# Neuroimaging in staging patients with non-small cell lung cancer

**Descriptor:**

Patients with newly diagnosed stage III (NICE guidelines) or N2 (SIGN guidelines) NSCLC who are planned for curative management should have contrast-enhanced CT brain or preferably,MRI head for staging purposes prior to treatment. This is not required in stage I and II disease.

**Background:**

The incidence of occult brain metastases is as high as 22% in newly diagnosed NSCLCpatients with disease stage higher than T1N0M0 with surgically resectable disease [1]. Earlydetection of unsuspected brain metastasis in patients who are planned for curative treatmentwill alter disease staging and management plan and may spare the patient needless majorsurgical intervention or radical radiotherapy.

To this end, NICE suggests considering MRI or CT head especially in stage III disease andSIGN 2014 recommends contrast CT head or MRI in N2 disease[2],[3],[4],[5],[6],[7]. It is alsoimportant to use resources appropriately; SIGN recommends neuroimaging is not required instage I-II patients unless clinically indicated [8],[9].

## The Cycle

**The standard:**

1. All patients with N2 or stage III non-small cell lung cancer being considered for curativetreatment should have brain imaging.

2. Patients with stage I-II lung cancer should not have unnecessary brain imaging.

**Target:**

Aim 100% compliance.

## Assess local practice

**Indicators:**

Percentage of patients identified through lung cancer MDT having appropriate neuroimaging(Contrast CT or MRI) for staging purposes.

**Data items to be collected:**

To collect the following using lung cancer MDT data and local RIS system:

- Staging, TNM classification and histopathology.

- Treatment intent: curative or palliative?

- Whether neuroimaging was performed, type of imaging (contrast CT/MRI), whether for staging purposes and results.

**Suggested number:**

All patients diagnosed with stage III and/or N2 NSCLC for curative treatment over the past 1-2 years.

All patients with stage I-II NSCLC in the same time period.

**Suggestions for change if target not met:**

- Results presented to local respiratory physicians and disseminated to respiratory MDT oncologists and local radiology team.

- Radiology lead at MDT to remind when neuroimaging appropriate.

- Amend MDT forms to include the following:

                    Neuroimaging performed or booked?

                    Type of neuroimaging?

                    Reason for not performing neuroimaging.

- Re-auditing after a year from implementing the changes to check for compliance.

- Include neuroimaging guidelines in the local lung cancer quality performance indicator(QPI) to make sure this is monitored yearly.

**Resources:**

- Assistance from lung cancer MDT coordinator to pull the required data.

- Radiologist time to collect and analyze the data (average 16 hours).

- Assistance from the respiratory department secretaries/or MDT coordinator to amend MDT forms if necessary.

- Assistance from radiology and/or respiratory clinical director to include the above as a QPI.

- Financial resources will be required to scan eligible patients. With current prevalence of NSCLC and number of patients suitable for curative treatment, implementing the above will only minimally increase the radiology department workload. Meeting the target would increase throughput by approximately 2 extra brain scans per month based on two district general hospitals however numbers may be higher in tertiary centres).

**References:**

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