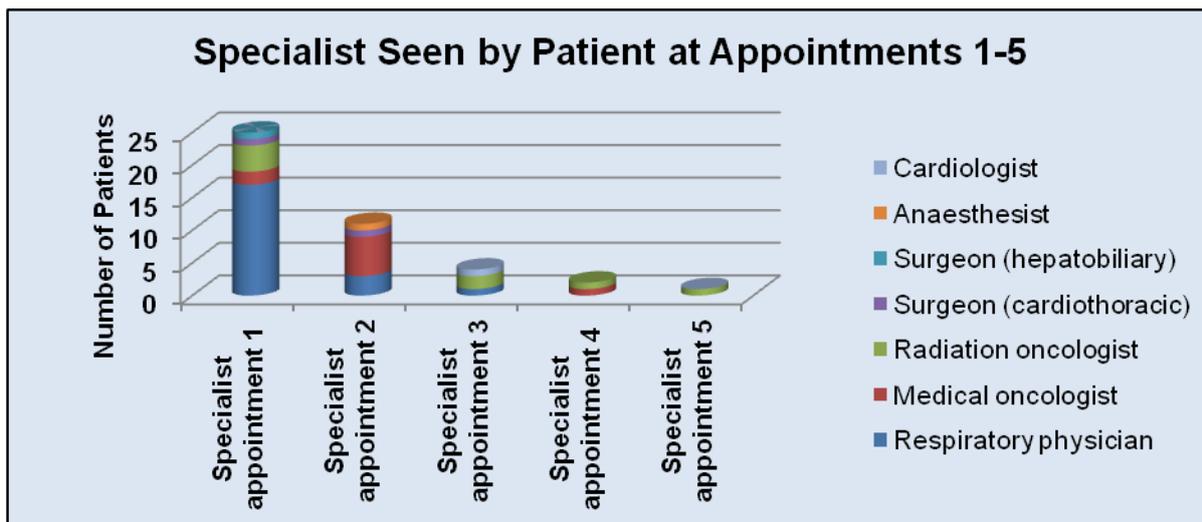
Average Number of Times Patients saw Specialist at Follow up

Graph 12 displays the specialist seen by patients at follow up appointments 1-10.

On average, across all of the 10 documented follow up appointments, patients saw a medical oncologist 4.9 times (n-49), a radiation oncologist 2.9 times (n-29), a general practitioner 0.6 times (n=6), a respiratory physician 0.3 times (n=3), a specialist surgeon 0.3 times (n=3), a cardiothoracic surgeon 0.2 times (n=2), a registrar 0.1 times (n=1) and a specialist nurse an 0.1 times (n=1).

Graph 12

**Specialist Seen at Follow up Appointments 1-10**
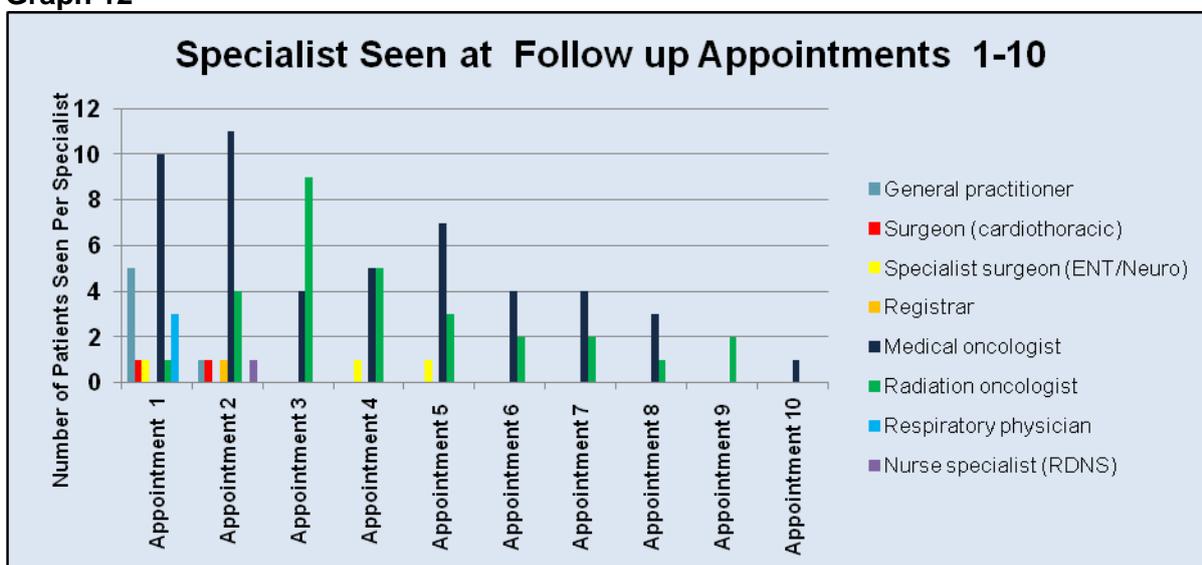
Number of Patients Seen by each Supportive Care Clinician

Graph 12 shows, the number of patients out of the selected cohort (n=25), seen by each supportive care clinician.

In summary 64% (n=16) of the total patient cohort (n=25) saw an occupational therapist, 60% (n=15) a physiotherapist, 40% (n=10) a palliative care physician, 36% (n=9) a social worker, 32% (n=8) a dietician, 16% (n=4) a pastoral care worker, 12% (n=3) a speech therapist and 8% (n=2) a home and community care worker.

Graph 12

**Number of Patients Seen by each Supportive Care Clinician**
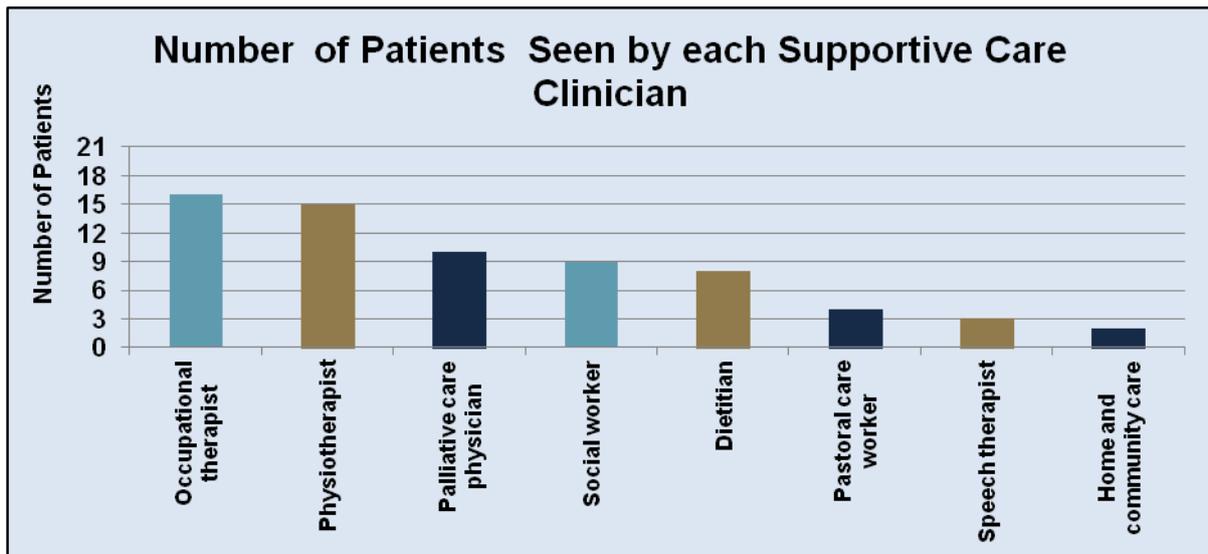
Specialist Nurse Appointments 1-5 & Stage of Intervention

A total of 9 of the 25 patients audited, had documented interventions by a specialist nurse. Graph 13 displays the number of patients seen at each stage of intervention and the sector in which care was delivered.

In summary, 45% (n=4) of the patient group (n=9) were seen during chemotherapy, 11% (n=1) post surgery, 11% (n=1) during the palliative care phase of their treatment, 11% (n=1) at follow up by the Royal District Nurse Service (RDNS), 11% (n=1) during the advanced stage of their disease process and 11% (n=1) immediately post diagnosis.

A total of 67% (n=4) of all specialist nurse interventions occurred as an outpatient or inpatient at Peninsula Health and 33% (n=3) occurred in the community sector.
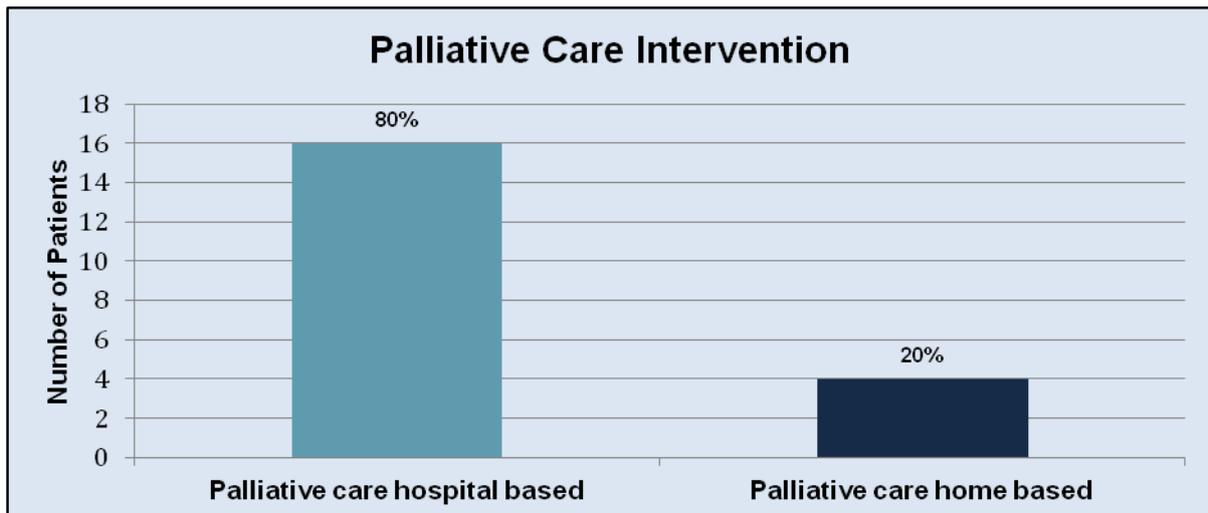
Graph 13

Stage & Sector of Specialist Nurse Intervention
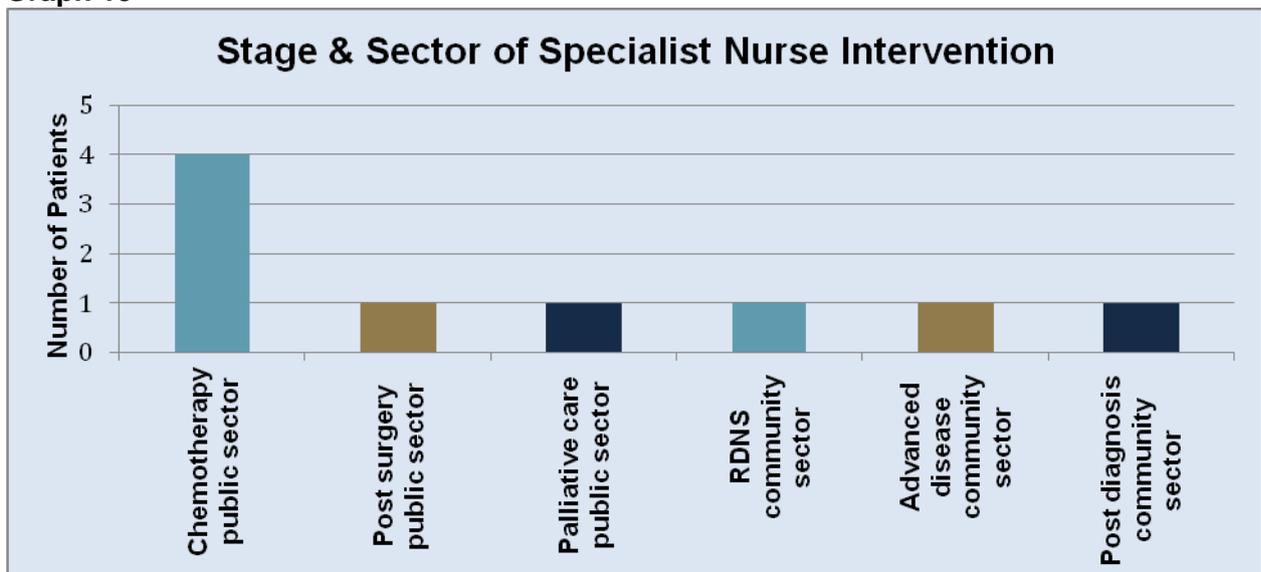
Palliative Care Intervention & Sector Delivered

A total of 20 of the audited patients required palliative care intervention, 80% (n=16) as an inpatient at Peninsula Health and 20% (n=4) in the community sector (graph 14).

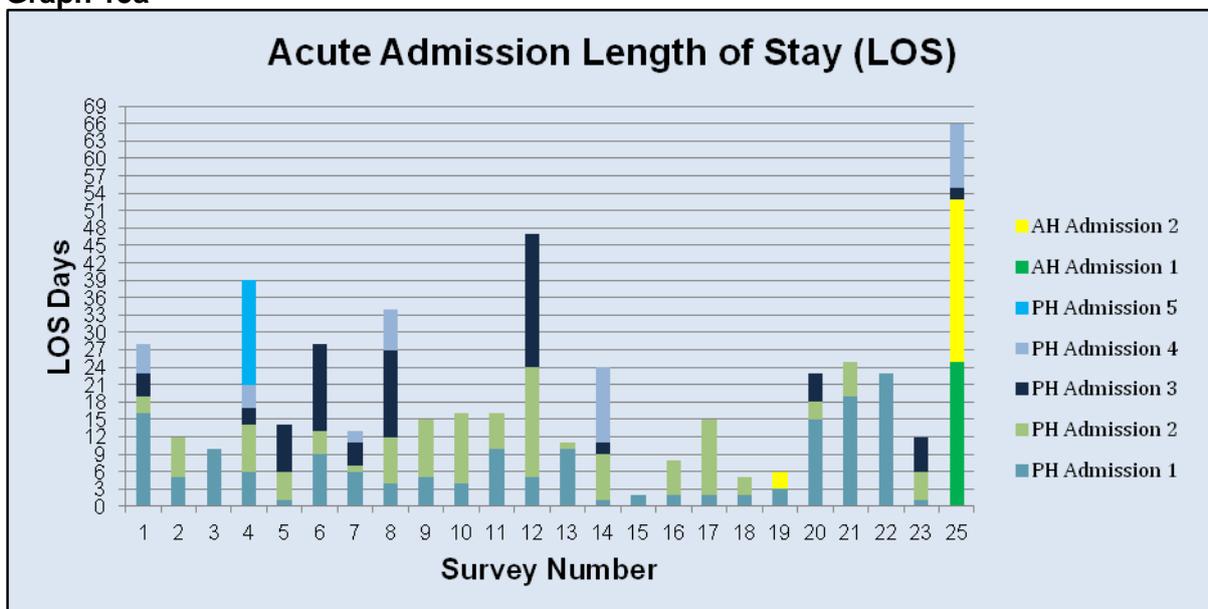**Graph 14**

Palliative Care Intervention

Acute Admission Length of Stay (LOS) and Number of Separations at PH

A total of 24 patients from the selected patient cohort (n=25), had 1-5 episodes of acute admission recorded in their medical record. One patient (survey number 24) had no episodes of acute admission recorded.

Graph 15a, shows that the length of stay for each episode of acute admission, at Peninsula Health (PH) ranged from 1-23 days. The cumulative length of stay for all acute admissions was 436 days, equating to an average length of stay of 18 days, for each patient (n=24).

Two of the 25 patients (survey number 25 and 19) audited at PH, had episodes of acute admission at the Alfred Health (AH), with an associated length of stay for admission (1) of 25 days and admission (2) from 3-28 days.
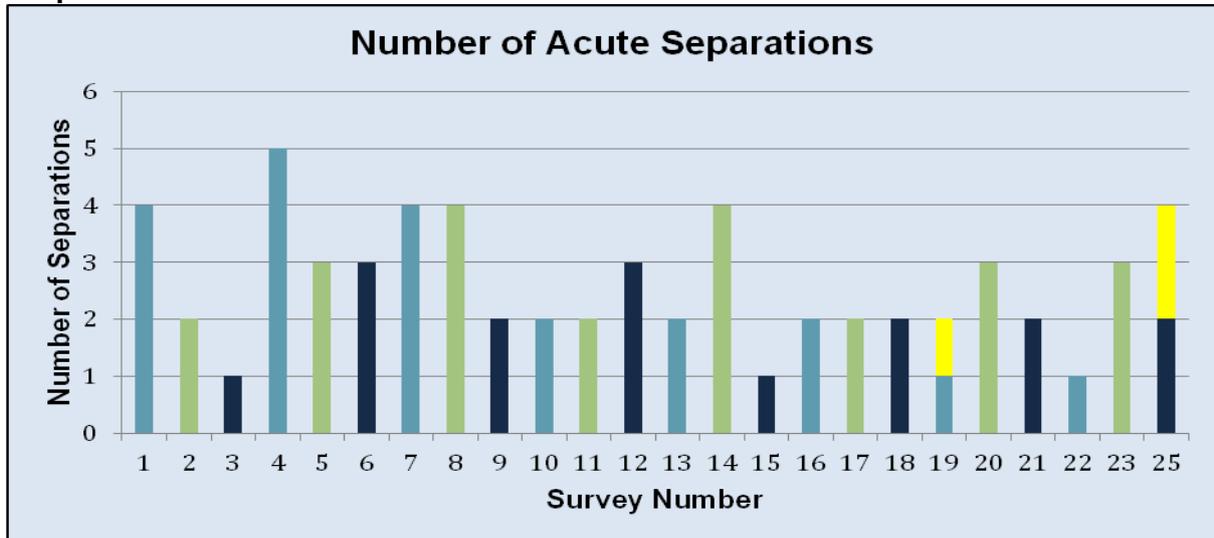
Graph 15a

Number of Acute Separations

Graph 15b shows the number of acute separations at both PH and AH for each of the patients audited. One patient (survey number 24) had no documented acute separations. Each of the remaining patients had from 1 to 5 acute separations recorded in the iPM database at PH. Additionally survey number 19 had one acute separation and survey

number 25 had two acute separations, recorded on the Powerchart database at Alfred Health (recorded in yellow).
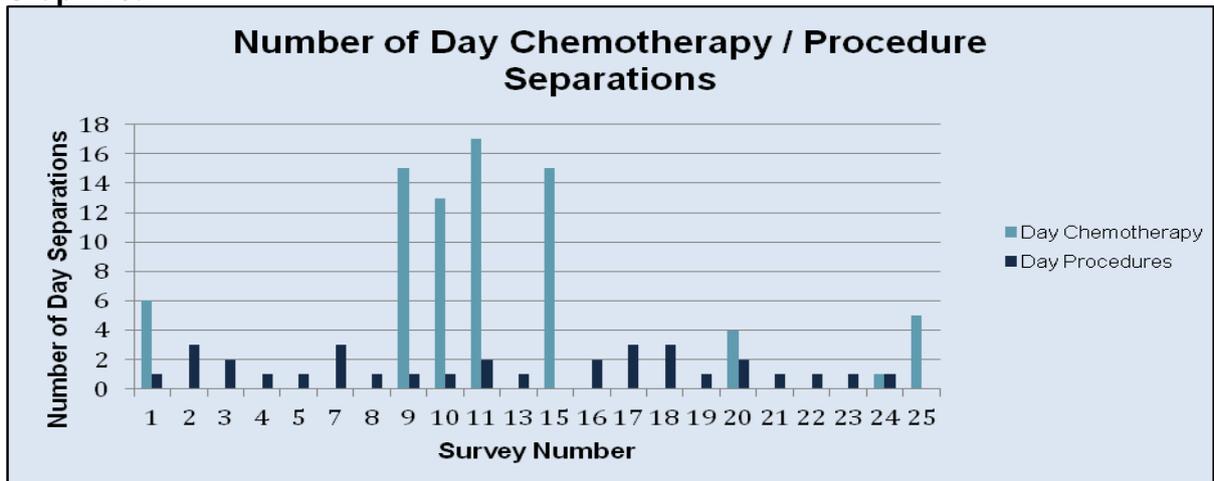
Graph 15b

Number of PH Day Chemotherapy / Procedure Separations

Graph 16a shows the number of day chemotherapy and day procedure separations for the selected patient cohort.

In total 22 of the patients audited (n=25) had either a chemotherapy or day procedure separation. Three patients (survey number 6, 12 and 14) had no day separations recorded in the medical record or iPM database.

Eight patients had 1-17 day chemotherapy separations. Six of this patient group (n=8) additionally had 1-2 day procedure separations. A further 14 patients had between 1 and 3 day procedure separations.
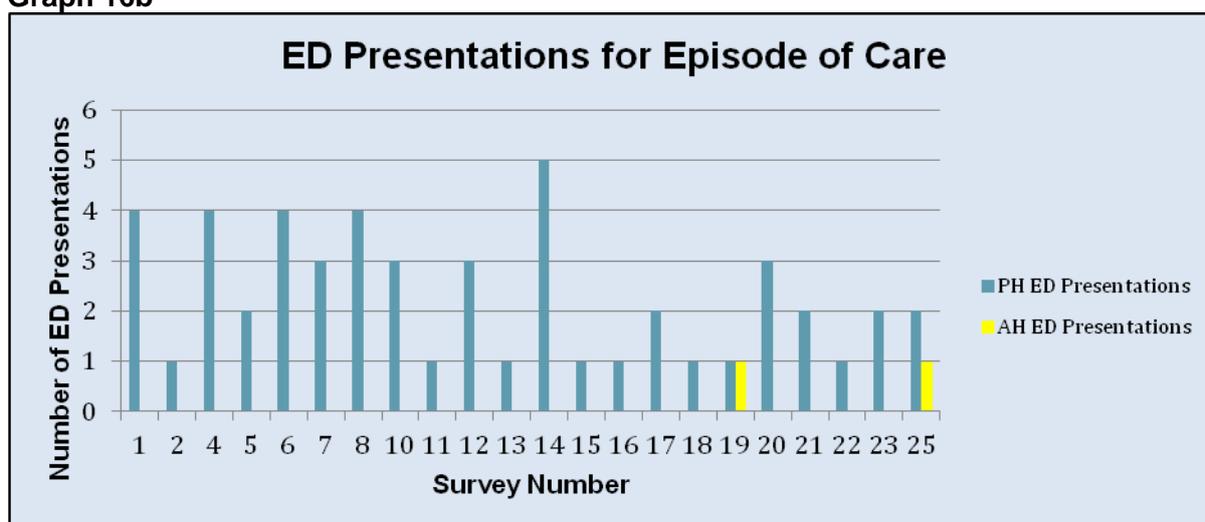
Graph 16a

Number of PH & AH Emergency Department (ED) Presentations

Graph 16b shows that 22 of the 25 patients audited had between 1-5 ED presentations at Peninsula Health across the episode of care audited. Survey numbers 3, 9 and 24 had no ED presentations recorded. Additionally survey number 19 and 25 had 1 ED presentation recorded on the Powerchart database each at the Alfred Health (recorded in yellow).
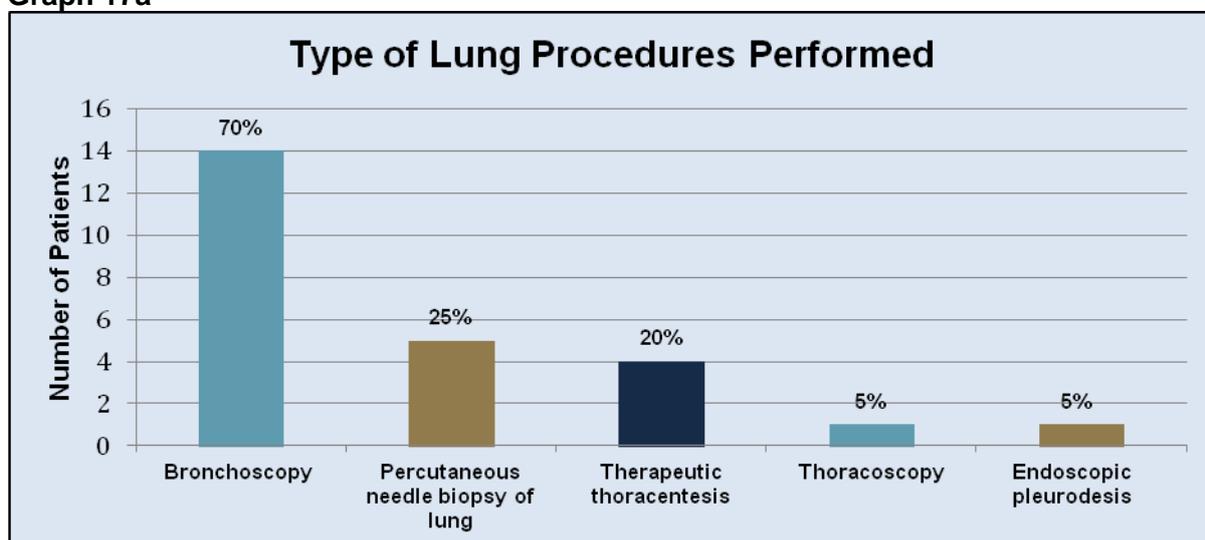
Graph 16b

Type of Lung Procedures

Analysis of the selected patient medical records and the Victorian Admitted Episode Data revealed, 20 of the 25 audited patients had one or more lung procedures performed at Peninsula Health (PH).

Graph 17a shows 70% (n=14) of this patient group (n=20) had a bronchoscopy, 25% (n=5) had a pecutaneous needle biopsy, 20% (n=4) had a therapeutic thoracentesis, 5% (n=1) had a thoracoscopy and a further 5% (n=1) had an endoscopic pleurodesis performed.

Graph 17a

Nature of Treatment Interventions

Analysis of the selected patient medical records and the Victorian Admitted Episode Data revealed a documented treatment invention for 13 of the 25 patients audited. Twelve of the patients from this group (n=13) had one or more treatment interventions at PH and 1 patient had a pneumonectomy at Jessie Macpherson Private Hospital.

Graph 17b shows of the 13 patients with a documented treatment intervention, 61% (n=8) had chemotherapy, 23% (n=3) had radiotherapy, 8% (n=1) had a lung lobectomy and 8% (n=1) had a pneumonectomy.

Graph 17b

Nature of Treatment Interventions

Bar chart showing Number of Patients (y-axis, 0–9) by treatment type:
- Chemotherapy: 8 (61%)
- Radiotherapy: 3 (23%)
- Lung lobectomy: 1 (8%)
- Pneumonectomy: 1 (8%)
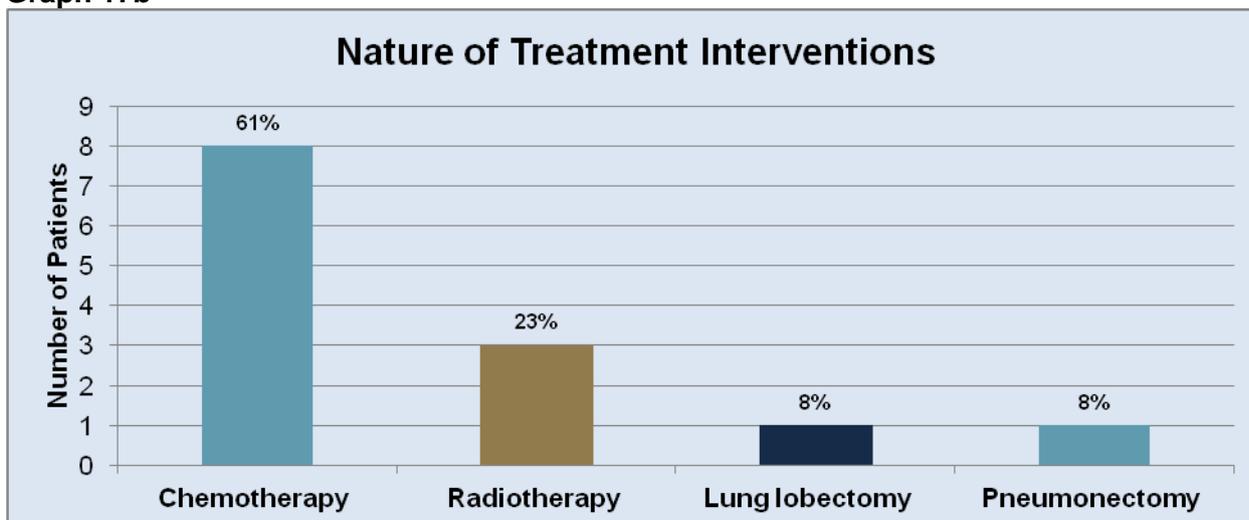
Summary of Key Findings

Analysis of the data collected from the 25 medical records audited revealed a number of key findings relating to patient mortality, first clinician review and sector referred on to, type of cancer diagnosed, time from referral to specialist appointment and from specialist appointment to initial treatment decision, stage of MDT discussion, multidisciplinary clinician appointments and palliative care.

- The high mortality rate among lung cancer patients is well documented. Data analysis further supports this revealing, only 10 of the 25 patients audited were alive, 1-year post diagnosis. This one-year survival rate of 40% correlates closely with the 38% one year survival rate for lung cancer patients, published by Cancer Council Victoria[6].

- Of the 23 patients with a known referral source, 19 had their first clinician appointment with a general practitioner, 3 with an emergency department medical officer and 1 with a thoracic physician in his private rooms. 14 of these 23 patients were subsequently referred for further review to a specialist rooms and 9 to the public sector.

- 13 of the 25 patients audited were diagnosed with a non-small cell lung carcinoma, 5 with small cell lung cancer and 2 with mesothelioma. In 3 of the cases audited the respective patient's lung biopsy results returned negative for cancer and a diagnosis of lung cancer was made on the results of radiology investigations and expert clinician review. The remaining 2 patients diagnosed with metastatic lung disease had no documented evidence of relevant pathology results in their medical record.

- Of the 25 medical records audited, 13 patients had their first specialist/health service appointment within 1-7 days of referral and 1 patient within 5 weeks of referral. The remaining 11 patients had no documented referral date in the medical record, to enable this timeframe to be measured.

- The lung Patient Management Framework[4] recommends that the time from the initial specialist presentation to initial treatment decision should be no more than four weeks. Of the 25 patients audited, 14 patients had an initial treatment decision made within this timeframe. Documentation in the medical record suggests, acute illness warranting inpatient admission, ongoing outpatient investigations and subsequent referrals between specialists as possible reasons for a delay of more than four weeks, from the initial specialist presentation to initial treatment decision in 6 of the audited cases. The remaining 5 patients had no documented evidence in the medical record of an initial treatment decision.

- Data analysis shows that of the 21 patients referred to an MDT for discussion, 81% (n=17) were referred before the start of treatment, as recommended in the lung patient management framework.

- At their first specialist appointment 17 patients saw a respiratory physician, 2 patients saw a medical oncologist, 4 patients saw a radiation oncologist, 1 patient saw a cardiothoracic surgeon and 1 patient saw a hepatobiliary surgeon.

- On average across the 10 follow up specialist appointments, patients saw a medical oncologist 4.9 times, a radiation oncologist 2.9 times, a general practitioner 0.6 times a respiratory physician 0.3 times, a specialist surgeon 0.3 times, a cardiothoracic surgeon 0.2 times, a registrar 0.1 times and a specialist nurse 0.1 times.

- The majority of the audited patients saw a supportive care clinician. 16 patients saw an occupational therapist, 15 saw a physiotherapist, 10 saw a palliative care physician, 9 saw a social worker, 8 saw a dietician, 4 saw a pastoral care worker, 3 saw a speech therapist and 2 saw a home and community care worker.

- A total of 9 of the 25 patients audited, had documented interventions by a specialist nurse.

- A total of 20 of the audited patients required palliative care intervention, 16 as an inpatient at Peninsula Health and 4 in the community sector

- A total of 24 patients from the selected patient cohort (n=25), had between 1-5 episodes of acute admission recorded in the medical record. The associated length of stay for each episode of acute admission, ranged from 1-23 days.

- Additionally 22 of the patients audited (n=25) presented between 1 to 5 times to the Emergency Department and / or had either a day chemotherapy or day procedure separation recorded in the medical record.

References

[1] Australian Government Cancer Australia 2011, *Lung Cancer Program*, accessed 8th August 2011. http://canceraustralia.gov.au/about-us/priorities-and-programs/lung-cancer-program

[2] Victorian Government, Department of Human Services (now Department of Health) 2007, Linking *cancer care: A guide for implementing coordinated cancer care,* Metropolitan Health and Aged Care Services Division, Melbourne, Australia

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