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Background

Staging of tumours is vital in determining treatment options, prognosis and outcome for cancer patients. The NICR is an electronic registry with sources from pathology, radiotherapy and hospital discharge information. None of these sources generally provide complete staging for lung cancer which is usually dependant on information from radiology e.g. CT scans.

From 2004-2009 the NICR had 5989 incidences of Lung cancer. Of these 680 (11.5%) had full TNM staging information but this was made up mainly from data for 2006 (68% staged) for which we had carried out an extensive note review. Staging in other years ranged from 3.5% in 2005 to 0% in 2008.

NICR has access to the Clinical Oncology Information System (COIS) for N. Ireland, an electronic patient record which records patients' attendance at the Cancer Centre and the radiotherapy and chemotherapy that they receive. It also includes patients' diagnoses and staging. The NICR also has access to the Cancer Patient Pathway System (CaPPS) which has staging information from MDT's.

Methods

Registry clerical staff (TVOs) searched COIS within the NICR to assign stage by reading electronic text files. The staging information is imbedded into the written record on COIS and is a combination of pathological and clinical information from radiology such as CT and PET scans.

Stage was not assigned when items such as nodal involvement (i.e. NX) or presence or absence of metastases (i.e. MX) were missing. In cases where there were obvious metastases from either pathology or scanning reports, Stage IV was assigned to the tumour regardless of the T and N for the tumour. Small cell carcinomas and carcinoid tumours were not staged, in keeping with TNM guidelines.

For 2009 data, full TNM stage was extracted from CaPPS. Gaps in the data from CaPPS were supplemented by COIS information.

Costs

To collect the additional data on over 3,000 patients, it took the equivalent of one full time cancer registrar approximately 4 months to complete the task at a cost of £9,000 i.e. £3 per staged case. Although the actual number of cases looked at was nearer 6,000, but some either had no stage or not enough information to give a full TNM profile.

Results

- The percentage staged increased overall from 11.2% to 65% (Table 1).
- The staging profiles were 15.4% Stage I 5.9% Stage II, 26.7% Stage III and 51.9% Stage IV, reflecting the known late stage of presentation for lung cancer (Fig.1).
- The variation by year in Stage III and Stage IV disease possibly reflect the upstaging due to reclassification of pleural effusion from Stage III (TNM6) to Stage IV in TNM7.
- Comparisons of the 2004-2008 data from LUCADA in England (Rich et al 2011) and NICR data, shows that the NICR appears to have a larger proportion of Stage IV tumours (Fig.2). This may be due to an over representation of later stage tumours in COIS or that in 2008 TNM version 7 was used by NICR to classify the stage groupings. Also NI is more representative of population compared with clinician reported cases for LUCADA.

Table 1

Year	Incidence	No. Staged Before (%)	No. Staged After (%)
2004	965	5 (0.5%)	486 (50.4%)
2005	951	33 (3.5%)	605 (63.6%)
2006	942	642 (68.2%)	680 (72.2%)
2007	1022	0	684 (66.9%)
2008	1061	0	672 (63.3%)
2009	1048	0	766 (73.1%)
Overall	5989	675 (11.2%)	3893(65.0%)

Fig.1

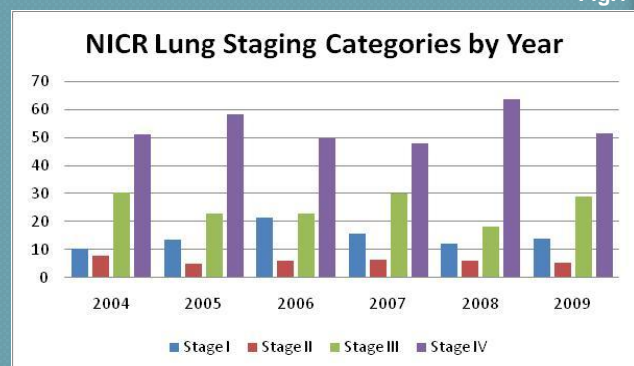
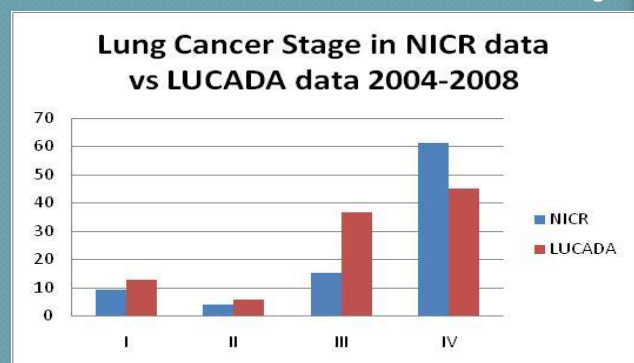


Fig.2



Conclusions

- The staging of Lung cancers improved dramatically by using electronic patient record systems.
- Use of electronic oncology system can provide missing data in a timesaving and cost efficient manner. It however only includes patients treated in the oncology system.

Strengths

- Additional information obtained without resorting to pulling patient records, thus saving time and resources.
- Staging extracted was the stage that was used to decide the treatment of a patient.
- Excellent check on registration data.

Weaknesses

- Only includes patients having oncology referral.
- Information was sometimes not complete enough to give a full TNM stage.