# ΚΑΡΚΙΝΟΣ ΠΝΕΥΜΟΝΑ

ΕΛΕΝΗ ΚΟΚΚΟΤΟΥ MD, MSc

ΠΝΕΥΜΟΝΟΛΟΓΟΣ

ΟΓΚΟΛΟΓΙΚΗ ΜΟΝΑΔΑ, Γ΄ΠΑΝΕΠΙΣΤΗΜΙΑΚΗ ΠΑΘΟΛΟΓΙΚΗ ΚΛΙΝΙΚΗ

ΙΑΤΡΙΚΗ ΣΧΟΛΗ ΕΚΠΑ

- ΑΠΟ ΤΟΥΣ ΣΥΧΝΟΤΕΡΟΥΣ ΚΑΙ ΠΙΟ ΘΑΝΑΤΗΦΟΡΟΥΣ ΚΑΡΚΙΝΟΥΣ ΠΑΓΚΟΣΜΙΩΣ
- ΚΑΘΥΣΤΕΡΗΜΕΝΗ ΔΙΑΓΝΩΣΗ ⇒ ΚΑΘΥΣΤΕΡΗΜΕΝΗ ΘΕΡΑΠΕΙΑ ⇒ ΘΝΗΣΙΜΟΤΗΤΑ
- 36.1% ΠΕΝΤΑΕΤΗΣ ΕΠΙΒΙΩΣΗ (ΣΤΑΔΙΑ I-III)
- 2.6% ΠΕΝΤΑΕΤΗΣ ΕΠΙΒΙΩΣΗ (ΣΤΑΔΙΟ IV)

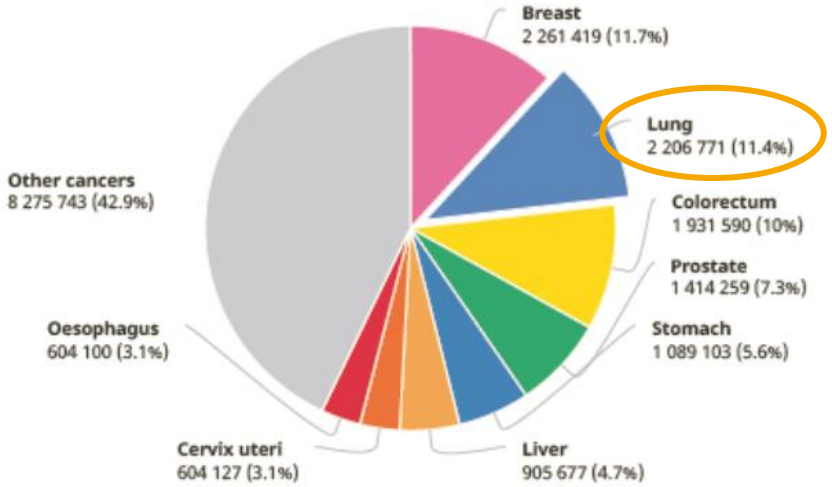
International Agency for Research on Cancer

World Health Organization

# Lung

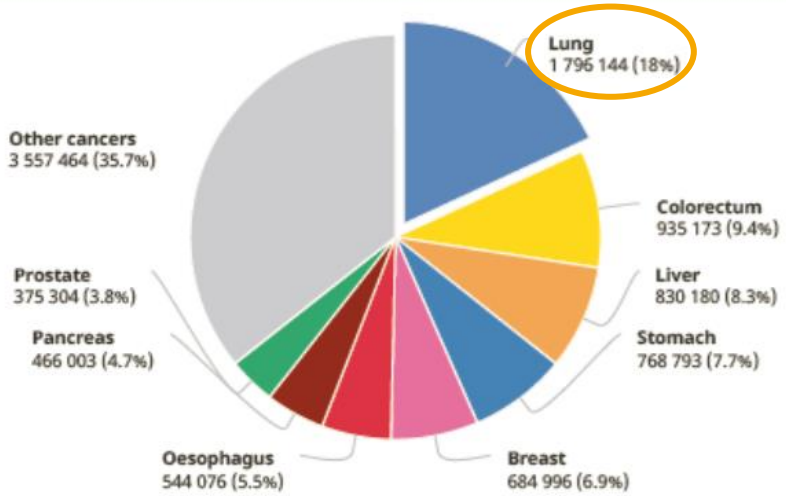
Source: Globocan 2020

## Number of new cases in 2020, both sexes, all ages




**Total: 19 292 789 cases**

## Number of deaths in 2020, both sexes, all ages

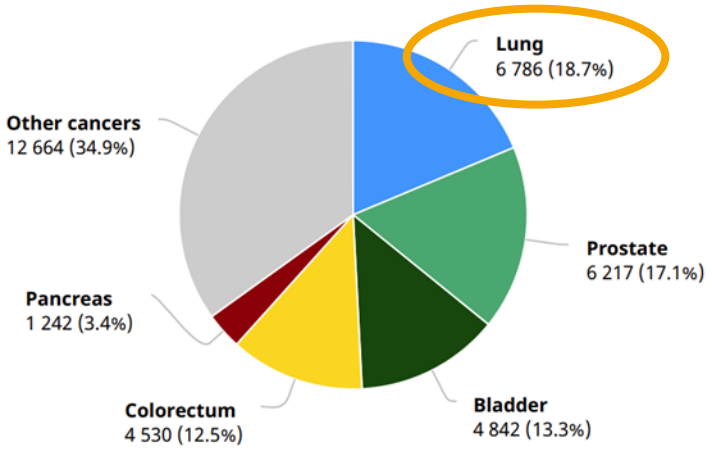



**Total: 9 958 133 deaths**

# Greece

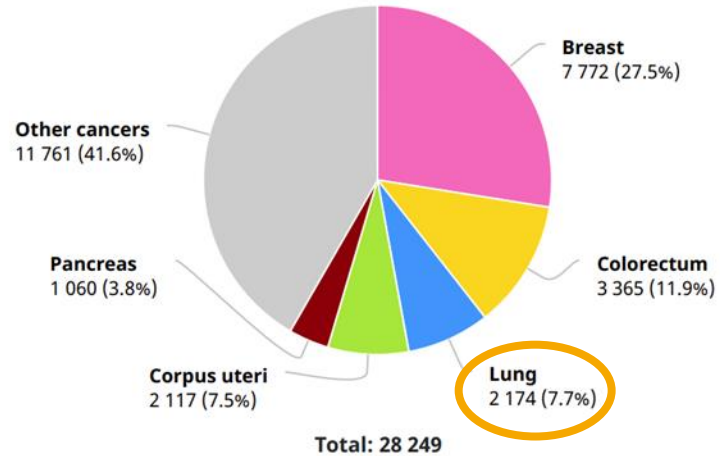
Source: Globocan

## Number of new cases in 2020, males, all ages




**Total: 36 281**

## Number of new cases in 2020, females, all ages

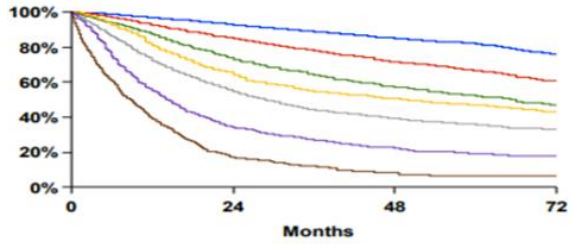



**Total: 28 249**

## Core IASLC Data in Support of Recommendations for Stage Groupings

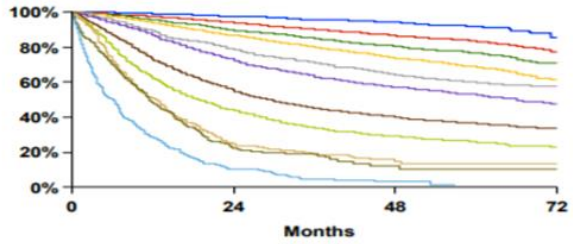
# Overall Survival by Clinical Stage

### 7th Edition Stage Groupings




| 7th Ed. | Events / N | MST | 24 Month | 60 Month |
|---|---|---|---|---|
| IA | 1119 / 6303 | NR | 93% | 82% |
| IB | 768 / 2492 | NR | 85% | 66% |
| IIA | 424 / 1008 | 66.0 | 74% | 52% |
| IIB | 382 / 824 | 49.0 | 64% | 47% |
| IIIA | 2139 / 3344 | 29.0 | 55% | 36% |
| IIIB | 2101 / 2624 | 14.1 | 34% | 19% |
| IV | 664 / 882 | 8.8 | 17% | 6% |

### Proposed Stage Groupings




| Proposed | Events / N | MST | 24 Month | 60 Month |
|---|---|---|---|---|
| IA1 | 68 / 781 | NR | 97% | 92% |
| IA2 | 505 / 3105 | NR | 94% | 83% |
| IA3 | 546 / 2417 | NR | 90% | 77% |
| IB | 560 / 1928 | NR | 87% | 68% |
| IIA | 215 / 585 | NR | 79% | 60% |
| IIB | 605 / 1453 | 66.0 | 72% | 53% |
| IIIA | 2052 / 3200 | 29.3 | 55% | 36% |
| IIIB | 1551 / 2140 | 19.0 | 44% | 26% |
| IIIC | 831 / 986 | 12.6 | 24% | 13% |
| IVA | 336 / 484 | 11.5 | 23% | 10% |
| IVB | 328 / 398 | 6.0 | 10% | 0% |

- MST, median survival time.
- Survival is weighted by type of database submission: registry versus other.

IASLC

*From:* Goldstraw P, Chansky K, Crowley J, et al. The IASLC Lung Cancer Staging Project: Proposals for Revision of the TNM Stage Groupings in the Forthcoming (Eighth) Edition of the TNM Classification for Lung Cancer. *J Thorac Oncol* 2016;11:39-51.

CRAB Cancer Research And Biostatistics

# ΚΛΙΝΙΚΑ ΧΑΡΑΚΤΗΡΙΣΤΙΚΑ ΚΑΡΚΙΝΟΥ ΠΝΕΥΜΟΝΑ

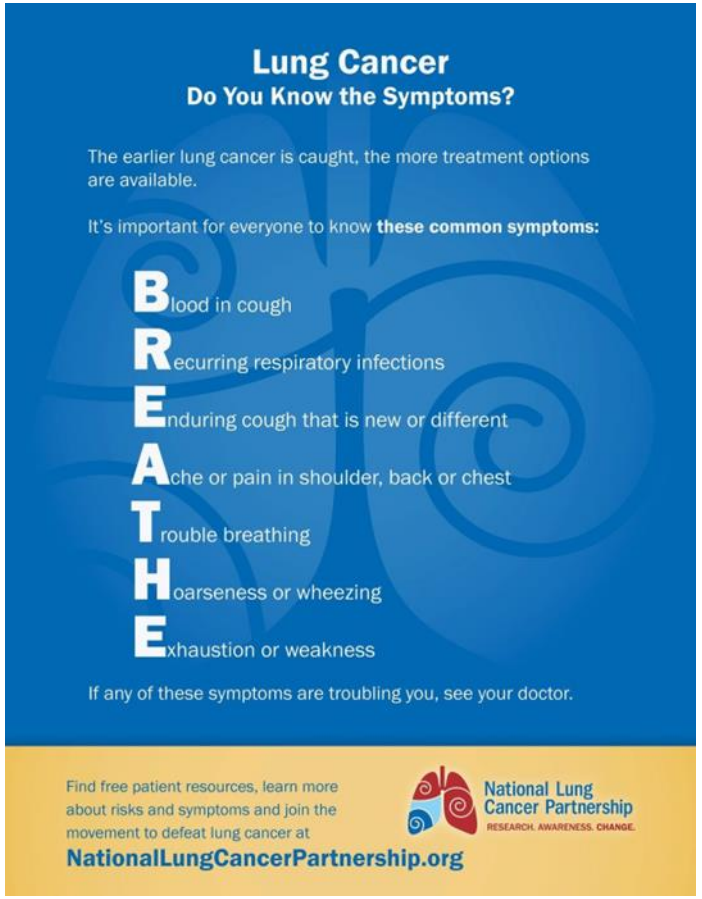
- ΟΙ ΠΛΕΙΟΨΗΦΙΑ ΤΩΝ ΑΣΘΕΝΩΝ ΕΙΝΑΙ ΣΥΜΠΤΩΜΑΤΙΚΟΙ
- ΣΥΜΠΤΩΜΑΤΑ ΜΠΟΡΕΙ ΝΑ ΠΡΟΚΛΗΘΟΥΝ ΑΠΟ:

➢ ΤΟΝ ΠΡΩΤΟΠΑΘΗ ΟΓΚΟ

➢ ΤΗ ΤΟΠΙΚΗ ΔΙΗΘΗΣΗ ΤΟΥ ΟΓΚΟΥ

➢ ΤΙΣ ΜΕΤΑΣΤΑΣΕΙΣ

➢ ΤΙΣ ΠΑΡΑΝΕΟΠΛΑΣΜΑΤΙΚΕΣ ΕΚΔΗΛΩΣΕΙΣ



# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΒΗΧΑΣ**

- ΜΗ ΕΙΔΙΚΟ ΣΥΜΠΤΩΜΑ
- ΠΑΡΟΥΣΙΑΖΕΤΑΙ ΣΤΟ 45% - 75% ΤΩΝ ΑΣΘΕΝΩΝ ΚΑΙ ΣΤΗΝ ΠΛΕΙΟΨΗΦΙΑ ΤΩΝ ΚΑΠΝΙΣΤΩΝ
- ΟΙ ΚΑΠΝΙΣΤΕΣ ΠΑΡΟΥΣΙΑΖΟΥΝ ΑΛΛΑΓΗ ΤΟΥ ΒΗΧΑ
- ΣΥΜΜΕΤΟΧΗ ΤΩΝ ΑΕΡΑΓΩΓΩΝ ΛΟΓΩ ΤΗΣ ΘΕΣΗΣ ΤΩΝ ΥΠΟΔΟΧΕΩΝ ΤΟΥ ΒΗΧΑ
- ΣΥΧΝΟΤΕΡΑ ΣΕ ΜΙΚΡΟΚΥΤΤΑΡΙΚΟ ΚΑΙ ΠΛΑΚΩΔΕΣ ΚΑΡΚΙΝΟ ΠΝΕΥΜΟΝΑ

# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΑΙΜΟΠΤΥΣΗ**

- ΑΠΟΒΟΛΗ ΑΙΜΑΤΟΣ ΑΠΟ ΤΟ ΣΤΟΜΑ (ΑΙΜΟΦΥΡΤΑ ΠΤΥΕΛΑ / ΜΑΖΙΚΗ ΠΝΕΥΜΟΝΙΚΗ ΑΙΜΟΡΡΑΓΙΑ)
- ΑΙΜΟΡΡΑΓΙΑ ΚΑΤΩΤΕΡΟΥ ΑΝΑΠΝΕΥΣΤΙΚΟΥ
- ΣΥΧΝΟΤΕΡΑ ΣΤΟ ΠΛΑΚΩΔΕΣ
- ΜΑΖΙΚΗ ΑΙΜΟΠΤΥΣΗ ΠΑΡΑΤΗΡΕΙΤΑΙ ΣΕ ΚΕΝΤΡΙΚΑ ΝΕΟΠΛΑΣΜΑΤΑ, ΜΕ ΚΟΙΛΟΤΗΤΑ Ή ΔΙΗΘΗΣΗ ΚΕΝΤΡΙΚΩΝ ΑΕΡΑΓΩΓΩΝ

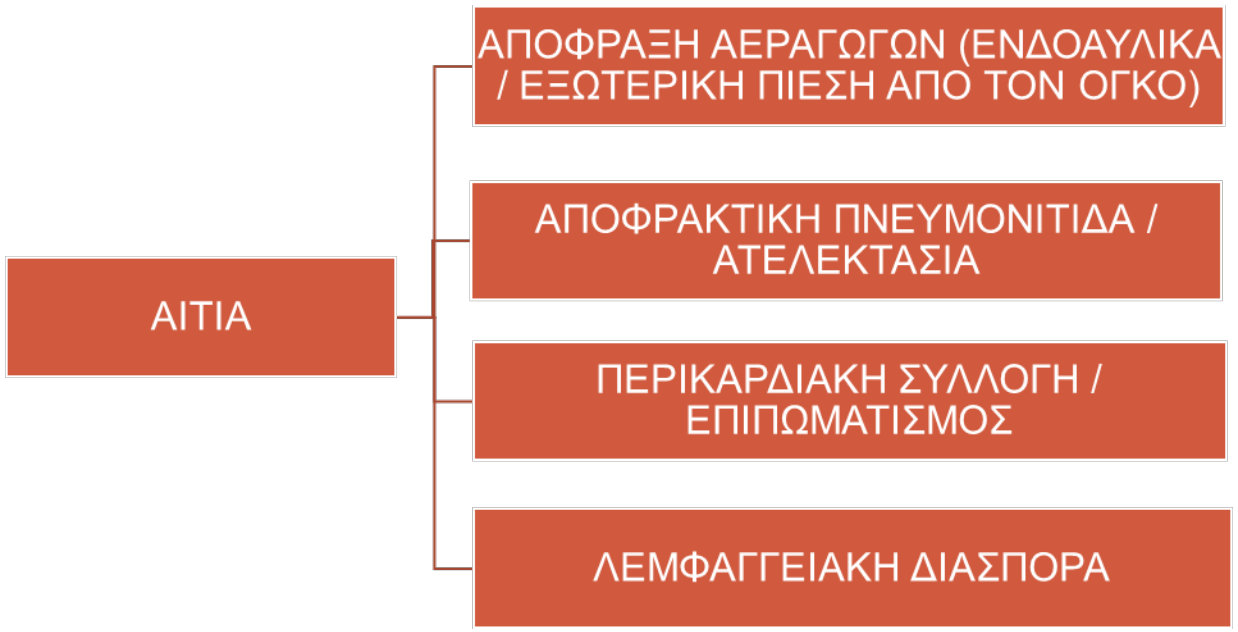
**ΑΙΤΙΑ**

- ΝΕΟΑΓΓΕΙΩΣΗ ΟΓΚΟΥ
- ΑΠΟΠΤΩΣΗ ΕΠΙΦΑΝΕΙΑΣ ΟΓΚΟΥ
- ΕΡΕΘΙΣΜΟΣ ΟΓΚΟΥ ΛΟΓΩ ΒΗΧΑ
- ΔΙΑΒΡΩΣΗ ΑΓΓΕΙΩΝ ΠΟΥ ΠΕΡΙΚΛΕΙΟΥΝ ΤΟΝ ΟΓΚΟ

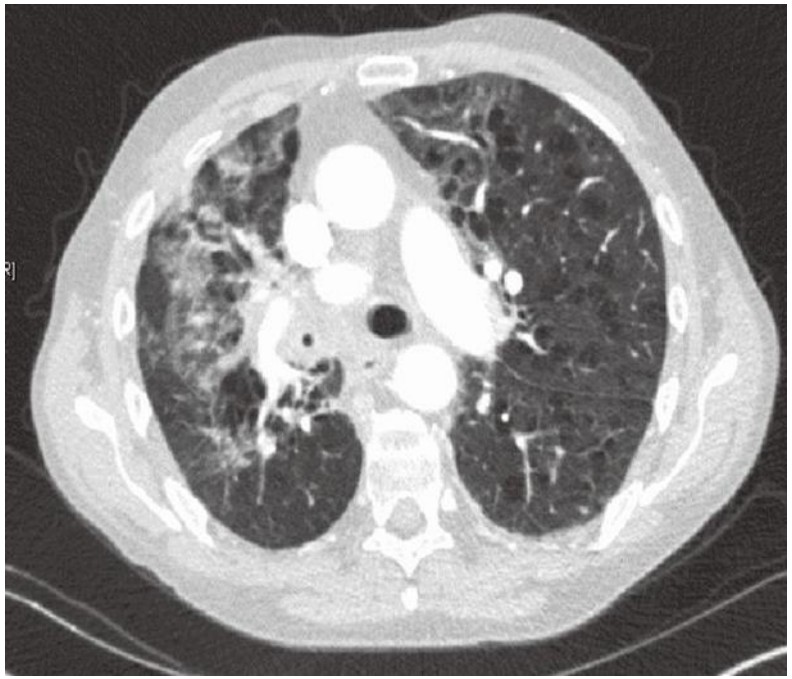
# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

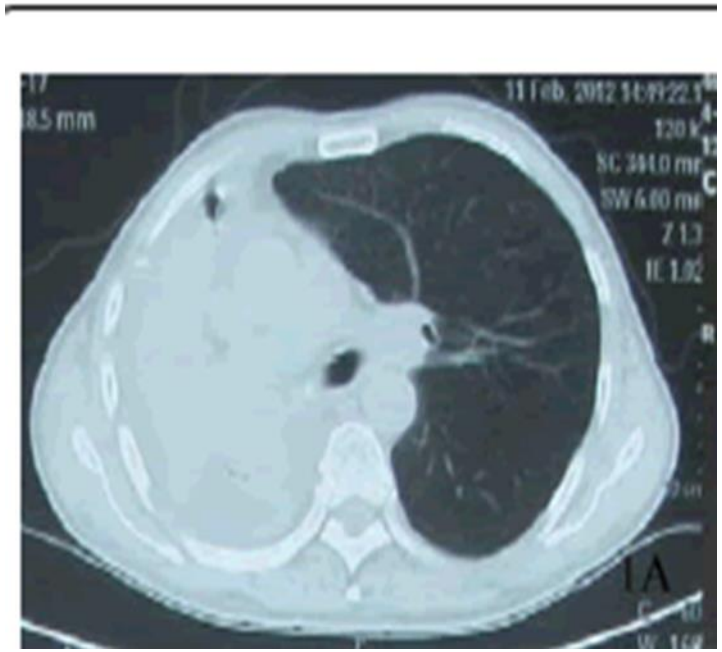
**ΔΥΣΠΝΟΙΑ**

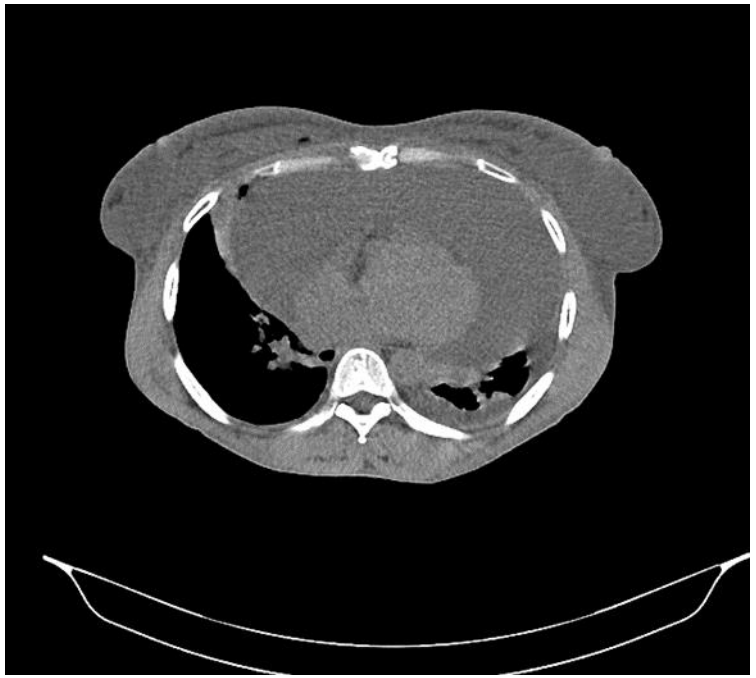
ΣΥΜΠΤΩΜΑΤΟΛΟΓΙΑ ΣΤΟ 25% ΤΩΝ ΑΣΘΕΝΩΝ



# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ







# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΣΥΡΙΓΜΟΣ**

- ΜΟΥΣΙΚΟΣ ΗΧΟΣ ΥΨΗΛΗΣ ΣΥΧΝΟΤΗΤΑΣ
- ΟΦΕΙΛΕΤΑΙ ΣΕ ΜΕΡΙΚΗ ΑΠΟΦΡΑΞΗ ΤΟΥ ΒΡΟΓΧΟΥ

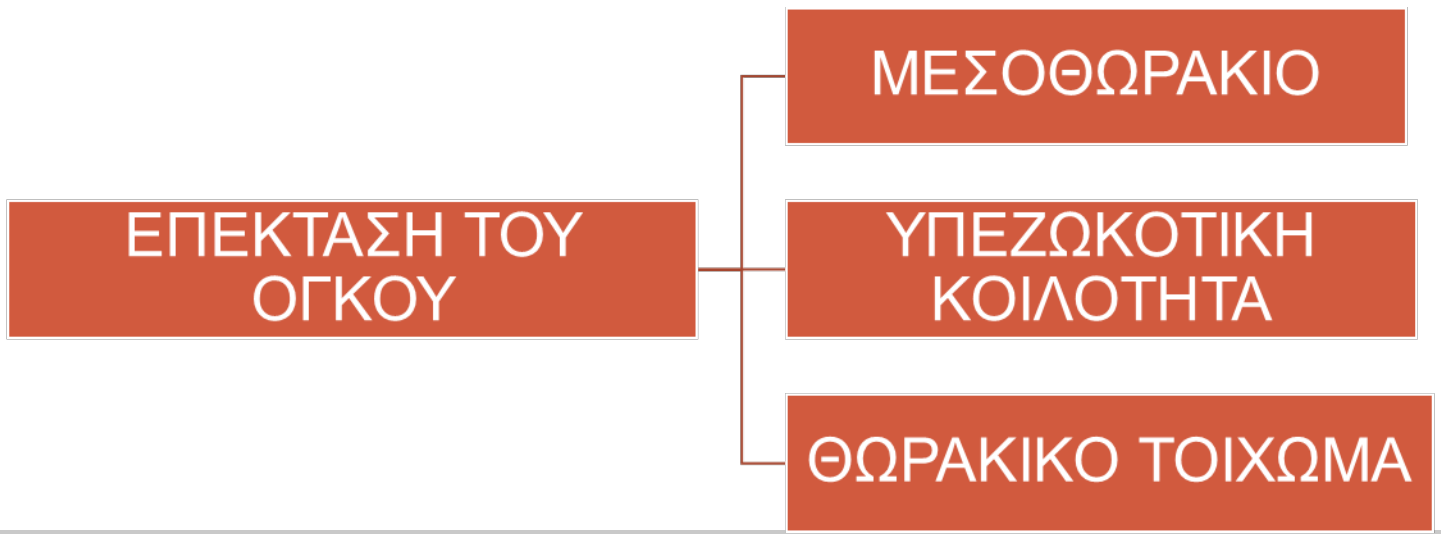
**STRIDOR**

- ΕΙΣΠΝΕΥΣΤΙΚΟΣ ΣΥΡΙΓΜΟΣ
- ΟΦΕΙΛΕΤΑΙ ΣΕ ΚΕΝΤΡΙΚΗ ΑΠΟΦΡΑΞΗ ΤΩΝ ΑΕΡΑΓΩΓΩΝ

# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΘΩΡΑΚΙΚΟΣ ΠΟΝΟΣ**

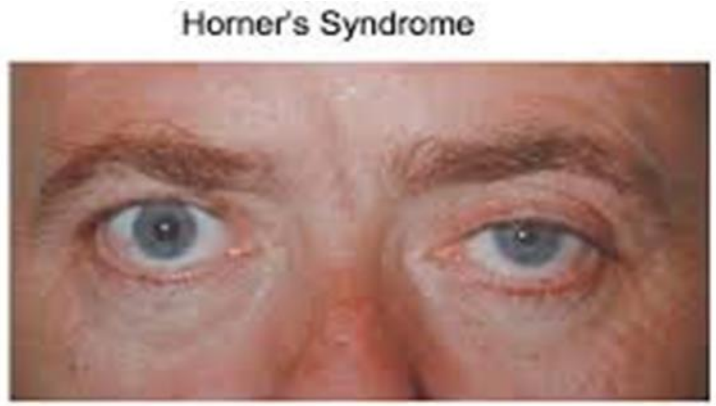
- ΣΥΧΝΟΤΕΡΟ ΣΕ ΝΕΟΤΕΡΕΣ ΗΛΙΚΙΕΣ ΚΑΙ ΣΤΟ 20% ΤΩΝ ΑΣΘΕΝΩΝ
- ΟΜΟΠΛΕΥΡΑ ΜΕ ΤΟΝ ΟΓΚΟ
- ΟΦΕΙΛΕΤΑΙ ΣΕ



# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΣΥΝΔΡΟΜΟ HORNER**

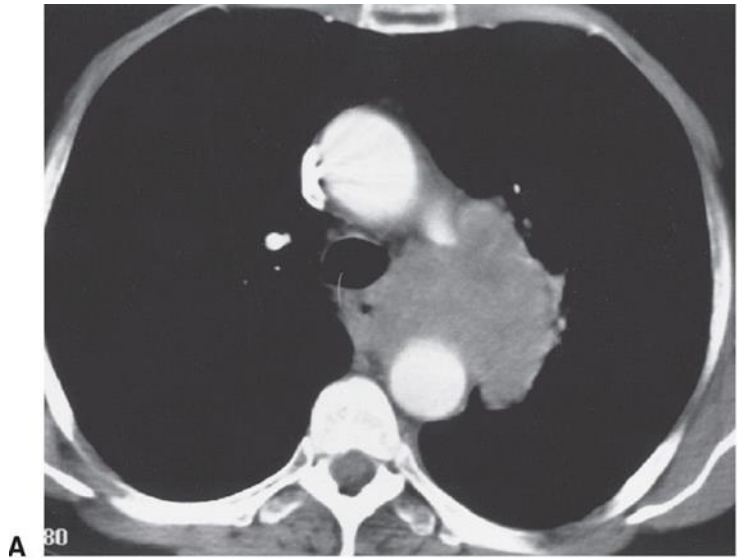
- ΕΤΕΡΟΠΛΕΥΡΟΣ ΕΝΟΦΘΑΛΜΟΣ
- ΒΛΕΦΑΡΟΠΤΩΣΗ
- ΜΥΣΗ
- ΕΤΕΡΟΠΛΕΥΡΗ ΑΝΙΔΡΩΣΙΑ ΠΡΟΣΩΠΟΥ ΚΑΙ ΑΝΩ ΑΚΡΟΥ
- ΣΥΧΝΟΤΕΡΑ ΣΕ ΑΣΘΕΝΕΙΣ ΜΕ ΟΓΚΟ PANCOAST



# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΒΡΑΓΧΟΣ ΦΩΝΗΣ**

- ΟΦΕΙΛΕΤΑΙ ΣΕ ΠΑΡΑΛΥΣΗ ΑΡΙΣΤΕΡΗΣ ΦΩΝΗΤΙΚΗΣ ΧΟΡΔΗΣ
- ΠΡΟΚΑΛΕΙΤΑΙ ΑΠΟ ΠΙΕΣΗ ΣΤΟ ΑΡΙΣΤΕΡΟ ΠΑΛΙΝΔΡΟΜΟ ΛΑΡΥΓΓΙΚΟ ΝΕΥΡΟ

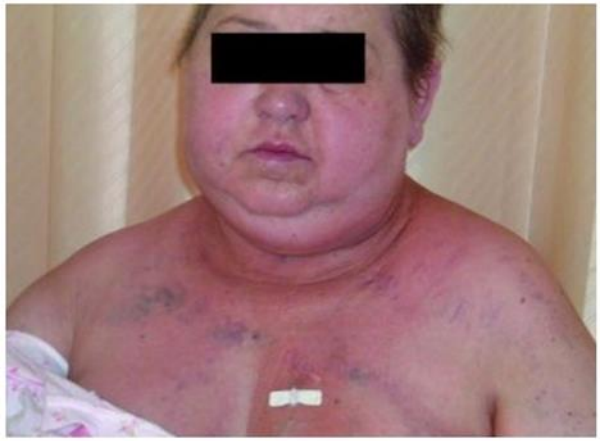


# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΣΥΝΔΡΟΜΟ ΑΠΟΦΡΑΞΗΣ ΑΝΩ ΚΟΙΛΗΣ ΦΛΕΒΑΣ**

- ΣΥΧΝΟΤΕΡΗ ΕΜΦΑΝΙΣΗ ΣΤΟ ΜΜΚΠ
- ΑΠΟΦΡΑΞΗ ΤΗΣ ΑΝΩ ΚΟΙΛΗΣ ΦΛΕΒΑΣ ΛΟΓΩ ΔΙΗΘΗΣΗΣ Ή ΣΥΜΠΙΕΣΗΣ ΑΠΟ ΟΓΚΟ ΔΕΞΙΟΥ ΠΝΕΥΜΟΝΑ Ή BLOCK ΛΕΜΦΑΔΕΝΩΝ
- ΑΠΟΦΡΑΞΗ ΜΠΟΡΕΙ ΝΑ ΠΡΟΚΑΛΕΣΕΙ ΚΑΙ ΘΡΟΜΒΩΣΗ ΤΗΣ ΑΝΩ ΚΟΙΛΗΣ ΦΛΕΒΑΣ

**ΚΛΙΝΙΚΑ ΧΑΡΑΚΤΗΡΙΣΤΙΚΑ**



- ΔΥΣΠΝΟΙΑ
- ΟΙΔΗΜΑ ΠΡΟΣΩΠΟΥ
- ΒΗΧΑΣ
- ΔΙΟΓΚΩΣΗ ΦΛΕΒΩΝ ΤΡΑΧΗΛΟΥ, ΕΠΙΦΛΕΒΟ
- ΚΕΦΑΛΑΛΓΙΑ
- ΑΙΣΘΗΜΑ ΒΑΡΟΥΣ ΚΑΙ ΤΑΣΗΣ ΣΕ ΠΡΟΣΩΠΟ – ΑΝΩ ΑΚΡΑ
- ΟΠΤΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ, ΣΥΓΧΥΣΗ

# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΔΥΣΦΑΓΙΑ**

ΛΟΓΩ ΣΥΜΠΙΕΣΗΣ ΤΟΥ ΟΙΣΟΦΑΓΟΥ ΑΠΟ ΤΟΝ ΟΓΚΟ Ή ΛΕΜΦΑΔΕΝΕΣ ΜΕΣΟΘΩΡΑΚΙΟΥ

**ΠΕΡΙΚΑΡΔΙΑΚΗ ΣΥΛΛΟΓΗ**

ΣΥΧΝΟΤΕΡΗ ΣΤΟ ΑΔΕΝΟΚΑΡΚΙΝΩΜΑ

ΠΡΟΚΑΛΕΙΤΑΙ ΑΙΜΑΤΟΓΕΝΩΣ, ΛΟΓΩ ΔΙΗΘΗΣΗΣ ΛΕΜΦΑΓΓΕΙΩΝ, ΔΙΗΘΗΣΗΣ ΜΕΣΟΘΩΡΑΚΙΟΥ

ΑΙΦΝΙΔΙΑ ΕΝΑΡΞΗ ΚΟΛΠΙΚΗΣ ΤΑΧΥΚΑΡΔΙΑΣ / ΚΟΛΠΙΚΗΣ ΜΑΡΜΑΡΥΓΗΣ

**ΚΑΡΔΙΑΚΟΣ ΕΠΙΠΩΜΑΤΙΣΜΟΣ**

ΕΠΙΠΛΟΚΗ ΠΕΡΙΚΑΡΔΙΑΚΗΣ ΣΥΛΛΟΓΗΣ

ΠΡΟΚΑΛΕΙ ΔΙΑΣΤΟΛΙΚΗ ΔΥΣΛΕΙΤΟΥΡΓΙΑ → ΚΑΤΑΠΛΗΞΙΑ → ΑΝΑΚΟΠΗ

# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

## ΜΕΤΑΣΤΑΣΕΙΣ ΚΕΝΤΡΙΚΟΥ ΝΕΥΡΙΚΟΥ ΣΥΣΤΗΜΑΤΟΣ

- ΣΥΧΝΟΤΕΡΕΣ ΟΙ ΕΓΚΕΦΑΛΙΚΕΣ
- ΕΠΙΔΕΙΝΩΝΟΥΝ ΤΗΝ ΠΟΙΟΤΗΤΑ ΖΩΗΣ ΤΩΝ ΑΣΘΕΝΩΝ
- ΜΕΙΩΝΟΥΝ ΤΟ ΠΟΣΟΣΤΟ ΕΠΙΒΙΩΣΗΣ ΤΟΥΣ
- ΣΥΧΝΟΤΕΡΑ ΣΕ ΜΙΚΡΟΚΥΤΤΑΡΙΚΟ / ΑΔΕΝΟΚΑΡΚΙΝΩΜΑ
- ΣΥΧΝΟΤΕΡΗ ΕΝΤΟΠΙΣΗ ΣΤΑ ΕΓΚΕΦΑΛΙΚΑ ΗΜΙΣΦΑΙΡΙΑ

## ΣΥΜΠΤΩΜΑΤΑ

- ΚΕΦΑΛΑΛΓΙΑ
- ΖΑΛΗ, ΝΑΥΤΙΑ, ΕΜΕΤΟΙ
- ΔΙΑΤΑΡΑΧΕΣ ΣΥΜΠΕΡΙΦΟΡΑΣ
- ΕΠΙΛΗΠΤΙΚΕΣ ΚΡΙΣΕΙΣ
- ΕΤΕΡΟΠΛΕΥΡΗ ΗΜΙΠΑΡΕΣΗ
- ΔΙΑΤΑΡΑΧΕΣ ΚΡΑΝΙΑΚΩΝ ΝΕΥΡΩΝ

# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΜΕΤΑΣΤΑΣΕΙΣ ΚΕΝΤΡΙΚΟΥ ΝΕΥΡΙΚΟΥ ΣΥΣΤΗΜΑΤΟΣ**

- ΜΕΤΑΣΤΑΣΕΙΣ ΣΠΟΝΔΥΛΙΚΗΣ ΣΤΗΛΗΣ: ΧΑΡΑΚΤΗΡΙΖΟΝΤΑΙ ΑΠΟ ΟΣΦΥΑΛΓΙΑ ΠΟΥ ΕΠΙΔΕΙΝΩΝΕΤΑΙ ΜΕ ΤΗΝ ΚΙΝΗΣΗ ΚΑΙ ΤΗΝ ΥΠΤΙΑ ΘΕΣΗ
- ΝΕΟΠΛΑΣΜΑΤΙΚΗ ΣΥΜΠΙΕΣΗ ΣΣ: ΠΡΟΚΑΛΕΙ ΔΥΣΛΕΙΤΟΥΡΓΙΑ ΑΙΣΘΗΤΙΚΟΤΗΤΑΣ, ΠΑΡΑΠΛΗΓΙΑ,ΑΚΡΑΤΕΙΑ ΟΥΡΩΝ ΚΑΙ ΚΟΠΡΑΝΩΝ
- ΛΕΠΤΟΜΗΝΙΓΓΙΚΗ ΚΑΡΚΙΝΩΜΑΤΩΣΗ ΣΠΑΝΙΑ (3-5%)

# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

## ΕΠΙΝΕΦΡΙΔΙΑΚΕΣ ΜΕΤΑΣΤΑΣΕΙΣ

- ΣΥΧΝΕΣ ΜΕΤΑΣΤΑΣΕΙΣ
- ΚΥΡΙΩΣ ΣΕ ΑΔΕΝΟΚΑΡΚΙΝΩΜΑ ΚΑΙ ΜΕΓΑΛΟΚΥΤΤΑΡΙΚΟ
- ΚΟΙΛΙΑΚΟ ΑΛΓΟΣ ΣΤΗ ΠΕΡΙΟΧΗ ΤΗΣ ΟΣΦΥΟΣ

## ΗΠΑΤΙΚΕΣ ΜΕΤΑΣΤΑΣΕΙΣ

- ΣΥΧΝΟΤΕΡΕΣ ΣΤΟ ΜΙΚΡΟΚΥΤΤΑΡΙΚΟ
- ΣΕ ΠΡΟΧΩΡΗΜΕΝΗ ΝΟΣΟ ΠΑΡΑΤΗΡΕΙΤΑΙ ΑΠΩΛΕΙΑ ΒΑΡΟΥΣ, ΑΝΟΡΕΞΙΑ ΚΑΙ ΙΚΤΕΡΟΣ

# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

**ΟΣΤΙΚΕΣ ΜΕΤΑΣΤΑΣΕΙΣ**

- ΟΙ ΣΥΧΝΟΤΕΡΕΣ ΜΕΤΑΣΤΑΣΕΙΣ, 30-40% ΤΩΝ ΑΣΘΕΝΩΝ ΜΕ ΠΡΟΧΩΡΗΜΕΝΗ ΝΟΣΟ
- ΠΡΟΚΑΛΟΥΝ ΜΕΤΑΒΟΛΙΚΕΣ ΔΙΑΤΑΡΑΧΕΣ (ΥΠΕΡΑΣΒΕΣΤΙΑΙΜΙΑ)
- ΠΡΟΚΑΛΟΥΝ ΠΑΘΟΛΟΓΙΚΑ ΚΑΤΑΓΜΑΤΑ
- ΠΡΟΚΑΛΟΥΝ ΣΥΜΠΙΕΣΗ ΣΣ

# ΚΛΙΝΙΚΑ ΣΗΜΕΙΑ ΚΑΙ ΣΥΜΠΤΩΜΑΤΑ

## ΓΕΝΙΚΑ ΣΥΜΠΤΩΜΑΤΑ

- ΠΥΡΕΤΟΣ ΑΓΝΩΣΤΟΥ ΑΙΤΙΟΛΟΓΙΑΣ
- ΔΕΚΑΤΙΚΗ ΠΥΡΕΤΙΚΗ ΚΙΝΗΣΗ
- ΕΦΙΔΡΩΣΕΙΣ
- ΚΑΧΕΞΙΑ ΕΚΔΗΛΩΝΕΤΑΙ ΩΣ ΑΝΟΡΕΞΙΑ ΚΑΙ ΚΑΤΑΒΟΛΗ
- ΑΝΟΡΕΞΙΑ
- ΑΠΩΛΕΙΑ ΒΑΡΟΥΣ

# ΠΑΡΑΓΟΝΤΕΣ ΚΙΝΔΥΝΟΥ

Established and putative risk lung cancer risk factors

| Risk factor | Magnitude of association |
|---|---|
| Tobacco smoking | 20-fold increased risk vs. never smoker |
| Secondhand smoke | 25% to 28% increased risk vs. never smoker |
| Electronic cigarettes | Presently unknown |
| Other tobacco use (cigars, pipes, water pipes) | 1.9 to 4.6-fold increased risk |
| Smoked cannabis | Presently no known risk |
| Radon | 14% to 29% increased risk |
| Asbestos | 12% to 24% increased risk |
| History of COPD, emphysema, or chronic bronchitis | 2 to 3-fold increased risk |
| History of asthma | 28% to 44% increased risk |
| History of pneumonia | 30% to 57% increased risk |
| History of *Chlamydia pneumoniae* | 1.2 to 2.4-fold increased risk |
| History of tuberculosis | 48% to 76% increased risk |
| HIV | 2-fold increased risk |

Table 1

A Summary Table of Established Risk Factors for Lung Cancer in Never-Smokers

| Exposure | Study Types | Exposure Assessment | Summary of Findings/Public Health Implications |
|---|---|---|---|
| Secondhand tobacco smoke | Meta-analysis, pooled analysis, review | Questionnaire data, in-person interviews | Increased risk of LCINS for spousal secondhand smoke exposure as well as workplace exposure has been consistently observed regardless of study design, geographic region, etc. Associations between childhood exposures to secondhand smoke and LCINS have generally been weaker and not as consistent. Secondhand smoke exposure is an important risk factor in all geographical regions. |
| Outdoor pollution | Cohort, meta-analysis | Quantitative estimates of residential exposure to outdoor pollutants (e.g., inverse distance-weighted interpolation methods geocoded to baseline residential address, fixed site monitors, land use regression) | Different types of outdoor pollutants have been studied, including ozone, PM, and nitrogen oxides. Most consistently reported association with LCINS has been with $PM_{2.5}$. |
| Indoor pollution | Case-control, cohort, meta-analysis, pooled analysis | Questionnaire data, in-person interviews on household air pollution | Different sources of indoor pollution have been studied. These include indoor cooking oil, coal fuel, waste and dung combustion, and biomass fuel, among others. The association between indoor pollution and LCINS has consistently been stronger among women, which is likely due to women having greater exposure to fuel combustion products at home than men. Approximately half of the world's population is still exposed to indoor air pollution from domestic cooking and/or heating with solid fuels. |
| Asbestos | Meta-analysis, pooled analysis | Questionnaire data, in-person interview of occupational exposure history, environmental monitoring/quantitative measurements of fibers linked to job title | Association between asbestos exposure and LCINS observed, generally stronger among men than women likely due to differences in exposure levels. Although most dangerous asbestos types are no longer used, other siliceous fibers and chrysotile are still incorporated into building projects in developing nations. |
| Radon | Meta-analysis, pooled analysis, review | Occupational exposure, residential exposure | Increased risk of LCINS is consistently seen in miners; level of association less clear with residential exposure. Population attributable fraction for residential radon exposure is higher in Europe. |
| Pneumonia | Meta-analysis, pooled analysis | Self-reported history of pneumonia | Increased risk of LCINS observed with pneumonia. Substantial public health interest due to the large population diagnosed with pneumonia. |
| Tuberculosis | Meta-analysis, pooled analysis, review | Self-reported history of tuberculosis | Previous diagnosis of tuberculosis has been found to have an independent effect on LCINS. Although the incidence of tuberculosis is low in North America, it is common in low- and middle-income countries and affects millions; therefore, the possible association with lung cancer risk is of public health importance. |
| Asthma | Case-control, meta-analysis, pooled analysis | Self-reported history of asthma, physician-diagnosed asthma | Some studies have reported an association between asthma and LCINS, but association is unclear and published literature is mixed. |

Abbreviations: LCINS, lung cancers in never-smokers; PM, particulate matter.

Tracing Lung Cancer Risk Factors Through Mutational Signatures in Never-Smokers The Sherlock-Lung Study, Am J Epidemiol. 2021;190(6):962–976

# ΔΙΑΓΝΩΣΤΙΚΟΣ ΕΛΕΓΧΟΣ

ΑΚΤΙΝΟΓΡΑΦΙΑ ΘΩΡΑΚΟΣ

ΑΞΟΝΙΚΗ ΤΟΜΟΓΡΑΦΙΑ ΘΩΡΑΚΟΣ

PET CT SCAN

# ΔΙΑΓΝΩΣΤΙΚΟΣ ΕΛΕΓΧΟΣ

- ΚΥΤΤΑΡΟΛΟΓΙΚΗ ΠΤΥΕΛΩΝ
- ΒΡΟΓΧΟΣΚΟΠΗΣΗ
- ΘΩΡΑΚΟΣΚΟΠΗΣΗ
- ΜΕΣΟΘΩΡΑΚΟΣΚΟΠΗΣΗ
- ΔΙΑΔΕΡΜΙΚΗ ΒΙΟΨΙΑ ΠΝΕΥΜΟΝΑ

# ΣΤΑΔΙΟΠΟΙΗΣΗ

INTERNATIONAL ASSOCIATION FOR THE STUDY OF LUNG CANCER

## 8th Edition of the TNM Classification for Lung Cancer

### T – Primary Tumour

| | | |
|---|---|---|
| TX | | Primary tumour cannot be assessed, or tumour proven by the presence of malignant cells in sputum or bronchial washings but not visualized by imaging or bronchoscopy |
| T0 | | No evidence of primary tumour |
| Tis | | Carcinoma in situ |
| T1 | | Tumour 3 cm or less in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (i.e., not in the main bronchus)[1] |
| | T1mi | Minimally invasive adenocarcinoma[2] |
| | T1a | Tumour 1 cm or less in greatest dimension[1] |
| | T1b | Tumour more than 1 cm but not more than 2 cm in greatest dimension[1] |
| | T1c | Tumour more than 2 cm but not more than 3 cm in greatest dimension[1] |
| T2 | | Tumour more than 3 cm but not more than 5 cm; or tumour with any of the following features[3]<br>• Involves main bronchus regardless of distance to the carina, but without involving the carina<br>• Invades visceral pleura<br>• Associated with atelectasis or obstructive pneumonitis that extends to the hilar region, either involving part of the lung or the entire lung |
| | T2a | Tumour more than 3 cm but not more than 4 cm in greatest dimension |
| | T2b | Tumour more than 4 cm but not more than 5 cm in greatest dimension |
| T3 | | Tumour more than 5 cm but not more than 7 cm in greatest dimension or one that directly invades any of the following: chest wall (including superior sulcus tumours), phrenic nerve, parietal pericardium; or associated separate tumour nodule(s) in the same lobe as the primary |
| T4 | | Tumours more than 7 cm or one that invades any of the following: diaphragm, mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, oesophagus, vertebral body, carina; separate tumour nodule(s) in a different ipsilateral lobe to that of the primary |

[1]The uncommon superficial spreading tumour of any size with its invasive component limited to the bronchial wall, which may extend proximal to the main bronchus, is also classified as T1a.

[2]Solitary adenocarcinoma (</= 3 cm), with a predominantly lepidic pattern and </= 5 mm invasion in greatest dimension in any one focus.

[3]T2 tumours with these features are classified T2a if 4 cm or less, or if size cannot be determined and T2b if greater than 4 cm but not larger than 5 cm.

## N – Regional Lymph Nodes

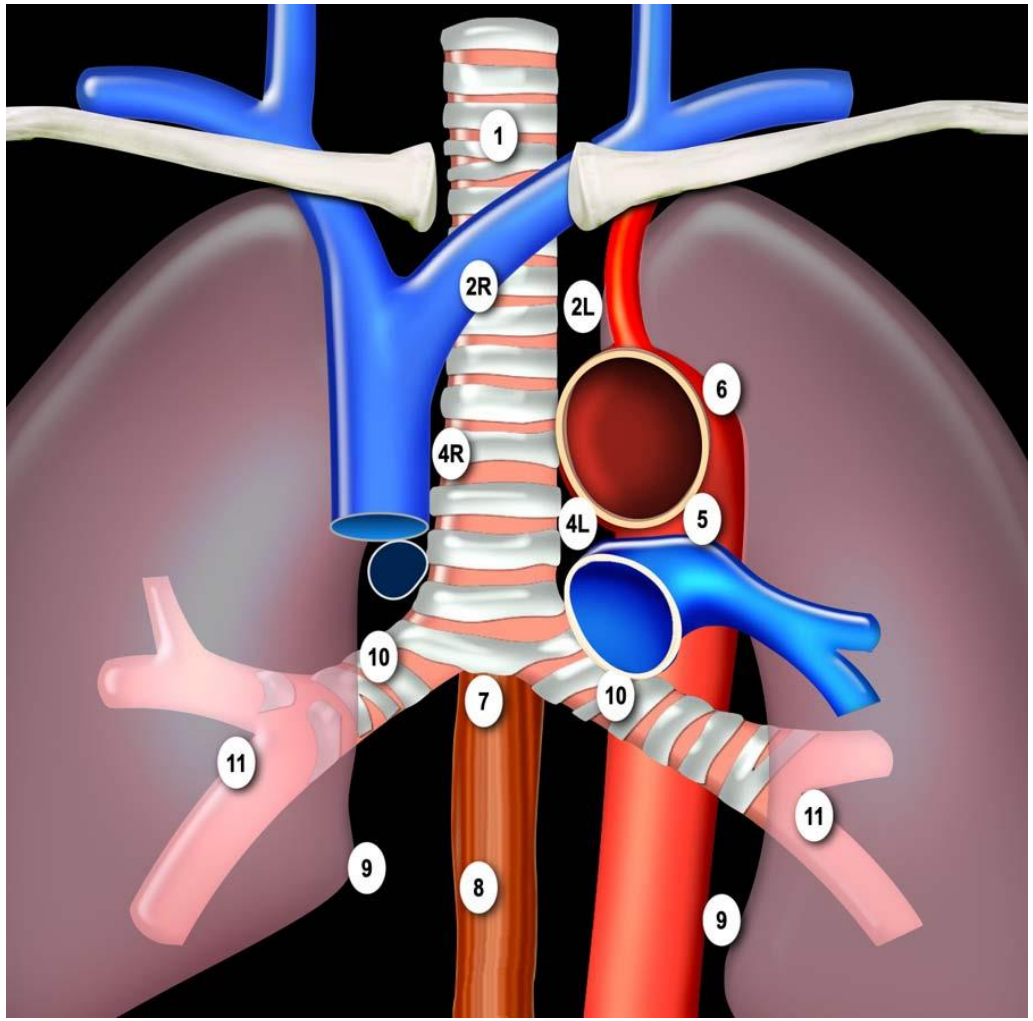
| | | |
|---|---|---|
| NX | | Regional lymph nodes cannot be assessed |
| N0 | | No regional lymph node metastasis |
| N1 | | Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension |
| N2 | | Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s) |
| N3 | | Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene or supraclavicular lymph node(s) |

## M- Distant Metastasis

| | | |
|---|---|---|
| M0 | | No distant metastasis |
| M1 | | Distant metastasis |
| | M1a | Separate tumour nodule(s) in a contralateral lobe; tumour with pleural or pericardial nodules or malignant pleural or pericardial effusion [4] |
| | M1b | Single extrathoracic metastasis in a single organ [5] |
| | M1c | Multiple extrathoracic metastases in one or several organs |

[4]Most pleural (pericardial) effusions with lung cancer are due to tumour. In a few patients, however, multiple microscopic examinations of pleural (pericardial) fluid are negative for tumour, and the fluid is non-bloody and is not an exudate. Where these elements and clinical judgement dictate that the effusion is not related to the tumour, the effusion should be excluded as a staging descriptor.

[5]This includes involvement of a single distant (non-regional) node.




## Regional Lymph Node Classification System

Lymph node staging is done according to the American Thoracic Society mapping scheme.

**Supraclavicular nodes**

- 1. Low cervical, supraclavicular and sternal notch nodes

**Superior mediastinal nodes**

- *2. Upper Paratracheal*: above the aortic arch, but below the clavicles.
- *3A. Pre-vascular*: nodes not adjacent to the trachea like the nodes in station 2, but anterior to the vessels.
- *3P. Pre-vertebral*: nodes not adjacent to the trachea, but behind the esophagus, which is prevertebral (3P).

**Inferior Mediastinal nodes**

- *4. Lower Paratracheal* (including Azygos Nodes): below upper margin of aortic arch down to level of main bronchus.

**Aortic nodes**

- *5. Subaortic* (A-P window): nodes lateral to ligamentum arteriosum. These nodes are not located between the aorta and the pulmonary trunk, but lateral to these vessels.
- *6. Para-aortic* (ascending aorta or phrenic): nodes lying anterior and lateral to the ascending aorta and the aortic arch.

**Subcarinal nodes**

- *7. Subcarinal.*

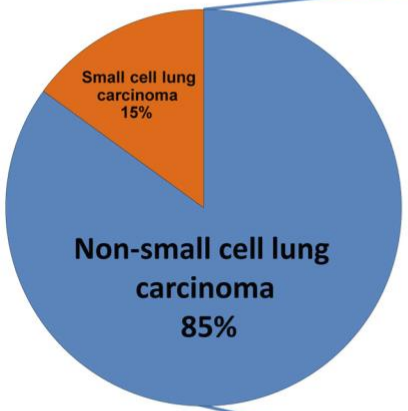
**Inferior Mediastinal nodes**

- *8. Paraesophageal* (below carina).
- *9. Pulmonary Ligament*: nodes lying within the pulmonary ligaments.

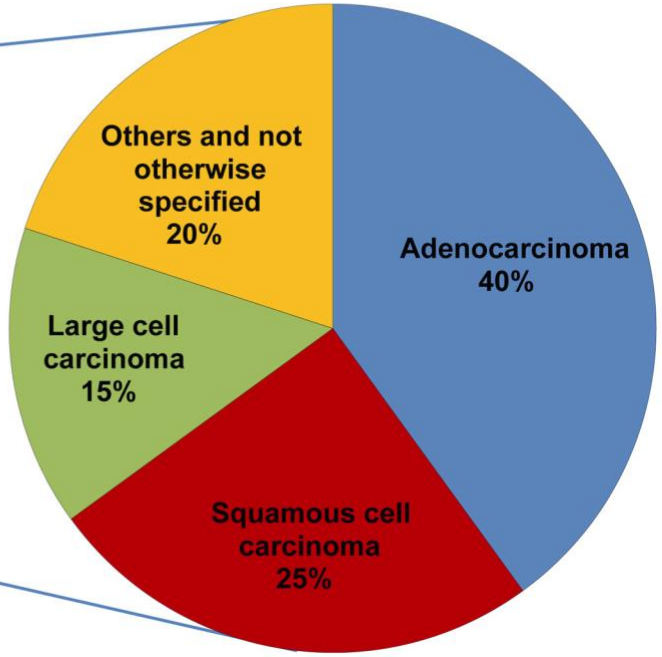
**Pulmonary nodes**

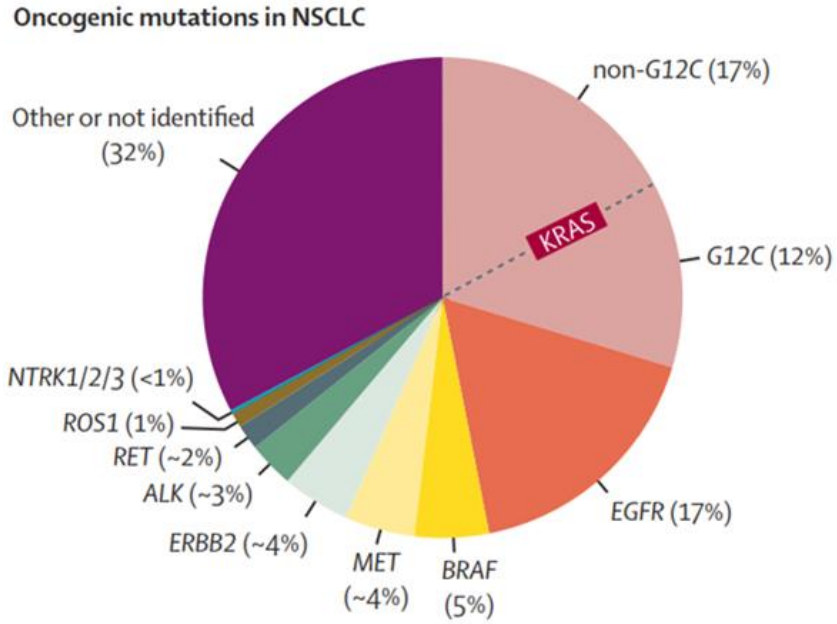
- *10-14. N1-nodes*: these are located outside of the mediastinum.

Lung cancer histological categories




Non-small cell lung cancer subtypes

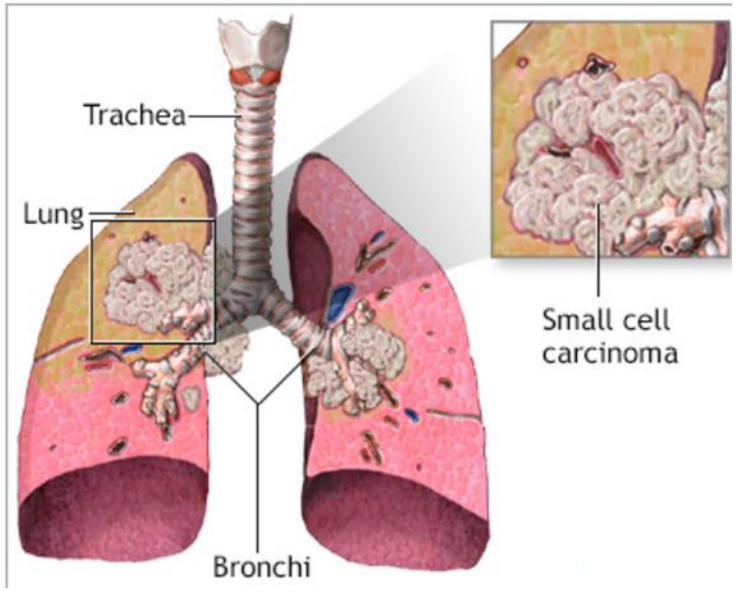


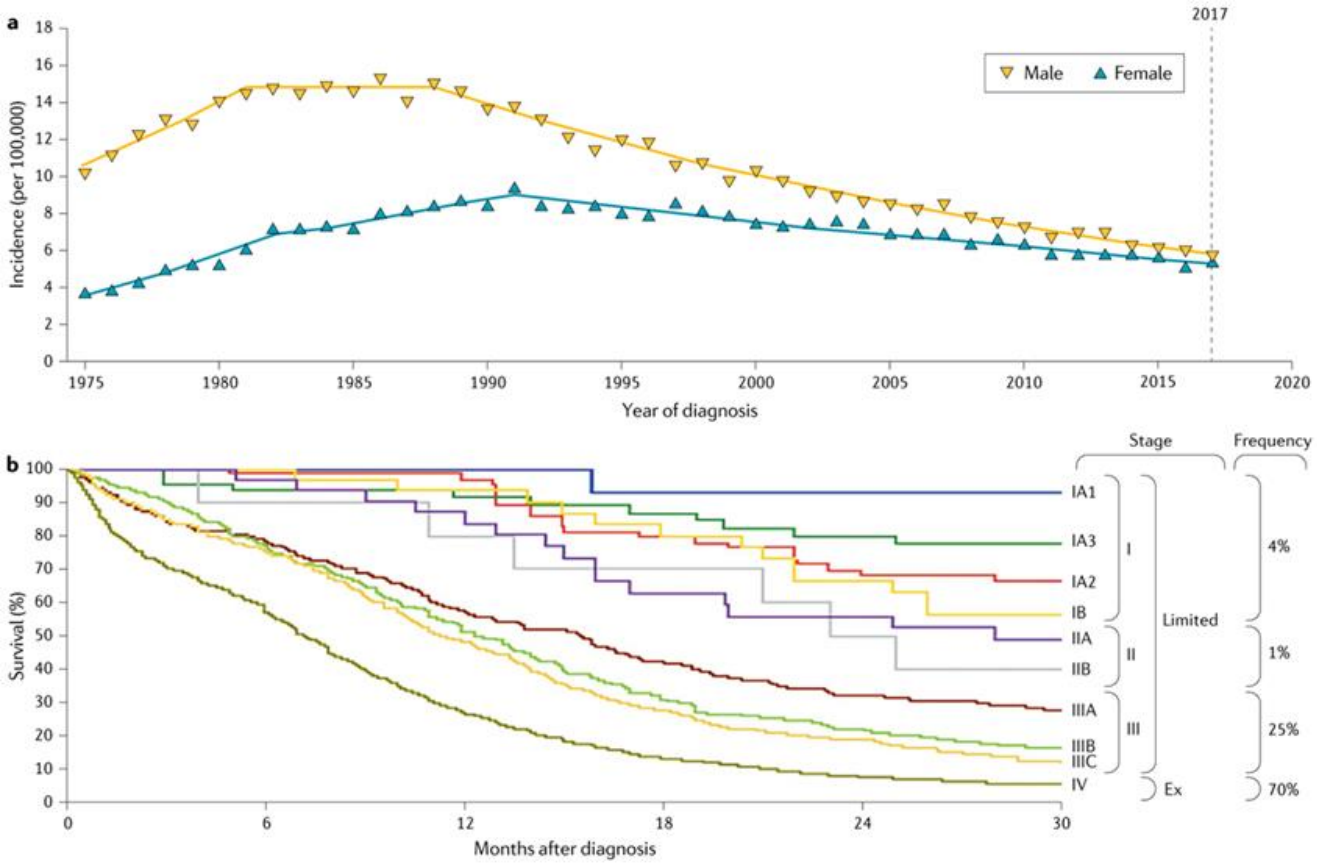

*Cancer Epidemiol Biomarkers Prev*. Author manuscript; available in PMC 2020 April 01

# Small Cell Lung Cancer

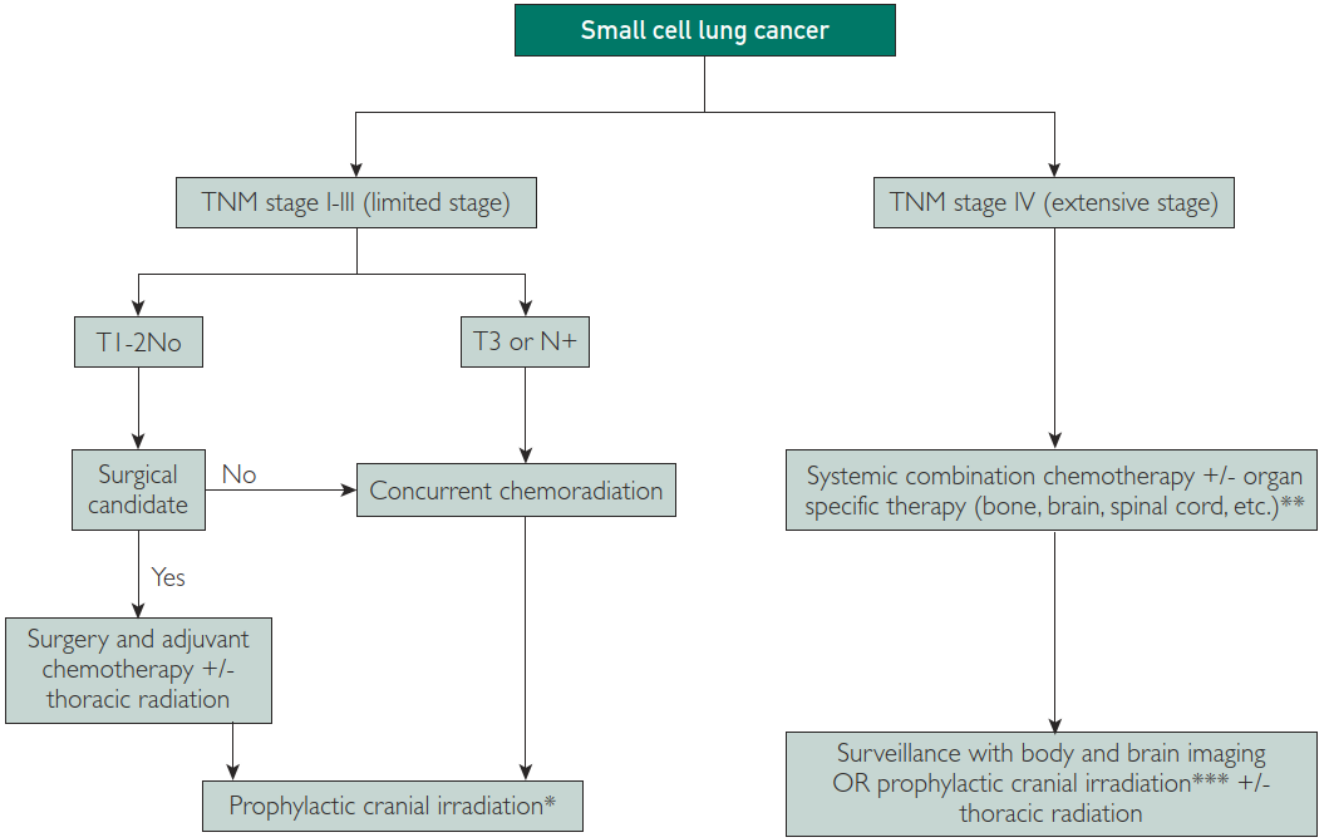
- High-grade neuroendocrine carcinoma with high metastatic potential[1]
- Accounts for ~13% of lung cancers in United States[2]
  - Cases: ~31,000 diagnosed in 2022[3]
  - 3-yr relative survival: 10.7% (2015)
- Mortality has declined since 2001, largely due to decreasing incidence rather than treatment advances[2]
- Most common genetic alterations: *TP53* and *RB1* inactivation; no clear targetable genetic drivers[4,5]




1. Bunn. J Thorac Oncol. 2016;11:453. 2. Howlader. NEJM. 2020;383:640. 3. Siegel. CA Cancer J Clin. 2022;72:7.
4. George. Nature. 2015;524:47. 5. Rudin. Nat Genet. 2012;44:1111. 6. SEER Cancer Statistics Review, 1975-2018.




Rudin. Nat Rev Dis Primers. 2021;7:3. 2. Aupérin. NEJM. 1999;34:476. 3. Bogart. ASCO 2021. Abstr 8505




*Only in patients who had a response to initial therapy
**Symptomatic site-specific therapy such as radiation or surgery should be given prior to systemic therapy
***Controversial, recommended in select cases

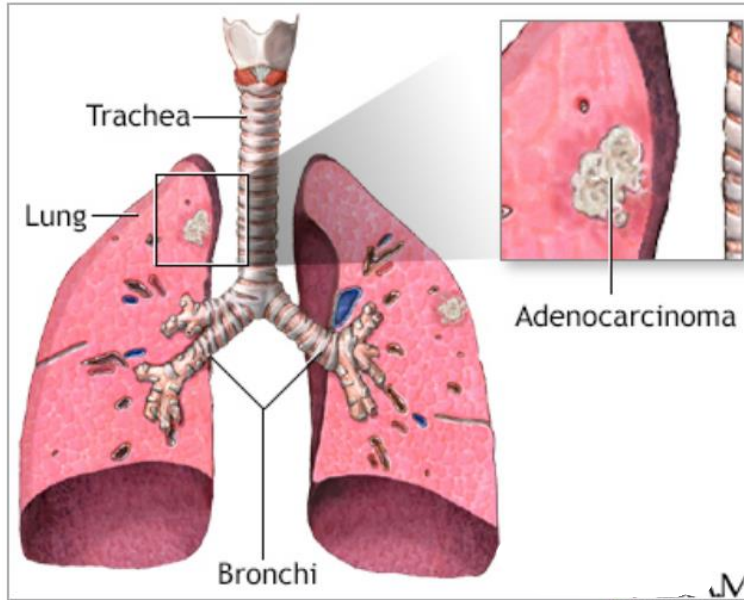
**FIGURE 1.** Initial management algorithm of SCLC. SCLC = small-cell lung cancer; TNM = tumor node metastasis.

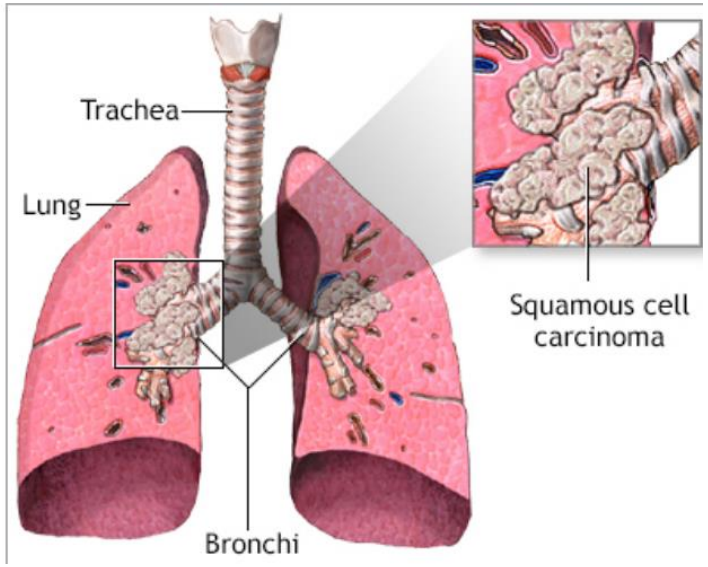
Mayo Clin Proc. ■ August 2019;94(8):1599-1622 ■ https://doi.org/10.1016/j.mayocp.2019.01.034

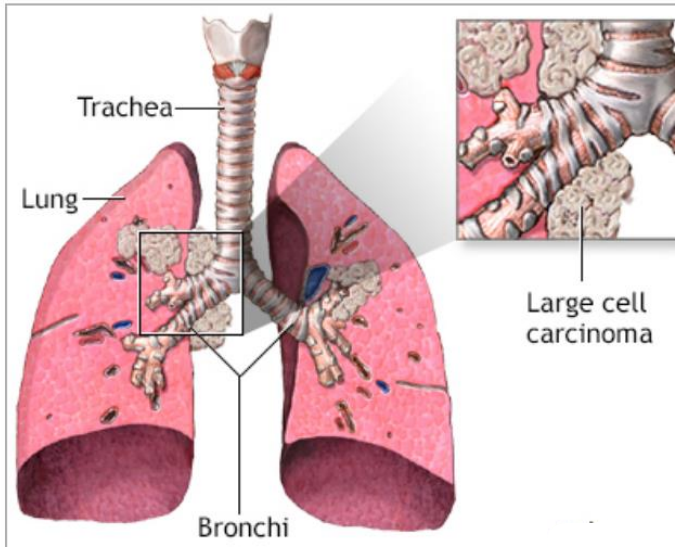
+ IMMUNOTHERAPY

# NSCLC

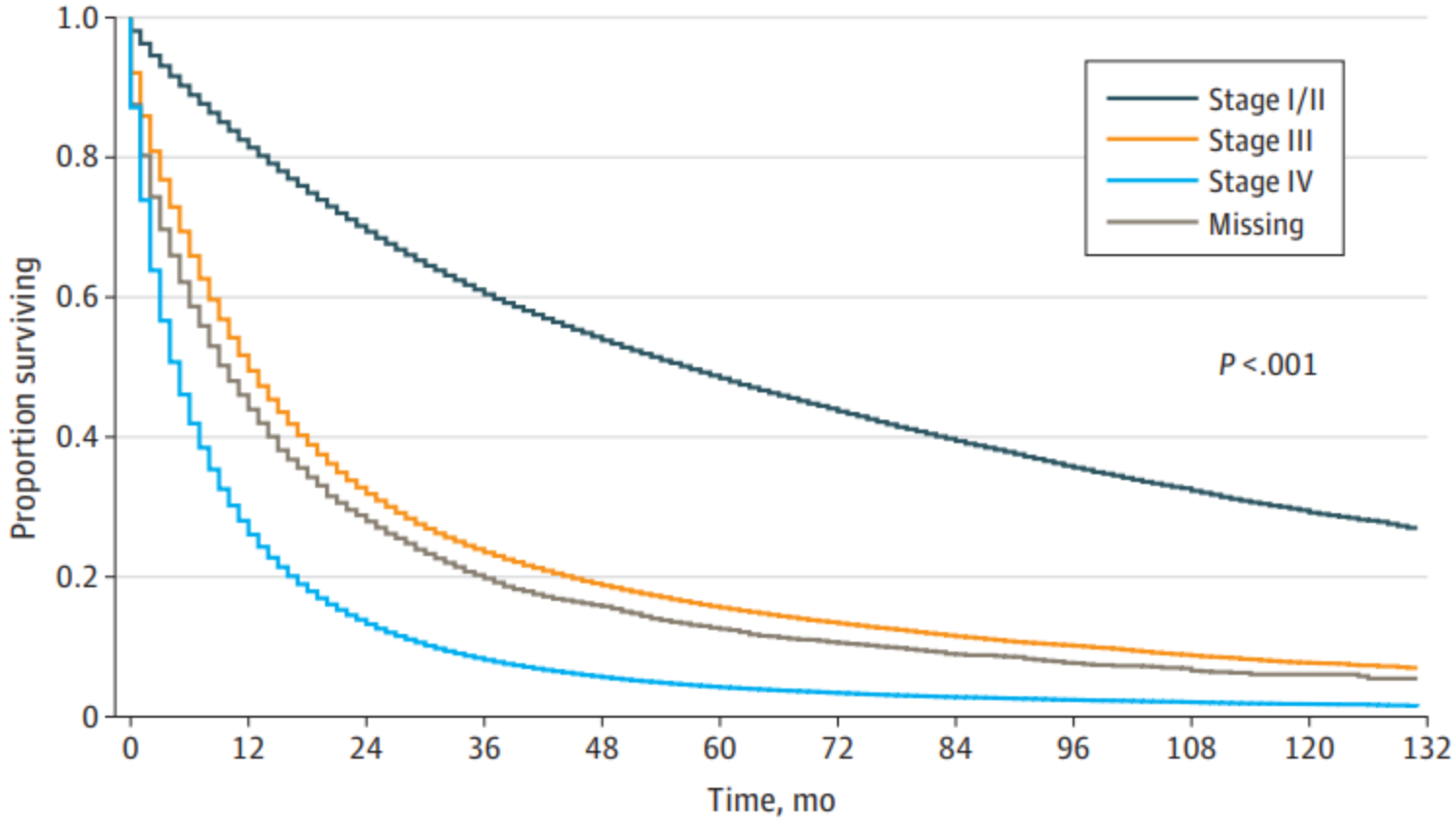
| | Squamous Cell Carcinoma | Adenocarcinoma | Large Cell Carcinoma |
|---|---|---|---|
| **Prevalence** number of people suffering from the disease in a year | • Accounts for about 25% of NSCLC cases | • Accounts for about 40% of NSCLC cases | • Accounts for about 10% of NSCLC cases |
| **Incidence** number of new cases developing in a year | • Decreasing | • Increasing | |
| **Location** | • Usually central | • Usually more peripheral but can be multi-focal | • Central or peripheral location |
| **Risk Factors** | • Highly correlated with smoking (~90% of those with SCC are smokers) | • Most common type seen in non-smokers Precursor is atypical alveolar hyperplasia | |
| **Histological Features** | • Cancer of squamous epithelial cells | • Cancer of bronchial mucosal (glandular) tissue or the alveolar surface epithelium<br>• Cancer recapitulates glandular patterns | • Diagnosis of exclusion (ie. doesn't have features of adenocarcinoma or squamous cell carcinoma) |
| **Prognosis** | • Slow-growing tumour | • Faster doubling time than squamous cell<br>• Often early metastasis<br>• Usually worse prognosis than squamous cell | • Can cavitate<br>• Metastasize early (often to GI tract)<br>• Prognosis is similar to that for adenocarcinoma |


Trachea
Lung
Adenocarcinoma
Bronchi


Trachea
Lung
Squamous cell carcinoma
Bronchi

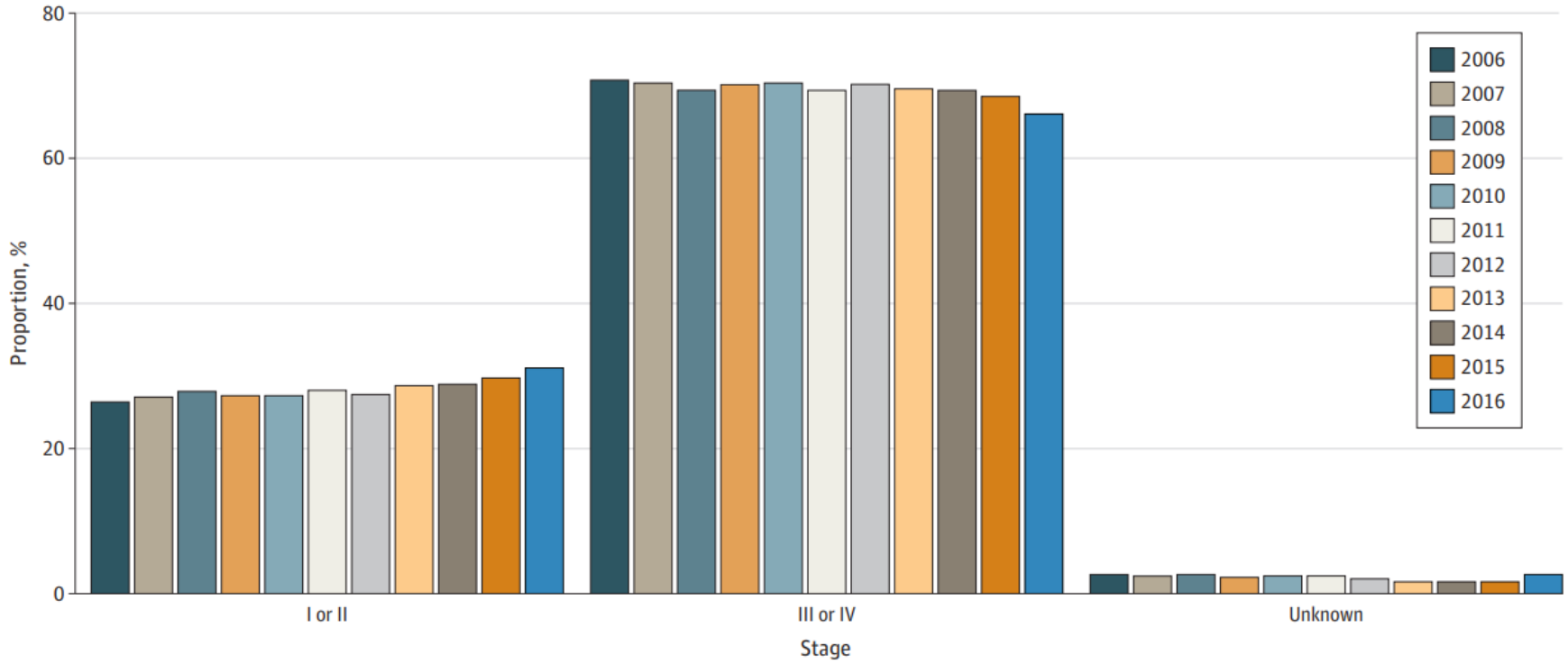

Trachea
Lung
Large cell carcinoma
Bronchi

## Figure 4. 10-Year Survival According to Non–Small Cell Lung Cancer Stage at Diagnosis



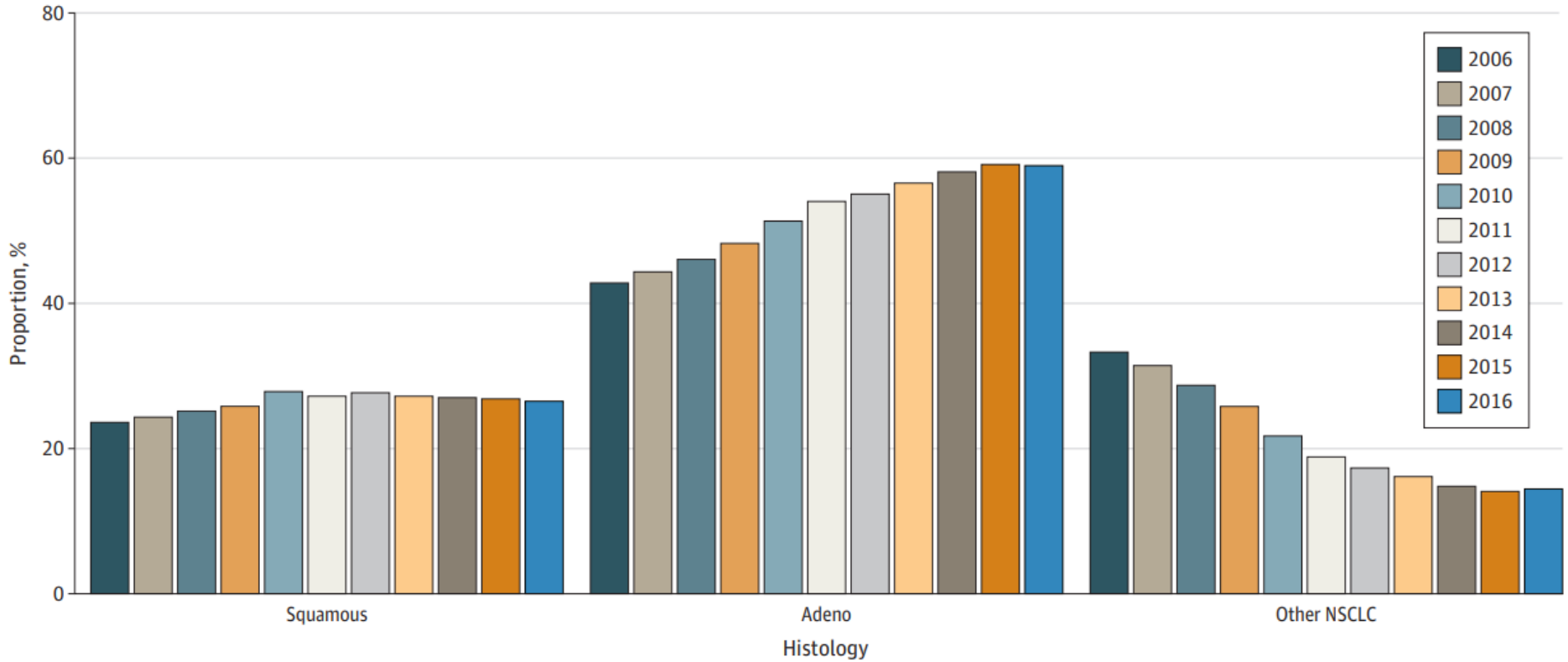

*JAMA Network Open*. 2021;4(12):e2137508. doi:10.1001/jamanetworkopen.2021.37508

## Figure 2. Shift in Stage at Diagnosis Over Time, 2006-2016




*JAMA Network Open*. 2021;4(12):e2137508. doi:10.1001/jamanetworkopen.2021.37508

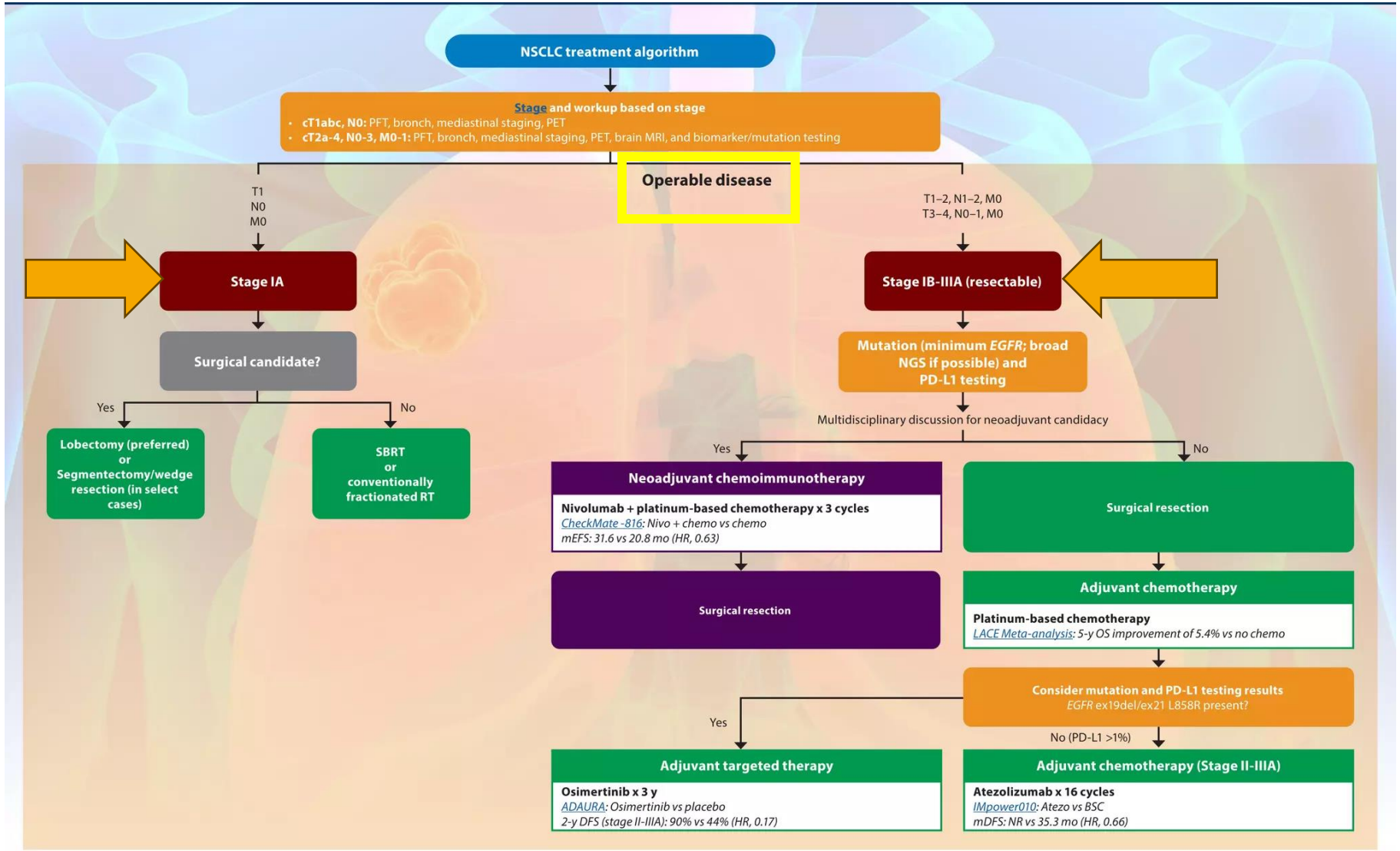
## Figure 3. Shift in Histology Over Time, 2006-2016




*JAMA Network Open*. 2021;4(12):e2137508. doi:10.1001/jamanetworkopen.2021.37508

**TABLE 1.** Recommended Biomarker Tests for Patients With Newly Diagnosed NSCLC

| | Nonsquamous Histology | Squamous Cell Carcinoma |
|---|---|---|
| Minimum necessary | PD-L1 IHC, EGFR, ALK, ROS1, BRAF | PD-L1 IHC |
| Recommended* | RET, MET exon 14, HER2, KRAS, NTRK | |


NSCLC treatment algorithm
Stage and workup based on stage
• cT1abc, N0: PFT, bronch, mediastinal staging, PET
• cT2a-4, N0-3, M0-1: PFT, bronch, mediastinal staging, PET, brain MRI, and biomarker/mutation testing
Operable disease
T1
N0
M0
Stage IA
Surgical candidate?
Yes
No
Lobectomy (preferred) or Segmentectomy/wedge resection (in select cases)
SBRT or conventionally fractionated RT
T1–2, N1–2, M0
T3–4, N0–1, M0
Stage IB-IIIA (resectable)
Mutation (minimum EGFR; broad NGS if possible) and PD-L1 testing
Multidisciplinary discussion for neoadjuvant candidacy
Yes
No
Neoadjuvant chemoimmunotherapy
Nivolumab + platinum-based chemotherapy x 3 cycles
CheckMate -816: Nivo + chemo vs chemo
mEFS: 31.6 vs 20.8 mo (HR, 0.63)
Surgical resection
Surgical resection
Adjuvant chemotherapy
Platinum-based chemotherapy
LACE Meta-analysis: 5-y OS improvement of 5.4% vs no chemo
Consider mutation and PD-L1 testing results
EGFR ex19del/ex21 L858R present?
Yes
No (PD-L1 >1%)
Adjuvant targeted therapy
Osimertinib x 3 y
ADAURA: Osimertinib vs placebo
2-y DFS (stage II-IIIA): 90% vs 44% (HR, 0.17)
Adjuvant chemotherapy (Stage II-IIIA)
Atezolizumab x 16 cycles
IMpower010: Atezo vs BSC
mDFS: NR vs 35.3 mo (HR, 0.66)

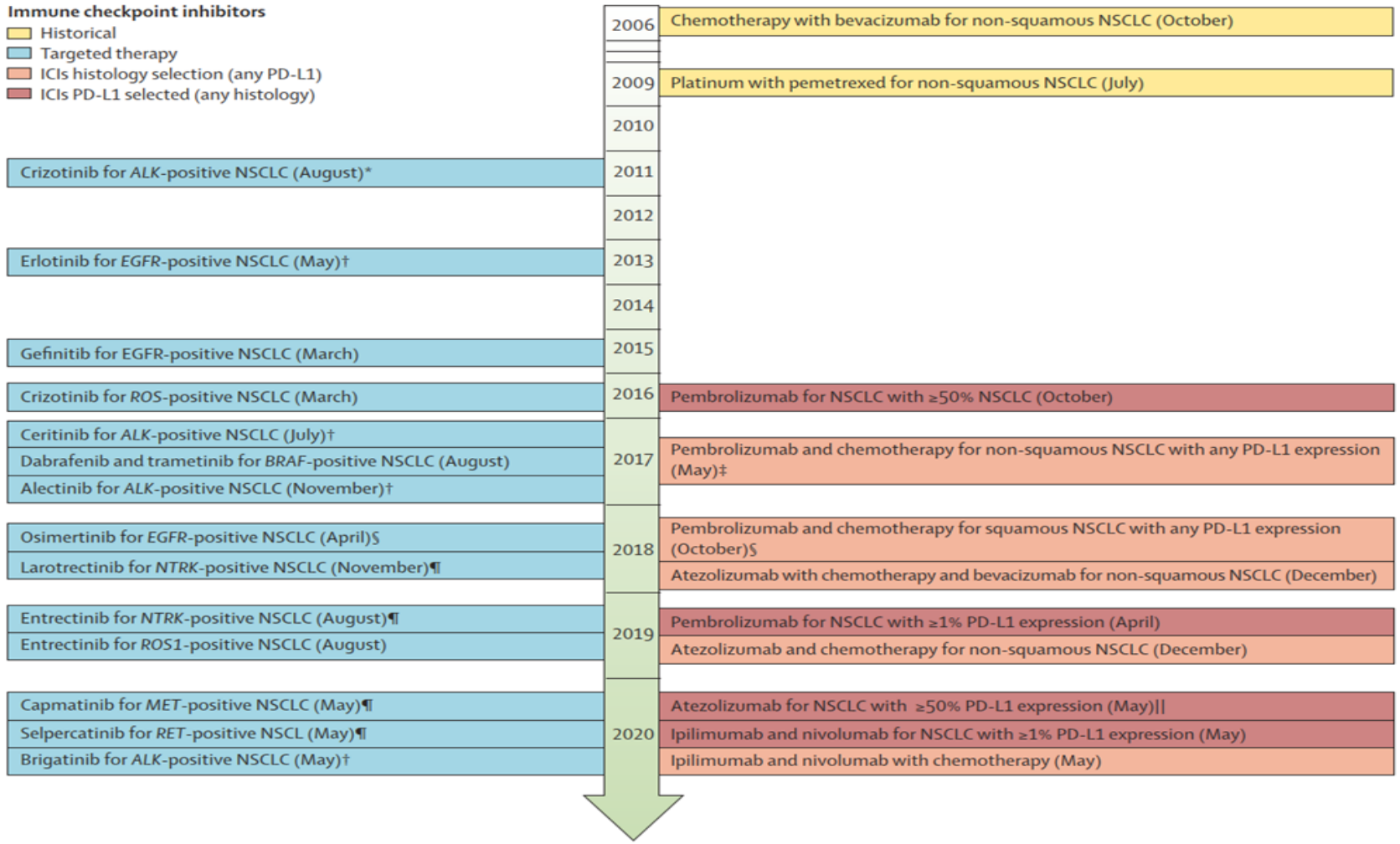
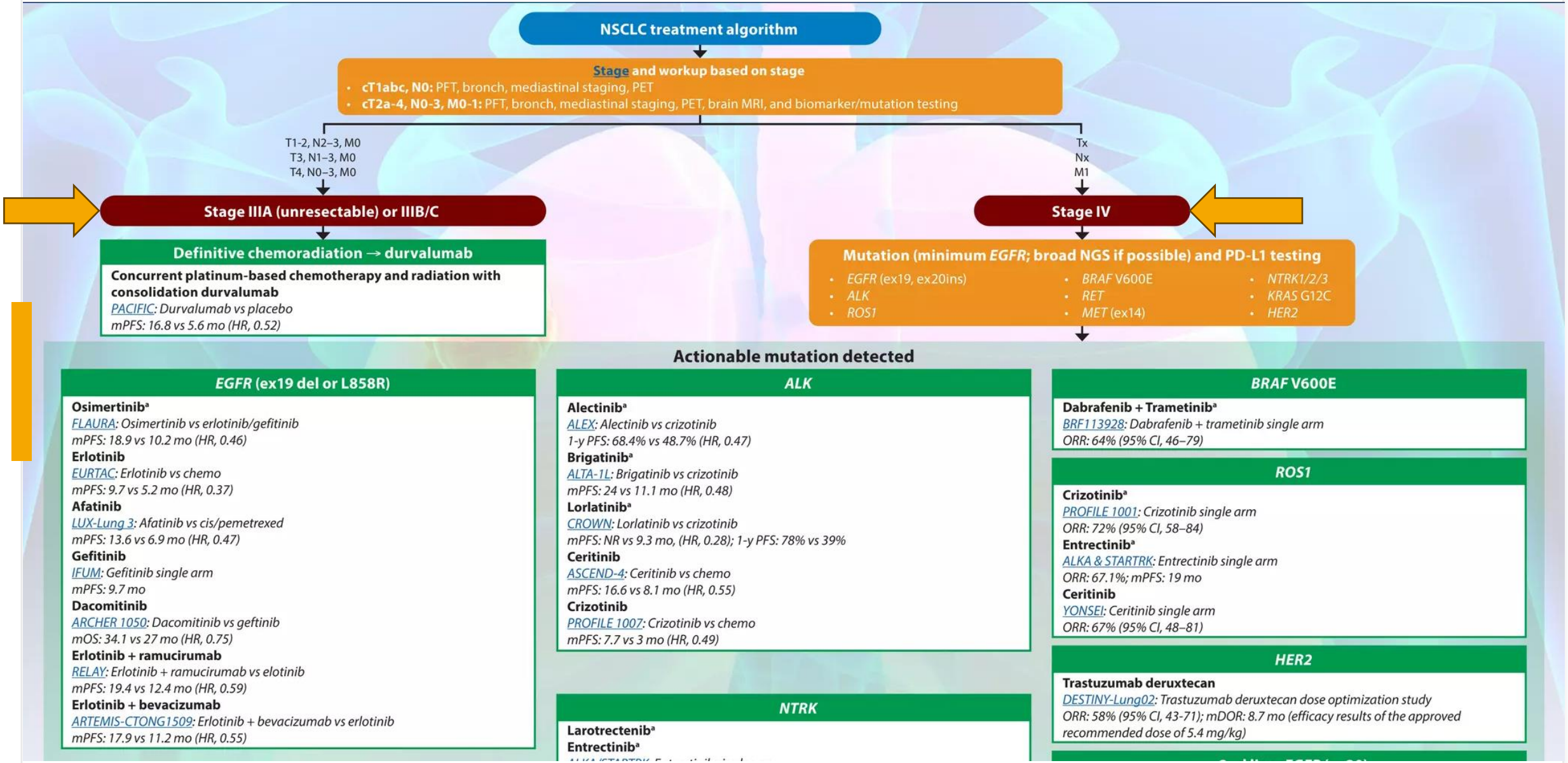
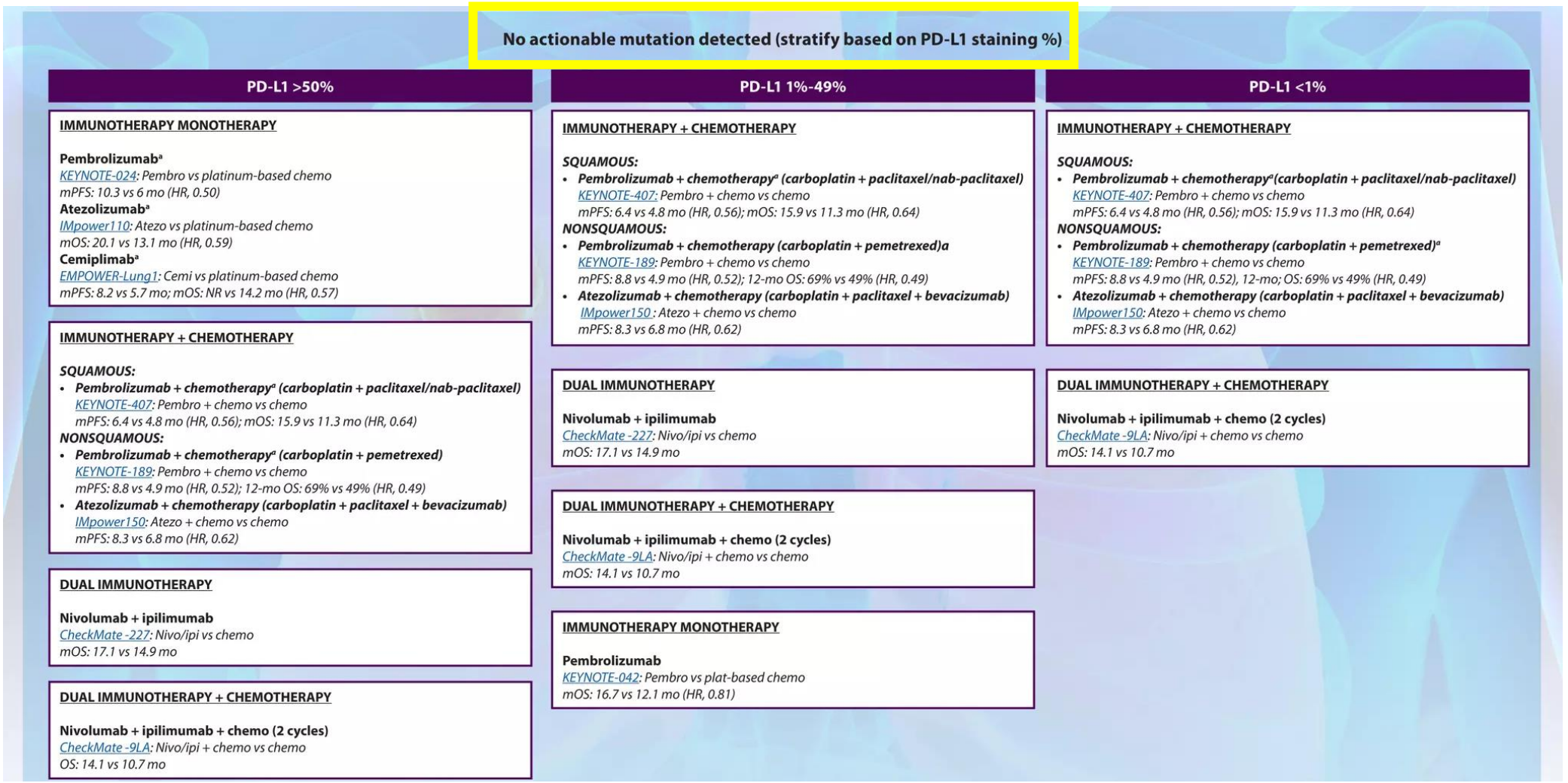
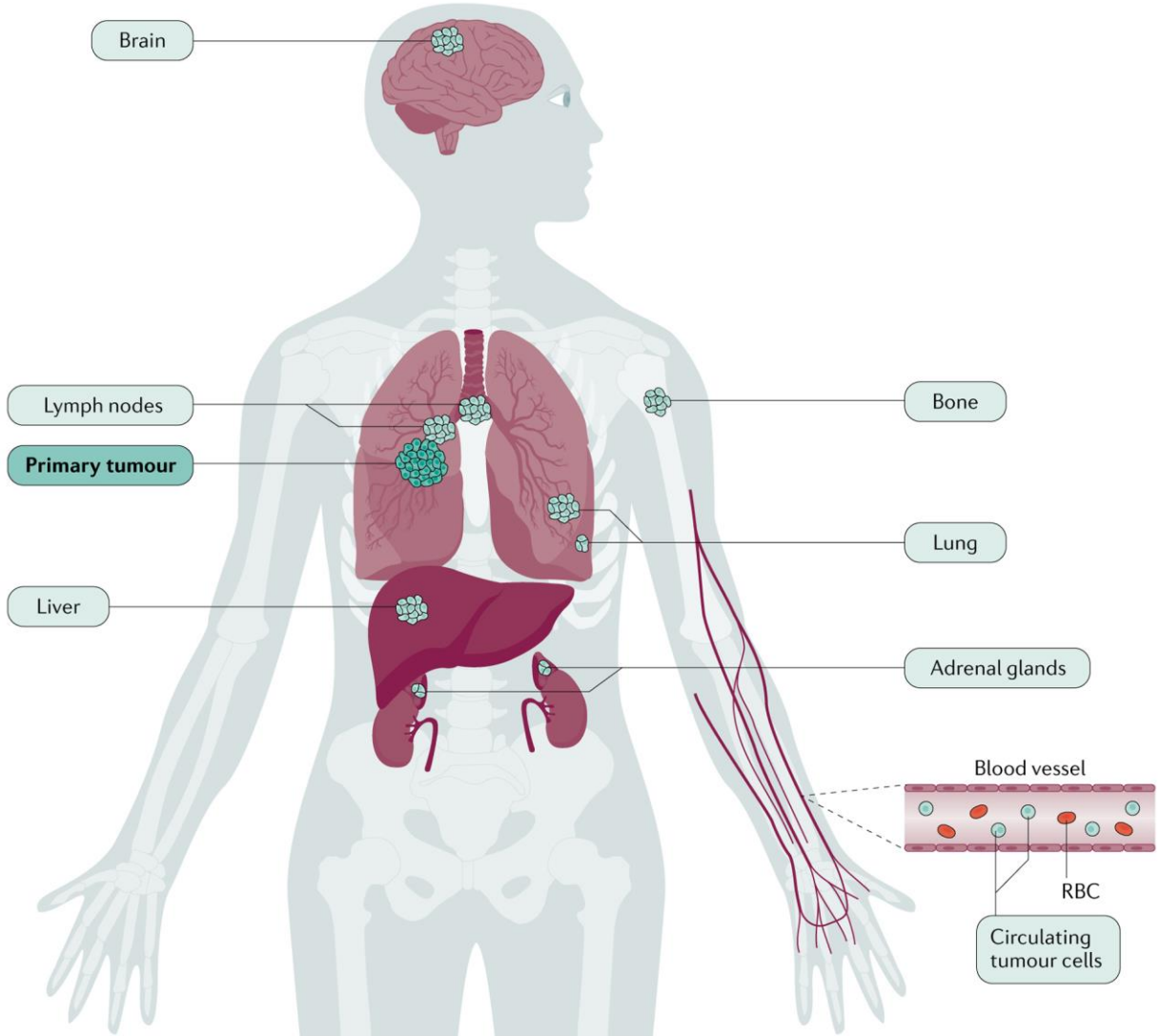



*Figure 2*: **Timeline of selected US Food and Drug Administration drug approvals for patients with treatment-naive metastatic NSCLC**


NSCLC treatment algorithm
Stage and workup based on stage
cT1abc, N0: PFT, bronch, mediastinal staging, PET
cT2a-4, N0-3, M0-1: PFT, bronch, mediastinal staging, PET, brain MRI, and biomarker/mutation testing
T1-2, N2–3, M0
T3, N1–3, M0
T4, N0–3, M0
Tx
Nx
M1
Stage IIIA (unresectable) or IIIB/C
Stage IV
Definitive chemoradiation → durvalumab
Concurrent platinum-based chemotherapy and radiation with consolidation durvalumab
PACIFIC: Durvalumab vs placebo
mPFS: 16.8 vs 5.6 mo (HR, 0.52)
Mutation (minimum EGFR; broad NGS if possible) and PD-L1 testing
EGFR (ex19, ex20ins)
ALK
ROS1
BRAF V600E
RET
MET (ex14)
NTRK1/2/3
KRAS G12C
HER2
Actionable mutation detected
EGFR (ex19 del or L858R)
Osimertinib[a]
FLAURA: Osimertinib vs erlotinib/gefitinib
mPFS: 18.9 vs 10.2 mo (HR, 0.46)
Erlotinib
EURTAC: Erlotinib vs chemo
mPFS: 9.7 vs 5.2 mo (HR, 0.37)
Afatinib
LUX-Lung 3: Afatinib vs cis/pemetrexed
mPFS: 13.6 vs 6.9 mo (HR, 0.47)
Gefitinib
IFUM: Gefitinib single arm
mPFS: 9.7 mo
Dacomitinib
ARCHER 1050: Dacomitinib vs geftinib
mOS: 34.1 vs 27 mo (HR, 0.75)
Erlotinib + ramucirumab
RELAY: Erlotinib + ramucirumab vs elotinib
mPFS: 19.4 vs 12.4 mo (HR, 0.59)
Erlotinib + bevacizumab
ARTEMIS-CTONG1509: Erlotinib + bevacizumab vs erlotinib
mPFS: 17.9 vs 11.2 mo (HR, 0.55)
ALK
Alectinib[a]
ALEX: Alectinib vs crizotinib
1-y PFS: 68.4% vs 48.7% (HR, 0.47)
Brigatinib[a]
ALTA-1L: Brigatinib vs crizotinib
mPFS: 24 vs 11.1 mo (HR, 0.48)
Lorlatinib[a]
CROWN: Lorlatinib vs crizotinib
mPFS: NR vs 9.3 mo, (HR, 0.28); 1-y PFS: 78% vs 39%
Ceritinib
ASCEND-4: Ceritinib vs chemo
mPFS: 16.6 vs 8.1 mo (HR, 0.55)
Crizotinib
PROFILE 1007: Crizotinib vs chemo
mPFS: 7.7 vs 3 mo (HR, 0.49)
NTRK
Larotrectenib[a]
Entrectinib[a]
BRAF V600E
Dabrafenib + Trametinib[a]
BRF113928: Dabrafenib + trametinib single arm
ORR: 64% (95% CI, 46–79)
ROS1
Crizotinib[a]
PROFILE 1001: Crizotinib single arm
ORR: 72% (95% CI, 58–84)
Entrectinib[a]
ALKA & STARTRK: Entrectinib single arm
ORR: 67.1%; mPFS: 19 mo
Ceritinib
YONSEI: Ceritinib single arm
ORR: 67% (95% CI, 48–81)
HER2
Trastuzumab deruxtecan
DESTINY-Lung02: Trastuzumab deruxtecan dose optimization study
ORR: 58% (95% CI, 43-71); mDOR: 8.7 mo (efficacy results of the approved recommended dose of 5.4 mg/kg)


No actionable mutation detected (stratify based on PD-L1 staining %)
PD-L1 >50%
IMMUNOTHERAPY MONOTHERAPY
Pembrolizumab[a]
KEYNOTE-024: Pembro vs platinum-based chemo
mPFS: 10.3 vs 6 mo (HR, 0.50)
Atezolizumab[a]
IMpower110: Atezo vs platinum-based chemo
mOS: 20.1 vs 13.1 mo (HR, 0.59)
Cemiplimab[a]
EMPOWER-Lung1: Cemi vs platinum-based chemo
mPFS: 8.2 vs 5.7 mo; mOS: NR vs 14.2 mo (HR, 0.57)
IMMUNOTHERAPY + CHEMOTHERAPY
SQUAMOUS:
Pembrolizumab + chemotherapy[a] (carboplatin + paclitaxel/nab-paclitaxel)
KEYNOTE-407: Pembro + chemo vs chemo
mPFS: 6.4 vs 4.8 mo (HR, 0.56); mOS: 15.9 vs 11.3 mo (HR, 0.64)
NONSQUAMOUS:
Pembrolizumab + chemotherapy[a] (carboplatin + pemetrexed)
KEYNOTE-189: Pembro + chemo vs chemo
mPFS: 8.8 vs 4.9 mo (HR, 0.52); 12-mo OS: 69% vs 49% (HR, 0.49)
Atezolizumab + chemotherapy (carboplatin + paclitaxel + bevacizumab)
IMpower150: Atezo + chemo vs chemo
mPFS: 8.3 vs 6.8 mo (HR, 0.62)
DUAL IMMUNOTHERAPY
Nivolumab + ipilimumab
CheckMate -227: Nivo/ipi vs chemo
mOS: 17.1 vs 14.9 mo
DUAL IMMUNOTHERAPY + CHEMOTHERAPY
Nivolumab + ipilimumab + chemo (2 cycles)
CheckMate -9LA: Nivo/ipi + chemo vs chemo
OS: 14.1 vs 10.7 mo
PD-L1 1%-49%
IMMUNOTHERAPY + CHEMOTHERAPY
SQUAMOUS:
Pembrolizumab + chemotherapy[a] (carboplatin + paclitaxel/nab-paclitaxel)
KEYNOTE-407: Pembro + chemo vs chemo
mPFS: 6.4 vs 4.8 mo (HR, 0.56); mOS: 15.9 vs 11.3 mo (HR, 0.64)
NONSQUAMOUS:
Pembrolizumab + chemotherapy (carboplatin + pemetrexed)a
KEYNOTE-189: Pembro + chemo vs chemo
mPFS: 8.8 vs 4.9 mo (HR, 0.52); 12-mo OS: 69% vs 49% (HR, 0.49)
Atezolizumab + chemotherapy (carboplatin + paclitaxel + bevacizumab)
IMpower150 : Atezo + chemo vs chemo
mPFS: 8.3 vs 6.8 mo (HR, 0.62)
DUAL IMMUNOTHERAPY
Nivolumab + ipilimumab
CheckMate -227: Nivo/ipi vs chemo
mOS: 17.1 vs 14.9 mo
DUAL IMMUNOTHERAPY + CHEMOTHERAPY
Nivolumab + ipilimumab + chemo (2 cycles)
CheckMate -9LA: Nivo/ipi + chemo vs chemo
mOS: 14.1 vs 10.7 mo
IMMUNOTHERAPY MONOTHERAPY
Pembrolizumab
KEYNOTE-042: Pembro vs plat-based chemo
mOS: 16.7 vs 12.1 mo (HR, 0.81)
PD-L1 <1%
IMMUNOTHERAPY + CHEMOTHERAPY
SQUAMOUS:
Pembrolizumab + chemotherapy[a](carboplatin + paclitaxel/nab-paclitaxel)
KEYNOTE-407: Pembro + chemo vs chemo
mPFS: 6.4 vs 4.8 mo (HR, 0.56); mOS: 15.9 vs 11.3 mo (HR, 0.64)
NONSQUAMOUS:
Pembrolizumab + chemotherapy (carboplatin + pemetrexed)[a]
KEYNOTE-189: Pembro + chemo vs chemo
mPFS: 8.8 vs 4.9 mo (HR, 0.52), 12-mo; OS: 69% vs 49% (HR, 0.49)
Atezolizumab + chemotherapy (carboplatin + paclitaxel + bevacizumab)
IMpower150: Atezo + chemo vs chemo
mPFS: 8.3 vs 6.8 mo (HR, 0.62)
DUAL IMMUNOTHERAPY + CHEMOTHERAPY
Nivolumab + ipilimumab + chemo (2 cycles)
CheckMate -9LA: Nivo/ipi + chemo vs chemo
mOS: 14.1 vs 10.7 mo


Brain
Lymph nodes
Primary tumour
Liver
Bone
Lung
Adrenal glands
Blood vessel
RBC
Circulating tumour cells


ANY
QUESTIONS