The TNM classification of lung tumours

Controversies in cancer staging and registration in Belgium

Dr. Mia Slabbaert
OVERVIEW

Introduction: purpose of TNM-classification

Usefulness of TNM – data

Which problems are detected by BCR and how to avoid them?

To ameliorate reporting TNM

 completaeness / accuracy)
Introduction
Classification of tumours can be done

According to
- localisation of primary tumour
- tumour type (histology)
- specific characteristics such as hormonal status, mutations, etc.
- presence/absence/duration of symptoms
- sex of the patient
- age of the patient
- clinical assessment of the tumour (cTNM)
- histopathological assessment of the tumour (pTNM)
- ..... 

→ All those factors have an influence on the prognosis of the patient
INTRODUCTION – Purpose of TNM

Based on the description of the **ANATOMICAL EXTENT OF THE DISEASE**

- to facilitate *the choice of treatment*

- to give an indication of the *prognosis*

- to make it possible to *compare treatment results* of different hospitals/countries

- to facilitate *cancer research*

- to sustain *control activities* *(eg evaluation of quality of care : feedback reports on process and outcome indicators)*
INTRODUCTION: is registration of TNM obligatory?

21 MARCH 2003. — Royal Decree concerning standards to be met by oncological care programs to be recognised.

Art. 11. § 1. Every care program (...) has to participate in cancer registration.

This cancer registration contains minimally following parameters:

1) Unique patient identification (...)
2) Diagnosis according to International Classification and incidence date
3) Tumorstage (cTNM)
4) Conclusion of the pathological report (including pTNM);
5) Treatment with reference to guidelines or justification of divergence
6) Follow-up plan
7) Side effects
8) Survival
9) Date of death

Yes
INTRODUCTION : general principles

T : extent of the primary Tumour
N : presence/absence of regional lymph Nodes metastasis
M : presence/absence of distant Metastasis

With the 3 variables, groups are created with comparable prognosis or treatment modalities → so called TNM-stages

- cStage
- pStage / ypStage,
- BCR : combined TNM-stage (compilation of pTNM en cTNM. If both are present, pStage prevails over cStage except when clinical stage is IV)
# TNM STAGES calculated with T, N, M

<table>
<thead>
<tr>
<th>T/M</th>
<th>Subgroup</th>
<th>N0</th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>T1a</td>
<td>Ia</td>
<td>IIa</td>
<td>IIIa</td>
<td>IIIb</td>
</tr>
<tr>
<td></td>
<td>T1b</td>
<td>Ia</td>
<td>IIa</td>
<td>IIIa</td>
<td>IIIb</td>
</tr>
<tr>
<td>T2</td>
<td>T2a</td>
<td>Ib</td>
<td>IIa</td>
<td>IIIa</td>
<td>IIIb</td>
</tr>
<tr>
<td></td>
<td>T2b</td>
<td>IIa</td>
<td>IIb</td>
<td>IIIa</td>
<td>IIIb</td>
</tr>
<tr>
<td>T3</td>
<td>T3 &gt;7</td>
<td>IIb</td>
<td>IIIa</td>
<td>IIIb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T3&lt;sub&gt;Inv&lt;/sub&gt;</td>
<td>IIb</td>
<td>IIIa</td>
<td>IIIb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T3&lt;sub&gt;Satell&lt;/sub&gt;</td>
<td>IIb</td>
<td>IIIa</td>
<td>IIIb</td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>T4&lt;sub&gt;Inv&lt;/sub&gt;</td>
<td>IIIa</td>
<td>IIIa</td>
<td>IIIb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T4&lt;sub&gt;Ipsi Nod&lt;/sub&gt;</td>
<td>IIIa</td>
<td>IIIa</td>
<td>IIIb</td>
<td></td>
</tr>
<tr>
<td>M1</td>
<td>M1a&lt;sub&gt;Contra Nod&lt;/sub&gt;</td>
<td>IV</td>
<td>IV</td>
<td>IV</td>
<td>IV</td>
</tr>
<tr>
<td></td>
<td>M1a&lt;sub&gt;Pl Disem&lt;/sub&gt;</td>
<td>IV</td>
<td>IV</td>
<td>IV</td>
<td>IV</td>
</tr>
<tr>
<td></td>
<td>M1b</td>
<td>IV</td>
<td>IV</td>
<td>IV</td>
<td>IV</td>
</tr>
</tbody>
</table>

7<sup>th</sup> edition
Lung tumours
USEFULNESS of TNM variables/stages

ILLUSTRATION OF:
- Selection of treatment
- Composition of patient population
- Survival analysis according to T, N, M or stage
- Evaluation of Quality of Care
4.2. Treatment of NSCLC

4.2.1. Treatment of early stage NSCLC (stage I-II and selected stage IIIA cT3N1)

<table>
<thead>
<tr>
<th>Criteria for operability</th>
<th>Assessment of lung function and exercise testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendations</td>
<td>Recommendation</td>
</tr>
</tbody>
</table>

Primary surgery in early stage NSCLC (stage I-II selected stage IIIA cT3N1)

Recommendation

(Neo)adjuvant chemotherapy in early stage NSCLC (stage I-II, selected stage IIIA cT3N1 or unforeseen N2)

Recommendation

Postoperative radiotherapy in resected early-stage NSCLC

Recommendation
Multidisciplinair oncologisch handboek

2e editie 2010

- STADIUM IIIa:
  - T3N1M0: Heelkundige resectie
    (indien medisch inoperabel: radiotherapie met curatieve intentie).
    Postoperative chemotherapie wordt aan patiënt voorgesteld.
  - T1-3N2M0: na bewezen mediastinoscopie of EBUS, niet massieve klieren:
    Inductiechemotherapie
    dan radiotherapie indien stabiele ziekte of progressieve ziekte, tenzij minimale N2, dan evt. heelkunde.
  - T4N0-1M0: indien chirurgisch resecable:
    Heelkunde,
    anders concomitante chemotherapie overwegen.

- STADIUM IIIB
  - T4N2M0: indien fitte patiënt:
    Concomitante radiochemotherapie,
    zo niet: inductiechemo, dan radiotherapie.
  - T elke N3M0: overweeg concomitante radiochemotherapie (indien fitte patiënt),
    anders ‘palliatieve’ chemotherapie.

- STADIUM IV: T elke N elke M1
  - Indien symptomatiche hersenmeta: eerst bestralen,
    als dan algemene toestand in orde is: palliatieve chemotherapie.
  - Indien andere meta: palliatieve chemotherapie, eventueel combinatie met radiotherapie op meta.
THE USE-FULLNESS OF TNM-VARIABLES

Different patient-population in different hospitals
THE USE-FULLNESS OF TNM-VARIABLES

Overall survival vs. Number of years

- cT1a $\leq 2\text{ cm}$
- cT1b $>2-3\text{ cm}$
- cT2a $\leq 5\text{ cm}$
- cT2b $>5-7\text{ cm}$
- cT3 $> 7\text{ cm}$

5-Year Survival:
- cT1a: 53%
- cT1b: 47%
- cT2a: 43%
- cT2b: 36%
- cT3: 26%

TNM 7th edition

Cases from 45 sources in 20 countries 1990-2000

THE USE-FULLNESS OF TNM-VARIABLES

Overall survival

Number of years

TNM 7th edition

Cases from 45 sources in 20 countries 1990-2000
THE USE-FULLNESS OF TNM-VARIABLES

Overall survival

<table>
<thead>
<tr>
<th>Group</th>
<th>Definition</th>
<th>5-Yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>T4N\text{any}_M0</td>
<td>Invasion, Ipsi Nodule</td>
<td>15%</td>
</tr>
<tr>
<td>M1a</td>
<td>Pleural Effusion</td>
<td>2%</td>
</tr>
<tr>
<td>M1a</td>
<td>Contralateral Nodule</td>
<td>3%</td>
</tr>
<tr>
<td>M1b</td>
<td>Distant metastasis</td>
<td>1%</td>
</tr>
</tbody>
</table>

TNM 7\text{th} edition

Cases from 45 sources in 20 countries 1990-2000

THE USE-FULLNESS OF TNM-VARIABLES
THE USE-FULLNESS OF TNM-VARIABLES

Quality indicators for the diagnosis and treatment of lung cancer

FRANCE VRIJENS, LEEN VERLEYE, CINDY DE GENDT*, VIKI SCHILLEMANS*, JO ROBAYS, CÉCILE CAMBERLIN, CÉCILE DUBOIS, SABINE STORDEUR, DAVID JEGOU*, GEERT SILVERSMIT*, ELIZABETH VAN EYCKEN*, ISABELLE WAUTERS, JAN P VAN MEERBEECK

* BELGIAN CANCER REGISTRY

Results

Room for improvement:

- Reporting to Belgian Cancer Registry suboptimal (e.g. 23% clinical stage missing)

Distribution of clinical stage (incidence 2010-2011)
GOOD NEWS: Clinical stage availability

**Bronchus and lung (TNM stage avail.):**

- Clinical:
  - 2011: 75.7%
  - 2012: 79.4%
  - 2013: 82.4%
  - 2014: 84.2%

- Pathological:
  - 2011: 22.2%
  - 2012: 21.9%
  - 2013: 22.7%
  - 2014: 25.4%

- Combined:
  - 2011: 81.8%
  - 2012: 85.2%
  - 2013: 87.6%
  - 2014: 89.7%
GOOD NEWS:
availability of stage information

By adding “stage by source” to ‘stage calculated by BCR’

<table>
<thead>
<tr>
<th>topo</th>
<th>histo /3</th>
<th>inc year</th>
<th>cT</th>
<th>cN</th>
<th>cM</th>
<th>pT</th>
<th>pN</th>
<th>pM</th>
<th>cStage by BCR</th>
<th>pStage by BCR</th>
<th>COMBstage by BCR</th>
<th>Stage by source</th>
</tr>
</thead>
<tbody>
<tr>
<td>349</td>
<td>8000</td>
<td>2014</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>IV</td>
</tr>
<tr>
<td>349</td>
<td>8041</td>
<td>2014</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>IV</td>
</tr>
<tr>
<td>341</td>
<td>8041</td>
<td>2014</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>IV</td>
</tr>
<tr>
<td>343</td>
<td>8140</td>
<td>2014</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>IV</td>
</tr>
<tr>
<td>349</td>
<td>8041</td>
<td>2014</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>IV</td>
</tr>
<tr>
<td>343</td>
<td>8481</td>
<td>2014</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>IV</td>
</tr>
<tr>
<td>341</td>
<td>8140</td>
<td>2014</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>IIIB</td>
</tr>
<tr>
<td>343</td>
<td>8041</td>
<td>2014</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>IV</td>
</tr>
</tbody>
</table>

Field for ‘other classifications’ or ‘remark’
GOOD NEWS: availability of stage information

<table>
<thead>
<tr>
<th>topo</th>
<th>lat</th>
<th>histo</th>
<th>behaviour</th>
<th>cT</th>
<th>cN</th>
<th>cM</th>
<th>pT</th>
<th>pN</th>
<th>pM</th>
</tr>
</thead>
<tbody>
<tr>
<td>C34.0</td>
<td>2</td>
<td>8012</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.0</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>2a</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8041</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>1b</td>
<td>1</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>2a</td>
<td>0</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8070</td>
<td>3</td>
<td>1a</td>
<td>2</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8070</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td>1a</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>1a</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>2a</td>
<td>0</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Stage IV** → any T, any N, M1

**Stage IIA** → T2b N0 M0 or T1a/b N1 M0 or T2a N1 M0

*Clinical stage or pathological stage?*
Inc year 2014: LUNG TUMOURS (stageable)

<table>
<thead>
<tr>
<th>Missing comb stage</th>
<th>860 (10 %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIB2014 with stages calculated by BCR</td>
<td></td>
</tr>
</tbody>
</table>

% really missing stages after adding TNM stage by source

790 (9,3 %)

Added stages

<table>
<thead>
<tr>
<th>Stage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>5</td>
</tr>
<tr>
<td>Stage III</td>
<td>9</td>
</tr>
<tr>
<td>Stage IV</td>
<td>56</td>
</tr>
</tbody>
</table>

20 % not stage IV

Room for improvement:
- Reporting to Belgian Cancer Registry suboptimal (e.g. 23% clinical stage missing)
RECURRENT PROBLEMS
# RECURRENT PROBLEMS

1) No TNM variables

<table>
<thead>
<tr>
<th>topo</th>
<th>lat</th>
<th>histo</th>
<th>behaviour</th>
<th>cT</th>
<th>cN</th>
<th>cM</th>
<th>pT</th>
<th>pN</th>
<th>pM</th>
</tr>
</thead>
<tbody>
<tr>
<td>C34.0</td>
<td>2</td>
<td>8012</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.0</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.0</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8550</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>1</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>2a</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8041</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>1b</td>
<td>1</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>2a</td>
<td>0</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8070</td>
<td>3</td>
<td>1a</td>
<td>2</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8070</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8550</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>1a</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>1a</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>2a</td>
<td>0</td>
<td>1b</td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>2b</td>
<td>2</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8550</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>2b</td>
<td>2</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>1a</td>
<td>0</td>
<td>1a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>1b</td>
<td>3</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RECURRENT PROBLEMS

1) No TNM variables

Problems:
- How to calculate QI (treatment following guidelines based on stage)?
- How to know your patient population?
- How to interpret survival results?

Solution:
- wait until staging examinations are done
- wait until surgery is executed and AP-report is available
- in case of referral to other centre: please mention!
- ask a question in case of difficulties to assign a TNM
RECURRENT PROBLEMS

2) No cTNM when pTNM is present

<table>
<thead>
<tr>
<th>topo</th>
<th>lat</th>
<th>histo</th>
<th>behaviour</th>
<th>cT</th>
<th>cN</th>
<th>cM</th>
<th>pT</th>
<th>pN</th>
<th>pM</th>
</tr>
</thead>
<tbody>
<tr>
<td>C34.0</td>
<td>2</td>
<td>8012</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.0</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.0</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8550</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>2a</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>1a</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>1b</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>2a</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8070</td>
<td>3</td>
<td>1a</td>
<td>2</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8070</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8550</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>1a</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8550</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>2b</td>
<td>2</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>1a</td>
<td>0</td>
<td>1a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RECURRENT PROBLEMS

2) No cTNM when pTNM is present

Both are important!
- cTNM will help to decide if surgery is indicated (→ Quality Indicators)
- pTNM will help to decide if adjuvant treatment is necessary and gives more accurate prognostic information

- cTNM maybe different from pTNM
  preop understaging
  preop overstaging ...

if cTNM = pTNM ... ‘rather suspicious’ for
## RECURRENT PROBLEMS

3) No pTNM in case of surgical resection of primary tumour

<table>
<thead>
<tr>
<th>topo</th>
<th>lat</th>
<th>histo</th>
<th>behaviour</th>
<th>cT</th>
<th>cN</th>
<th>cM</th>
<th>pT</th>
<th>pN</th>
<th>pM</th>
<th>treatment (done or planned)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C34.0</td>
<td>2</td>
<td>8012</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.0</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.0</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8550</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>1</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>2a</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>1a</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>1b</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>2a</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8070</td>
<td>3</td>
<td>1a</td>
<td>2</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8070</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8550</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>1a</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8550</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>2b</td>
<td>2</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8070</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>1</td>
<td>8140</td>
<td>3</td>
<td>1a</td>
<td>0</td>
<td>1a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C34.1</td>
<td>2</td>
<td>8140</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RECURRENT PROBLEMS

3) No pTNM in case of surgical resection of primary tumour

Solution:
- wait until surgery is executed and AP-report is available
- in case of referral to other centre: please mention!
- use “10” in correct manner: only for surgery of the primary tumour, not for staging surgical procedures (mediastinoscopy, thoracoscopy, lymph node removal,...) : surgical staging is part of clinical staging!
RECURRENT PROBLEMS

4) Presence of pTNM without evidence of surgical procedure is (rarely) possible

pT = only possible after resection of the primary tumour OR a biopsy allowing to evaluate the highest T-category

eg: CT-scan: lung tumour possibly invading oesophagus
     Biopsy of nodule in oesophagus = ingrowth of lung tumour
     \( \rightarrow \) cT4

Even when no surgery \( \rightarrow \) pT4 can be registered because of microscopic proof of the highest pT category
RECURRENT PROBLEMS

5) pN without pT

Information about lymph nodes obtained by
- physical examination
- imaging
- endoscopy (EBUS/EUS)
- mediastinoscopy, mediastinotomy, thoracoscopy, surgical exploration,…

And no further surgical intervention on primary tumour

pN or cN ?

7th edition of TNM, page 8:
An excisional biopsy of a lymph node without pathological assessment of the primary is insufficient to fully evaluate the pN category and is a clinical classification, in other words: no pN without pT.
Thus, in this cases cN should be used.
RECURRENT PROBLEMS

6) Copy-paste of cTNM ↔ pTNM
RECURRENT PROBLEMS

7) Wrong TNM-variables

- Not existing values (e.g., T3a, T4b,...)
- Wrong choice of value
RECURRENT PROBLEMS

- **PANCOAST tumour**: tumour in the apex of the lung = tumour located in the sulcus superior, with destructive lesions and involvement of brachial plexus and cervical sympathetic nerves → at least cT3 (regardless of diameter of the tumour)
RECURRENT PROBLEMS

• Do not forget ATELECTASIS OR OBSTRUCTIVE PNEUMONITIS!

Regardless diameter of lung tumour:

In 7th edition:
- atelectasis/pneumonitis extending to the hilus but not involving entire lung
  → at least cT2/pT2
- atelectasis/pneumonitis involving entire lung
  → at least cT3/pT3 (changed in 8th edition → also T2)
RECURRENT PROBLEMS

• Be careful with SYNCHRONOUS BILATERAL LESIONS!

1) Bilateral lesions with PROVEN same histology
   → 1 tumour in a metastatic setting
   → at least cM1a **AND** pM1a

2) Bilateral lesions but histology of one or both lesions unknown
   → considered to be the same histology
   → 1 tumour in a metastatic setting
   → at least cM1a

3) Bilateral lesions but PROVEN different histology (histological FAMILY)
   → 2 primary tumours
   → each with own TNM stage

VERY IMPORTANT IMPLICATIONS FOR TREATMENT / PROGNOSIS
RECURRENT PROBLEMS

- Make a clear difference between NEW LESIONS AND RECURRENT LESIONS!

  1) New lesion in lung after previous one and PROVEN same histology (regardless laterality)
     → 1 tumour with recurrent lesion (no New Diagnosis)
     → maybe rTNM (not asked by BCR)

  2) New lesion in lung after previous one and PROVEN ≠ histology (regardless laterality)
     → New Diagnosis

  3) New lesion in lung after previous one and no histology available (regardless laterality)
     → histology considered to be the same
     → 1 tumour with recurrent lesion (no New Diagnosis)
     → maybe rTNM (not asked by BCR)

- Make a clear difference between METASTASIS IN LYMPH NODES (REGIONAL → N) AND AT A DISTANCE (non-regional LN included → M) Eg. metastatic ipsilat hilar LN = N1, not M1
TNM: a fascinating but never ending story.....
CASE 1:

CT-scan:
- Tumour of 2.5 cm in upper lobe of right lung + nodule of 1 cm in lower lobe of right lung
- Enlarged mediastinal lymph nodes
- No other lesions observed
→ Bronchoscopy + biopsy of nodule in upper lobe
→ EUS: puncture of ipsilateral mediastinal lymph nodes

APO lung biopsy: adenocarcinoma
APO EUS: compatible with metastasized adenoca of lung

How to stage this tumour?
1) cT1N2M1
2) cT4NxM0 + pT_N2M_
3) cT4N2M0
4) cT4N2M1 + pT_N_M1
ANSWER TO CASE 1:

CT-scan:
- Tumour of 2.5 cm in upper lobe of right lung + nodule of 1 cm in lower lobe of right lung \( \rightarrow \text{cT}4 \) (no pT4 since no microscopic proof of second nodule)
- Enlarged mediastinal lymph nodes
- No other lesions observed \( \rightarrow \text{cM}0 \)

\( \rightarrow \) Bronchoscopy + biopsy of nodule in upper lobe
\( \rightarrow \) EUS: puncture of ipsilateral mediastinal lymph nodes

APO lung biopsy: adenocarcinoma
APO EUS: compatible with metastasized adenocarcinoma of lung \( \rightarrow \text{cN}2 \) (regional node metastasis)

How to stage this tumour?
1) \( \text{cT1N2M1} \) (wrong: no metastasis at a distance)
2) \( \text{cT4NxM0 + pT_N2M_} \) (wrong: EUS provides information for clinical staging)
3) \( \text{cT4N2M0} = \text{correct} \)
4) \( \text{cT4N2M1 + pT_N_M1} \) (wrong = no proof of distant metastasis)
CASE 2:

CT-scan:
- Pneumonitis of left upper lobe due to obstruction by tumour of 2.5 cm
- Enlarged mediastinal lymph nodes
- No other lesions observed

→ Bronchoscopy + biopsy of tumour: APO: *spinocellular carcinoma*

→ Mediastinoscopy: biopsy of multiple LN
  
  APO: 1 node paratracheal right positive for meta of spinocellular ca

*How to stage this tumour?*

1) cT1N0M1
2) cT2N2M0
3) cT1N3M0
4) cT2N3M0
Answer to CASE 2:

CT-scan:
- Pneumonitis of left upper lobe due to obstruction by tumour of 2.5 cm
- Enlarged mediastinal lymph nodes  \(\rightarrow\) at least cT2, regardless 2.5 cm
- No other lesions observed  \(\rightarrow\) M0

Bronchoscropy + biopsy of tumour : APO : spinocellular carcinoma

Mediastinoscopy : biopsy of multiple LN
  APO : 1 node paratracheal right positive for meta of spinocellular ca

How to stage this tumour?

1) cT1N0M1  \(\text{wrong : pneumonitis overrules size ; no distant metastasis}\)

2) cT2N2M0  \(\text{N3 because of contralateral mediastinal}\)

3) cT1N3M0  \(\text{wrong : pneumonitis overrules size}\)

4) cT2N3M0  \(\text{in the TNM 8th edition cT2aN3M0}\)