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## **Consultant-Led Radiation Therapy Plan Peer Review Meeting and Improved Access to and Outcomes From Curative Intent Lung Cancer Radiation Therapy.**

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# Consultant-led radiotherapy plan peer review meeting and improved access to and outcomes from curative intent lung cancer radiotherapy.

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## ABSTRACT

### Purpose:

Our centre introduced consultant (Attending Physician) led peer review of all curative intent lung cancer (NSCLC and SCLC) radiotherapy plans in 2011. In this process, all components of the treatment pathway, including decision to treat, target volume delineation, radiotherapy plan coverage and proposed image guidance are discussed and the meeting recommendations are recorded on a database. We have previously demonstrated a significant impact on radiotherapy plan target volume delineation. Given this impact we seek to assess the clinical impact of introducing a consultant led radiotherapy plan peer review process.

### Methods:

Using our institutional lung cancer radiotherapy database we identified all patients with NSCLC and SCLC who had curative intent radiotherapy between 2001 and 2015. Using our regional cancer clinical database and cancer registry figures we identified the total number of patients diagnosed with lung cancer. Using these sources, we recorded the proportion of all patients with a lung cancer diagnosis who received curative intent radiotherapy and for the patients who received curative intent radiotherapy, the 90-day mortality and the 2-year overall survival. Survival was estimated using the Kaplan Meier method.

### Results:

In total 1096 patients were treated with curative intent radiotherapy between 2001 and 2015 in our region. During this time period, there was an increase in the proportion of patients with lung cancer receiving radiotherapy from 5% (95% C.I. 4.6% to 5.4%) before 2011 to 10% (95% C.I. 9.2% to 10.8%) after 2011. This increase was seen across the region. The 90 day mortality rate remained relatively stable 3% versus 4% (NS). Although other factors need to be taken in to account the 2-year overall survival increased from 39% to 46% (HR 0.86 – 95% C.I. =0.70 to 0.97).

### Conclusions:

There has been a doubling of the use of radical radiotherapy, without an increase in short term mortality or a fall in survival which has coincided with the establishment of a regional lung cancer radiotherapy peer review meeting. We propose that peer review is a significant factor in increasing access to and outcomes from curative intent lung cancer radiotherapy.

## OBJECTIVES

- Our centre introduced consultant (Attending Physician) led peer review of all curative intent lung cancer (NSCLC and SCLC) radiotherapy plans in 2011.
- In this process, all components of the treatment pathway are discussed and the meeting recommendations are recorded on a database (see figure 1) and these, include:
  - decision to treat;
  - target volume delineation;
  - radiotherapy plan coverage;
  - proposed image guidance.
- We have previously demonstrated a significant impact on radiotherapy plan target volume delineation<sup>1</sup>.
- Given this impact we seek to assess the clinical impact of introducing a consultant led radiotherapy plan peer review process.

The screenshot shows a web-based form titled 'Peer Review Lung Database'. It contains numerous input fields for patient data (ID, initials, BPR, cons, Histology, Treatment Paradigm, PET/CT staging, FEV1, TF, Respiratory Compensation, Peer Review Treatment Indication, Peer Review Treatment Indication Changed, Peer Review Volume Date, Changed Peer Review Volume) and clinical details (Age, PS, T, N, PLNS, M, MRC Dys, %FEV1, %TF, brain staging, iv contra, Gender, GTV volume). There are also checkboxes for 'PR Volume change - date accepted', 'PR Review DVH Date', 'Lung V20/V18', 'oesophageal V50', 'Spinal Cord PRV max:', 'mean heart:', 'Changed Peer Review DVH?', 'PR DVH accepted if previously declined', 'Peer Review Dose Date', 'Dose prescription:', 'Changed Peer Review Dose?', 'PR Dose accepted if previously declined', and 'Comments'. On the right side, there are checkboxes for 'VMAT or IMRT', 'Type B algorithm', '99%+ PTV 95% dose', '99%+ CTV 95% d', '99%+ PTV 95% D', '99%+ PTV 90% dose', 'salvage', '2 primaries', 'Oligomet', 'Lung nodules (T3/4)', and 'Replan needed'.

Fig 1: Recording fields for the Northern Ireland radical lung radiotherapy peer review database

## METHODS

- Using our institutional lung cancer radiotherapy database we identified all patients with NSCLC and SCLC who had curative intent radiotherapy between 2001 and 2015.
- Using our regional cancer clinical database and cancer registry figures we identified the total number of patients diagnosed with lung cancer.
- Using these sources, we recorded the proportion of all patients with a lung cancer diagnosis who received curative intent radiotherapy and for the patients who received curative intent radiotherapy, the 90-day mortality and the 2-year overall survival.
- Survival was estimated using the Kaplan Meier method.

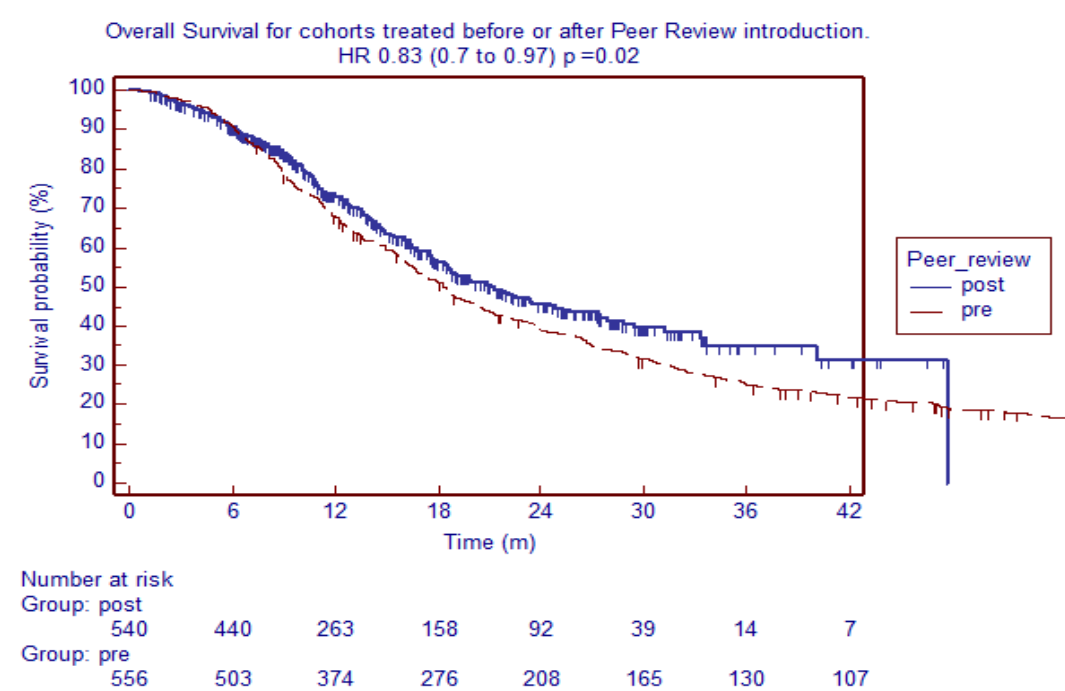
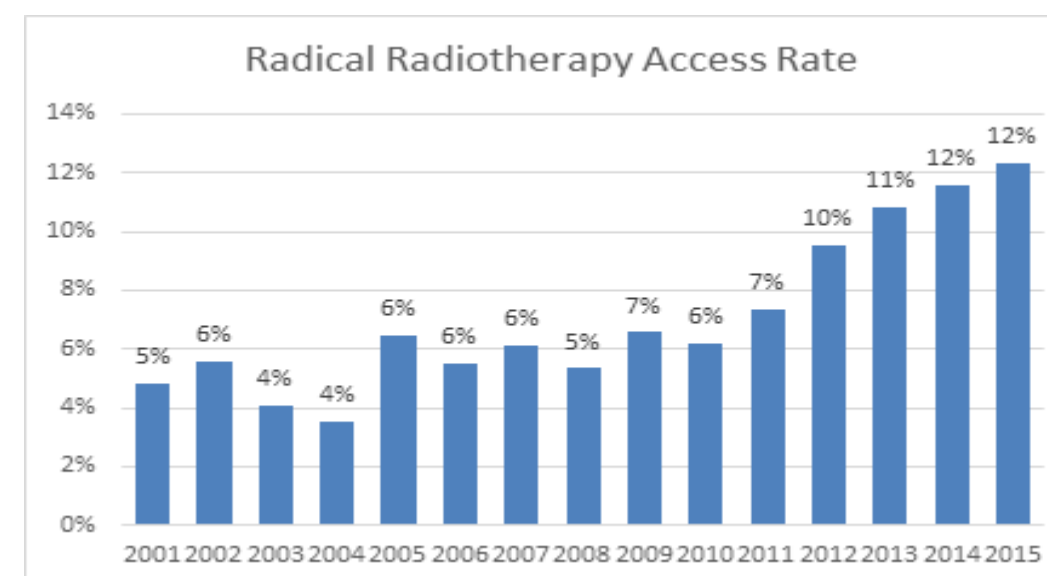


Fig 2: Overall survival before and after introduction of peer review

Fig 3: Northern Ireland curative intent radiotherapy for lung cancer access rates from 2011 to 2015.



## RESULTS

- In total 1096 patients were treated with curative intent radiotherapy between 2001 and 2015.
- During this time period, there was an increase in the proportion of patients with lung cancer receiving radiotherapy from 5% (95% C.I. 4.6% to 5.4%) before 2011 to 10% (95% C.I. 9.2% to 10.8%) after 2011.
- This increase was seen across the region.
- 90-day mortality rate remained relatively stable 3% versus 4% (NS).
- Although other factors need to be taken in to account the 2-year overall survival increased from 39% to 46% (HR 0.86 – 95% C.I. =0.70 to 0.97).

## CONCLUSIONS

- In the study period, there has been a doubling of the use of radical radiotherapy, without an increase in short term mortality or a fall in survival.
- This has coincided with the establishment of a regional lung cancer radiotherapy peer review meeting.
- We suggest that peer review is a significant factor in increasing access to and outcomes from curative intent lung cancer radiotherapy.

## REFERENCES

1. Rooney KP, et al. The Impact of Colleague Peer Review on the Radiotherapy Treatment Planning Process in the Radical Treatment of Lung Cancer. Clin Oncol 2015;27(9):514-8.

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