East Midlands Cancer Alliance
Lung Cancer Emergency Presentations: Significant Event Audit

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Project and slides produced with Dr Paul Beckett,
Consultant Respiratory Physician at Derby Teaching Hospitals
Background to the Workshop

• Survival for lung cancer is improving but remains poor in comparison to other cancer types.

• Significant proportion of lung cancer diagnoses made after an emergency presentation.
### Table 2  Proportion of tumours by route, for selected tumours

<table>
<thead>
<tr>
<th>Route</th>
<th>All cancers</th>
<th>Bladder</th>
<th>Central nervous system</th>
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<th>Stomach</th>
<th>Uterus</th>
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</thead>
<tbody>
<tr>
<td>Screen-detected (%)</td>
<td>5</td>
<td>30</td>
<td>1</td>
<td>28</td>
<td>2</td>
<td>16</td>
<td>24</td>
<td>41</td>
<td>11</td>
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<td>34</td>
<td>23</td>
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<td>TWW (%)</td>
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<td>Referral (%)</td>
<td>21</td>
<td>14</td>
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<td>Emergency presentation (%)</td>
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<td>9</td>
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<tr>
<td>Unknown (%)</td>
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<td>5</td>
<td>1</td>
<td>9</td>
<td>6</td>
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<tr>
<td>Unknown (%)</td>
<td>8</td>
<td>5</td>
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</tbody>
</table>

**Abbreviations:** DCO = Death Certificate Only; GP = general practitioner; TWW = Two-Week Wait. Cases diagnosed in persons with an English residential address, 2006–2008. Cervical cancer proportions relate to 2006–2007 data due to incomplete screening data in 2008. All 95% confidence intervals are below ± 1%.
## Routes to Diagnosis

**Table 3** One-year relative survival by route, for selected tumours with 95% confidence intervals

<table>
<thead>
<tr>
<th>All routes</th>
<th>Screen-Detected</th>
<th>TWW</th>
<th>GP Referral</th>
<th>Other Outpatient</th>
<th>Inpatient Elective</th>
<th>Emergency Presentation</th>
<th>Unknown</th>
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<tr>
<td><strong>Survival</strong></td>
<td><strong>95% CI</strong></td>
<td><strong>Survival</strong></td>
<td><strong>95% CI</strong></td>
<td><strong>Survival</strong></td>
<td><strong>95% CI</strong></td>
<td><strong>Survival</strong></td>
<td><strong>95% CI</strong></td>
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<tr>
<td>Bladder</td>
<td>73%</td>
<td>72–73</td>
<td>83%</td>
<td>82–84</td>
<td>79%</td>
<td>78–80</td>
<td>77%</td>
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<tr>
<td>Central nervous system</td>
<td>39%</td>
<td>39–40</td>
<td>47%</td>
<td>37–57</td>
<td>54%</td>
<td>52–57</td>
<td>62%</td>
</tr>
<tr>
<td>Breast</td>
<td>97%</td>
<td>96–97</td>
<td>100%</td>
<td>100–100</td>
<td>98%</td>
<td>98–99</td>
<td>96%</td>
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<tr>
<td>Colorectal</td>
<td>74%</td>
<td>74–75</td>
<td>98%</td>
<td>97–100</td>
<td>92%</td>
<td>91–95</td>
<td>92%</td>
</tr>
<tr>
<td>Kidney and unspecified urinary organs</td>
<td>69%</td>
<td>68–70</td>
<td>79%</td>
<td>77–80</td>
<td>82%</td>
<td>80–79</td>
<td>82%</td>
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<tr>
<td>Lung</td>
<td>29%</td>
<td>28–29</td>
<td>30%</td>
<td>39–41</td>
<td>40%</td>
<td>40–41</td>
<td>44%</td>
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<td>Melanoma</td>
<td>97%</td>
<td>97–97</td>
<td>95%</td>
<td>98–99</td>
<td>98%</td>
<td>97–98</td>
<td>94%</td>
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<tr>
<td>Multiple myeloma</td>
<td>70%</td>
<td>69–71</td>
<td>82%</td>
<td>80–85</td>
<td>81%</td>
<td>79–82</td>
<td>78%</td>
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<tr>
<td>Non-Hodgkin lymphoma</td>
<td>75%</td>
<td>75–76</td>
<td>85%</td>
<td>84–87</td>
<td>86%</td>
<td>85–87</td>
<td>81%</td>
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<tr>
<td>Oesophagus</td>
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<td>39–40</td>
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<td>41–43</td>
<td>47%</td>
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<tr>
<td>Ovary</td>
<td>70%</td>
<td>69–70</td>
<td>84%</td>
<td>82–85</td>
<td>81%</td>
<td>79–82</td>
<td>82%</td>
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<tr>
<td>Pancreas</td>
<td>17%</td>
<td>16–17</td>
<td>19%</td>
<td>18–21</td>
<td>26%</td>
<td>24–27</td>
<td>33%</td>
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<tr>
<td>Prostate</td>
<td>96%</td>
<td>95–96</td>
<td>98%</td>
<td>97–98</td>
<td>99%</td>
<td>99–99</td>
<td>96%</td>
</tr>
<tr>
<td>Stomach</td>
<td>41%</td>
<td>40–41</td>
<td>43%</td>
<td>42–45</td>
<td>52%</td>
<td>50–54</td>
<td>55%</td>
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<tr>
<td>Uterus</td>
<td>91%</td>
<td>90–91</td>
<td>94%</td>
<td>94–95</td>
<td>94%</td>
<td>93–94</td>
<td>90%</td>
</tr>
</tbody>
</table>


National Lung Cancer Audit

• 133,530 cases of NSCLC who presented 2006–2011:
  – 19% referred non-electively

• This route of referral was strongly associated with:
  – more advanced disease stage (e.g. in Stage IV – OR: 2.34, 95% CI: 2.14–2.57, \( p < 0.001 \))
  – worse performance status (e.g. in PS 4 – OR: 7.28, 95% CI: 6.75–7.86, \( p < 0.001 \))
  – worse socioeconomic status
  – extremes of age

• These patients were more likely to have died within 1 year of diagnosis:
  – Multivariate hazard ratio of 1.51 (95% CI: 1.49–1.54)

Our Project

• To replicate the SEA methodology used in other areas
• To use the process obtained to generate learning
• To use the learning to deliver meaningful change
Request sent to all cancer leads in the ECAG

Non elective diagnosis of lung cancer or mesothelioma. Between Sept 2014 to February 2015

10 patients for SEA

SEA on patient/s identified at practice

SEA returned for descriptive and thematic analysis
## SEAs Received

105 Cases In Total

<table>
<thead>
<tr>
<th>Location</th>
<th>Primary Care</th>
<th>Secondary Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burton</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Derby</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>Nottingham</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Kettering</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Mansfield</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Lincolnshire</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>64</strong></td>
<td><strong>56</strong></td>
</tr>
</tbody>
</table>
Linked SEAs

105 Cases In Total

Primary care: 49
Secondary care: 41
Intersection: 15
Demographics Of All Patients

- Male 49, Female 53
- Mean age 73, Median age 72, IQR 66-81, range 45-97
- Ethnicity (secondary care only):
  - White British 46
  - Not stated 7
  - Afro-Caribbean 1
  - White Irish 1
  - White Other 1
Outcomes For All Patients

- 80 died
- 21 alive
- 4 unknown
- Median survival from diagnosis 45 days (IQR 17-102)
Presentation To Secondary Care

- 30/56 referred as emergency by GP

- 45/56 were first seen in A&E

- Presenting symptoms
  - Breathlessness 57%
  - Cough 30%
  - Pain (varied from 1 day to 1 year) 29%
  - Weight loss 16%
  - Confusion 7%
  - Haemoptysis 5%
Performance Status and Stage Of Secondary Care Cases

PERFORMANCE STATUS

- 0: 4% (14% in total)
- 1: 20% (20% in total)
- 2: 20% (20% in total)
- 3: 42% (42% in total)
- 4: 14% (14% in total)

STAGE

- I: 4% (7% in total)
- II: 7% (7% in total)
- III: 16% (16% in total)
- IV: 73% (73% in total)
Specialist Nurse Input In Secondary Care

Proportion of Patients seen by Lung Cancer Nurse/ Acute Oncology Nurse

- Ward: 52%
- Clinic: 16%
- Nil: 32%
MDT Discussions

Number of MDT discussions

- One: 61%
- Two: 25%
- Three: 7%
- Four: 5%
- Nil: 2%
Thematic Analysis

- Each SEA had sections to prompt for free text
  - What happened?
  - Why did it happen?
  - Changes implemented?
  - Delays?
  - Missed opportunities?
1. WHAT HAPPENED?

Describe the process to diagnosis for this patient in detail. Including dates of consultations, referral and diagnosis and the clinicians involved in that process. Consider for instance:

- The initial presentation and presenting symptoms (including where it first came to light).
- The key consultations at which the diagnosis was made.
- Consultations in the year prior to diagnosis and referral (how often the patient had been seen by the practice, for what reasons, the type of consultation held (telephone, in clinic, etc.) and who - GP, GP, Nurse 1, Nurse 2 etc.)
- Whether the diagnosis was made by the Out of Hours service, at A&E, or in secondary care clinics.
- If this appears to be any delay in the process of the patient being seen with symptoms, what the impact on potential impact of the event was.

A gentleman with a his CVA and hypertension - good recovery except for some issues of increased phlegm and nasal mucus since his stroke. Had annual checks all satisfactory.

Seen 18/2/2014 by GP3 - post nasal mucus drip, occ cough and gag. Chest is clear on examination. Antibiotics and nasal spray prescribed.

Had stopped smoking around 1990.

Seen 21/3/2014 by GP3 - symptoms improved with above Rx. Still some post nasal drip though and cough - referred for CXR. Systemically well in self, daughter felt he's improving. Chest was clear on exam again.

CXR done 25.4.2014 XR Chest: Clinical history: dry cough / 65% pathology
XR Chest: The heart is normal. There is blunting of the right costophrenic angle, which may be chronic, but could represent a small effusion. The lungs are otherwise clear.

30.4.2014 patient invited for a review.

6.5.2014 - seen by GP3 - well in himself - felt breathing had improved with steam vapours. Chest examined - nil abnormality especially R base. Plan agreed with family to monitor and repeat CXR after a few months.

Seer 24/6.2014 for minor surgical procedure, done by GP2 no complaints about breathing cough.

Seen 8/7/2014 by HCA for routine annual blood test. Normal FBG and bone profile.

Seen 22.7.2014 by FN for annual hypertension and CVD review. Well in himself, slow BP only. No fainting etc. no record made of respiratory symptoms.

2. WHY DID IT HAPPEN?

Reflect on the process of diagnosis for the patient. Consider for instance:

- If this was as good as it could have been (and if so, the factors that contributed to so appropriate a diagnosis in primary care).
- How often/over what time period the patient was seen before a referral was made (and the urgency of referrals).
- Whether he was safely settled (and if so, why this was appropriate).
- Whether there was any delay in diagnosis (and any underlying factors that contributed to this).
- Whether appropriate diagnostic services were used (and whether there was adequate access to availability of these, and whether the reasons for any delay was acceptable or appropriate).

Initial assessment and treatment of symptoms, seemed appropriate. Referral for CXR also seemed appropriate after the duration of the cough.

The CXR report wasn’t alarming, and as seen by GP2 who focused on the lungs and R base and found nothing abnormal. Clinically he was improving too. So I feel arranging a review CXR after 4 months was a reasonable approach. Safety netting was mentioned in the records.

At the time the follow-up CXR was requested mid September 2014, he had developed progressive symptoms and was referred appropriately into hospital. It’s not clear from the notes whether the patient did book an appointment to get the CXR done or not. However he was ultimately admitted to hospital and a CXR performed, which confirmed a large R pleural effusion and suspected malignancy. However follow-up arrangements recorded were for 4 week discharge suggesting a lack of urgent concern on the part of the hospital.

The patient was seen by 4 different GPs over the course of this case. And in between by other practice staff. He was an uncomplaining patient who may have underplayed his symptoms somewhat, although several times his family were involved in appointments and were asked about his health.

A question to discuss is should the practice have arranged another CXR earlier than September 2014?
Thematic Analysis

• Common themes

• Divided into:
  • Tumour
  • Person
  • System
  • Diagnostics
  • Primary Care
  • Secondary Care
Tumour Themes

- No symptoms
- Anaemia
- Weight loss
- Neurological features:
  - ataxia, arm/facial weakness, seizure
- Breathlessness
- Pain
- Recurrent COPD exacerbations in the 6 months leading to diagnosis
Person Themes

- Nihilism and reluctance to “bother” G.P
  - Seizure 4 months before
  - Haemoptysis, saw pharmacist
- Stoic attitude rarely attend G.P
- Attribution of symptoms to another problem
- Attend AE
- Declining further investigations
  - Abnormal CXR
- Slow to represent after Investigations
- Frail with comorbidity
System Themes

- Lack of ownership/continuity
  - X4 attendances 4 different G.Ps
  - In-patients managed on general medical wards
- 2WW cancer clinic slots filled with non-cancer patients
- Ineffective palliative care/“keep at home” plan
- Recall systems following investigations
- Fatigue for repeat attenders
Diagnostic Themes

- CXR not considered
  - anaemia, shoulder pain, chest pain, weight loss
- Reassured by a “normal” CXR
- Delays in receiving report
- Incorrect reporting
- Lack of access to CT scanning for G.Ps
- Communication to ward around CT scans being cancelled secondary care.
Primary Care Themes

- Ex-smokers
- False reassurance of hospital admission and improved symptoms
- Number practitioners seen
- Multiple diagnoses from secondary care
- Communication from hospital discharge team
- Communication with patient
- Vigilance for vulnerable people
Secondary Care Themes

• Patients cared for in non-specialist wards
• Responsibility for patient
• Holistic approach
  – Analgesia
  – Psychological support
• Inpatient specialist palliative care review
• Availability of LCNS
• Explanation of diagnosis often left to junior doctor
Community Themes

- Understanding of NICE referral guideline criteria
  - What to do if CXR normal?
- Symptoms not always respiratory and meet criteria
- Pathway redesign
Workshop

• Workshop was held 17th March 2016
• Local lung cancer clinicians, primary care staff and commissioners
• Results were shared and discussed
• Key actions were agreed
Actions from the Audit

• **Primary Care:**
  - Sharing of best practice to implement optimal safety-netting processes
  - Implementation of SEA in cases of emergency admission of cancer cases as best practice
  - Increased awareness of the use and limitations of CXR
  - Development of protocols to allow CXR ordering by specialist nurses in community
  - Sharing of data for benchmarking of practices on numbers of emergency admissions and numbers of CXRs requested

• **Secondary Care/ECAG:**
  - Development of guidelines to encourage earlier CXR usage in patients with both Respiratory and non-Respiratory symptoms
  - Pathway redesign according to the principles of the optimal lung cancer pathway
The most commonly diagnosed cancer types in males with thrombocytosis, compared with males in the general population.

Sarah ER Bailey et al. Br J Gen Pract
doi:10.3399/bjgp17X691109
Actions from subsequent research

- BJGP 2017:
  - Clinical relevance of thrombocytosis in primary care: a prospective cohort study of cancer incidence using English electronic medical records and cancer registry data
  - Sarah ER Bailey, Obioha C Ukoumunne, Elizabeth A Shephard and Willie Hamilton

  "The results of this study show that substantial proportions of lung and colorectal cancer diagnoses could be expedited by at least 2 months if thrombocytosis were to be routinely investigated"
DIAGNOSIS OF LUNG CANCER
THROUGH AN EMERGENCY PRESENTATION
THEMATIC MAP

Questions?