

## 國軍左營總醫院放射腫瘤科

### 2025 年食道癌放射線治療指引

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食道癌放射治療指引與監測修正對照表

| 2024 | 2025             | 說明      |
|------|------------------|---------|
|      | 每週量體重並注意進食及營養狀態。 | 急性副作用增列 |
|      | 更新 references    | 補充      |

## 放射治療適應症

### 一、根治性目的(curative intent)

1. T1-T4a 健康狀況不適合手術但可化學治療，或不選擇手術的 M0 病人
2. 同步化學及放射治療-T1b-T4b，or N+，M0
3. 手術前輔助治療-T1b-T4a，or N+，M0
4. 手術後輔助治療-R1 or R2 resection；pT3 (option)，pT4 or pN+.
5. 未產生遠端轉移之局部復發
6. 寡轉移(oligometastases)且 ECOG performance status < 2

### 二、緩解性目的(palliative intent)

1. T4b 且 ECOG performance status  $\geq 2$
2. 遠端轉移病灶
3. 產生症狀之局部復發併有遠端轉移
4. 寡轉移(oligometastases)且 ECOG performance status  $\geq 2$
5. 健康狀況不適合手術及化學治療的 M0 病人

## 根治性放射治療必要流程

### 一、治療計劃前完整的臨床評估

1. 確認期別及病理報告。
2. 必要檢驗以排除全身多處轉移可能。
3. 經團隊會議討論或相關科別照會。

### 二、治療體位設定

1. 病人採仰臥，通常食道腫瘤中段及下段雙側上肢上舉。若為上段腫瘤，可不需上肢上舉。以頸肩胸模具固定，治療標記設定於模具及身體上。

### 三、模擬攝影

1. 病人依設定體位躺上電腦斷層攝影床，必要時以金屬線進行標記，並配合模具。通常病人可採自由呼吸。
2. 通常電腦斷層掃描每切面間距應不大於 5mm，掃描範圍應至少包括腫瘤及全肺部並超過治療區域 5-10 cm。
3. 掃描後應注意中心點是否偏移，並以油性水洗不掉簽字筆作好標記供治療辨認。

### 四、治療計劃(treatment planning)-

#### 1. 腫瘤體積(TV target volume)

A. Definitive RT：GTV以CT，PET or endoscopy可見腫瘤為主。

(1) CTV-tumor為tumor + 2-4 cm superior and inferior margins and a 0.5-1.0 cm lateral margin.

(2) CTV-lymph node 包含潛在轉移區域，involved nodal irradiation (preferred) or elective nodal irradiation

(3) PTV包含呼吸移動及擺位誤差。可適當搭配slow CT or 4D CT (with/without breath holding or gating)來決定ITV (internal target volume)。通常為 CTV + 0.5-1.0 cm。

(4) Involved nodal irradiation：Lymph node + 0.5-1.5 cm margins

(5) Elective nodal irradiation：

i. Cervical esophagus：para-esophageal LNs + SCF LNs + higher echelon neck LNs

ii. Upper third esophagus：para-esophageal LNs + SCF LNs

iii. Middle third esophagus：para-esophageal LNs

iv. Lower third esophagus：para-esophageal LNs + lesser curvature LN + celiac axis LN

B.Adjuvant RT：CTV以食道tumor and LAP bed & high risk lymphatic region (anastomosis：option)，或疑有殘存腫瘤處為主。

C.At least 95 % PTV is covered by 95% prescribed dose；no more 1% PTV received 110% prescribed dose

2.放療劑量：Definitive 治療 50-50.4 Gy(1.8–2 Gy/Fx)。Neoadjuvant 治療 41.4-50.4 Gy (1.8–2 Gy/Fx)。Adjuvant 治療 45-50.4 Gy (1.8–2 Gy/Fx)。\*以上劑量依照 performance status，risk factors (margin close，margin positive，ENE 及正常組織耐受劑量(Lung，spinal cord，stomach，bowel，liver，heart) 可予以調整。頸部段食道癌不接受手術時，可考慮使用較高放射劑量( $\leq 63$  Gy)。若病情需要更高劑量，需於本科或團隊會議討論。

3.體外放射治療技術建議 3DCRT 或 IMRT。

4.劑量評估參數：至少包括肺部劑量(以 V20，mean lung dose 等)、心臟、脊髓劑量等。

5.建議使用 6-10 MV x-ray with heterogeneity correction。

五、放射治療前評估紀錄：包括期別、病理報告、病人簡史、理學檢查、重要檢查結果、診斷、體能狀態及治療計劃。

六、首次治療前應使用定位照相或影像導引以確保照射範圍正確性，並由醫師確認簽章後才能進行。

## 根治性食道癌放射治療副作用評估

| Adverse Event        | Grade                                                                              |                                                                                                                  |                                                                                                             |                                                                                                                                                    |       |
|----------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------|
|                      | 1                                                                                  | 2                                                                                                                | 3                                                                                                           | 4                                                                                                                                                  | 5     |
| Esophagitis          | Asymptomatic; clinical or diagnostic observations only; intervention not indicated | Symptomatic; altered eating/swallowing; oral supplements indicated                                               | Severely altered eating/swallowing; tube feeding, TPN or hospitalization indicated                          | Life-threatening consequences; urgent operative intervention indicated                                                                             | Death |
| Dermatitis radiation | Faint erythema or dry desquamation                                                 | Moderate to brisk erythema; patchy moist desquamation, mostly confined to skin folds and creases; moderate edema | Moist desquamation in areas other than skin folds and creases; bleeding induced by minor trauma or abrasion | Life-threatening consequences; skin necrosis or ulceration of full thickness dermis; spontaneous bleeding from involved site; skin graft indicated | Death |
| Pneumonitis          | Asymptomatic; clinical or diagnostic observations only; intervention not indicated | Symptomatic; medical intervention indicated; limiting instrumental ADL                                           | Severe symptoms; limiting self care ADL; oxygen indicated                                                   | Life-threatening respiratory compromise; urgent intervention indicated (e.g., tracheotomy or intubation)                                           | Death |

## 重要器官劑量限制

Liver :  $V_{30Gy} < 33\%$  , mean dose  $\leq 23Gy$ Kidney:  $V_{20Gy} \leq 33\%$ , Mean  $< 18Gy$ Spinal cord :  $\leq 48Gy$ Heart :  $V_{40} \leq 33\%$  , Mean  $\leq 32\%$ Stomach max dose  $\leq 54Gy$  ; Bowel  $\leq 54Gy$ Lung :  $V_{20} \leq 38\%$  ,  $V_{10} \leq 50\%$  , mean dose  $\leq 20Gy$

**根治性食道癌放射治療可能副作用與處置：**可參見國衛院放療共識手冊。

**一、急性副作用：**

1. 噁心、嘔吐：選擇清淡易消化之食物，少量多餐，嚴重時可請醫師處方。
2. 喉嚨及食道炎：吞嚥時食道有灼熱感，改用柔軟之食物，必要時可請醫師處方或暫停治療。
3. 咳嗽：可請醫師處方。
4. 每周量體重並注意進食及營養狀態。

**二、慢性副作用：**

1. 食道狹窄：吞嚥困難，可用擴張器擴張或手術治療。
2. 肺部發炎或纖維化引起咳嗽、氣喘、呼吸困難，可用藥物及氧氣治療。
3. 脊髓炎：下半身麻木感覺或麻痺，可用高壓氧治療。
4. 少數其他可能之副作用如心血管疾病，胸壁副作用，臂神經損傷，氣管副作用，肝臟副作用，腸道副作用，腎臟副作用。

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## 2025 年食道癌放射治療品質監測指標

1. 根治性食道癌病人接受放射治療前，主治醫師對該療程進行確認及簽章比率:閾值:95%

分子定義：監測期間內，因食道癌進行根治性放射治療，於接受放射治療前，主治醫師對病患療程進行確認及簽章之人數

分母定義：監測期間內，因食道癌進行根治性放射治療總人數

2. 根治性食道癌病人接受放射治療前，使用定位照相以確保照射範圍正確性之比率:閾值:95%

分子定義：監測期間內，因食道癌進行根治性放射治療，於接受放射治療前，使用定位照相或影像導引以確保照射範圍正確性之人數

分母定義：監測期間內，因食道癌進行根治性放射治療總人數

3. 根治性食道癌病人接受放射治療時，劑量符合標準政策之比率:閾值:90%

分子定義：監測期間內，因食道癌進行根治性放射治療，於療程完成時，總劑量與標準劑量誤差為正負(含)10%以內之人數

分母定義：監測期間內，因食道癌進行根治性放射治療總人數

4. 根治性食道癌病人接受放射治療時，治療時間符合標準政策之比率:閾值:90%

分子定義：監測期間內，因食道癌進行根治性放射治療，於療程完成時，總治療時間與標準治療時間誤差為正負(含)兩週之人數

分母定義：監測期間內，因食道癌進行根治性放射治療總人數

5. 根治性食道癌病人接受放射治療時，治療次數符合標準政策之比率:閾值:90%以上

分子定義：監測期間內，因食道癌進行根治性放射治療，於療程完成時，實際次數與標準次數誤差為正負(含)10%以內之人數

分母定義：監測期間內，因食道癌進行根治性放射治療總人數

6. 根治性食道癌病人接受放射治療時，急性期非血液副作用出現第三級或以上之反應的比率:閾值:30%

分子定義：監測期間內，因食道癌進行根治性放射治療，於療程完成時，急性期副作用出現第三級或以上之反應之人數

分母定義：監測期間內，因食道癌進行根治性放射治療總人數