NSCLC: Summary of important changes and new decision tree

Early stage (I-IIA, some IIB)

SABR for all inoperable patients and some borderline operable patients (would only be suitable for sublobar resection)

Peripheral and not abutting chest wall	54Gy/3#/1 week
Peripheral and abutting chest wall	55Gy/5#/2 weeks
Central (PTV 1-2cm away from primary bronchial tree or brachial plexus)	50Gy/5#/2 weeks 60Gy/8#/3-4 weeks (more common)
Unsuitable for SABR (e.g. PTV<1cm from primary bronchial tree or brachial plexus, or medically unfit)	55Gy/20#/4 weeks CHART: 54Gy/36#/12 days 60-66Gy/30-33#/6-6.5 weeks Stage 2B: Consider chemoradiotherapy

During COVID, patients in these groups had still further hypofractionated RT:

- A few peripheral tumours were considered for 34Gy/1#
- Some tumours abutting the chest wall were treated with 48-54Gy/3#
- More central tumours were treated with 50Gy/5#
- Some ultracentral tumours were treated with 15# treatments

Stage III

- Increased rate of surgery
- No role for PORT (even in N2 patients) unless R1 resection or if there is extracapsular lymph node disease.

Stage IV

- See changes in RCR guidelines for treatment of brain metastases

Solitary lesion	Surgery or SRS	15-24Gy/1#	
1-4 lesions, total volume <20cm^3, KPS>70 and controlled extracranial disease	SRS	15-24Gy/1# Consider adding WBRT: 30Gy/10#/2 weeks	
Multiple metastases	KPS>70	WBRT	30Gy/10#/2 weeks 20Gy/5#/1 week
	KPS<70	Supportive care only	

- If the synchronous metastases are only to the brain (or, as SARON progresses, there is low metastatic burden elsewhere), with chest disease that is radically treatable and brain metastases amenable to SRS (see above), then the chest disease can receive consolidation RT after systemic therapy, and the brain metastases can be treated with SRS.

NSCLC: Updated decision tree

<table>
<tr><td rowspan="5">Stage 1-2

29%</td><td rowspan="2">Candidate for surgery

60% (NLCA, 2017 period)</td><td colspan="2" rowspan="2">Surgery</td><td>Complete resection → Observation 93%</td><td rowspan="5">No recurrence 50% → Observation

Local or regional recurrence 15% → Some may have palliative chest radiotherapy (see Stage IV)

Distant recurrence 35% → some may have palliative radiotherapy (see Stage IV)</td></tr>
<tr><td>Positive margins (R1) 7% → Re-resection
If no longer operable:
Adjuvant radiotherapy (Stage 2 only) and/or chemotherapy
50-55Gy/20#/4 weeks
60Gy/30#/6 weeks</td></tr>
<tr><td rowspan="3">Medically inoperable

40% (NLCA, 2017 period)</td><td rowspan="3">Candidate for SABR

55%- Adjusted from NLCA</td><td>Peripheral and not abutting chest wall</td><td>54Gy/3#/1 week 0-5% (Currently- likely to increase)</td></tr>
<tr><td>Peripheral and abutting chest wall</td><td>50-55Gy/5#/2 weeks
90% (Currently- likely to decrease)</td></tr>
<tr><td>Central (PTV 1-2cm away from primary bronchial tree or brachial plexus)</td><td>60Gy/8#/3-4 weeks
5-10%</td></tr>
<tr><td colspan="2">Unsuitable for SABR (e.g. PTV<1cm from primary bronchial tree or brachial plexus, or medically unfit) 2% (adjusted from NCLA)</td><td>55Gy/20#/4 weeks
50%

CHART:
54Gy/36#/12 days
60-66Gy/30-33#/6-6.5 weeks 50%</td></tr>
<tr><td colspan="3">(Remaining 43% (NCLA- NB higher than optimum) receive chemoradiotherapy/palliative radiotherapy/ best supportive care)</td></tr>
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<table>
<tr><td rowspan="5">Stage 3

21%</td><td rowspan="3">Stage 3A
33%</td><td rowspan="2">Candidate for surgery 20% (Adizie et al. 2019)</td><td colspan="2">Surgery (as extensive as needed for full excision)
Consider adjuvant chemotherapy (particularly for N1-2 patients with good PS)

Consider adjuvant RT only for patients with ssN2 disease with extracapsular nodal spread, or positive margins after surgery (<5%- NLCA):
54Gy/27-30#/5-6 weeks
55Gy/20-25#/4-5 weeks
60Gy/30#/6 weeks</td><td rowspan="5">No recurrence → Observation

Local/regional/distant failure: Palliative treatment (see Stage IV)

NB Targeted therapies may be an alternative for Stage 3B-C patients with susceptible mutations</td></tr>
<tr><td colspan="2">Preoperative chemotherapy and radiotherapy (Stage 3A N2 only)
45Gy/25#/5 weeks (<5%- NLCA)</td></tr>
<tr><td>Medically inoperable 80% (Adizie et al. 2019)</td><td>Definitive radiotherapy (40%- Adizie et al. 2019)</td><td>Concurrent or sequential chemoradiotherapy 80%
55Gy/20#/4 weeks
60-66Gy/30-33#/6-6.5 weeks

CHART 20%
54Gy/36#/12 days</td></tr>
<tr><td colspan="2"></td><td>Palliative treatment (60%- Adizie et al. 2019)</td><td>See Stage 4</td></tr>
<tr><td rowspan="3">Stage 3B-C

(Or any Stage 3 Pancoast tumour)
67%</td><td>Excellent PS (may be fit for surgery) 1%</td><td colspan="2">(Some T3 N2): Surgery + adjuvant chemotherapy and/or radiotherapy (R1 resection or extracapsular disease only
54Gy/27-30#/5-6 weeks (extracapsular spread)
50-55Gy/20-25#/4-5 weeks (R1)
60Gy/30#/6 weeks (R1)</td></tr>
<tr><td>Definitive radiotherapy (50%- Adizie et al. 2019)</td><td colspan="2">Concurrent or sequential chemoradiotherapy 80%
55Gy/20#/4 weeks
60-66Gy/30-33#/6-6.5 weeks

CHART 20%
54Gy/36#/12 days</td></tr>
<tr><td>Palliative treatment (49%- Adizie et al. 2019)</td><td colspan="2">See Stage 4</td></tr>
</table>

<table>
<tr><td rowspan="4">Stage 4

50%</td><td>Low metastatic burden (e.g. brain metastases only, which are amenable to SRS), with radically treatable chest disease 6%</td><td colspan="2">After systemic therapy:

Chest disease: Radical RT as appropriate following systemic therapy. E.g. 55Gy/20# /4 weeks or 60-66Gy/30-33#/6-6.5 weeks
AND
Brain metastases (1-4 lesions, total volume <20cm^3, KPS>70): SRS: 15-24Gy/1#</td></tr>
<tr><td>No Focal symptoms 47%</td><td colspan="2">No radiotherapy (chemo-immunotherapy, targeted therapy or supportive care only depending on PS and mutation profile)</td></tr>
<tr><td rowspan="3">Focal symptoms 47%</td><td rowspan="3">Chemo-immunotherapy (Good PS)/ Supportive care (poor PS) + palliative radiotherapy according to symptoms</td><td>Chest
Good PS: 30-39Gy/10-13#/2-2.5 weeks (limit cord dose to 36Gy) 15%
OR 20Gy/5#/1 week 15%

Poor PS: 17Gy/2#/8days 10%
OR 10Gy/1# 20%</td></tr>
<tr><td>Bone
20Gy/5#/1 week 15% or 8Gy/1# 10%</td></tr>
<tr><td>Brain
1-4 lesions, total volume <20cm^3, KPS>70 and controlled extracranial disease →SRS 15-24Gy/1# 6%

Consider adding WBRT:
30Gy/10#/2 weeks 7%

Multiple metastases:
KPS>70 → WBRT 30Gy/10#/2 weeks or 20Gy/5#/1 week 17%
KPS<70 → Supportive care only</td></tr>
</table>

(K)PS- (Karnofsky) Performance Status

SRS- Stereotactic Radiosurgery