# 國軍左營總醫院放射腫瘤科

## 2024 年鼻咽癌放射治療指引

**本版放射腫瘤科共識會議日期：2016 年 4 月 15 日，本版定案日期：2016 年 4 月 29 日，**

**本版修訂日期：2024 年 6 月 6 日(與國軍高雄總醫院放射腫瘤科崔樂平主任)**

**期別依據：AJCC 8th edition (2017)**

鼻咽癌放射治療指引與監測修正對照表

| 2023 | 2024 | 說明 |
|---|---|---|
| 國軍高雄總醫院左營分院 | 國軍左營總醫院 | 醫院名稱變更 |
| | Reduce field boost 可考慮再做 CT scan simulation 評估療效，並做為 treatment plan 參考。 | 新加 |
| CTCAE v4.03 | CTCAE v5.0 | |
| | 更新 references | 補充 |

## 常見放射治療適應症

一、根治性目的(curative intent):

1. 首次根治性治療:
   i. 放射治療:T1N0M0
   ii. 放射治療加化學治療:T1N1-3M0;T2-4NanyM0
2. Any T, Any N, with early M1
   i. 先化學治療，後放射治療或合併化學治療。
   ii. 同步化學及放射治療（適合遠端轉移病灶不大或為局限性，或是有明顯鼻咽或頸部局部症狀）。
3. 局部區域(locoregional)復發且無遠端轉移病灶。

二、緩解性目的(palliative intent)

1. 明顯骨等遠端轉移病灶
2. 併有遠端轉移且產生症狀之局部復發

## 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. 必要檢查以排除全身多處轉移可能(考慮電腦斷層正子攝影)。
3. 經團隊會議討論或相關科別照會。
4. 必要時會做放射治療前的牙科會診及牙齒處置。

二、治療體位設定

1. 病人採仰臥，雙手置於身旁。以頭頸模具固定，治療標記設定於模具上。

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(如腫大之頸部淋巴)，並配合模具固定身體位置。
2. 通常電腦斷層掃描每切面間距為 2.5mm，掃描範圍應至少包括眼眶及鎖骨下緣。
3. 掃描後應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. 放療劑量：
   i. 原發(鼻咽)及侵犯淋巴部位/淋巴區給予 70-76Gy(1.8-2 Gy/fx)
   ii. 潛在風險部位/淋巴區 44-63Gy(1.8-2 Gy/fx)

建議分高，中，低危險區域做三階段不同劑量治療。

Sequential IMRT technique:deliver the initial phase (week 4-5) followed by moderate-dose boost volume phase (week 5-6.5), then gross tumor boost to high dose (week 6.5 to 8), usually using 3 separate dose plans

Examples:

Three phases:

CTV-H:primarytumorand involved nodal area:

70.2Gy/39fx–75.6Gy/42fx

CTV-M: primary tumor with 1.5-2.0 cm margin (high risk subclinical region)/
involved node with 1.0-1.5 cm margin or involved nodal level (high risk subclinical region) :
57.6 Gy/ 32 fx– 61.2 Gy/ 34 fx

CTV-L:uninvolved nodal area:
43.2Gy/24fx- 50.4Gy/28fx

Reduce field boost 可考慮再做 CT scan simulation 評估療效，並做為 treatment plan 參考。

2. 採用 IMRT 為治療方式，以減少危急器官放射劑量。
3. CTV 包括原發腫瘤部位、侵犯淋巴部位/淋巴區以及潛在風險淋巴區。
4. 治療計劃標靶體積(PTV: planning target volume)：PTV 依 CTV 增加 0.3 至 0.5 公分。鄰近腦幹處，考慮器官忍受劑量可為 0.1 公分
5. 劑量評估參數：至少包括腦幹、脊髓、腮腺、顳下頜關節、眼睛(水晶體)、視神經，視交叉等劑量。

五、放射治療前評估紀錄：包括病理報告、期別、核磁共振或電腦斷層攝影影像報告、病人簡史、理學檢查、重要檢查結果、診斷評估、體能狀態及治療計劃。

六、首次治療前應使用定位照相驗證片以確保照射範圍正確性，並由主治醫師確認簽章後才能進行。

## 重要器官劑量評估參數

NOTE: All dose constraints below should be met whether the patient undergoes 3D-CRT or IMRT techniques.

Critical Normal Structures

Dose constraints are given below:

| Structure | true structure constraint | PRV constraint |
|---|---|---|
| Brainstem | 54 Gy max dose | no more than 1% to exceed 60 Gy |
| Spinal Cord | 45 Gy max dose | no more than 1% to exceed 50 Gy |
| Optic Nerves,Chiasma54Gy max dose | 54 Gy max dose | |
| Mandible, TM joint | 70 Gy, if not possible then nomore than 1cc to exceed 75 Gy | |

Parotid glands: Mean dose <26 Gy (optimal) or 30 Gy(acceptable), should be achieved in at least one gland; or at least 50% of one gland will receive < 33 Gy (optimal) or 35Gy(acceptable) (should be achieved in at least one gland).

Other normal structures can be considered:

| | |
|---|---|
| Each cochlea | No more than 5% receives 55 Gy or more |
| Eyes | Max dose less than 50 Gy |
| Lens | Max dose less than 10Gy |
| Glottic Larynx | Mean dose less than 40Gy |
| Esophagus, Postcricoid pharynx | Mean dose less than 45 Gy |

**根治性鼻咽癌放射治療可能副作用與處置:**

一、 急性副作用：

1.口腔黏膜炎：常以溫開水漱口，嚴重時可請醫師處方漱口劑及藥膏。

2.嗅覺味覺遲鈍：需配合調節食物口味，在治療後將漸漸恢復。

3.皮膚炎: 減少磨擦，嚴重時可請醫師處方藥膏。

4.口乾: 隨身攜帶水壺漱口或飲用。

5.下巴、頸部淋巴水腫：嚴重時可請醫師處理或開處方藥物。

6.短暫性脊髓病變：在治療後將漸漸恢復。

二、慢性副作用：

1.口乾: 隨身攜帶水壺漱口或飲用，嚴重時可請醫師處方藥物。

2.蛀牙: 保持口腔清潔，定期牙科門診防治。

3.牙關緊閉: 練習張口運動。

4.頸部僵硬: 經常做頸部柔軟運動及手部按摩。

5.中耳炎及聽力減退: 定期耳鼻喉科門診追蹤。

6.少數零星個案且較嚴重的副作用，如腦組織壞死、視神經及視網膜病變、腦幹病變、腦下垂體功能低下、永久性脊髓病變、骨頭壞死、白內障、吞嚥困難、大量出血及中風等等：定期門診追蹤，嚴重時可考慮介入處置。

## 根治性鼻咽癌放射治療常見之副作用及程度分級:

**CTCAE v5.0**

| | Grade | | | | |
|---|---|---|---|---|---|
| **Adverse event** | **1** | **2** | **3** | **4** | **5** |
| Oral pain | Mild pain | Moderate pain; limiting Instrumental ADL | Severe pain; limiting self care ADL | - | - |
| Definition: A disorder characterized by a sensation of marked discomfort in the mouth, tongue or lips | | | | | |
| Mucositis oral | Asymptomatic or mild symptoms; intervention nor indicated | Moderate pain; not interfering with oral intake; modified diet indicated | Severe pain; interfering with oral intake | Life-threatening consequences; urgent intervention indicated | death |
| Definition: A disorder characterized by inflammation of the oral mucosal | | | | | |
| Dry mouth | Symptomatic(e.g., dry or thick saliva) without significant dietary alteration; unstimulated saliva flow>0.2ml/min | Moderate symptoms; oral intake alteration(e.g., copious water, other lubricants, diet limited to purees and/or soft, moist foods); unstimulated saliva 0.1-0.2 ml/min | Inability to adequately aliment orally; tube feeding or TPN indicated; unstimulated saliva <0.1 ml/min | - | - |
| Definition: A disorder characterized by reduced salivary flow in the oral cavity | | | | | |
| Dysphagia | Symptomatic, able to eat regular diet | Symptomatic and altered eating/swallowing | Severely altered eating/swallowing; tube feeding or TPN or hospitalization indicated | Life-Threatening consequences; urgent intervention indicated | Death |
| Definition: A disorder characterized by difficulty in swallowing | | | | | |
| 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 |
| Definition: A finding of inflammatory reaction occurring as a result of exposure to biologically effective levels of ionizing radiation | | | | | |

**參考文獻:**


1. National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines in Oncology: Head and Neck cancersVersion: Version: 4.2024. Available at https://www.nccn.org/professionals/physician_gls/pdf/head-and-neck.pdf. Accessed May 17, 2024.
2. CTCAE v5.0. Common Terminology Criteria for.Adverse Events (CTCAE). Published：Nov. 27, 2017.
3. Chan ATC, Gregoire V, Lefebvre JL, Licitra L, Felip E. Nasopharyngeal cancer: EHNS-ESMO-ESTRO Clinical practice guidelines for diagnosis, treatment and follow-up. Annals of oncology 2010;21: 187-189
4. Al-Sarraf M, at el. Chemoradiotherapy versus radiotherapy in patients with advanced nasopharyngeal cancer: phase III randomized Intergroup study 0099. J ClinOncol 1998;16: 1310-1317
5. Chan ATC, et al. Concurrent Chemotherapy-Radiotherapy Compared With Radiotherapy Alone in Locoregionally Advanced Nasopharyngeal Carcinoma: Progression-Free Survival Analysis of a Phase III Randomized Trial. J ClinOncol 2002; 20:2038-2044
6. Wee J, et al. Randomized Trial of Radiotherapy Versus Concurrent Chemoradiotherapy Followed by Adjuvant Chemotherapy in Patients With American Joint Committee on Cancer/International Union Against Cancer Stage III and IV Nasopharyngeal Cancer of the Endemic Variety. J ClinOncol 2005;23: 6730-6738
7. American Head and Neck Society Practical Guideline.
8. Lee N, Xia P, Quivey JM, et al. Intensity-modulated radiotherapy in the treatment of nasopharyngeal carcinoma: An update of the UCSF experience. Int J RadiatOncolBiol Phys. 2002;29:12-22
9. Kam MK, Leung SF, Zee B, et al. Impact of Intensity-modulated radiotherapy (IMRT) on salivary gland function in early-stage nasopharyngeal carcinoma (NPC) patients. Proc Am SocClinOncol. 23: 500s, 2005.
10. Kam MK, Teo PM, Chau RM, et al. Treatment of nasopharyngeal carcinoma with intensity-modulated radiotherapy: The Hong Kong experience. Int J RadiatOncolBiol Phys.1440-50, 2004.
11. Wolden SL, Chen WC, Pfister DG, et al. Intensity-modulated radiation therapy (IMRT) for nasopharynx cancer: Update of the Memorial Sloan-Kettering experience.Int J RadiatOncolBiol Phys.57-62, 2006
12. Langendijk JA, Leemans CR, Buter J., et al. The additional value of chemotherapy to radiotherapy in locally advanced nasopharyngeal carcinoma: A meta-analysis of the published literature. J ClinOncol. 4604-4612, 2004.

13. Lee AW, et al. Current Management of Nasopharyngeal Cancer. Semi RadiaOncol. 22 (2012):233-244
14. Gang P, et.al. A prospective, randomized study comparing outcomes and toxicities of intensity-modulated radiotherapy vs. conventional two-dimensional radiotherapy for the treatment of nasopharyngeal carcinoma.RadiotOncol 104 (2012) 286–293
15. Lee AW, et al. The battle against nasopharyngeal cancer. RadiatOncol. 104 (2012) 272–278
16. CTCv4.0 http://evs.nci.nih.gov/ftp1/CTCAE/CTCAE_4.03_2010-06-14_QuickReference_5x7.pdf
17. Chen L,Hu CS, Chen XZ, et al. Concurrent chemoradiotherapy plus adjuvant chemotherapy versus concurrent chemoradiotherapy alone in patients with locoregionally advanced nasopharyngeal carcinoma: a phase 3 multicentrerandomised controlled trial. Lancet Oncol. 13(2):163-71, 2012
18. Jin X, Han C, Zhou Y, Yi J, Yan H, Xie C.A modified VMAT adaptive radiotherapy for nasopharyngeal cancer patients based on CT-CT image fusion.RadiatOncol. 27;8:27, 2013.
19. Miao J, Di M, Chen B, et al.A Prospective 10-Year Observational Study of Reduction of Radiation Therapy Clinical Target Volume and Dose in Early-Stage Nasopharyngeal Carcinoma. Int J RadiatOncolBiol Phys. 2020;107;672-82.
20. Ng WT, Tung SY, Lee V, et al. Lee.Concurrent-Adjuvant Chemoradiation Therapy for Stage III-IVB Nasopharyngeal Carcinoma—Exploration for Achieving Optimal 10-Year Therapeutic Ratio. Int J RadiatOncolBiol Phys. 2018;101;1078-86.
21. Sun LM, Li CI, Huang EY, Vaughan TL. Survival differences by race in nasopharyngeal carcinoma.Am J Epidemiol. 2007;165(3):271-8.
22. Lee AW, Ng WT,Pan JJ, et al. International guideline for the delineation of the clinical target volumes (CTV) for nasopharyngeal carcinoma. RadiotherOncol. 2018;126;25-36.

**2024 年鼻咽癌放射治療品質監測指標**

1. 根治性鼻咽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%以上

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

分母定義：監測期間內，因鼻咽癌進行根治性放射治療總人數

2. 根治性鼻咽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:90%

分子定義：監測期間內，因鼻咽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，因鼻咽癌進行根治性放射治療總人數

3. 根治性鼻咽癌病人接受放射治療時，劑量符合標準政策之比率:閾值:90%以上

分子定義：監測期間內，因鼻咽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正負(含)10%以內之人數

分母定義：監測期間內，因鼻咽癌進行根治性放射治療總人數

4. 根治性鼻咽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%以上

分子定義：監測期間內，因鼻咽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)兩週以內之人數

分母定義：監測期間內，因鼻咽癌進行根治性放射治療總人數

5.根治性鼻咽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，因鼻咽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，因鼻咽癌進行根治性放射治療總人數

6.根治性鼻咽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，因鼻咽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，因鼻咽癌進行根治性放射治療總人數