Conclusions Individuals with HHT may be protected against primary and/or metastatic lung cancer. This does not appear to be due to reduced smoking habit.

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P10 CARBOPLATIN AND GEMCITABINE IMPAIR NEUTROPHIL PHAGOCYTIC FUNCTION

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10.1136/thoraxjnl-2013-204457.160

Background Lung cancer causes 6% of UK deaths with 20% due to infection[1,2]. The reason is multifactorial with myelosuppression secondary to chemotherapy being a contributor. However, the effect of chemotherapy drugs on the function of peripheral neutrophils has rarely been explored. It is proposed carboplatin and gemcitabine may decrease the function of circulating neutrophils that are present, causing a poorer response to infection by neutrophils that are present. Granulocyte-macrophage colony-stimulating factor (GM-CSF) is used to stimulate neutrophil production in febrile neutropenic patients on chemotherapy, however studies show it also improves mature neutrophil function[3,4]. The aim was to research the effect of carboplatin and gemcitabine on neutrophil phagocytic function and to determine whether GM-CSF reverses any deficit seen in phagocytosis.
Methods Neutrophils isolated from healthy donor blood by dextran sedimentation followed by discontinuous Percoll gradient. Untreated neutrophils compared with those pre-incubated with carboplatin, gemcitabine or both drugs (10^{-4} mM). Phagocytosis assessed by ingestion of serum-opsonised zymosan. Repeated with 30 minute GM-CSF (5 ng/ml) pre-incubation. Apoptosis analysed by flow cytometry. All cells incubated for 2 hours untreated or with single or both chemotherapeutic agents (10^{-4} mM) or phorbol 12-myristate 13-acetate (PMA) for 30 minutes. Cells stained with APC-Annexin V to detect apoptosis and propidium iodide to distinguish early and late apoptotic cells.
Results A significant decrease in percentage phagocytosis occurred with chemotherapy drugs compared to untreated neutrophils: carboplatin $p = < 0.001$, gemcitabine $p = < 0.01$, carboplatin and gemcitabine $p = < 0.05$. GM-CSF caused a significant increase in percentage phagocytosis when gemcitabine caused a deficit ($p = < 0.05$) with a 9–13% increasing trend seen in other conditions. No difference in apoptosis occurred between untreated (median 3.9%) and chemotherapy treated neutrophils (median: carboplatin 4.4%, gemcitabine 4.9%, carboplatin and gemcitabine 3.6%).
Conclusions This study demonstrated that phagocytosis is impaired by carboplatin and gemcitabine in healthy volunteer blood. Therefore it is proposed a reduced response to infection may also occur in lung cancer patients given these drugs, contributing to mortality. There was no difference in apoptosis, suggesting an alternative mechanism of action. Further study is required to explore the mechanism of action and the effect of GM-CSF on phagocytosis following chemotherapy.

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P11 TYROSINE KINASE INHIBITOR USE IN PULMONARY ADENOCARCINOMA

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10.1136/thoraxjnl-2013-204457.161

Introduction Personalised treatments are becoming increasingly important in medicine, and the use of tyrosine kinase inhibitors (TKI) in the management of the subset of patients with pulmonary adenocarcinomas which express a mutation in the epidermal growth factor receptor (EGFR), is one example of this approach. However, although this cell type is common, in the UK only a small proportion of patients express the EGFR mutation and there is little published data on the number of patients receiving TKI therapy. Since 2010 we have routinely performed EGFR testing on pulmonary adenocarcinoma samples at our large cancer unit and were interested to assess our use of TKIs.
Methods We reviewed all cases of pulmonary adenocarcinoma since EGFR testing began, looking for the proportion EGFR positive, their performance state (PS), and what treatments were offered.
Results Of 241 cases of primary pulmonary adenocarcinoma, 54 (22%) had insufficient material available for mutation testing. Of the remaining 187, 23 (12%) were EGFR positive (mean age 76 [range 47–92], 18 female). Although 16 were PS ≤2, only 5 patients had stage 1A cancer with 13 having advanced disease (stage 3B/4). Seven patients underwent attempted curative surgery and 4 patients with poor PS were managed with best supportive care only. Twelve patients (52% of the EGFR positive group and 6.4% of the tested cohort) received a TKI (mean age 74 [50–92], PS ≤2 in 8, 10 female), and in 3 of these it was the only treatment modality offered (1%).
Conclusions We have shown that our cohort of patients with adenocarcinoma had a higher rate of EGFR mutation than expected, and that half of these received targeted biological therapy with tyrosine kinase inhibitors. Importantly TKI therapy was the only treatment modality available for patients who would have previously been untreated. This work emphasises the need to obtain a histological diagnosis in patients with lung cancer, to ensure that all possible treatment modalities can be considered.

P12 TEMPORAL TRENDS, CAUSES & RISK FACTORS FOR HOSPITAL ADMISSIONS IN INCURABLE LUNG CANCER

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10.1136/thoraxjnl-2013-204457.162

Introduction Little is known about hospital admissions (HAs) following a diagnosis of incurable lung cancer (LC). This study sets out to identify temporal trends for HA in this group of vulnerable patients in addition to exploring the reasons behind and potential risk factors for HA.
Methods All new LC diagnoses for 2009–2011 (n = 565) were identified, from which 1:4 were selected randomly (n = 142). Records were reviewed and those patients treated with curative intent or diagnosed and died in same HA were excluded from analysis. Basic demographic data were collected including comorbidity score, stage, histology and LC was classified as either central (mediastinum to origin of lobar bronchi and vessels) or

Abstract P12 Table 1. Potential risk factors for Hospital Admission

Variable	Significance
Age	NS
Sex	P = 0.09
Comorbidity score	NS
Stage	NS
Small cell vs. NSCLC	NS
Central vs. Peripheral tumour	NS
Presence or absence of pleural effusion	NS
Presence or absence of metastases	NS

peripheral after review of the diagnostic CT scan. The presence or absence of significant pleural effusion (>1.c.m. depth) and extra-thoracic metastases was noted. Simple non-parametric tests were used to identify any risk factors for HA.

Results 84 patients (mean age 70.3 years, 42 males) were suitable for inclusion, accounting for 98 HAs with median length of stay of 6 days. Of the 59 patients with HA, 63%, 22%, 6% and 9% experienced 1, 2, 3 or ≥4 HAs. The HA: patient ratio fell with time from 1.44 in 2009, 1.23 in 2010 to 0.86 in 2011. Survival figures were 13.1%, 28.6%, 23.8% and 34.5% for <3, 3–6, 6–9 and >9 months respectively. 76% of HAs occurred within 3 months of death.

The primary cause of HA was determined to be infection (33%), breathlessness (16%), neurological (14%), pain (10%), gastrointestinal symptoms (10%), others (17%). No obvious clinical risk factors for HA were found when comparing those patients having HA to those without HA (Table 1).

Conclusions HAs in incurable LC are common but difficult to predict.

Future strategies designed to prevent HA may need to focus more on social factors in addition to providing rapid treatment of infection and symptom palliation in the last 3 months of life.

Epidemiology

P13 IDENTIFYING PATIENTS WHO HAD SURGICAL RESECTION FOR NON-SMALL CELL LUNG CANCER USING LARGE DATASETS

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10.1136/thoraxjnl-2013-204457.163

Introduction Surgical resection rates have become an important indicator of NHS Trust performance and efforts to increase them are on-going with the aim of improving overall survival. The National Lung Cancer Audit (NLCA) has collected data on primary lung cancer since 2004 and has now been linked with Hospital Episode Statistics (HES) for research into inequalities in access to treatment. How well these two large datasets capture surgical data is not known.

Methods We used the NLCA to identify all cases of NSCLC, excluding stage IIIB or IV, diagnosed between January 2004 and March 2010. We calculated the proportion of cases with a procedure date in the NLCA, and the proportion with a code in HES, for potentially curative surgery less than 6 months after or 3 months before diagnosis. We looked at the age, lung function, performance status, stage and survival according to where surgery was recorded. Given the increase in NLCA case ascertainment from approximately 19% in 2004 to 98% in 2009 we also looked for changes in our results over time.

Abstract P13 Table 1. Features and survival of people according to the database in which records of surgery were present

	Record of surgical procedure			
	Both	HES only	NLCA only	Neither
N= 60,196	n = 8,535 14%	n = 2,568 4%	n = 795 1%	n = 48,298 80%
Mean age (years)	67.4	66.8	67.8	72.6
Mean % predicted FEV1	77.1	74.7	74.2	63.8
Missing FEV1 (% of total)	54.6	77.8	68.7	81.8
Stage (% of non-missing)	67.2	56.4	58.4	36.2
1a or 1b				
2a or 2b	21.9	23.0	21.7	19.6
3a	10.9	20.6	19.9	44.2
Missing stage (% of total)	14.5	60.6	52.0	72.9
Performance status	92.3	86.2	85.5	47.9
(% of non-missing) 0–1				
2	6.4	10.2	9.0	24.1
3–4	1.2	3.6	5.5	27.9
Missing performance status	28.2	58.9	38.2	50.4
(% of total)				
Median survival (months)*	62	41	18	7
**Died within 30-days	2.6	4.4	5.8	N/A
of surgery (%)				
Died within 90-days	5.3	8.6	16.7	N/A
of surgery (%)				

*Survival is calculated from date of diagnosis not date of procedure; FEV1 Forced expiratory Volume in 1 second;
**HES date of procedure unless NLCA only

Results There were 60,196 people in the NLCA who met the inclusion criteria; 8,535 (14%) had a record of surgery in both databases. An additional 2,568 (4%) had a record of surgery in HES and 795 (1%) in the NLCA. The features of people who had surgery in HES only or the NLCA only were similar, however median survival was shorter, and the proportion that died soon after surgery was higher, in the NLCA only group compared with those with surgery records in both databases (table 1). The proportion with HES only records of surgery decreased from 6% (n = 215) in 2004 to 3% (n = 367) in 2009; the patterns of survival each year were similar to the overall results.

Conclusion The proportion of people who had potentially curative surgery differed according to the database used to identify surgical procedures. There are many possible explanations for our results; however use of either database alone is likely to under-estimate the proportion of people who had surgery and this should be taken into account in studies investigating access to surgery.

P14 SMALL-CELL LUNG CANCER IN ENGLAND: TRENDS IN SURVIVAL AND THERAPY

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10.1136/thoraxjnl-2013-204457.164