the thoracic inlet to the gastro-oesophageal junction. These points were mapped using the registration transformation onto the inhale image which provided a measure of oesophageal displacement between the exhale and inhale breath-holds. Displacements in the right-left (R-L) and anterior-posterior (A-P) directions were measured.
Results: A total of 86 measurements were analysed. The range of displacement in each direction was: R-L 0.03 – 7.15 mm; A-P 0.11 – 9.94 mm. The mean and standard deviation (SD) of displacement are shown in the table:

Level of Measurement	Mean Displacement in mm (SD)	
	R-L	A-P
8 cm above the carina	1.92 (1.38)	1.13 (0.60)
4 cm above the carina	2.29 (1.64)	1.43 (1.53)
Carina	1.18 (1.13)	2.98 (3.18)
4 cm below the carina	3.62 (2.49)	4.22 (2.89)
8 cm below the carina	2.05 (2.00)	2.72 (1.57)
12 cm below the carina	1.21 (0.69)	3.23 (1.86)

Displacement of the oesophagus was more marked 4 cm below the carina (range 1.06 – 8.91 mm) and less marked 8 cm above the carina (0.4 – 4.15 mm). The mean SD over all levels in both directions was 1.75 mm.
Conclusion: The oesophagus moves during respiration and this needs to be incorporated into a Planning organ at Risk Volume (PRV) using standard margin calculations. Conformal radiotherapy techniques, such as Intensity Modulated Radiotherapy (IMRT), may facilitate avoidance of the oesophageal PRV and reduce radiation-induced toxicity.

1175 PUBLICATION

Pilot study of daily low dose cisplatin and radiotherapy for medically inoperable stage I non-small cell lung cancer: long-term follow-up

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Background: Previous randomized trials have shown improved outcomes from concurrent radiation and chemotherapy over radiation alone for Stage III non-small cell lung cancer (NSCLC). We carried out a prospective pilot study to assess the feasibility of treating medically inoperable patients with Stage I NSCLC with combination daily low dose cisplatin and small volume radiotherapy.
Methods and Materials: From January 1996 to November 2000, 34 consenting patients, median age 73 years, were enrolled. All patients were considered medically inoperable; with tumour size <5 cm (T1-T2, N0) and ECOG status <3. Patients received daily IV cisplatin, 6 mg/m^2, followed within 30 minutes by radiotherapy. The primary tumor was treated to a dose of 55 Gy/20 fractions/4 weeks (dose calculated with lung correction). No elective nodal irradiation was given.
Results: Treatment was well tolerated. One patient had a myocardial infarct during treatment, but was able to complete the regimen. Six patients suffered Grade 3 toxicity (pulmonary: 4, cardiac: 2). Six patients had Grade 1–2 lung toxicity and 18 patients had Grade 1–2 nausea or anorexia. During follow-up, most patients developed in-field Grade 1 pulmonary fibrosis and 3 patients had Grade 1 subcutaneous fibrosis. Twelve patients developed recurrent disease: 7 local recurrence only; 1 simultaneous local and distant recurrence; and 4 distant relapses. No mediastinal nodal recurrences were observed. Actuarial local relapse free survival was 73% at 2 years, 66% at 3 years and 59% at 5 years. Eleven patients died of intercurrent illness. Overall survival rates were 55% at 2 years, 42% at 3 years, and 21% at 5 years. Cause specific survival rates were 71% at 2 years, 67% at 3 years and 44% at 5 years.
Conclusion: This regimen of and radiotherapy and concurrent low-dose cisplatin was well tolerated by patients unfit for surgery. These results are superior to those of historical controls from this institution, and compare favourably with other reported series of Stage I NSCLC patients treated with radiotherapy alone. Further study is required to assess the role of chemotherapy in early stage medically inoperable NSCLC and its integration with newer high dose radiotherapy regimens.

1176 PUBLICATION

Lung cancer in South-East Scotland: has treatment and survival improved since 1995?

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Aim: A national audit of all patients diagnosed in Scotland in 1995 has previously been published, which demonstrated low use of treatment and poor survival. Since 1995 many changes have been made to the organisation and delivery of cancer treatments with the introduction of South-East Scotland Cancer Network (SCAN), treatment guidelines and multi-disciplinary working. This repeat audit has been conducted to assess the impact of these changes
Methods: From the Scottish Cancer Registry all cases of lung cancer diagnosed in the SCAN region (population 1.25 million) in 2002, were identified along with demographic and tumour related details. Then using SCAN prospective audit data all treatments with surgery, radiotherapy and or chemotherapy within six-months of diagnosis were identified. The median and one year overall survival were calculated. These data were then compared with the patients identified from this region in the 1995 Scottish National Audit using Chi squared and Log rank tests.
Results: In 1995 there were 1082 in the Cancer Registry, of which 904 were included in the audit. In 2002 there were 1017 patients, 888 in the audit.

	1995	2002
Total in audit (% of cases in registry)	904(84%)	888(87.3%)
Pathology type		
SCLC	165 (18.3%)	137(15.4%)
NSCLC	528(58.4%)	520(58.6%)
No pathology	211(23.3%)	231(26.0%)
Age		
Median	70	71
Range	38–96	37–92
Male	58.2%	56.3%
NSCLC + no pathology: Primary therapy	n = 739	n = 751
Resection	88(11.9%)	104(13.8%)
Radical radiotherapy	19(2.6%)	100(13.3%)
Palliative treatment	329(44.5%)	289(38.5%)
No treatment	303(41%)	258(34.4%)
SCLC: Primary therapy	n = 165	n = 137
Chemotherapy (± radiotherapy)	108 (65.4%)	91 (66.4%)
Overall Survival	n = 904	n = 888
Median	4.05 months	5.76 months
1 year	23.4%	30.3%

Conclusions: The changes in the organisation of lung cancer services have resulted in a significant increase in the use of potentially curative treatment for patients with NSCLC ($P < 0.001$), particularly from the increased use of radical radiotherapy. There has been a significant improvement in survival since 1995 ($p < 0.01$). The impact on the survival of the all lung cancer patients in the Cancer Registry is under investigation.

1177 PUBLICATION

Combined CYP1A1/GSTM1 at-risk genotypes are overrepresented in squamous lung carcinoma patients but underrepresented in elderly tumor-free subjects

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Background: Polycyclic aromatic hydrocarbons (PAH) are activated by cytochrome P450 1A1 (CYP1A1) and inactivated by glutathione S-transferase mu (GSTM1). Therefore, it is expected that a combination