Royal College of Physicians | National Lung Cancer Audit

NLCA annual report analysis 2017
(for the population of 2016)

Overview

Patient-level data for England, Wales and Guernsey were analysed together, with Guernsey considered as an English trust to simplify the reporting. For England, the National Cancer Registration and Analysis Service (NCRAS) provided an extract of processed cases from the cancer registry that have a primary ICD-10 C34 diagnosis. All trusts in England were offered the opportunity to validate the data held by Nation Cancer Registration & Analysis Service, but not all completed this process.

This document explains the rules used to carry out the analysis and can be used by organisations to replicate the analysis using their own local data, and to compare it with the results in annual audit report. The results of analysis on local data will inevitably differ slightly as it has not gone through the NCRAS/NLCA procedure of cleaning and validation.

Defining denominators for calculation

The table below describes the methods used, and the denominators for the overall aggregated results. Upon applying further exclusion criteria (see annual audit results Excel sheets available online at www.nlcaudit.co.uk) and combining data from Guernsey and Wales, we were left with 36,761 patients from England, 2,240 patients from Wales and 40 patients from Guernsey.

The denominator for the overall aggregated results which includes all lung cancer patients (NSCLC, SCLC & carcinoids) is 39,038.

The denominator for all NSCLC is 34,502, and 23,548 for histologically confirmed NSCLC patients.

The numbers for NSCLC stage IIIB & IV is 19,318 while for NSCLC stage IIIB&IV and PS0/1 is 7,164.

Lastly the denominator to be used for SCLC is 3,991.

Increase in adjusted proportions

The NLCA team is often asked about how results can increase or decrease following case mix adjustment. One of the most important reasons for this is that the distribution of stage or performance status (PS) of an organisation can vary greatly from the national average. For example, an organisation that has 8% PS0 cases and 17% PS1 cases, when compared with a national average of 16% PS0and 27% PS1, will likely see their adjusted result increase significantly, especially in outcomes such as surgery which is dependent on good PS and good stage patients.

For further details please contact the NLCA team at NLCA@rcplondon.ac.uk

Field Calculations	
Trust first seen (England only)	Order of declining priority: 1) Validated name of the trust sent during the validation process for a patient 2) Patients assigned through the NLCA developed algorithm. See document online: www.rcplondon.ac.uk/projects/outputs/data-collection-and-indicators
Performance status %	Number of patients with performance status of 0, 1, 2, 3, 4 and 5 divided by total number of patients with lung cancer. Patients with stage recording of 9 are not counted as it signifies missing data =Number of patients with performance status of 0, 1, 2, 3, 4 and 5 x 100 39,038
Stage %	Number of patients with Stage 0,1A,1B,2A,2B,3A,3B and 4 divided by the total number of patients with lung cancer. = Number of patients with Stage 0,1A,1B,2A,2B,3A,3B and 4 x 100 39,038
Performance status and Stage %	Number of patients who have a recording of performance status of 0,1,2,3,4 and 5 **&** recording of stage 0,1A,1B,2A,2B,3A,3B and 4 divided by the total number of patients with lung cancer. = Number of patients who have a recording of performance status of 0,1,2,3,4 and 5 **&** recording of stage 0,1A,1B,2A,2B,3A,3B and 4 x 100 39,038
FEV1 Percentage %	Number of patients with a recording of FEV1 percentage divided by the total number of patients in England and Wales (exclude Guernsey as data not provided) = Number of patients with a recording of FEV1 percentage x 100 (36758+2240)
FEV1 Percentage with Stage I&II and PS 0/1 %	Number of patients with stage I or II and PS 0/1 lung cancer and a recording of FEV1 percentage divided by the total number of patients with stage I&II and PS 0/1 in England and Wales (exclude Guernsey as data not provided) = Number of patients with a recording of FEV1 percentage x 100 (5527+314)
FEV1 Absolute %	Number of patients with a recording of FEV1 absolute divided by the total number of patients in England and Wales (exclude Guernsey as data not provided) = Number of patients with a recording of FEV1 absolute x 100 (36758+2240)
FEV1 Absolute	Number of patients with stage I or II and PS 0/1 lung cancer and a recording of

with Stage I&II and PS 0/1 %	FEV1 absolute divided by the total number of patients with stage I&II and PS 0/1 in England and Wales (exclude Guernsey as data not provided) = Number of patients with a recording of FEV1 absolute x 100 (5527+314)
CT Scan %	Number of patients with a date of CT scan divided by the total number of patients from England and Wales = Number of patients with date of CT scan x 100 (36758 +2240)
PET Scan %	Number of patients with a date of PET scan divided by the total number of patients from England and Wales = Number of patients with date of PET scan x 100 (36758 +2240)
Bronchoscopy %	Number of patients with a date for bronchoscopy divided by the total number of patients from England and Wales = Number of patients with date for bronchoscopy x 100 (36758 +2240)
Nurse Specialist %	The field of Nurse specialist is divided into 3 calculations: 1) LCNS data completeness This is calculated by counting the number of patients with a recording of whether the patients **was/or not** seen by a LCNS divided by the total number of patients = Number of patients with 'clinical nurse specialist' variable as Y or N x 100 39038 2) LCNS assessed This is calculated by counting the number of patients with a recording of whether the patients **was** seen by a LCNS divided by the total number of patients = Number of patients with 'clinical nurse specialist' variable as 'Y' x 100 39038 3) LCNS present at diagnosis This is calculated by counting the code 'Y1' which indicates clinical nurse specialist presence during diagnosis divided by the total number of patients in England. This measure can only be calculated for England. = Number of patients with 'Y1' cns recording x 100 36758
MDT %	Number of patients with a valid date of MDT discussion divided by the total number of patients with lung cancer. = Number of patients with a valid date of MDT discussion x 100

	39038
Pathological Confirmation %	Number of patients with a valid SNOMED code which either signifies NSCLC, SCLC or carcinoids and excludes no SNOMED code or bucket code (see variable code type & list of valid SNOMED codes used), divided by total number of lung cancer patients. = Number of patients with SNOMED code for NSCLC, SCLC or carcinoid x 100 39038
NSCLC Not Otherwise Specified (NOS) %	Number of patients with a SNOMED morphology code of M8046/3 divided by the total number of histologically confirmed cases. = Number of patients with a SNOMED morphology code of M8046/3 x 100 23548
Active anti-cancer treatment %	This field combines treatment data from Hospital Episode Statistics (HES), Radiotherapy Dataset (RTDS) and Systemic Anti-cancer Treatment dataset (SACT) with the surgery, radiotherapy and systemic anti-cancer treatment data in NLCA. To calculate active treatment rates, we include all patients with a valid surgery, systemic anti-cancer treatment and radiotherapy dates in either NLCA, HES, RTDS and SACT divided by the total number of patients. = Number of patients with NLCA, RTDS, SACT or HES data on treatment x 100 39038
Surgery (overall) %	Number of patients with a valid date of surgery (one month before or six months after date of diagnosis) from NLCA or HES (See document – for type of surgery included) divided by total number of patients. = Number of patients with surgery from NLCA or HES x 100 39038
Surgery (NSCLC) %	Number of NSCLC (proven or presumed) patients with a valid date of surgery (one month before or six months after date of diagnosis) from NLCA or HES divided by total number of patients with NSCLC. = Number of NSCLC patients with surgery from NLCA or HES x 100 34502
Surgery (pathologically confirmed NSCLC) %	Number of pathologically proven NSCLC patients with a valid date of surgery (one month before or six months after date of diagnosis) from NLCA or HES divided by total number of pathologically proven NSCLC patients. = Number of proven NSCLC patients with surgery from NLCA or HES x 100 23548
Surgery (Stage I & II NSCLC) %	Number of Stage I & II NSCLC (proven or presumed) patients with a valid date of surgery (one month before or six months after date of diagnosis) from NLCA or HES divided by total number of NSCLC patients with Stage I & II. = Number of NSCLC patients of Stage I/II with surgery from NLCA or HES x 100

	9525
Surgery (Stage I & II NSCLC and PS 0-2) %	Number of Stage I & II NSCLC (proven or presumed) patients with a valid date of surgery (one month before or six months after date of diagnosis) from NLCA or HES divided by total number of NSCLC patients with Stage I & II. = Number of NSCLC patients of Stage I/II and PS 0-2 with surgery from NLCA or HES / 6965 x 100
Radiotherapy %	Number of patients with a valid date of radiotherapy (six months before or six months after date of diagnosis) from NLCA or RTDS divided by the total number of patients. = Number of patients with valid date of radiotherapy from NLCA or RTDS / 39038 x 100
Radiotherapy with curative intent (NSCLC Stage I&II and PS 0-2)	We categorised radiotherapy with curative intent into SABR and Other Radical Radiotherapy. SABR: Presence of dose of radiotherapy greater than or equal to 50 Gy & fractions less than 11 divided by the total number of patients with stage I&II NSCLC and PS 0 -2. Other Radical Radiotherapy: Dose of radiotherapy greater than 50 Gy (except SABR doses) divided by the total number of patients with stage I&II NSCLC and PS 0 -2. SABR = Number of NSCLC stage I&II and PS 0-2 patients with fraction > 49 and fraction < 11 / 6555 x 100 Conventional RT = Number of NSCLC stage I&II and PS 0-2 patients with fraction > 49 and fraction < 11 / 6555 x 100
Curative-intent treatment (NSCLC Stage I & II and PS 0-2) %	We defined radical treatment for this analysis as the presence of dose of radiotherapy greater than or equal to 50 Gy recorded in RTDS OR date of surgery from NLCA or HES. (This analysis only uses radiotherapy mentioned in RTDS as the radiotherapy dataset provides more detail on radiotherapy including radiotherapy type based on dose.) This was calculated for English patients only. Number of NSCLC patients with stage I or II and who received radical treatment (see above definition) divided by the total number of NSCLC patients with Stage I or II. = Number of NSCLC patients of Stage I&II and PS 0-2 and RTDS dose ≥ 50 Gy or date of surgery from NLCA or HES / 6555 x 100
Systemic anti-cancer	Number of SCLC patients with a valid date of systemic anti-cancer treatment (six months before or six months after date of diagnosis) from NLCA or SACT

treatment (SCLC) %	divided by the total number of patients with SCLC. = Number of SCLC patients with systemic anti-cancer treatment from NLCA or SACT / 3991 x 100
Systemic anti-cancer treatment (NSCLC) %	Number of NSCLC (proven or presumed) patients with a valid date of systemic anti-cancer treatment (six month before or six months after date of diagnosis) from NLCA or SACT divided by total number of patients with NSCLC. = Number of NSCLC patients with systemic anti-cancer treatment from NLCA or SACT / 34502 x 100
Systemic anti-cancer treatment (NSCLC Stage IIIB/IV) %	Number of NSCLC (proven or presumed) patients with stage IIIB/IV with a valid date of systemic anti-cancer treatment (six month before or six months after date of diagnosis) from NLCA or SACT divided by total number of patients with NSCLC and stage IIIB/IV. = Number of NSCLC patients stage IIIB/IV with systemic anti-cancer treatment from NLCA or SACT / 19318 x 100
Systemic anti-cancer treatment (NSCLC Stage IIIB/IV PS 0/1) %	Number of NSCLC (proven or presumed) patients with stage IIIB/IV and performance status 0/1 with a valid date of systemic anti-cancer treatment (six months before or six months after date of diagnosis) from NLCA or SACT divided by total number of patients with NSCLC, stage IIIB/IV and PS 0/1. = Number of NSCLC patients, stage IIIB/IV, PS 0/1 with systemic anti-cancer treatment from NLCA or SACT / 7164 x 100
Survival 3 months %	Number of patients whose end date (either date of death or last date of ONS follow up) is more than 3 months divided by total number of patients who were followed up for more than 3 months. = Number of patients who have survived 3 months from date of diagnosis / 39013 x 100
Survival 1 year %	Number of patients whose end date (either date of death or last date of ONS follow up) is more than 1 year divided by total number of patients who were followed up for more than 1 year. As the data analysis for the annual audit occurs 9 months after year ends, all patients who were diagnosed from October till December 2016 would not be included in the denominator due to the lack of 1 year follow-up. = Number of patients who have survived 1 year from date of diagnosis / 30435 x 100