

# **Lung cancer: diagnosis and management (update)**

**Search strategies**

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*Search strategies*

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# 1. Scoping search strategies

## 1.1 Scoping searches

Scoping searches were undertaken on the following websites and databases (listed in alphabetical order) in April 2017 to provide information for scope development and project planning. Browsing or simple search strategies were employed.

Guidelines/website	Systematic review/economic evaluations
American Cancer Society	Campbell Collaboration
American College of Chest Physicians	Cochrane Database of Systematic Reviews (CDSR)
American Society for Radiation Oncology	Database of Abstracts of Reviews of Effects (DARE) – last updated April 2015
American Thoracic Society	DUETS
Association for Molecular Pathology	Health Technology Assessment (HTA) Database – last updated October 2016
British Lung Foundation	NHS Economic Evaluation Database (NHS EED) – last updated April 2015
British Thoracic Society	NIHR Health Technology Assessment Programme
Canadian Medical Association Infobase	NIHR Health Services and Delivery Research (HS&DR) Programme
Canadian Task Force on Preventive Health Care	PROSPERO
Cancer Australia	TRIP Database
Cancer Care Ontario	
Cancer Control Alberta	
Cancer Research UK	
Care Quality Commission	
College of American Pathologists	
Core Outcome Measures in Effectiveness Trials (COMET)	
Department of Health & Social Care	
European Respiratory Society	
European Society for Medical Oncology	
European Society of Gastrointestinal Endoscopy	
European Society of Thoracic Surgery	
General Medical Council	
Guidelines & Audit Implementation Network (GAIN)	
Guidelines International Network (GIN)	
Healthtalk Online	
International Association for the Study of Lung Cancer	
MacMillan Cancer Support	
Medicines and Products Regulatory Agency (MHRA)	
National Audit Office	
National Cancer Intelligence Network	
National Clinical Audit and Patient Outcomes Programme	
National Health and Medical Research Council - Australia	
National Institute for Health and Care Excellence (NICE) - published & in development guidelines	

Guidelines/website	Systematic review/economic evaluations
National Institute for Health and Care Excellence (NICE) - Topic Selection NHS Choices NHS Digital NHS England NICE Clinical Knowledge Summaries (CKS) NICE Evidence Search Office for National Statistics Patient UK PatientVoices Public Health England Quality Health Royal College of Anaesthetists Royal College of General Practitioners Royal College of Midwives Royal College of Nursing Royal College of Pathologists Royal College of Physicians Royal College of Radiologists Royal College of Surgeons Scottish Government Scottish Intercollegiate Guidelines Network (SIGN) UK Data Service US National Guideline Clearinghouse Walsall community Health NHS Trust Welsh Government	

## 1.2 Main searches

Bibliographic databases searched for the guideline

- Cochrane Database of Systematic Reviews – CDSR (Wiley)
- Cochrane Central Register of Controlled Trials – CENTRAL (Wiley)
- Database of Abstracts of Reviews of Effects – DARE (Wiley)
- Health Technology Assessment Database – HTA (Wiley)
- EMBASE (Ovid)
- MEDLINE (Ovid)
- MEDLINE Epub Ahead of Print (Ovid)
- MEDLINE In-Process (Ovid)

## 1.3 Identification of evidence for review questions

The searches were conducted between October 2017 and April 2018 for 9 review questions (RQ).

Searches were re-run in May 2018.

Where appropriate, in-house study design filters were used to limit the retrieval to, for example, randomised controlled trials. Details of the study design filters used can be found in section 3.

## 2. Review question search strategies

### 2.1 Search strategy review questions

RQ1.1: What is the clinical and cost effectiveness of using non-ultrasound-guided TBNA, EBUS-TBNA or EUS-FNA as the first test for people with an intermediate probability of mediastinal malignancy?

RQ1.2: What is the clinical and cost-effectiveness of EBUS-TBNA alone, EUS-FNA alone or EBUS-TBNA and EUS-FNA in combination compared with surgical staging to diagnose and/or stage lung cancer?

**Table 1: search strategy**

**Medline Strategy, searched 3<sup>rd</sup> November 2017**

**Database: Ovid MEDLINE(R) 1946 to October Week 4 2017**

**Search Strategy:**

- 1 exp Lung Neoplasms/
- 2 ((lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.
- 3 ((pancoast\* or superior sulcus or pulmonary sulcus) adj4 (tumo?r\* or syndrome\*)).tw.
- 4 ((lung\* or pulmonary or bronch\*) adj4 (oat or small or non-small) adj4 cell\*).tw.
- 5 (SCLC or NSCLC).tw.
- 6 or/1-5
- 7 exp Biopsy, Fine-Needle/
- 8 Biopsy, Needle/mt [Methods]
- 9 (TBNA\* or EBUSTBNA\* or TBNB\* or EUS-FNA\* or EUSFNA\* or EUS-FNB\* or EUSFNB\*).tw.
- 10 (EUS\* adj2 (FNA\* or FNB\*)).tw.
- 11 ((transbronch\* or trans-bronch\*) adj4 needle\* adj4 (aspirat\* or biops\* or prick\* or perforat\* or ruptur\*)).tw.
- 12 ((endoscop\* or endobronch\*) adj4 (ultras\* or echo\* or sonogra\* or tomograph\* or doptone\*) adj4 (needle\* or fine or hollow\*) adj4 (aspirat\* or biops\* or prick\* or perforat\* or ruptur\*)).tw.
- 13 (EUS\* adj4 (needle\* or fine or hollow\*) adj4 (aspirat\* or biops\* or prick\* or perforat\* or ruptur\*)).tw.
- 14 or/7-13
- 15 6 and 14
- 16 Animals/ not Humans/
- 17 15 not 16
- 18 limit 17 to english language

Note: *In-house RCT, observational studies and systematic review filters were appended. No date limit as these were new questions.*

### 2.2 Search strategy review question

RQ1.3: What is the clinical and cost-effectiveness of routine MRI of the brain in the management of people with lung cancer prior to radical therapy with curative intent?



**Table 2: search strategy**

**Medline Strategy, searched 27<sup>th</sup> November 2017**

**Database: Ovid MEDLINE(R) 1946 to November Week 3 2017**

**Search Strategy:**

- 1 exp Lung Neoplasms/
- 2 ((lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.
- 3 ((pancoast\* or superior sulcus or pulmonary sulcus) adj4 (tumo?r\* or syndrome\*)).tw.
- 4 ((lung\* or pulmonary or bronch\*) adj4 (oat or small or non-small) adj4 cell\*).tw.
- 5 (SCLC or NSCLC).tw.
- 6 or/1-5
- 7 exp Magnetic Resonance Imaging/
- 8 ((magnet\* or spin\* or chemical\* or proton\*) adj4 (resonan\* or shift\* or spin\* or echo\* or contrast\* or transfer\*) adj4 (imag\* or tomograph\* or angiograph\* or perfusion\*)).tw.
- 9 ((NMR or MR) adj4 (imag\* or tomograph\* or angiograph\* or perfusion\*)).tw.
- 10 (MRI or MRIs or fMRI or MRA or DWI).tw.
- 11 zeugmatograph\*.tw.
- 12 exp Magnetic Resonance Spectroscopy/
- 13 (magnet\* adj4 resonan\* adj4 (spectro\* or spectra\* or spectru\*)).tw.
- 14 ((NMR or MR) adj4 (spectro\* or spectra\* or spectru\*)).tw.
- 15 MRS.tw.
- 16 (fluid attenuated adj4 inversion recover\*).tw.
- 17 FLAIR.tw.
- 18 or/7-17
- 19 exp Central Nervous System/
- 20 exp Skull/
- 21 (brain\* or encephalon\* or cerebr\* or intracranial\* or supratentorial\* or cerebell\* or mening\* or leptomening\*).tw.
- 22 ((gr?y or white) adj2 matter\*).tw.
- 23 (cranial\* or skull\* or cranium\* or calvari\* or pituitar\* or hypophys\* or infundibl\* or infracerebral\*).tw.
- 24 (central nervous system\* or CNS or cerebrospin\*).tw.
- 25 or/19-24
- 26 18 and 25
- 27 exp Neuroimaging/
- 28 neuroimag\*.tw.
- 29 ((brain\* or encephalon\* or cerebr\* or intracranial\* or supratentorial\* or cerebell\* or mening\* or leptomening\* or neuro\* or neura\*) adj4 (imag\* or scan\* or tomograph\*)).tw.
- 30 exp Central Nervous System/dg [Diagnostic Imaging]
- 31 exp Brain Neoplasms/dg [Diagnostic Imaging]
- 32 Cerebrospinal Fluid/dg [Diagnostic Imaging]
- 33 or/27-32
- 34 26 or 33
- 35 6 and 34
- 36 Animals/ not Humans/
- 37 35 not 36
- 38 limit 37 to english language

*Note: No date limit was used as this is a new question.*

## 2.3 Search strategy review question

RQ3.1: What is the clinical and cost effectiveness of chemoradiotherapy or surgery with adjuvant treatment for the treatment for N2 stage NSCLC?

**Table 3: search strategy**

<b>Medline Strategy, searched 26<sup>th</sup> February 2018</b>	
<b>Database: Ovid MEDLINE(R) 1946 to Present with Daily Update</b>	
<b>Search Strategy:</b>	
1	exp Lung Neoplasms/
2	((lung* or pulmonary or bronch*) adj3 (cancer* or neoplasm* or carcinoma* or tumo?r* or lymphoma* or metast* or malignan* or blastoma* or carcinogen* or adenocarcinoma* or angiosarcoma* or chondrosarcoma* or sarcoma* or teratoma* or microcytic*)).tw.
3	((pancoast* or superior sulcus or pulmonary sulcus) adj4 (tumo?r* or syndrome*)).tw.
4	((lung* or pulmonary or bronch*) adj4 (oat or small or non-small) adj4 cell*).tw.
5	(SCLC or NSCLC).tw.
6	or/1-5
7	(N2* or cN2* or pN2* or ypN2* or T*N2* or N0-2* or IIIA* or cIIIA* or IIIB*).tw.
8	(stag* adj3 (three or III or four or IV or late* or advance*)).tw.
9	(stag* adj3 ("3" or "4")).tw.
10	(local* advanc* adj3 (non-small or NSCLC)).tw.
11	LA-NSCLC.tw.
12	Mediastinum/
13	Mediastinal Neoplasms/
14	(mediastin* or subcarinal).tw.
15	or/7-14
16	Thoracic Surgery/
17	Thoracic Surgical Procedures/
18	Pulmonary Surgical Procedures/
19	Pneumonectomy/
20	Thoracotomy/
21	exp Thoracoscopy/
22	((lung* or pulmonary or bronch* or thorax or thorac*) adj4 (surg* or operation* or reoperation* or resection* or excision*)).tw.
23	(surg* adj1 resection*).tw.
24	(pneumonectom* or pneumoresect* or pulmonectom* or thoracotom* or pleuracotom* or pleurotom* or pleuroscop* or rethoracotom* or pneumolobectom* or segmentectom* or thoracoscop* or videothoracoscop* or bilobectom*).tw.
25	(EPP or PNE or VATS).tw.
26	(pleura* adj4 (endoscop* or incision*)).tw.
27	((lung* or pulmonary or bronch*) adj4 lobect*).tw.
28	((wedge or triangl*) adj4 (resect* or excision*)).tw.
29	or/16-28
30	exp Chemoradiotherapy/
31	(chemoradiotherap* or radiochemotherap* or chemoradiation*).tw.
32	(CRT or CRTx or CCRT or NCRT or RCTx or RT-CT or chemoRT).tw.
33	Combined Modality Therapy/
34	(combine* adj4 modal* adj4 (treat* or therap* or regimen* or manag* or intervention*)).tw.
35	((tri-modal* or trimodal* or multi-modal* or multimodal*) adj4 (treat* or therap* or regimen* or manag* or intervention*)).tw.
36	TMT.tw.

**Medline Strategy, searched 26<sup>th</sup> February 2018**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

- 37 or/30-36
- 38 29 or 37
- 39 6 and 15 and 38
- 40 Animals/ not Humans/
- 41 39 not 40
- 42 limit 41 to english language

*Note: In-house RCT and systematic review filters were appended. No date limit was used due to additional terminology to that in the searches carried out in the 2011 guideline update.*

## 2.4 Search strategy review question

RQ3.2: What is the clinical and cost effectiveness of different radiotherapy regimens with curative intent for NSCLC (stage T1a–2b N0 M0)?

**Table 4: search strategy**

**Medline Strategy, searched 18<sup>th</sup> January 2018 (main search), 3<sup>rd</sup> April 2018 (2005-2011 published papers), 24<sup>th</sup> May 2018 (observational studies)**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

- 1 exp Lung Neoplasms/
- 2 ((lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.
- 3 ((pancoast\* or superior sulcus or pulmonary sulcus) adj4 (tumo?r\* or syndrome\*)).tw.
- 4 ((lung\* or pulmonary or bronch\*) adj4 (oat or small or non-small) adj4 cell\*).tw.
- 5 (SCLC or NSCLC).tw.
- 6 or/1-5
- 7 exp Radiotherapy/
- 8 Radiation Oncology/
- 9 radiotherapy.fs.
- 10 (radiotherap\* or radiotreat\* or roentgentherap\* or radiosurg\*).tw.
- 11 ((radiat\* or radio\* or irradiat\* or roentgen or x-ray or xray) adj4 (therap\* or treat\* or repair\* or oncolog\* or surg\*)).tw.
- 12 (RT or RTx or XRT).tw.
- 13 Stereotaxic Techniques/
- 14 ((stereotac\* or stereotax\*) adj4 (radiat\* or surg\* or procedure\* or method\* or technique\* or technic\*)).tw.
- 15 (SABR or SBRT or SRS).tw.
- 16 ((hypofraction\* or hyperfraction\*) adj4 (dose\* or dosage\* or accelerat\* or expedite\* or hasten\* or quick\* or radical\* or modulat\* or adjust\* or regulat\* or intens\*)).tw.
- 17 (HFSRT or CAHRT or CHARTWEL or IMRT or AHRT or A-HYPO or HypoTRT).tw.
- 18 or/7-17
- 19 6 and 18
- 20 limit 19 to english language
- 21 Animals/ not Humans/
- 22 20 not 21
- 23 (201104\* or 201105\* or 201106\* or 201107\* or 201108\* or 201109\* or 201110\* or 201111\* or 201112\* or 2012\* or 2013\* or 2014\* or 2015\* or 2016\* or 2017\* or 2018\*).ed.

**Medline Strategy, searched 18<sup>th</sup> January 2018 (main search), 3<sup>rd</sup> April 2018 (2005-2011 published papers), 24<sup>th</sup> May 2018 (observational studies)**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

24 22 and 23

*Note: In-house RCT, observational studies and systematic review filters were appended. Original search was conducted on 18<sup>th</sup> January 2018 with a date limit of April 2011 onwards. An additional search was then requested for papers published between 2005 and April 2011, this was conducted on 3<sup>rd</sup> April 2018. A final search of observational studies to support RCT evidence was conducted on 24<sup>th</sup> May 2018*

## 2.5 Search strategy review question

RQ3.4: What is the most clinically and cost-effective regimen of chemoradiotherapy for people with limited-stage SCLC?

**Table 5: search strategy**

**Medline Strategy, searched 8<sup>th</sup> March 2018**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

- 1 Small Cell Lung Carcinoma/
- 2 Carcinoma, Small Cell/
- 3 SCLC.tw.
- 4 ((pancoast\* or superior sulcus or pulmonary sulcus) adj4 (tumo?r\* or syndrome\*)).tw.
- 5 or/1-4
- 6 ((small or oat or reserve or round) adj1 cell adj1 (lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.
- 7 (non adj1 small adj1 cell adj1 (lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.
- 8 6 not 7
- 9 5 or 8
- 10 exp Chemoradiotherapy/
- 11 (chemoradiotherap\* or radiochemotherap\* or chemoradiation\*).tw.
- 12 (chemo adj1 (radiotherap\* or radiation)).tw.
- 13 ((chemotherap\* or antineoplastic\* or anti-neoplastic\* or polychemotherap\* or CTX) adj4 combin\* adj4 (radiotherap\* or radiotreat\* or irradiat\* or RT or RTx or XRT or TRT or TCRT)).tw.
- 14 Combined Modality Therapy/
- 15 (combine\* adj4 modal\* adj4 (treat\* or therap\* or regimen\* or manag\* or intervention\*)).tw.
- 16 ((tri-modal\* or trimodal\* or multi-modal\* or multimodal\*) adj4 (treat\* or therap\* or regimen\* or manag\* or intervention\*)).tw.
- 17 TMT.tw.
- 18 or/10-17
- 19 Drug Therapy/
- 20 exp Drug Therapy, Combination/
- 21 exp Antineoplastic Protocols/
- 22 exp Antineoplastic Agents/
- 23 Chemotherapy, Adjuvant/
- 24 (chemotherap\* or antineoplastic\* or anti-neoplastic\* or polychemotherap\* or CTX).tw.

**Medline Strategy, searched 8<sup>th</sup> March 2018**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

- 25 ((anticancer\* or anti-cancer\* or antitumo?r or anti-tumo?r or anticarcinogen\* or anti-carcinogen\*) adj4 (drug\* or agent\* or therap\* or treat\* or medicat\* or protocol\*)).tw.
- 26 or/19-25
- 27 (concurrent\* or follow\* or after\* or with or consecutiv\* or alongside or synchroni?ed or parallel or coexisting or concomitant or accompan\*).tw.
- 28 exp Radiotherapy/
- 29 Radiation Oncology/
- 30 exp Radiography, Thoracic/
- 31 radiotherapy.fs.
- 32 (radiotherap\* or radiotreat\* or roentgentherap\* or radiosurg\*).tw.
- 33 ((radiat\* or radio\* or irradiat\* or roentgen or x-ray or xray) adj4 (therap\* or treat\* or repair\* or oncolog\* or surg\*)).tw.
- 34 (RT or RTx or XRT or TRT or TCRT).tw.
- 35 ((chest\* or thorac\* or thorax) adj4 irradiat\*).tw.
- 36 or/28-35
- 37 26 and 27 and 36
- 38 18 or 37
- 39 9 and 38
- 40 Animals/ not Humans/
- 41 39 not 40
- 42 limit 41 to english language

*Note: In-house RCT and systematic review filters were appended. No date limit was used as this was a new question.*

## 2.6 Search strategy review question

RQ3.5: In people with extensive-stage SCLC who have had first-line treatment with systemic anti-cancer therapies, when is first use of thoracic radiotherapy clinically and cost effective?

**Table 6: search strategy**

**Medline Strategy, searched 12<sup>th</sup> February 2018**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

- 1 Small Cell Lung Carcinoma/
- 2 Carcinoma, Small Cell/
- 3 SCLC.tw.
- 4 ((pancoast\* or superior sulcus or pulmonary sulcus) adj4 (tumo?r\* or syndrome\*)).tw.
- 5 or/1-4
- 6 ((small or oat or reserve or round) adj1 cell adj1 (lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.
- 7 (non adj1 small adj1 cell adj1 (lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or

**Medline Strategy, searched 12<sup>th</sup> February 2018**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*).tw.

8 6 not 7

9 5 or 8

10 exp Radiography, Thoracic/

11 ((chest\* or thorac\* or thorax) adj4 (radiotherap\* or radiotreat\* or roentgentherap\* or radiosurg\* or radiograph\*)).tw.

12 ((chest\* or thorac\* or thorax) adj4 (radiat\* or radio\* or irradiat\* or roentgen or x-ray or xray) adj4 (therap\* or treat\* or repair\* or oncolog\* or surg\*)).tw.

13 ((chest\* or thorac\* or thorax) adj4 (RT or RTx or XRT)).tw.

14 (TRT or TCRT).tw.

15 or/10-14

16 exp Radiotherapy/

17 Radiation Oncology/

18 radiotherapy.fs.

19 or/16-18

20 exp Thorax/

21 (chest\* or thorac\* or thorax).tw.

22 20 or 21

23 19 and 22

24 15 or 23

25 9 and 24

26 limit 25 to english language

27 Animals/ not Humans/

28 26 not 27

*Note: In-house RCT, observational studies and systematic review filters were appended. No date limit as this is a new question.*

## 2.7 Search strategy review questions

RQ4.1: What is the clinical and cost effectiveness of cranial irradiation for brain metastases in people with NSCLC?

RQ4.2: What is the clinical and cost-effectiveness of prophylactic cranial irradiation to prevent brain metastases in people with SCLC?

**Table 7: search strategy**

**Medline Strategy, searched 16<sup>th</sup> October 2017 (with date limit) & 6<sup>th</sup> November 2017 (without date limit)**

**Database: Ovid MEDLINE(R) 1946 to October Week 4 2017**

**Search Strategy:**

- 1 exp Lung Neoplasms/
- 2 ((lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*).tw.
- 3 ((pancoast\* or superior sulcus or pulmonary sulcus) adj4 (tumo?r\* or syndrome\*).tw.
- 4 ((lung\* or pulmonary or bronch\*) adj4 (oat or small or non-small) adj4 cell\*).tw.
- 5 (SCLC or NSCLC).tw.
- 6 or/1-5
- 7 exp Central Nervous System Neoplasms/
- 8 ((central nervous system\* or CNS or cerebrospinal axi\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\* or disease\*).tw.
- 9 ((brain\* or encephalon\* or cerebr\* or intracranial\* or supratentorial\* or cerebell\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\* or disease\*).tw.
- 10 ((gr?y or white) adj2 matter\* adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\* or disease\*).tw.
- 11 ((mening\* or leptomening\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\* or disease\*).tw.
- 12 (meningeoma\* or meningothelioma\*).tw.
- 13 Spinal Neoplasms/
- 14 ((spine or spinal\* or intraspinal\* or dorsal\* or vertebra\* or myelon\* or epidural\* or dural\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\* or disease\*).tw.
- 15 or/7-14
- 16 exp Brain/
- 17 exp Meninges/
- 18 (brain\* or encephalon\* or cerebr\* or intracranial\* or supratentorial\* or cerebell\* or mening\* or leptomening\*).tw.
- 19 ((gr?y or white) adj2 matter\*).tw.
- 20 (single or solitary or singular).tw.
- 21 or/16-20

**Medline Strategy, searched 16<sup>th</sup> October 2017 (with date limit) & 6<sup>th</sup> November 2017 (without date limit)**

**Database: Ovid MEDLINE(R) 1946 to October Week 4 2017**

**Search Strategy:**

- 22 exp Neoplasm Metastasis/
- 23 exp Carcinoma/
- 24 (metast\* or carcinoma\* or carcinosis or carcinomatosis or epithelioma\*).tw. (830586)
- 25 ((cancer\* or neoplasm\* or tumor\* or lymphoma\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*) adj3 (spread\* or disseminat\* or secondary\* or migrat\* or advanc\* or termina\* or involv\*).tw.
- 26 or/22-25
- 27 21 and 26
- 28 15 or 27
- 29 exp Cranial Irradiation/
- 30 ((cranial\* or skull\* or cranium\* or calvari\* or pituitar\* or hypophys\* or infundibl\* or infracerebral\*) adj4 (irradiat\* or radiat\* or radio\*).tw.
- 31 (PCI or PCRT).tw.
- 32 ((whole or full or total or complete or entire or thorough or comprehensive or extensive) adj4 (brain\* or encephalon\* or cerebr\* or intracranial\* or supratentorial\* or cerebell or mening\* or leptomening\*) adj4 (irradiat\* or radiat\* or radio\*).tw.
- 33 WBRT.tw.
- 34 exp Brain Neoplasms/rt [Radiotherapy]
- 35 exp Meningeal Neoplasms/rt [Radiotherapy]
- 36 Radiosurgery/
- 37 radiosurg\*.tw.
- 38 ((stereotac\* or stereotax\* or gamma\* or linear or LINAC or cyberkni\*) adj4 radiotherap\*).tw.
- 39 or/29-38
- 40 6 and 28 and 39
- 41 Animals/ not Humans/
- 42 40 not 41
- 43 limit 42 to english language

*Note: In-house RCT, observational studies and systematic review filters were appended. A date limit was originally applied (16<sup>th</sup> October 2017) and then removed following first review of the evidence.*



### 3. Study Design Filters

**Table 8: study design filters**

The MEDLINE SR, RCT, and observational studies filters are presented below.	
<b>Systematic Review</b>	
1.	Meta-Analysis.pt.
2.	Meta-Analysis as Topic/
3.	Review.pt.
4.	exp Review Literature as Topic/
5.	(metaanaly\$ or metanaly\$ or (meta adj3 analy\$)).tw.
6.	(review\$ or overview\$).ti.
7.	(systematic\$ adj5 (review\$ or overview\$)).tw.
8.	((quantitative\$ or qualitative\$) adj5 (review\$ or overview\$)).tw.
9.	((studies or trial\$) adj2 (review\$ or overview\$)).tw.
10.	(integrat\$ adj3 (research or review\$ or literature)).tw.
11.	(pool\$ adj2 (analy\$ or data)).tw.
12.	(handsearch\$ or (hand adj3 search\$)).tw.
13.	(manual\$ adj3 search\$).tw.
14.	or/1-13
15.	animals/ not humans/
16.	14 not 15
<b>RCT</b>	
1	Randomized Controlled Trial.pt.
2	Controlled Clinical Trial.pt.
3	Clinical Trial.pt.
4	exp Clinical Trials as Topic/
5	Placebos/
6	Random Allocation/
7	Double-Blind Method/
8	Single-Blind Method/
9	Cross-Over Studies/
10	((random\$ or control\$ or clinical\$) adj3 (trial\$ or stud\$)).tw.
11	(random\$ adj3 allocat\$).tw.
12	placebo\$.tw.
13	((singl\$ or doubl\$ or trebl\$ or tripl\$) adj (blind\$ or mask\$)).tw.
14	(crossover\$ or (cross adj over\$)).tw.
15	or/1-14
16	animals/ not humans/
17	15 not 16
<b>Observational</b>	
1	Observational Studies as Topic/
2	Observational Study/
3	Epidemiologic Studies/
4	exp Case-Control Studies/
5	exp Cohort Studies/
6	Cross-Sectional Studies/
7	Controlled Before-After Studies/
8	Historically Controlled Study/
9	Interrupted Time Series Analysis/
10	Comparative Study.pt.
11	case control\$.tw.

**The MEDLINE SR, RCT, and observational studies filters are presented below.**

- 12 case series.tw.
- 13 (cohort adj (study or studies)).tw.
- 14 cohort analy\$.tw.
- 15 (follow up adj (study or studies)).tw.
- 16 (observational adj (study or studies)).tw.
- 17 longitudinal.tw.
- 18 prospective.tw.
- 19 retrospective.tw.
- 20 cross sectional.tw.
- 21 or/1-20

## 4. Health economics search strategies

### 4.1 Economic evaluations and quality of life data

#### Sources searched to identify economic evaluations

- NHS Economic Evaluation Database – NHS EED (Wiley) last updated Apr 2015
- Health Technology Assessment Database – HTA (Wiley) last updated Oct 2016
- Embase (Ovid)
- MEDLINE (Ovid)
- MEDLINE In-Process (Ovid)

Search filters to retrieve economic evaluations and quality of life papers were appended to the review question search strategies. For some health economics strategies additional terms were added to the original review question search strategies (see sections 4.2, 4.3 and 4.4) The searches were conducted between October 2017 and April 2018 for 9 review questions (RQ).

Searches were re-run in May 2018.

Searches were limited to those in the English language. Animal studies were removed from results.

**Table 9: Economic evaluation and quality of life filters**

Medline Strategy	
<b>Economic evaluations</b>	
1	Economics/
2	exp "Costs and Cost Analysis"/
3	Economics, Dental/
4	exp Economics, Hospital/
5	exp Economics, Medical/
6	Economics, Nursing/
7	Economics, Pharmaceutical/
8	Budgets/
9	exp Models, Economic/
10	Markov Chains/
11	Monte Carlo Method/
12	Decision Trees/
13	econom\$.tw.
14	cba.tw.
15	cea.tw.
16	cua.tw.
17	markov\$.tw.
18	(monte adj carlo).tw.
19	(decision adj3 (tree\$ or analys\$)).tw.
20	(cost or costs or costing\$ or costly or costed).tw.
21	(price\$ or pricing\$).tw.
22	budget\$.tw.

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- 23 expenditure\$.tw.
- 24 (value adj3 (money or monetary)).tw.
- 25 (pharmacoeconomic\$ or (pharmaco adj economic\$)).tw.
- 26 or/1-25

### Quality of life

- 1 "Quality of Life"/
- 2 quality of life.tw.
- 3 "Value of Life"/
- 4 Quality-Adjusted Life Years/
- 5 quality adjusted life.tw.
- 6 (qaly\$ or qald\$ or qale\$ or qtime\$).tw.
- 7 disability adjusted life.tw.
- 8 daly\$.tw.
- 9 Health Status Indicators/
- 10 (sf36 or sf 36 or short form 36 or shortform 36 or sf thirtysix or sf thirty six or shortform thirtysix or shortform thirty six or short form thirtysix or short form thirty six).tw.
- 11 (sf6 or sf 6 or short form 6 or shortform 6 or sf six or sfsix or shortform six or short form six).tw.
- 12 (sf12 or sf 12 or short form 12 or shortform 12 or sf twelve or sftwelve or shortform twelve or short form twelve).tw.
- 13 (sf16 or sf 16 or short form 16 or shortform 16 or sf sixteen or sfsixteen or shortform sixteen or short form sixteen).tw.
- 14 (sf20 or sf 20 or short form 20 or shortform 20 or sf twenty or sftwenty or shortform twenty or short form twenty).tw.
- 15 (euroqol or euro qol or eq5d or eq 5d).tw.
- 16 (qol or hql or hqol or hrqol).tw.
- 17 (hye or hyes).tw.
- 18 health\$ year\$ equivalent\$.tw.
- 19 utilit\$.tw.
- 20 (hui or hui1 or hui2 or hui3).tw.
- 21 disutili\$.tw.
- 22 rosser.tw.
- 23 quality of wellbeing.tw.
- 24 quality of well-being.tw.
- 25 qwb.tw.
- 26 willingness to pay.tw.
- 27 standard gamble\$.tw.
- 28 time trade off.tw.
- 29 time tradeoff.tw.
- 30 tto.tw.
- 31 or/1-30

## 4.2 Search strategy review questions

RQ1.1: What is the clinical and cost effectiveness of using non-ultrasound-guided TBNA, EBUS-TBNA or EUS-FNA as the first test for people with an intermediate probability of mediastinal malignancy?

RQ1.2: What is the clinical and cost-effectiveness of EBUS-TBNA alone, EUS-FNA alone or EBUS-TBNA and EUS-FNA in combination compared with surgical staging to diagnose and/or stage lung cancer?

**Table 10: Search strategy**

**Medline Strategy, searched 6<sup>th</sup> November 2017**

**Database: Ovid MEDLINE(R) 1946 to October Week 4 2017**

**Search Strategy:**

- 1 exp Lung Neoplasms/
- 2 ((lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.
- 3 ((pancoast\* or superior sulcus or pulmonary sulcus) adj4 (tumo?r\* or syndrome\*)).tw. (756)
- 4 ((lung\* or pulmonary or bronch\*) adj4 (oat or small or non-small) adj4 cell\*).tw.
- 5 (SCLC or NSCLC).tw.
- 6 or/1-5
- 7 exp Biopsy, Fine-Needle/
- 8 Biopsy, Needle/mt [Methods]
- 9 (TBNA\* or EBUSTBNA\* or TBNB\* or EUS-FNA\* or EUSFNA\* or EUS-FNB\* or EUSFNB\*).tw.
- 10 (EUS\* adj2 (FNA\* or FNB\*)).tw.
- 11 ((transbronch\* or trans-bronch\*) adj4 needle\* adj4 (aspirat\* or biops\* or prick\* or perforat\* or ruptur\*)).tw.
- 12 ((endoscop\* or endobronch\*) adj4 (ultras\* or echo\* or sonogra\* or tomograph\* or doptone\*) adj4 (needle\* or fine or hollow\*) adj4 (aspirat\* or biops\* or prick\* or perforat\* or ruptur\*)).tw.
- 13 (EUS\* adj4 (needle\* or fine or hollow\*) adj4 (aspirat\* or biops\* or prick\* or perforat\* or ruptur\*)).tw.
- 14 exp Positron-Emission Tomography/
- 15 (positron emission adj2 compute\* adj2 (tomograph\* or assist\*)).tw.
- 16 (PET\* adj2 CT).tw.
- 17 Mediastinoscopy/
- 18 Mediastinoscopes/
- 19 Mediastinum/dg [Diagnostic Imaging]
- 20 (mediastinoscop\* or mediastinotom\*).tw.
- 21 ((neck\* or collum or collar) adj4 US).tw.
- 22 or/7-21
- 23 exp Neck/
- 24 Neck Muscles/
- 25 exp Cervical Vertebrae/
- 26 (neck\* or collum or collar).tw.
- 27 ((cervical or C) adj4 vertebra\*).tw.
- 28 or/23-27
- 29 exp Ultrasonography/
- 30 (ultras\* or echo\* or sonogra\* or tomograph\* or doptone\*).tw.
- 31 29 or 30
- 32 28 and 31
- 33 22 or 32
- 34 6 and 33 (10309)
- 35 Animals/ not Humans/
- 36 34 not 35

**Medline Strategy, searched 6<sup>th</sup> November 2017**  
**Database: Ovid MEDLINE(R) 1946 to October Week 4 2017**  
**Search Strategy:**

37 limit 36 to english language

### 4.3 Search strategy review question

RQ1.3: What is the clinical and cost-effectiveness of routine MRI of the brain in the management of people with lung cancer prior to radical therapy with curative intent?

**Table 11: Search strategy**

**Medline Strategy, searched 5<sup>th</sup> December 2017**  
**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**  
**Search Strategy:**

1 exp Lung Neoplasms/  
2 ((lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.  
3 ((pancoast\* or superior sulcus or pulmonary sulcus) adj4 (tumo?r\* or syndrome\*)).tw.  
4 ((lung\* or pulmonary or bronch\*) adj4 (oat or small or non-small) adj4 cell\*).tw.  
5 (SCLC or NSCLC).tw.  
6 or/1-5  
7 exp Magnetic Resonance Imaging/  
8 ((magnet\* or spin\* or chemical\* or proton\*) adj4 (resonan\* or shift\* or spin\* or echo\* or contrast\* or transfer\*) adj4 (imag\* or tomograph\* or angiograph\* or perfusion\*)).tw.  
9 ((NMR or MR) adj4 (imag\* or tomograph\* or angiograph\* or perfusion\*)).tw.  
10 (MRI or MRIs or fMRI or MRA or DWI).tw.  
11 zeugmatograph\*.tw.  
12 exp Magnetic Resonance Spectroscopy/  
13 (magnet\* adj4 resonan\* adj4 (spectro\* or spectra\* or spectru\*)).tw.  
14 ((NMR or MR) adj4 (spectro\* or spectra\* or spectru\*)).tw.  
15 MRS.tw.  
16 (fluid attenuated adj4 inversion recover\*).tw.  
17 FLAIR.tw.  
18 exp Tomography, X-Ray Computed/  
19 Tomography Scanners, X-Ray Computed/  
20 ((comput\* or electron\*) adj4 tomograph\*).tw.  
21 (CT or CAT or NCCT or MDCT or PCT).tw.  
22 tomodensitometr\*.tw.  
23 or/7-22  
24 exp Central Nervous System/  
25 exp Skull/  
26 (brain\* or encephalon\* or cerebr\* or intracranial\* or supratentorial\* or cerebell\* or mening\* or leptomening\*).tw.  
27 ((gr?y or white) adj2 matter\*).tw.  
28 (cranial\* or skull\* or cranium\* or calvari\* or pituitar\* or hypophys\* or infundibl\* or infracerebral\*).tw.  
29 (central nervous system\* or CNS or cerebrospin\*).tw. (274289)

**Medline Strategy, searched 5<sup>th</sup> December 2017**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

30 or/24-29  
31 23 and 30  
32 exp Neuroimaging/  
33 neuroimag\*.tw.  
34 ((brain\* or encephalon\* or cerebr\* or intracranial\* or supratentorial\* or cerebell\* or mening\* or leptomening\* or neuro\* or neura\*) adj4 (imag\* or scan\* or tomograph\*)).tw.  
35 exp Central Nervous System/dg [Diagnostic Imaging]  
36 exp Brain Neoplasms/dg [Diagnostic Imaging]  
37 Cerebrospinal Fluid/dg [Diagnostic Imaging]  
38 or/32-37  
39 31 or 38  
40 6 and 39  
41 Animals/ not Humans/  
42 40 not 41

## 4.4 Search strategy review question

RQ 3.5: In people with extensive-stage SCLC who have had first-line treatment with systemic anti-cancer therapies, when is first use of thoracic radiotherapy clinically and cost effective?

**Table 12: Search strategy**

**Medline Strategy, searched 13<sup>th</sup> February 2018**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

1 Small Cell Lung Carcinoma/  
2 Carcinoma, Small Cell/  
3 SCLC.tw.  
4 ((pancoast\* or superior sulcus or pulmonary sulcus) adj4 (tumo?r\* or syndrome\*)).tw.  
5 or/1-4  
6 ((small or oat or reserve or round) adj1 cell adj1 (lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.  
7 (non adj1 small adj1 cell adj1 (lung\* or pulmonary or bronch\*) adj3 (cancer\* or neoplasm\* or carcinoma\* or tumo?r\* or lymphoma\* or metast\* or malignan\* or blastoma\* or carcinogen\* or adenocarcinoma\* or angiosarcoma\* or chondrosarcoma\* or sarcoma\* or teratoma\* or microcytic\*)).tw.  
8 6 not 7  
9 5 or 8  
10 exp Radiotherapy/  
11 Radiation Oncology/  
12 exp Radiography, Thoracic/  
13 radiotherapy.fs.  
14 (radiotherap\* or radiotreat\* or roentgentherap\* or radiosurg\*).tw.  
15 ((radiat\* or radio\* or irradiat\* or roentgen or x-ray or xray) adj4 (therap\* or treat\* or repair\* or oncolg\* or surg\*)).tw.

**Medline Strategy, searched 13<sup>th</sup> February 2018**

**Database: Ovid MEDLINE(R) 1946 to Present with Daily Update**

**Search Strategy:**

- 16 (RT or RTx or XRT or TRT or TCRT).tw.
- 17 or/10-16
- 18 9 and 17
- 19 limit 18 to english language
- 20 Animals/ not Humans/
- 21 19 not 20