



# DEFININGMED

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## Head & Neck Conditions

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# Nasopharyngeal Cancer in Singapore: A Primary Care Update

**Dr Soong Yoke Lim**

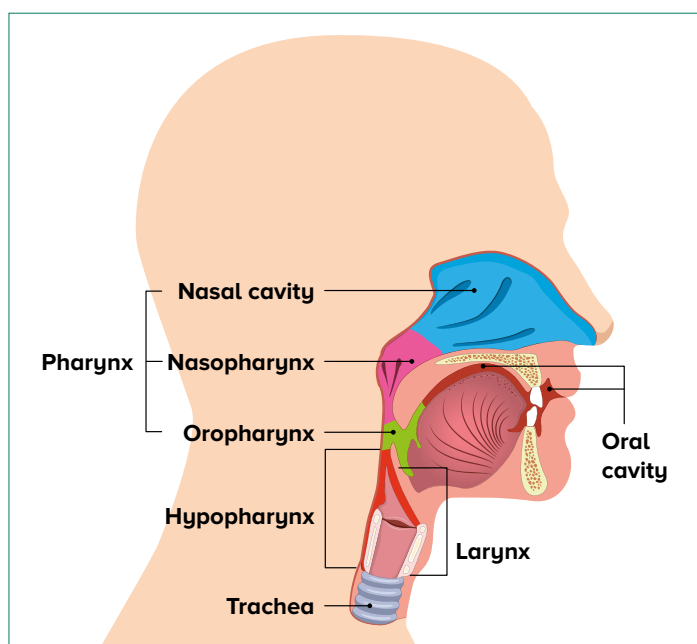
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**Not only are primary care physicians crucial to screening and early detection of nasopharyngeal cancer, they can also play a key role throughout the patient journey – by helping their patients manage the side effects and comorbidities during treatment, as well as survivorship care to optimise outcomes.**

## NASOPHARYNGEAL CANCER

Nasopharyngeal cancer (NPC), commonly known as nose cancer, is a disease of particular interest to Singapore due to its high incidence and tendency to afflict people who are still in the economically active age.

NPC arises from the epithelium of the nasopharynx (also known as posterior nasal space). This small cuboidal space is located behind the nasal cavity and above the oropharynx. It has connections to the middle ear via the Eustachian tubes on both sides of the lateral walls.



## EPIDEMIOLOGY

According to data from GLOBOCAN 2020, more than 130,000 new cases of NPC are diagnosed worldwide annually with the majority of cases occurring in South-East Asia, China and Northern Africa. Men are three times more commonly affected than women.

Although data from the Singapore Cancer Registry shows that the incidence of NPC has been gradually declining since the 1970s, the incidence of NPC in Singapore remains one of the highest in the world with 8.9 per 100,000 males affected per year.

While the reasons for this decline are unclear, it is believed that lifestyle changes due to rapid economic development are contributory. Most of the cases occur in the Chinese race, with peak incidence at the age of 50-59 years.

## RISK FACTORS

Interaction of several factors increases the risk of NPC. These are:

- Epstein-Barr virus (EBV) infection
- Environmental factors (frequent consumption of salted and preserved foods, such as salted fish and vegetables, which are high in nitrosamines – carcinogenic compounds linked to NPC)
- Genetic predisposition – Patients with a family history of NPC, especially in first degree relatives, have an increased risk of developing NPC

**SYMPTOMS AND SIGNS**

In the early stage, patients with NPC may have little or no symptoms. Some patients may present with unilateral blocked ears that come and go, self-resolving blood-stained sputum and small neck nodes which are often attributed to upper respiratory tract infection.

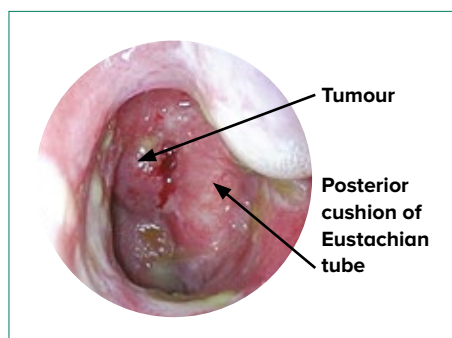
This makes diagnosis of NPC in the early stage challenging. As a result, about three-quarters of

patients with NPC have stage III or IV disease by the time they are finally diagnosed.

**In general, it may be prudent to refer the patient to the otolaryngologist for an opinion if patients have persistent symptoms that last more than a month or are recurrent. Common symptoms and signs of NPC are listed in Table 1 below.**

Common Symptoms and Signs of NPC	
Symptoms	Signs
<ul style="list-style-type: none"> <li>• Blood-stained sputum / nasal discharge</li> <li>• Blocked ears (especially unilateral)</li> <li>• Epistaxis</li> <li>• Nasal blockage</li> <li>• Tinnitus</li> <li>• Ear discharge</li> <li>• Neck mass (especially if recurrent)</li> <li>• Diplopia (due to sixth cranial nerve involvement)</li> <li>• Headaches (due to base of skull involvement)</li> <li>• Facial numbness (due to fifth cranial nerve involvement)</li> <li>• Symptoms of metastatic disease                             <ul style="list-style-type: none"> <li>– Weight loss / loss of appetite</li> <li>– Bony or back pain</li> <li>– Breathlessness</li> <li>– Abdominal symptoms related to liver metastasis (e.g., pain, jaundice)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Without a nasoendoscope, it may be difficult to visualise the primary tumour in the nasopharynx, particularly if the tumour is small (<b>Figure 1</b>)</li> <li>• Rarely, large nasopharynx tumours can be visible from the nostril or oropharynx</li> <li>• Otitis media with effusion (especially if unilateral) (<b>Figure 2</b>)</li> <li>• Neck nodes</li> <li>• Cranial neuropathies (III, IV, V, VI)</li> <li>• Signs of metastatic disease                             <ul style="list-style-type: none"> <li>– Cachexia</li> <li>– Bony tenderness</li> <li>– Pleural effusion</li> <li>– Hepatomegaly</li> </ul> </li> </ul>

**Table 1**



**Figure 1** Tumour in the post-nasal space extending into the fossa of Rosenmüller and abutting the posterior cushion of the Eustachian tube



**Figure 2** Otitis media with effusion secondary to obstruction of the Eustachian tube opening in the post-nasal space

Photographs courtesy of Dr Constance Teo

## SCREENING

The use of EBV serology (EBV VCA-IgA and EBV EA-IgA) and plasma EBV DNA has been proposed as a screening test for NPC. However, there is no good evidence to date that routine mass screening (even in highly endemic populations) could improve the outcome of NPC in the general population.

In Singapore, the Report of the Screening Test Review Committee (2019) recommends the use of **EBV serology in combination with nasopharyngoscopy for screening only in high-risk individuals** (i.e., individuals with a first degree relative [e.g., parent or sibling] with NPC).

## INVESTIGATIONS AND STAGING FOR NPC

### Routine investigations

Several investigations are routinely performed to determine the stage of disease and fitness for treatment. These include:

- **Biopsy of the nasopharyngeal mass** seen on nasoendoscope is essential for the diagnosis of NPC. Undifferentiated carcinoma is the most common subtype seen in Singapore, and other less common histologies include keratinising squamous cell carcinoma and non-keratinising differentiated carcinoma.
- **Full blood count and tests for renal function and liver function**
- **Hepatitis B screening** is done for all patients due to endemicity, so that patients can be started on anti-viral treatment to prevent hepatitis B flare during chemotherapy.
- **Plasma EBV DNA** is a blood test that measures the viral load of EBV. This has been shown to be a predictive marker (i.e., patients with persistent EBV DNA detectable in the blood at the end of treatment have a poorer prognosis compared to patients with undetectable EBV DNA).
- **MRI of nasopharynx and neck** to determine local and nodal extent of disease
- **FDG PET-CT** has the highest sensitivity and specificity in excluding distal metastasis. Alternatively, CT chest abdomen and bone scan may be used if cost is a consideration.

- **Baseline audiometry** is performed as patients may develop hearing loss due to effects of treatment.

### Staging

Once the scans are performed, the oncologist will 'stage' the disease. The staging system currently used is from the 8<sup>th</sup> edition of the American Joint Committee on Cancer (AJCC) staging system which **uses a predefined combination of size and extent of the tumour, lymph nodes and presence of metastasis** to determine the stage.

Stage distribution in 2017 from our cancer registry are as follows:

- **Stage I:** 7.3%
- **Stage II:** 17.5%
- **Stage III:** 25.2%
- **Stage IV:** 50%

It is important to note that stage IV is divided into two groups:

- **Patients with stage IVA** are those with locally advanced disease, but no spread to other parts of the body (i.e., still considered curable)
- **Patients with stage IVB** are those in which there is evidence of metastasis beyond the head and neck region (i.e., generally considered incurable)

## TREATMENTS

### 1. Radiotherapy

The main treatment for NPC is radiotherapy, also known as radiation therapy. Radiotherapy uses powerful and targeted X-ray beams to cure cancer by causing double-strand DNA breaks in cancer cells. Typically, the treatment covers the nasopharynx (where the primary tumour sits) and the neck node regions (even if none are seen on scans due to high incidence of microscopic disease).

Patients undergoing radiation usually go for once-a-day treatment (approximately 20 minutes every weekday, with weekend breaks to recover from side effects) over seven weeks (typically 33 to 35 sessions).

## 2. Chemotherapy

Current evidence suggests that the addition of chemotherapy to radiation has a significant survival benefit for patients with stage III and IVA NPC, and some patients with stage II NPC.

Patients derive the most benefit when chemotherapy is given concurrently with radiation, but further chemotherapy either before or after radiation may be needed for some patients. The two commonly used chemotherapy agents in NPC are cisplatin and gemcitabine.

In patients with metastatic NPC, chemotherapy plays an important role to help palliate symptoms by controlling the growth of the cancer.

## 3. Surgery

Surgery is not a common treatment for NPC and is usually reserved for cases where the cancer recurs after initial treatment. In cases where there is a small cancer recurrence at the nasopharynx or in the lymph nodes of the neck, surgery may be considered to treat the recurrence. This may be performed either through open surgery or endoscopic (keyhole) surgery through the nose.

# The GP’s Role in NPC Patient Care

## MANAGING SIDE EFFECTS OF TREATMENT

Most patients undergoing treatment will experience some side effects. Radiation side effects are divided into acute effects (i.e., side effects that occur during radiation treatment) and late effects (i.e., side effects that manifest many months to years after completion of radiation).

**The oncologist will monitor patients closely during treatment to manage side effects, but patients may still present to primary care if their symptoms are not better, especially if after-hours.** Common side effects of radiotherapy and chemotherapy are listed in *Table 2* below.

Common Side Effects of Radiotherapy and Chemotherapy		
Acute radiotherapy	Late radiotherapy	Chemotherapy
<ul style="list-style-type: none"> <li>• Skin reactions – dermatitis and broken skin</li> <li>• Sore mouth/throat as a result of mucositis – usually managed with analgesia and topical medications such as triamcinolone</li> <li>• Xerostomia</li> <li>• Dysgeusia</li> <li>• Dysphagia from mucositis leading to weight loss – Encourage soft blended food, analgesia before meals and nutritional milk replacements. Nasogastric tube may be needed if weight loss is significant.</li> <li>• Hoarseness of voice</li> <li>• Earaches or difficulty hearing</li> </ul>	<ul style="list-style-type: none"> <li>• Permanent xerostomia</li> <li>• Dental decay due to xerostomia</li> <li>• Osteoradionecrosis</li> <li>• Hearing loss</li> <li>• Voice changes</li> <li>• Dysphagia, with some patients needing tube feeding due to persistent aspiration pneumonia</li> <li>• Vision changes / blindness</li> <li>• Hypothyroidism</li> <li>• Radiation myelopathy (very rare)</li> <li>• Carotid stenosis</li> <li>• Secondary malignancies</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of appetite</li> <li>• Lethargy</li> <li>• Nausea and vomiting</li> <li>• Thinning or loss of hair</li> <li>• Peripheral neuropathy</li> <li>• Ototoxicity leading to hearing loss and tinnitus</li> <li>• Nephropathy</li> <li>• Liver dysfunction</li> <li>• Cytopaenia (anaemia, neutropaenia and thrombocytopenia)</li> <li>• Sepsis (including neutropaenic sepsis)</li> </ul>

Table 2



## WHAT GPs CAN LOOK OUT FOR IN NPC PATIENTS

There are a few considerations that a primary care physician should look out for, when a patient on active NPC treatment presents to the clinic (*Table 3*).

Conditions That Require Attention During NPC Treatment	
<b>Diabetes</b>	Patients with dysphagia/mucositis may have reduced food intake. This may cause hypoglycaemia that requires temporary adjustment in oral diabetic medications / insulin. Patients with diabetes are also prone to diabetic ketoacidosis if they develop sepsis.
<b>Hypertension</b>	Poor fluid intake can lead to dehydration. Anti-hypertensives may exacerbate hypotension caused by dehydration, and may have to be stopped temporarily.
<b>Fever</b>	Patients on treatment may develop febrile neutropaenia. This is a medical emergency and patients should be referred to the accident and emergency department.
<b>Uncontrolled vomiting</b>	Patients on chemotherapy are given antiemetics. Despite this, some patients continue to have nausea and vomiting. Patients should be referred back to the hospital if there are signs of dehydration.
<b>Pain (from mucositis)</b>	Patients may consult their primary care physician due to uncontrolled pain. In general, nonsteroidal anti-inflammatory drugs (NSAIDs) are avoided due to the small risk of nephrotoxicity, especially when patients are on cisplatin chemotherapy and may be dehydrated.

*Table 3*

### PROGNOSIS OF NPC

The prognosis of NPC is generally very good. The reported five-year survival rates are:

- Stage I disease – 93%
- Stage II disease – 87%
- Stage III disease – 81%
- Stage IVA disease – 65%
- Stage IVB disease – 63%

### FOLLOW-UP AND SURVIVORSHIP CARE

The oncologist will follow up with patients at regular intervals for a minimum of five years. During the consultations, patients are assessed for evidence of recurrence using clinical examinations and investigations. Long-term side effects, if any, are monitored and managed.

**Primary care physicians play an important role in survivorship care. Some common issues that primary care physicians should pay attention to are listed in *Table 4*.**

### Survivorship Issues to Note in Primary Care

<b>Cardiovascular risk factors</b>	Patients who undergo radiation to the head and neck region have a slightly elevated risk of carotid artery stenosis, leading to strokes. Hence, optimal control of cardiovascular risk such as diabetic control, blood pressure control, lipid levels control and smoking cessation is important to minimise the risk of stroke.
<b>Dental decay</b>	Patients with NPC may develop xerostomia after treatment. This leads to early dental decay. In general, extractions are not recommended, and patients should be advised to see their dentist every six months.

**Survivorship Issues to Note in Primary Care** (continued)

<b>Aspiration pneumonia</b>	About 5% of patients may develop chronic swallowing problems. Some of them may present with recurrent chest infections due to aspiration pneumonia. Patients with this symptom need to be referred back to the hospital for assessment by a speech therapist.
<b>Hypothyroidism</b>	Hypothyroidism is a known long-term complication of radiation to the neck. The primary care physician may be asked to co-manage this with the oncologist.

Table 4

**CONCLUSION**

NPC is not uncommon in Singapore. Primary care physicians play an important role in early detection of the cancer, managing comorbidities during treatment as well as looking after patients after the end of their treatment.

**REFERENCES**

1. Singapore Cancer Registry 50th Anniversary Monograph (1968 – 2017). Accessed from: <https://nrdo.gov.sg/publications/cancer>
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GPs can call the **SingHealth Duke-NUS Head & Neck Centre** for appointments at the following hotlines, or scan the QR code for more information:

**Singapore  
 General Hospital  
 6326 6060**

**Changi  
 General Hospital  
 6788 3003**

**Sengkang  
 General Hospital  
 6930 6000**

**KK Women's and  
 Children's Hospital  
 6692 2984**

**National Cancer  
 Centre Singapore  
 6436 8288**

**National Dental  
 Centre Singapore  
 6324 8798**



# Thyroid Nodules: An Update on Investigations and Management

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**Thyroid nodules are usually incidentally picked up during health screenings in the primary care setting. General practitioners are therefore key to initiating investigations to identify potential malignancies. Find out more about the latest in assessment and treatment options, and when specialist referral is needed.**

### INTRODUCTION TO THYROID NODULES

The occurrence of thyroid nodules is very common, and it has been shown that nodules can be detected with ultrasound (US) in up to 68% of a random population, with increased incidence in females and the elderly<sup>1</sup>.

Most of these patients with thyroid nodules are asymptomatic, with the nodules being picked up incidentally on routine head and neck imaging for other conditions, or via US done during health screening in the primary care setting.

### Incidence of thyroid cancer

Fortunately, the vast majority of thyroid nodules (> 95%) are benign and do not cause problems in the patients' lifetimes. Congruent with the increased detection of thyroid nodules, the incidence of thyroid cancer is also increasing globally.

**In Singapore, thyroid cancer is the eighth most common cancer amongst females, with an incidence of 10.9 per 100,000 individuals. Of note, amongst younger females less than 50 years of age, it ranks in the top three commonest malignancies.**

The priorities in the evaluation of patients with thyroid nodules will therefore be to exclude malignancy and to identify symptomatic patients who may benefit from intervention.



## CLINICAL PRESENTATION

Figure 1 shows the symptoms, signs and red flags to look out for in the presentation of thyroid nodules.

Thyroid Nodules: What to Look Out For	
Symptoms and signs	Red flags
<ul style="list-style-type: none"> <li>• <b>Anterior neck swelling:</b> Dominant nodule, goitre</li> <li>• <b>Compressive symptoms:</b> Dysphagia, dyspnoea (typically worse when lying down)</li> <li>• <b>Hormonal dysfunction:</b> Symptoms/signs of thyrotoxicosis or hypothyroidism</li> <li>• <b>Assess for risk factors:</b> Previous neck irradiation, family history of thyroid malignancy</li> </ul>	<ul style="list-style-type: none"> <li>• Voice hoarseness</li> <li>• Rapidly enlarging swelling</li> <li>• Presence of lymphadenopathy</li> <li>• Significant compressive symptoms – airway distress</li> <li>• Fixation of nodule to surrounding tissues</li> </ul>

Figure 1

## TYPES OF INVESTIGATIONS

### 1. Thyroid function test

#### When it is needed

A thyroid function test (TFT) should be performed in the initial assessment of a patient with a thyroid nodule or goitre, especially if they have symptoms suggestive of thyroid hormonal dysfunction.

#### Managing thyroid hormonal dysfunctions

The treatment of hyperthyroidism or hypothyroidism can be initiated in the primary care setting and these patients can continue to follow up with their general practitioners once their thyroid function is controlled.

For patients with thyroid functions that are more difficult to control, or in the presence of red flags or atypical features, referral for specialist evaluation should be considered.

### 2. Thyroid ultrasound

#### When it is needed

A US of the thyroid with evaluation of lymph nodes should be performed in all patients presenting with thyroid nodules or goitres.

#### Objectives

The objectives of ultrasonography are to:

- Confirm the clinical diagnosis
- Evaluate the size of the nodules/goitre objectively (allowing a baseline for surveillance)
- Assess for suspicious features that will necessitate further investigation with a fine needle aspiration cytology

#### Standardised scoring system

However, US reports, until recently, lacked standardisation and can be difficult to interpret. Tracking nodules across various time points can also be challenging.

Since mid-2022, the reporting of US thyroids in SingHealth has followed a similar format regardless of performing institution. Nodules are labelled the same way on follow-up scans.

## TYPES OF INVESTIGATIONS (continued)

In addition, nodules are now reported according to the **Thyroid Imaging Reporting & Data System (TI-RADS)<sup>2</sup>** (Figure 2). TI-RADS is a scoring system which has been validated for reproducibility with

clear criteria for nodule sampling, allowing a more streamlined approach. There is also evidence to show that it has reduced sampling rates.

### ACR TI-RADS

COMPOSITION (Choose 1)		ECHOGENICITY (Choose 1)		SHAPE (Choose 1)		MARGIN (Choose 1)		ECHOGENIC FOCI (Choose all that apply)	
Cystic or almost completely cystic	0 pts	Anechoic	0 pts	Wider-than-tall	0 pts	Smooth	0 pts	None or large comet-tail artifacts	0 pts
Spongiform	0 pts	Hyperechoic or isoechoic	1 pt	Taller-than-wide	3 pts	Ill-defined	0 pts	Macro-calcifications	1 pt
Mixed cystic and solid	1 pt	Very hypoechoic	3 pts			Lobulated or irregular	2 pts	Peripheral (rim) calcifications	2 pts
Solid or almost completely solid	2 pts	Hypoechoic	2 pts			Extra-thyroidal extension	3 pts	Punctate echogenic foci	3 pts

Add Points from All Categories to Determine TI-RADS Level				
0 Points	2 Points	3 Points	4 to 6 Points	7 Points or More
TR1	TR2	TR3	TR4	TR5
Benign	Not Suspicious	Mildly Suspicious	Moderately Suspicious	Highly Suspicious
No FNA	No FNA	FNA if ≥ 2.5 cm	FNA if ≥ 1.5 cm	FNA if ≥ 1 cm
		Follow if ≥ 1.5 cm	Follow if ≥ 1 cm	Follow if ≥ 0.5 cm*

COMPOSITION	ECHOGENICITY	SHAPE	MARGIN	ECHOGENIC FOCI
<p><i>Spongiform:</i> Composed predominantly (&gt; 50%) of small cystic spaces. Do not add further points for other categories.</p> <p><i>Mixed cystic and solid:</i> Assign points for predominant solid component.</p> <p>Assign 2 points if composition cannot be determined because of calcification.</p>	<p><i>Anechoic:</i> Applies to cystic or almost completely cystic nodules.</p> <p><i>Hyperechoic/ isoechoic/hypoechoic:</i> Compared to adjacent parenchyma.</p> <p><i>Very hypoechoic:</i> More hypoechoic than strap muscles. Assign 1 point if echogenicity cannot be determined.</p>	<p><i>Taller-than-wide:</i> Should be assessed on a transverse image with measurement parallel to sound beam for height and perpendicular to sound beam for width.</p> <p>This can usually be assessed by visual inspection.</p>	<p><i>Lobulated:</i> Protrusions into adjacent tissue.</p> <p><i>Irregular:</i> Jagged, spiculated, or sharp angles.</p> <p><i>Extrathyroidal extension:</i> Obvious invasion = malignancy.</p> <p>Assign 0 points if margin cannot be determined.</p>	<p><i>Large comet-tail artifacts:</i> V-shaped, &gt; 1 mm, in cystic components.</p> <p><i>Macrocalcifications:</i> Cause acoustic shadowing.</p> <p><i>Peripheral:</i> Complete or incomplete along margin.</p> <p><i>Punctate echogenic foci:</i> May have small comet-tail artifacts.</p>

\*Refer to discussion of papillary microcarcinomas for 5-9 mm TR5 nodules.<sup>2</sup>

Figure 2

### 3. Fine needle aspiration cytology

#### When it is needed

The introduction of TI-RADS in thyroid sonography has provided a standardised and objective tool for thyroid nodule assessment, thereby reducing ambiguity around which nodules require cytologic evaluation.

Suspicious nodules are further investigated with fine needle aspiration cytology (FNAC).

#### Procedure and reporting

In this procedure, which can be US-guided, a needle is introduced into the nodule to collect cells. This is generally a safe procedure and can be performed as day surgery.

The FNAC results will then be reported by the pathologists using the **Bethesda system**<sup>3</sup> (**Figure 3**), which estimates a higher risk of malignancy with corresponding higher Bethesda grading. This then provides the attending clinician with a guide for counselling the patient regarding the management options and recommendations.

Diagnostic category	Risk of malignancy if NIFTP is not cancer	Risk of malignancy if NIFTP is cancer	Management
<b>Nondiagnostic/unsatisfactory</b> <ul style="list-style-type: none"> <li>Cyst fluid only</li> <li>Acellular specimen</li> <li>Other: Obscuring factors</li> </ul>	5 - 10%	5 - 10%	Repeat FNA under US guidance
<b>Benign</b> <ul style="list-style-type: none"> <li>Benign follicular nodule</li> <li>Chronic lymphocytic (Hashimoto) thyroiditis, in proper clinical setting</li> <li>Granulomatous (subacute) thyroiditis</li> </ul>	0 - 3%	0 - 3%	Clinical and US follow-up until two negative
<b>Atypia of undetermined significance / follicular lesion of undetermined significance</b>	6 - 18%	10 - 30%	Repeat FNA, molecular testing or lobectomy
<b>Follicular neoplasm / suspicious for a follicular neoplasm</b> (Specify if Hürthle cell type)	10 - 40%	25 - 40%	Molecular testing, lobectomy
<b>Suspicious for malignancy</b>	45 - 60%	50 - 75%	Lobectomy or near-total thyroidectomy
<b>Malignant</b> <ul style="list-style-type: none"> <li>Papillary thyroid carcinoma</li> <li>Medullary thyroid carcinoma</li> <li>Poorly differentiated carcinoma</li> <li>Undifferentiated (anaplastic) carcinoma</li> <li>Squamous cell carcinoma</li> <li>Carcinoma with mixed features</li> <li>Metastatic malignancy</li> <li>Non-Hodgkin lymphoma</li> <li>Other</li> </ul>	94 - 96%	97 - 99%	Lobectomy or near-total thyroidectomy

**Figure 3** 2017 Bethesda System for Reporting Thyroid Cytopathology

NIFTP: Non-invasive follicular thyroid neoplasm

## MANAGEMENT OPTIONS

### 1. Ultrasound surveillance

As the majority of thyroid nodules are benign and indolent, and do not cause symptoms, they can generally be monitored with US surveillance. These include:

- TR3-5 nodules that may not meet the size criteria for FNAC
- FNAC-proven benign nodules and for which patients are asymptomatic

#### Follow-up screening recommendations

As the risk of malignancy increases with higher TI-RADS grading, the recommended frequency of performing US thyroid surveillance is as follows:

- **TR1-2 nodule:** US surveillance is not routinely required, especially for asymptomatic patients. Patients may be advised to observe themselves and return if symptomatic.
- **TR3 nodule:** Follow-up at 1, 3 and 5 years
- **TR4 nodule:** Follow-up at 1, 2, 3 and 5 years
- **TR5 nodule:** Annual follow-up till 5 years

### 2. Surgery

**Thyroidectomy** is a common and generally safe head and neck surgical procedure and may be indicated for some patients who present with thyroid nodules or goitres.

The extent of surgery will either be a hemithyroidectomy (lobectomy) or a total thyroidectomy. In addition, for cancer cases, additional surgical procedures may be performed as indicated (e.g., neck dissection for lymph node clearance).

#### Indications

The indications for surgery are:

- Proven or suspected thyroid malignancy
- Benign nodules/goitres causing compressive symptoms
- Thyrotoxicosis resistant to medical therapy
- Patient preference

### Surgical methods

#### a. Traditional neck incision

The majority of thyroidectomies are performed via the traditional neck (transcervical) incision.

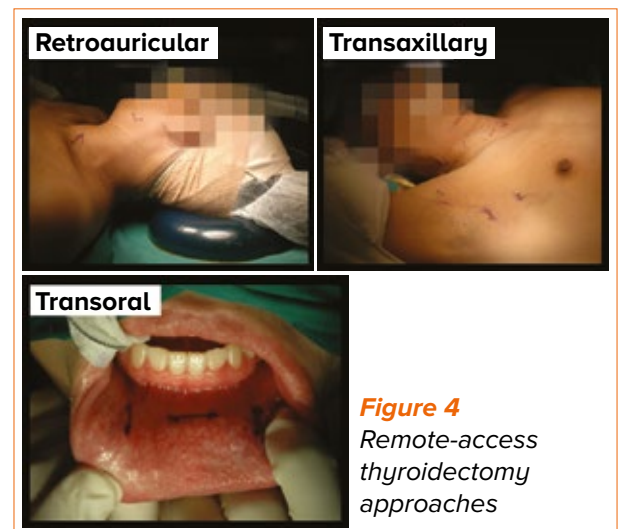
This surgical approach is well-established and provides the most direct access to the thyroid gland, thereby allowing safe instrumentation to remove the thyroid gland while preserving vital adjacent structures such as the recurrent laryngeal nerve and the parathyroid glands.

Although this approach invariably requires a neck scar, the majority of cases heal very well and are usually not conspicuous with time.

#### b. Remote-access procedures

Remote-access approaches (e.g., transaxillary, retroauricular or transoral approaches) avoid an anterior neck scar but surgical access to the thyroid gland is not as direct, requiring a wider extent of dissection and longer operative times.

These approaches may not be suitable for certain patients such as those with larger nodules/goitres or thyroid malignancy. **Careful patient selection with thorough counselling is therefore imperative** for patients who may be keen on these remote-access procedures.



**Figure 4**  
Remote-access  
thyroidectomy  
approaches

### 3. Thyroid nodule ablation

Thyroid ablation, first introduced in Singapore in 2017, has been shown to be effective in treating symptomatic benign thyroid nodules.

This procedure involves introducing a small probe into the nodule, after which heat is generated to ablate (or destroy) the tumour. Size reduction of the nodule then takes place slowly over months.

The most common technology used is that of **radiofrequency ablation (RFA)**. It is minimally invasive, can be performed as day surgery and is shown to be effective in shrinking benign nodules.

Selected patients with small papillary thyroid cancers who cannot undergo surgery may also be candidates for thyroid nodule ablation.

## TAKEAWAY MESSAGES FOR GPs

Thyroid nodules are very common, and there currently are guidelines in place within SingHealth institutions for the attending physicians to manage them in a timely and safe manner.

### What GPs can do

Many of these patients can be monitored in the primary care setting, typically those who are asymptomatic with nodules that have been assessed to be benign (TR1-2, FNAC-proven) or have been stable on serial US.

### When to refer to a specialist

Indications for referral to specialist care will include:

- Patients who are symptomatic or have red flag features
- Larger nodules (> 4 cm)
- Increase in size of nodules during surveillance (> 20% increase in two dimensions)

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1. 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer.
2. Tessler FN, et al. ACR Thyroid Imaging, Reporting and Data System (TI-RADS): White Paper of the ACR TI-RADS Committee. *Journal of the American College of Radiology*. 2017 May;14(5):587–959.
3. Ali SZ, Cibas ES. *The Bethesda System for Reporting Thyroid Cytopathology*, 2nd ed. Cham, Switzerland: Springer; 2017.







**Dr Too Chow Wei**

*Senior Consultant, SingHealth Duke-NUS Vascular Centre;  
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Visiting Consultant, Department of Radiology,  
Sengkang General Hospital*



Dr Too Chow Wei graduated from the Faculty of Medicine, National University of Singapore in 2003. He subsequently trained at various hospitals in Singapore in the diagnostic radiology training programme and attained specialisation accreditation in 2012.

He is currently a Senior Consultant at the Department of Vascular and Interventional Radiology and the Director of Interventional Services at Singapore General Hospital. He has a keen interest in the realm of interventional oncology and palliation, with experience in the ablation of liver, lung, kidney and bone tumours.



**Dr Tay Ze Yun**

*Consultant, SingHealth Duke-NUS Head & Neck Centre;  
Department of Otorhinolaryngology - Head & Neck Surgery, Sengkang General Hospital;  
Department of Otorhinolaryngology - Head & Neck Surgery, Singapore General Hospital;  
Visiting Consultant, National Cancer Centre Singapore*



Dr Tay Ze Yun graduated from the National University of Singapore and received his medical degree from the Yong Loo Lin School of Medicine in 2008. He subsequently joined the SingHealth Otolaryngology Residency Programme as part of the inaugural batch of residents and completed his specialist training in 2016.

In pursuit of his sub-speciality interest in head and neck surgery, he completed the two-year SingHealth Duke-NUS Head & Neck Centre Fellowship Programme (2016-2018). He was subsequently awarded the Ministry of Health's Health Manpower Development Plan award in 2018 to pursue a surgical fellowship in advanced head and neck surgical oncology at the world-renown Chang Gung Memorial Hospital in Taiwan.

Dr Tay also completed the International Federation of Head and Neck Oncologic Societies fellowship and graduated with honours in 2020. He is currently a Consultant at the Departments of Otorhinolaryngology – Head & Neck Surgery at Sengkang General Hospital and Singapore General Hospital.



GPs can call the **SingHealth Duke-NUS Head & Neck Centre** for appointments at the following hotlines, or scan the QR code for more information:



**Singapore  
General Hospital  
6326 6060**

**Changi  
General Hospital  
6788 3003**

**Sengkang  
General Hospital  
6930 6000**

**KK Women's and  
Children's Hospital  
6692 2984**

**National Cancer  
Centre Singapore  
6436 8288**

**National Dental  
Centre Singapore  
6324 8798**

# Common Oral Mucosal Lesions: Diagnosis and Management in Primary Care

**Dr Chelsia Sim Qiu Xia**

Senior Consultant,

Department of Oral & Maxillofacial Surgery,

National Dental Centre Singapore; Singapore General Hospital

**Patients often present at primary care with what they think are common ulcers. In the rare cases where the lesion turns out to be malignant, early intervention through diagnosis and timely referral can lead to an improved prognosis.**

## INTRODUCTION

The oral cavity consists of hard and soft tissues, with at least 28 teeth in adults (excluding the third molars, also known as ‘wisdom teeth’).

A **thorough oral examination** allows a holistic approach to the patient’s chief complaint and is the **key to making an early diagnosis of an underlying systemic condition.**

Thorough oral examination should include palpation of the lymph nodes, muscles of mastication and temporomandibular joint (TMJ) prior to the start of the examination of the intraoral structures, such as the dentition and soft tissue structures including the tongue, floor of mouth, and buccal and labial mucosae.

The following cases studies illustrate the management of oral lesions in primary care and the importance of early recognition of potentially malignant oral lesions.

## CASE STUDY 1

### Managing oral lichen planus in primary care

#### BACKGROUND

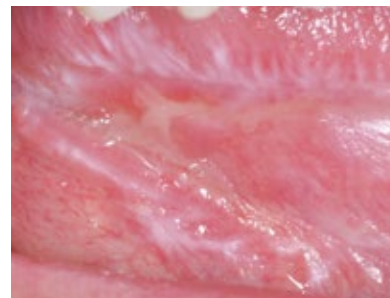
The patient was an 18-year-old Chinese female with the chief complaint of painful tongue with tightness in the cheeks with some surface roughness. She reported not being able to eat well. The oral symptoms had started about three months ago.

She is healthy with no known drug allergies and no reported use of tobacco or alcohol. She does not take any medications regularly.

On examination, her oral hygiene was fair with minimal plaque and she was caries-free.

#### PRESENTATION ON EXAMINATION

She presented with white reticular striations on the bilateral lateral surfaces of the tongue (**Figures 1 and 2**) with erosive mucosal changes, covered with yellowish fibrinous exudate and erythematous margins.



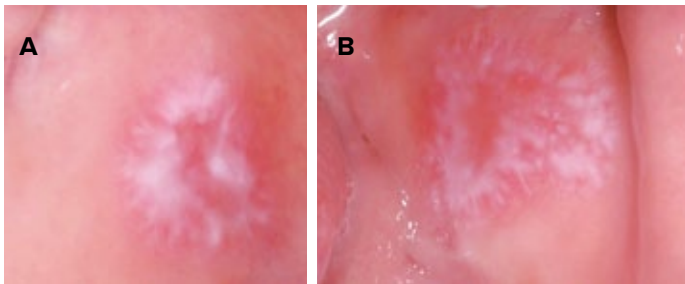
**Figure 1** Right lateral border of tongue. Central area of ulceration, covered by yellow fibrinous membrane with surrounding white reticular striation.



**Figure 2** Left lateral tongue. Central focal area of erosive changes with surrounding white striations.

## CASE STUDY 1 (continued)

Both sides of the buccal mucosa presented with patches of white reticular striations with no ulcerations or mass effect (**Figures 3**). These lesions are non-indurated.



**Figures 3** Left (A) and right (B) buccal mucosae with white reticular striations

### CLINICAL DIAGNOSIS

The clinical differential diagnosis included oral lichen planus (OLP), oral involvement of an underlying systemic autoimmune condition such as systemic lupus erythematosus or discoid lupus. An incisional biopsy was performed to confirm the definitive diagnosis.

Microscopic findings were consistent with lichenoid mucositis, recommending clinicopathologic correlation for the diagnosis of OLP.

Blood serology tests to check for autoimmune conditions including rheumatoid factor (RF), anti-nuclear antibody (ANA) and double-stranded DNA (dsDNA) were done with no significant findings.

The patient was diagnosed with OLP based on the clinical and histopathologic findings.

### What is oral lichen planus

Oral lichen planus (OLP) is a chronic mucocutaneous inflammatory condition that tends to affect the oral mucosa, although the skin and other mucosal surfaces such as the oesophageal and vaginal mucosae can be involved.

OLP has several clinical presentations including the reticular, plaque-like, erosive/atrophic, ulcerative and bullous forms. An individual patient can have a combination of these types.

- 1. Reticular OLP.** The most common and characteristic of OLP. This form of OLP is usually asymptomatic, commonly found on bilateral buccal mucosa as lacy, white lines referred to as Wickham's striae. One of the common complaints from patients with reticular OLP is roughness of the cheeks with some tightness.
- 2. Plaque-like OLP.** A less common form of OLP, it commonly occurs on the dorsum of the tongue and can be accompanied by depapillation of the surrounding dorsal surfaces of the tongue. Some patients complain of dysgeusia or reduced taste sensation.
- 3. Erosive/atrophic OLP.** The mucosa commonly presents with redness due to thinning of the surface epithelium and can affect any mucosal surface, including the tongue, gingiva and buccal mucosa. In most instances, individuals with erosive lichen planus are uncomfortable when eating and drinking, particularly with foods and drinks that are at extremes of temperature, acidic, coarse or spicy.
- 4. Ulcerative OLP.** In severe cases, ulceration can develop. Individuals affected by ulcerations may experience pain even when not eating or drinking, with complaints of reduced quality of life.
- 5. Bullous OLP.** It is the rarest form of OLP. It is characterised by the formation of vesicles or bullae, which usually develop in the presence of the other forms of OLP. These bullae tend to rupture easily forming shallow ulcerations in the background of striations and erythematous mucosa.

### Managing and treating oral lichen planus

The main treatment goal is elimination of oral symptoms to improve quality of life.

**The reticular form of OLP** often does not require any treatment. Adequate information on OLP should be made available to the patient. Most importantly, patients must be informed of the importance of periodic observation even if the oral lesions remain asymptomatic.

## CASE STUDY 2

### Timely referral for a non-healing ulcer

**Erosive/ulcerative lesions** in most cases tend to be more symptomatic, especially when eating spicy foods or drinking hot drinks, while in other cases, the lesions may be asymptomatic. Management of these erosive/ulcerative lesions involves the use of topical immunosuppressive agents such as corticosteroids, tacrolimus or intralesional corticosteroid injections for recalcitrant lesions. In severe cases, a short course of systemic corticosteroids can be prescribed.

At times, patients may develop **oral candidiasis** (pseudomembranous or erythematous types), a type of fungal infection, even before the initiation of topical corticosteroid therapy.

In cases with oral candidiasis (pseudomembranous or erythematous types), topical antifungals and/or systemic antifungals can be prescribed.

Chlorhexidine mouthwash can also be given as it has some fungicidal properties.

In the author's experience, nystatin suspension has been ineffective in eradicating oral candidiasis due to several reasons such as the need for multiple dosing daily, containing high sugar content and bad tastes which in turn lead to poor patient compliance. A preferred topical antifungal agent is miconazole 2% gel or ketoconazole 2% gel in addition to chlorhexidine rinse.

In some cases, a course of systemic fluconazole can be prescribed.

#### REFERRING FOR SPECIALIST CARE

**In patients with persistent erosions/ulcerations who are unresponsive to topical therapy, referral to an oral medicine trained dentist may be required.**

With an ageing population, there is also an increasing number of patients with other medical comorbidities that can affect the management of these oral lesions, such as those with poorly-controlled diabetes and hepatitis B infection.

#### BACKGROUND

The patient was a 42-year-old Chinese female with a chief complaint of a non-healing ulcer on the right lateral border of the tongue for a duration of three months (*Figure 4*). She reported slight discomfort at the tongue ulcer.



*Figure 4* Focal area of ulceration on the right lateral border of tongue. The lesion remains the same after use of topical steroids.

Her medical history was non-significant with no known drug allergies. She did not recall possible trauma to the lesional site. She was a non-smoker and social drinker.

#### DIAGNOSIS

The patient was referred by her general practitioner to the National Dental Centre Singapore.

On examination, there were no palpable cervical lymph nodes, facial asymmetry or abnormal jaw movement. Her oral hygiene is good with no active caries.

The clinical differential diagnosis included traumatic ulcer and oral squamous cell carcinoma.

Topical corticosteroid (Clobetasol propionate 0.2% ointment) was prescribed for two weeks. At her two-week review, there was no improvement in the lesion and an incisional biopsy was carried out.

## CASE STUDY 2 (continued)

### REFERRING FOR SPECIALIST CARE

Microscopic examination revealed a superficially invasive squamous cell carcinoma.

The patient was subsequently referred to the Head and Neck Oncology team at the National Cancer Centre Singapore for wide surgical excision with ipsilateral neck dissection. Further histologic examination revealed no involvement of the lymph nodes and the surgical margins, both deep and peripheral, were cleared of tumour.

**Differential diagnoses for oral ulcers are not exhaustive, thus one must be vigilant and timely referral for management of these oral ulcers is important.** As shown in this case, a delay in diagnosis may lead to spread of cancer cells, affecting the prognosis and management of the condition.

In addition, continued follow-up of oral ulcers is important to ensure that there is complete resolution of the ulceration. Otherwise, a biopsy should be considered to rule out malignant changes.



### Dr Chelsia Sim Qiu Xia

*Senior Consultant, Department of Oral & Maxillofacial Surgery, National Dental Centre Singapore; Singapore General Hospital*



Dr Chelsia Sim is a Consultant at the National Dental Centre Singapore (NDCS) who graduated from the National University of Singapore (NUS) and obtained her Master's degree and advanced training in oral medicine at the University of California, San Francisco. Following that, she completed another residency in oral and maxillofacial pathology at the University of Iowa.

She currently runs the Oral Medicine Unit in the Department of Oral & Maxillofacial Surgery at NDCS, and is actively engaged in the surgical biopsy service at Singapore General Hospital. Dr Sim also teaches oral and maxillofacial pathology to the dental undergraduates at NUS.

Her clinical interests include diagnosis and management of oral mucosal diseases including autoimmune mucocutaneous diseases. She also treats patients with oral precancerous lesions with carbon dioxide laser.



GPs can call the **SingHealth Duke-NUS Head & Neck Centre** for appointments at the following hotlines, or scan the QR code for more information:

**Singapore  
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**KK Women's and  
Children's Hospital  
6692 2984**

**National Cancer  
Centre Singapore  
6436 8288**

**National Dental  
Centre Singapore  
6324 8798**





# Primary Care Management of Facial Nerve Palsy and Its Sequelae

**Dr Wong Manzhi**

*Senior Consultant,*

*Department of Plastic, Reconstructive & Aesthetic Surgery,  
Singapore General Hospital*

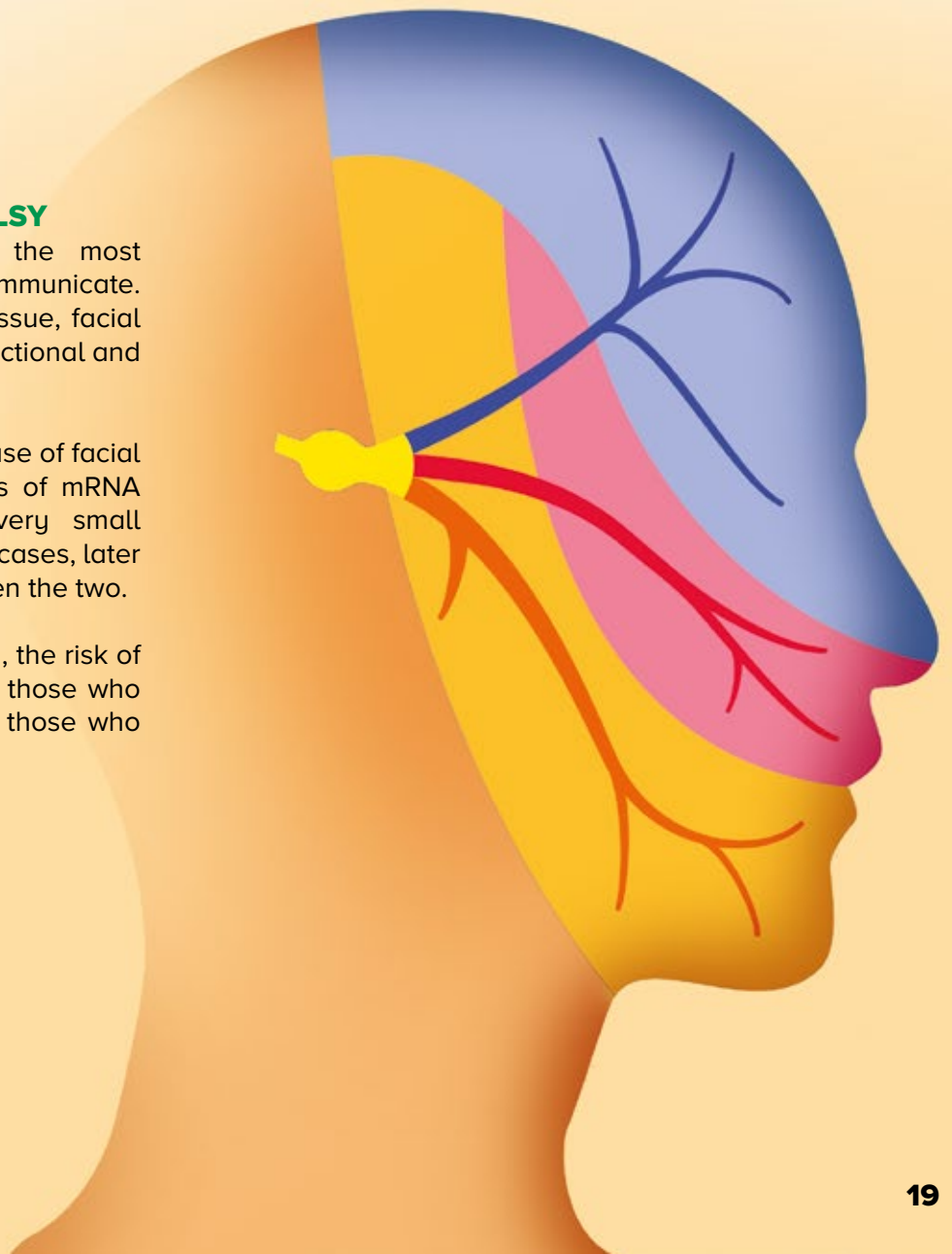
**When encountering facial paralysis, patients may first consult their general practitioner. As its impact is not only cosmetic but also functional and psychological, facial paralysis needs to be managed with care. We share how you can optimise care for these patients, from evaluation and grading to treatment.**

## **INTRODUCTION TO FACIAL PALSY**

Facial expressions are one of the most important non-verbal ways we communicate. Far from being a simple cosmetic issue, facial paralysis can result in significant functional and psychological consequences.

Bell's palsy is the most common cause of facial paralysis. While early clinical trials of mRNA COVID-19 vaccines reported a very small number of post-vaccine Bell's palsy cases, later studies found no association between the two.

In fact, according to recent research, the risk of Bell's palsy seems to be higher for those who develop COVID-19 as compared to those who get the mRNA vaccine.



## CAUSES OF FACIAL PALSY

The top differential causes of facial paralysis include idiopathic (Bell's palsy), infectious (e.g., Ramsay Hunt syndrome) and tumours (central nervous system [CNS] / ear / parotid).

### 1. Bell's palsy

- The minimum diagnostic criteria are acute onset, ipsilateral lower motor neuron lesion and absence of other cranial, ear or parotid pathology. It is thus a diagnosis of exclusion.
- It is postulated that herpes simplex virus type 1 (HSV-1) reactivation leads to compression at the meatal foramen from nerve swelling.

- Progression to maximum weakness must occur within two days (less commonly, up to two weeks).
- 85% of patients start to recover by three weeks, achieving full recovery by six months without any specific intervention. The remaining 15% of patients have permanent diminished function (post-paralytic syndrome) and experience muscle weakness with synkinesis. Synkinesis refers to the unwanted co-contraction of different facial muscles (e.g., when the patient smiles, his eye closes involuntarily).
- Risk factors include pregnancy and diabetes.

## HOW TO OPTIMISE MANAGEMENT IN PRIMARY CARE

Bell's palsy, with its acute presentation, is commonly misdiagnosed by the layman as a stroke. Patients thus commonly present to the accident and emergency department. However, some patients may consult their general practitioner first.

### EVALUATION AND GRADING

Evaluation begins with careful history-taking regarding comorbidities, onset, duration, previous episodes and associated symptoms (e.g., vertigo, hearing loss, otalgia and otorrhoea).

Clinical examination should include the cranial nerves to determine if this is an isolated CN VII palsy or if there are multiple CN palsies, as well as to establish if it is an upper or lower motor neuron lesion. Carry out a complete head and neck examination of the ear, parotid gland, neck and intraorally.

Finally, grade the severity of the palsy based on the House-Brackmann system.

### TREATMENT OPTIONS BY GPs

Primary care treatment consists of the following:

#### 1. Eye care

- Tears Naturele preservative-free drops in the day 1-4 hourly/PRN

- Eye gel at night (Vidisc gel or Duratears ointment)
- Eye taping when asleep

#### 2. Steroids

*(the mainstay of treatment for Bell's palsy)*

- Prednisolone 1 mg/kg/day for 1 week, and taper off over the next 4-7 days
- Should be started as early as possible, best within 3 days

#### 3. Antivirals

*(in addition to steroids, not alone)*

- Acyclovir 800 mg 5 times a day for 7-10 days
- Consider a longer course of steroids/antivirals (2-3 weeks) for Ramsay Hunt syndrome

#### 4. Facial neuromuscular retraining

- During the period of paralysis, the patient should avoid excessive/exaggerated facial movements as these worsen the facial asymmetry by pulling the face towards the unaffected side.

## 2. Ramsay Hunt syndrome

- This is much less common than Bell's palsy and is associated with herpes zoster reactivation. It is thus more common in the elderly and immunocompromised.
- Symptoms may be more severe and may include cranial nerve (CN) VIII symptoms of hearing loss and giddiness. Vesicles may be seen on the pinna, external auditory canal, palate or tongue.
- The prognosis is worse than Bell's palsy with 50-70% of patients achieving complete recovery.

## 3. Other infective causes

- These may include cholesteatoma, otitis media, HIV infection and Lyme disease, etc.

## 4. Tumours

- Tumours arising in the CNS (acoustic neuroma), tumours along the course of the nerve itself (facial nerve schwannoma) and parotid tumours can present with facial paralysis developing over a few weeks to months.

## 5. Congenital

- Developmental causes or birth trauma can result in facial paralysis.

- As muscle movements return, the focus is on regaining strength while avoiding facial synkinesis. The patient should separate movements of the upper face (e.g., eye closure) from the lower face (e.g., smiling, chewing).

They should eat looking forward rather than downward at the food, or they could end up with involuntary eye closure during chewing after they have 'recovered'. Movements should be gentle and precise and not exaggerated or forceful.

- Patients can refer to this video by Queen Victoria Hospital entitled 'Management of Paresis (full programme)' for initial information on how facial rehabilitation should be carried out:  
[www.youtube.com/watch?v=DnUHzbvJyeg](http://www.youtube.com/watch?v=DnUHzbvJyeg)
- There is inadequate evidence supporting acupuncture at present, however patients are not discouraged from trying it if they wish to. They are advised to avoid any form of electrical stimulation (either through acupuncture needles or over-the-counter devices) as this may result in spontaneous tics and muscle contracture in the long run.

## WHO SHOULD BE REFERRED TO A SPECIALIST

The following patients should be referred to an ENT specialist for workup, as well as the facial nerve clinic for facial reanimation options:

1. **Central, ear or parotid symptoms or signs are present, or when you suspect it is more than Bell's palsy (atypical presentation)** – An MRI scan and CT scan will be carried out.
2. **Dense palsy and no improvement by three weeks** – An MRI/CT scan may also be carried out to exclude another facial nerve pathology in cases with delayed recovery. Severity of paralysis and late return of function are poor prognostic factors for Bell's palsy. Such patients commonly recover with residual sequelae and early rehabilitation can improve clinical outcomes.
3. **Chronic facial paralysis of any cause**
4. **Recovered paralysis with residual sequelae (e.g., synkinesis)** – This is easier to correct when early or mild, hence referral should be initiated if there is any doubt.

## ADVANCES IN TREATMENT OPTIONS

### Facial neuromuscular retraining (NMR)

There are 42 individual facial muscles, innervated by five separate facial nerve branches and capable of making more than 10,000 expressions.

Non-specific general therapies used for injuries to other body parts (such as gross strengthening and electrical stimulation) should not be applied to the face.

The focus is on **improving coordination between muscles** as opposed to simply increasing their strength. Using a tailor-made retraining programme will induce long-term improvement by the process of brain plasticity. At Singapore General Hospital (SGH), our speech therapists are specially trained in facial NMR and work with all types of facial nerve conditions.

### Medical

**Botulinum toxin injection (BOTOX®)** is an important adjunct in the treatment of facial nerve disorders. It prevents the release of acetylcholine across the neuromuscular junction, causing selective paralysis of involuntarily contracting muscles around the eyes and mouth.

It relieves muscle tightness and spasms in long-standing post-paralytic syndrome. It is also a non-surgical treatment for conditions such as blepharospasm and hemifacial spasm.

BOTOX® effects can last four to six months and over time, injections can be given at a reduced frequency of one to two years if facial NMR is also carried out. BOTOX® injections for such medical indications are affordable and MediSave/insurance claimable.

### Surgical

#### Surgery for facial palsy

Surgical treatment is aimed at the holistic restoration of the droopy brow, eye exposure and smile paralysis and is MediSave/insurance claimable.

Before one year, the facial muscles are still viable and the connection of new neural input by means of **nerve grafting from the contralateral facial nerve / ipsilateral masseter nerve** can allow dynamic smiling and eye closure.

In chronic palsy, facial muscles undergo irreversible atrophy and another muscle (e.g., temporalis muscle or a slip of latissimus dorsi muscle) can be used for smile reanimation.





Ancillary procedures such as brow lifts enable the restoration of brow position and prevent obstruction of the visual axis. Lower eyelid tightening procedures with the addition of a platinum weight into the upper eyelid can help the eye to close.

### **Surgery for post-paralytic syndrome**

This consists of selective myectomies or neurectomies of overactive antagonist facial muscles to enable rebalancing of the smile and eye closure.

## **THE FACIAL NERVE CLINIC AT SINGAPORE GENERAL HOSPITAL**

The SGH Facial Nerve Clinic run by Dr Wong Manzhi was launched in 2016. It is conveniently sited within the ENT Centre on Wednesday mornings, and aims to provide one-stop clinical care for both subsidised and private patients.

We manage patients presenting with all types of acute and chronic facial nerve conditions, providing investigations and holistic management of eye, smile and face issues.

In association with specially-trained speech therapists, facial neuromuscular retraining is carried out in addition to medical and surgical treatment.



### **Dr Wong Manzhi**

*Senior Consultant, Department of Plastic, Reconstructive & Aesthetic Surgery, Singapore General Hospital*

Dr Wong Manzhi is a Senior Consultant Plastic Surgeon at Singapore General Hospital (SGH). In addition to all facets of reconstructive and aesthetic surgery, she is one of the few doctors in Singapore who have expertise in the sub-specialty management of facial nerve conditions.

She underwent a year-long operating fellowship at Kyorin University Hospital, Japan, which sees the highest number of patients with facial nerve disorders in Japan. Upon her return, she started the Facial Nerve Clinic located within the Ear, Nose and Throat Centre at SGH and a similar clinic in Tan Tock Seng Hospital. She is also a Visiting Consultant at KK Women's and Children's Hospital.

GPs who would like more information about this topic, please contact Dr Wong at **9113 9783** or [wong.manzhi@sgh.com.sg](mailto:wong.manzhi@sgh.com.sg).



GP Appointment Hotline: **6326 6060**

GPs can scan the QR code for more information about the department.





# Multidisciplinary Care for Complex Head and Neck Diseases and Tumours

## The SingHealth Duke-NUS Head & Neck Centre

The SingHealth Duke-NUS Head & Neck Centre specialises in the management of diseases and tumours of the head and neck region for adults and children.

It is a disease-based multidisciplinary service dedicated to complex head and neck diseases and tumours. Aside from providing clinical services to our local population, it is also a regional referral centre and centre for research.

### CLINICAL SERVICES

The Centre provides expertise not only in the traditional open surgical approach, but also in advanced minimally invasive techniques such as:

- Transoral robotic surgery
- Transoral laser microsurgery
- Endoscopic skull base surgery
- Remote-access thyroid surgery
- Non-invasive techniques for management of thyroid nodules

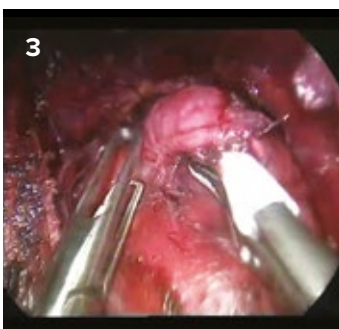
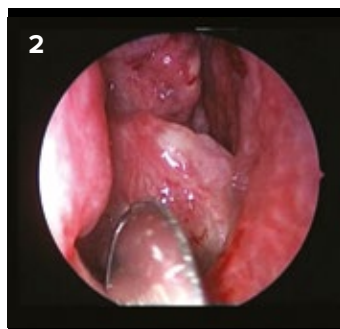
### A MULTIDISCIPLINARY APPROACH

The Centre forms a unique platform for the collaborative work of a multidisciplinary team of healthcare professionals to meet patient needs throughout their journey in SingHealth.

Our team of specialists is experienced in the assessment and management of complex head and neck diseases and tumours. They work closely with nurses and allied health professionals to achieve the best outcomes for our patients in the pursuit of comprehensive oncological resection, aesthetic reconstruction and functional rehabilitation.

Cases are discussed at a multidisciplinary tumour board comprising surgeons, medical oncologists, radiation oncologists, pathologists and other allied health professionals.

In the care of our patients, we view them as well as their family members as part of the team. At our combined nursing and allied health clinic, the team provides education, counselling and support to patients and their family in the treatment journey.



1. *Transoral robotic surgery – removal of a large parapharyngeal schwannoma*
2. *Endoscopic resection of sinonasal tumour*
3. *Endoscopic transoral thyroidectomy*

**For GP referrals, please contact the SingHealth Duke-NUS Head & Neck Centre:**

**Singapore General  
Hospital**  
6326 6060

**Changi General  
Hospital**  
6788 3003

**Sengkang General  
Hospital**  
6930 6000

**KK Women's and  
Children's Hospital**  
6692 2984

**National Cancer Centre  
Singapore**  
6436 8288

**National Dental Centre  
Singapore**  
6324 8798

**Website: [www.singhealth.com.sg/head-and-neck-centre](http://www.singhealth.com.sg/head-and-neck-centre)**

## Our Care Team

**Our care team includes members sub-specialised in head and neck care from the following disciplines:**

### Resection

- Head & Neck Surgery (ENT, general surgery, oro-maxillofacial and plastic surgery)
- Oculoplastics

### Medical treatment

- Radiation Oncology
- Medical Oncology
- Nuclear Medicine
- Endocrinology

### Reconstruction

- Plastics Surgery
- ENT
- Prosthodontics

### Rehabilitation

- Nursing (advance practice / resident nursing team)
- Allied Health Professionals (speech therapists, dietitians, occupational therapists, psychologists, medical social workers)
- Rehabilitation Medicine
- Dental

### Diagnostics

- Diagnostic Radiology
- Intervention Radiology
- Nuclear Medicine
- Pathology



**Scan the QR code to view the SingHealth Duke-NUS Head & Neck Centre care team.**





# New Children's Blood and Cancer Centre Advances Research for Disorders

## THE CHILDREN'S BLOOD AND CANCER CENTRE

KK Women's and Children's Hospital (KKH) has established the new Children's Blood and Cancer Centre (CBCC) to advance research, education and complex care for blood and cancer disorders in babies and children.

Launched in February 2022, the CBCC is one of the most comprehensive paediatric blood and cancer centres in Southeast Asia, focusing on basic science and translational research in childhood cancers, and clinical research in paediatric blood and cancer disorders.

“Research is key in improving outcomes in childhood blood and cancer disorders. As these conditions are rare, with the majority of them having unknown causes, multi-centre and international collaborations are important to advance cures and improve our young patients' health outcomes.”

**Prof Leung Wing Hang,**  
Director, CBCC and Visiting Consultant,  
Haematology/Oncology Service, KKH



### MULTIDISCIPLINARY, INDIVIDUALISED CARE

“Cancers in children can be broadly classified as blood cancers, brain tumours and solid tumours. Building on decades of cancer research at KKH, the CBCC will bring us a step closer towards enabling every patient to receive holistic, individualised and targeted treatment,” shares Dr Soh Shui Yen, Head and Senior Consultant, Haematology/Oncology Service, KKH.

The CBCC is led by a **multidisciplinary team of paediatric oncology specialists** in the fields of:

- Paediatric haematology/oncology
- Paediatric surgical oncology
- Neurosurgery
- Radiation oncology
- Pathology and molecular pathology
- Diagnostic and interventional imaging
- Nuclear medicine
- Nursing
- Allied health

### CONDITIONS SEEN AT THE CBCC

The centre provides holistic care for paediatric oncology patients diagnosed with:

- Various types of leukaemia and lymphoma
- Embryonal brain tumours
- High- and low-grade gliomas
- Neuroblastoma
- Childhood liver and renal tumours
- Bone tumours
- Soft tissue sarcomas
- Rare malignancies

### GLOBAL RESEARCH INTEGRATION

The CBCC uses the latest treatment protocols of international childhood tumour study groups such as for liver and kidney tumours, and is the only participating site in Southeast Asia to do so. It also provides pathology and molecular pathology consultations for challenging and rare childhood cancers in the region.

## THE BLOOD AND MARROW TRANSPLANTATION AND CELLULAR THERAPY PROGRAMME

### Transplantation

Beyond clinical treatment, the CBCC houses the Blood and Marrow Transplantation and Cellular Therapy (BMTCT) programme, which has been providing bone and marrow transplantation for children with malignant and non-malignant conditions since 1998.

The availability of advanced donor graft manipulation techniques and supportive care further increases the potential for more eligible donors and cures for patients.

### Advanced therapies

Since 2020, the BMTCT programme offers **chimeric antigen receptor (CAR) T-cell therapy** for patients with relapsed refractory haematologic malignancies, with two approved clinical trials recruiting eligible patients. Rapid advances in the cellular therapy field will enable CAR T-cell therapy to be a safer and more cost-effective treatment, and benefit more patients with different types of cancer.

## HOLISTIC FOLLOW-UP AND CARE

The **KKH Childhood Cancer Survivorship Programme** also provides holistic follow-up and care for childhood cancer survivors, and collects longitudinal health data to inform care and support.

Any patient with a history of childhood cancer or cancer/transplant treatment during childhood can be referred to the programme.

### HOW GPs CAN REFER



General practitioners can refer paediatric patients to:

- **Children's Blood and Cancer Centre** at [childhoodcancer@kkh.com.sg](mailto:childhoodcancer@kkh.com.sg)
- **Bone Marrow Transplantation and Cellular Therapy Programme** at [bmtct@kkh.com.sg](mailto:bmtct@kkh.com.sg)

## Our Care Team

### Director

**Prof Leung Wing Hang**

Visiting Consultant,  
Haematology/Oncology Service

### Manager

**Ms Angeline Lim**

Asst Manager,  
Haematology/Oncology Service

### Committee Chair

**Dr Soh Shui Yen**

Head & Senior Consultant,  
Haematology/Oncology Service

### Benign Haematology Lead

**Clin Assoc Prof Joyce Lam**

Senior Consultant,  
Haematology/Oncology Service;  
Deputy Head,  
Department of Pathology and Laboratory Medicine

### Malignant Haematology Lead

**Dr Rajat Bhattacharyya**

Senior Consultant,  
Haematology/Oncology Service

### Blood and Marrow Transplant and Cellular Therapy Lead

**Dr Michaela Seng**

Senior Consultant,  
Haematology/Oncology Service

### Brain and Solid Tumours Lead

**Dr Amos Loh**

Senior Consultant,  
Department of Paediatric Surgery

### Survivorship and Late Effects Lead

**Clin Assoc Prof Tan Ah Moy**

Senior Consultant,  
Haematology/Oncology Service

### Psychosocial, Preventive, Palliative and Supportive Care Leads

**Clin Assoc Prof Chan Mei Yoke**

Senior Consultant,  
Haematology/Oncology Service

### Dr Lois Teo

Head & Senior Principal Psychologist,  
Psychology Service

### Molecular and Histopathology Lead

**Clin Assoc Prof Kenneth Chang**

Head & Senior Consultant,  
Department of Pathology and Laboratory Medicine

### Data Science, Registry and Clinical Trial Management

**Ms Germaine Liew**

Senior Clinical Research Coordinator

### GMP and Quality Management Lead

**Dr Chu Pak Yan**


Senior Principal Medical Lab Scientist,  
Department of Pathology and Laboratory Medicine

# Specialist Promotions & Appointments


## NEW APPOINTMENTS



**Prof Lim Kiat Hon Tony**  
Head & Senior Consultant,  
Anatomical Pathology;  
**Chairman, Division of Pathology;**  
**Academic Chair, SingHealth Duke-NUS  
Pathology Academic Clinical Programme**




**Prof Brian Goh Kim Poh**  
*Head & Senior Consultant*  
**Dept**  
Hepato-Pancreato-Biliary and  
Transplant Surgery




**Dr Lee Phong Ching**  
Senior Consultant, Endocrinology;  
**Director, Obesity Centre**

## APPOINTMENTS – ASSOCIATE CONSULTANTS




**Dr Chan Chi Ho**  
*Associate Consultant*  
**Dept**  
Anaesthesiology




**Dr Leong Xin Fang**  
*Associate Consultant*  
**Dept**  
Anaesthesiology



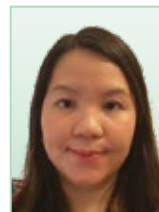
**Dr Lim Jia Yin**  
*Associate Consultant*  
**Dept**  
Anaesthesiology



**Dr Selvaraj Sangeetha**  
*Associate Consultant*  
**Dept**  
Anaesthesiology




**Dr Tracy Wong Yien Hui**  
*Associate Consultant*  
**Dept**  
Anaesthesiology



**Dr Yeo Kai Wen**  
*Associate Consultant*  
**Dept**  
Anaesthesiology



**Dr Yang Shi-Hui @  
Ma Phyu Le Win**  
*Associate Consultant*  
**Dept**  
Breast Surgery




**Dr Chew Chee Yee,  
Dorinda**  
*Associate Consultant*  
**Dept**  
Diagnostic Radiology



**Dr Tan Jia Wei**  
*Associate Consultant*  
**Dept**  
Diagnostic Radiology



**Dr Tan Ying Tse, Sarah**  
*Associate Consultant*  
**Dept**  
Endocrinology



**Dr Goh Qi Mei,  
Orlanda**  
*Associate Consultant*  
**Dept**  
Internal Medicine



**Dr Carolyn Tien  
Shan-Yeu**  
*Associate Consultant*  
**Dept**  
Renal Medicine






## NEW APPOINTMENT




**Dr Koh Lip Hoe**  
*Head & Senior Consultant*  
  
Division of Palliative  
Medicine

## APPOINTMENTS – ASSOCIATE CONSULTANTS



**Dr Yeow Ting Wen**  
*Associate Consultant*  
**Dept**  
Accident & Emergency



**Dr Wang Hao**  
*Associate Consultant*  
**Dept**  
Anaesthesia and  
Surgical Intensive Care




**Dr Clement Chan Wenhao**  
*Associate Consultant*  
**Dept**  
Diagnostic Radiology




**Dr Lam Jiahong, Jeremy**  
*Associate Consultant*  
**Dept**  
Diagnostic Radiology



**Dr Felicia Teo**  
*Associate Consultant*  
**Dept**  
Diagnostic Radiology




**Dr Nicholas Tee Chin Hock**  
*Associate Consultant*  
**Dept**  
Gastroenterology and  
Hepatology




**Dr Samuel Ee Cheng En**  
*Associate Consultant*  
**Dept**  
Geriatric Medicine



**Dr Cheong Hau Yiang**  
*Associate Consultant*  
**Dept**  
Infectious Diseases




**Dr Sanjiv Nair Sasidharan**  
*Associate Consultant*  
**Dept**  
Psychological Medicine




**Dr Chen Hui, Nicole**  
*Associate Consultant*  
**Dept**  
Rehabilitation Medicine



**Dr Neo Jin Rui, Edmund**  
*Associate Consultant*  
**Dept**  
Rehabilitation Medicine



**Dr Ng Jun Han Charles**  
*Associate Consultant*  
**Dept**  
Renal Medicine



**Dr Tan Si Hua, Mabel**  
*Associate Consultant*  
**Dept**  
Renal Medicine




**Dr Sim Jin Hui, Marcus**  
*Associate Consultant*  
**Dept**  
Respiratory & Critical  
Care Medicine

# Specialist Promotions & Appointments

## NEW APPOINTMENTS



**Dr Shashidhar Baikunje**  
Head &  
Senior Consultant  
**Dept**  
Renal Medicine




**Dr Priscilla Chiam Pei Sze**  
Head &  
Senior Consultant  
**Dept**  
Endocrinology



**Dr Jessica Tan Han Ying**  
Head &  
Senior Consultant  
**Dept**  
Respiratory Medicine

## APPOINTMENT – SENIOR CONSULTANT




**Dr Clement Ho Kam Man**  
Senior Consultant  
**Dept**  
Pathology

## APPOINTMENTS – CONSULTANTS



**Dr Wong Shiu Hong**  
Consultant  
**Dept**  
Occupational Medicine



**Dr Kotamma Venkateswaran**  
Consultant  
**Dept**  
Pathology


## APPOINTMENTS – ASSOCIATE CONSULTANTS



**Dr Chin Yun Ann**  
Associate Consultant  
**Dept**  
Endocrinology



**Dr Cao Taige**  
Associate Consultant,  
Dermatology  
**Dept**  
General Medicine



**Dr Martin Putera**  
Associate Consultant,  
Gastroenterology  
**Dept**  
General Medicine




**Dr Tan Boon Hian**  
Associate Consultant,  
Geriatric Medicine  
**Dept**  
General Medicine




**Dr Darren Teo Cheng Han**  
Associate Consultant,  
Infectious Diseases  
**Dept**  
General Medicine



**Dr Nathanael Foong Zhu En**  
Associate Consultant,  
Internal Medicine  
**Dept**  
General Medicine



**Dr Dominic Seet Ming Wei**  
Associate Consultant,  
Rheumatology  
**Dept**  
General Medicine




**Dr Zhu Runyu**  
Associate Consultant  
**Dept**  
Otorhinolaryngology -  
Head & Neck Surgery



**Dr Lee Wei Chee**  
Associate Consultant  
**Dept**  
Respiratory Medicine



## NEW APPOINTMENTS



**Clin Assoc Prof Lim Boon Leong Kevin**  
*Acting Head & Senior Consultant*  
**Dept**  
Orthopaedic Surgery



**Clin Assoc Prof Low Yee**  
*Senior Consultant;  
Clinical Director, Office of Patient Experience*  
**Dept**  
Paediatric Surgery



**Dr Rukshini Puvanendran**  
*Head & Senior Consultant*  
  
Family Medicine Service



**Dr Li Jiahui**  
*Head & Consultant*  
  
Infectious Disease Service


## PROMOTIONS – SENIOR CONSULTANTS




**Dr Chay Pui Ling**  
*Senior Consultant*  
  
Dental Service




**Dr Seng Su-Fern Michaela**  
*Senior Consultant*  
  
Haematology/  
Oncology Service



**Dr Kong Juin Yee**  
*Senior Consultant*  
**Dept**  
Neonatology



**Dr Tan Pih Lin**  
*Senior Consultant*  
**Dept**  
Neonatology



**Dr Yeo Kee Thai**  
*Senior Consultant*  
**Dept**  
Neonatology


## PROMOTIONS – CONSULTANTS



**Dr Tan Xian-Ting, Christelle**  
*Consultant*  
**Dept**  
Child Development



**Dr Syeda Kashfi Qadri**  
*Consultant*  
  
Children's Intensive Care Unit



**Dr Chan Boon Hui**  
*Consultant*  
  
Dental Service



**Dr Ang Yi Shan**  
*Consultant*  
**Dept**  
Dermatology



**Dr Foo Anqi, Sharon**  
*Consultant*  
**Dept**  
Maternal Fetal Medicine



**Dr Ngoh Seow Fen, Adeline**  
*Consultant*  
  
Neurology Service

# Specialist Promotions & Appointments

## PROMOTIONS – CONSULTANTS



**Dr Ho Ping Ling**  
Consultant  
**Dept**  
Obstetrics and  
Gynaecology



**Dr Ong Han Lim**  
Consultant  
**Dept**  
Paediatric Surgery



**Dr Chan Su-Wan  
Bianca**  
Consultant  
Rheumatology and  
Immunology Service

## APPOINTMENTS – ASSOCIATE CONSULTANTS



**Dr Matthew William  
Lukies**  
Associate Consultant  
**Dept**  
Diagnostic and  
Interventional Imaging



**Dr Kan Sheau Yun**  
Associate Consultant  
General Paediatrics  
Service



**Dr Poo Zi Xi**  
Associate Consultant  
**Dept**  
Maternal Fetal  
Medicine



**Dr Kwek Lee Koon  
(Guo Lijun)**  
Associate Consultant  
**Dept**  
Obstetrics and  
Gynaecology



**Dr Liu Jiayi**  
Associate Consultant  
**Dept**  
Obstetrics and  
Gynaecology



**Dr Mok Zhun Wei**  
Associate Consultant  
**Dept**  
Obstetrics and  
Gynaecology



**Dr Stella Rizalina  
Sasha Sugianto**  
Associate Consultant  
**Dept**  
Obstetrics and  
Gynaecology



Appointments: 6436 8288 | Email: [gpnetwork@nccs.com.sg](mailto:gpnetwork@nccs.com.sg)

## APPOINTMENTS – ASSOCIATE CONSULTANTS



**Dr Gambre Awesh  
Shamrao**  
Associate Consultant  
Division of Oncologic  
Imaging



**Dr Low Ong Wu Lin**  
Associate Consultant  
Division of Oncologic  
Imaging



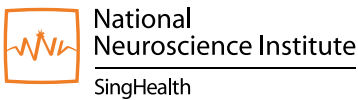


**Appointments: 6704 2222 | Email: [central.appt@nhcs.com.sg](mailto:central.appt@nhcs.com.sg)**

### NEW APPOINTMENT



**Assoc Prof Ching Chi Keong**  
*Senior Consultant;*  
*Director, Electrophysiology and Pacing;*  
*Chief Data and Digital Officer, SingHealth*  
**Dept**  
Cardiology



**Appointments:**  
**(SGH Campus) 6326 6060** | **Email:**  
**(TTSH Campus) 6330 6363** | **gpnetwork@sgh.com.sg**  
**appointments@nni.com.sg**

### NEW APPOINTMENT



**Dr Ling Ji Min**  
*Director, Spine and Spinal Disorders;*  
*Head of Service & Consultant,*  
*Neurosurgery, NNI@CGH;*  
*Consultant*  
**Dept**  
Neurosurgery

### APPOINTMENTS – ASSOCIATE CONSULTANTS



**Dr Hoe Hui Min**  
**Rebecca**  
*Associate Consultant*  
**Dept**  
Neurology



**Dr Lim Sheng Jie**  
**Christen**  
*Associate Consultant*  
**Dept**  
Neurology



**Dr Ling Hua Chan**  
*Associate Consultant*  
**Dept**  
Neurology



**Dr Poh Qi Wei**  
**Mervyn**  
*Associate Consultant*  
**Dept**  
Neurology



**Dr Jeanne Tan**  
**May**  
*Associate Consultant*  
**Dept**  
Neurology



**Dr Crystal Yeo**  
**Jing**  
*Associate Consultant*  
**Dept**  
Neurology



**Dr Shaun Previn**  
**Appaduray**  
*Associate Consultant*  
**Dept**  
Neuroradiology



**Dr Chan Ern Yao**  
**Vincent**  
*Associate Consultant*  
**Dept**  
Neuroradiology



# Specialist Promotions & Appointments

## APPOINTMENTS – ASSOCIATE CONSULTANTS



**Dr Farah Nur Ilyana Binti Mohd Ibrahim**

*Associate Consultant*

**Dept**

Cataract & Comprehensive Ophthalmology

**Sub-specialty**

Ophthalmology



**Dr Lim Sing Hui**

*Associate Consultant*

**Dept**

Cataract & Comprehensive Ophthalmology

**Sub-specialty**

Ophthalmology



**Dr Nicole Sie Ming**

*Associate Consultant*

**Dept**

Cataract & Comprehensive Ophthalmology

**Sub-specialty**

Ophthalmology



**Dr Tan Tien-En**

*Associate Consultant*

**Dept**

Cataract & Comprehensive Ophthalmology

**Sub-specialty**

Ophthalmology

# Recruitment

## Embark on a Life-Changing Journey with a Career at SingHealth

If you are a qualified doctor, a challenging career awaits you at SingHealth. We seek suitably qualified candidates to join us as:

- SENIOR CONSULTANTS/  
CONSULTANTS/  
ASSOCIATE CONSULTANTS
- RESIDENT PHYSICIANS
- STAFF REGISTRARS/  
SERVICE REGISTRARS

Interested applicants are to email your CV with full personal particulars, educational and professional qualifications (including housemanship details), career history, present and expected salary, names of at least two professional references, contact numbers and email address together with a non-returnable photograph.

Please email your CV to the respective institutions' email addresses/online career portals with the Reference Number DM2210.



The SingHealth Duke-NUS Academic Medical Centre draws on the collective strengths of SingHealth and Duke-NUS Medical School to drive the transformation of healthcare and provide affordable, accessible, quality healthcare.

With 42 clinical specialties, a network of 4 Hospitals, 5 National Specialty Centres, 8 Polyclinics and 3 Community Hospitals, it delivers comprehensive, multidisciplinary and integrated care.

### Singapore General Hospital

#### Departments seeking:

##### Resident Physicians and Staff Registrars

- Anaesthesiology
- Breast Surgery
- Colorectal Surgery
- Diagnostic Radiology
- Emergency Medicine
- ENT- Head & Neck Surgery
- Family Medicine & Continuing Care (FMCC)
- Gastroenterology & Hepatology
- General Surgery
- Haematology
- Hand & Reconstructive Microsurgery
- Infectious Diseases
- Orthopaedic Surgery (Sport & Exercise Medicine Centre)
- Plastic, Reconstructive & Aesthetic Surgery
- Rehabilitation Medicine
- Renal Medicine
- Rheumatology & Immunology
- SPRinT (Sarcoma, Peritoneal & Rare Tumours)
- Staff Clinic
- Vascular Surgery
- Urology

##### Associate Consultant/Consultant/

##### Senior Consultant

- Occupational & Environmental Medicine
- SPRinT (Sarcoma, Peritoneal & Rare Tumours)
- Clinical Epidemiologist
- Microbiology (Diagnostic Bacteriology Section)

**Website:** [www.sgh.com.sg](http://www.sgh.com.sg)

**Career Portal:** [www.sgh.com.sg/careers](http://www.sgh.com.sg/careers)

**Email:** [careers.medical@sgh.com.sg](mailto:careers.medical@sgh.com.sg)

### Changi General Hospital

#### Departments seeking:

##### Resident Physicians and Staff Registrars

- Accident & Emergency
- Anaesthesia & Surgical Intensive Care
- Breast Surgery
- Cardiology
- Diagnostic Radiology
- Medicine
- Neurosurgery
- Ophthalmology
- Orthopaedic Surgery
- Otorhinolaryngology - Head & Neck Surgery
- Psychological Medicine
- Rehabilitation Medicine
- Surgery
- Urology

##### Associate Consultants

- Anaesthesia & Surgical Intensive Care
- Dermatology
- Laboratory Medicine - Histopathology
- Orthopaedic Surgery
- Rheumatology
- Surgery

##### Dental Surgeon

- Oral & Maxillofacial

**Website:** [www.cgh.com.sg](http://www.cgh.com.sg)

**Email:** [medical\\_hr@cgh.com.sg](mailto:medical_hr@cgh.com.sg)

### Sengkang General Hospital

#### Departments seeking:

##### Resident Physicians and Staff Registrars

- Anaesthesiology
- Cardiology
- Emergency Medicine
- Surgery
- General Medicine
- Intensive Care Medicine
- Orthopaedic Surgery (with interest in Hand Surgery and Orthopaedic Surgery)
- Otorhinolaryngology - Head & Neck Surgery
- Plastic, Reconstructive & Aesthetic Surgery Service
- Urology

##### Senior Consultant, Consultant, Associate Consultant

- Emergency Medicine
- Gastroenterology
- Infectious Diseases
- Intensive Care Medicine
- Otorhinolaryngology - Head & Neck Surgery
- Pathology
- Radiology

**Website:** [www.skh.com.sg](http://www.skh.com.sg)

**Career Portal:** [www.skh.com.sg/careers/Pages/careers.aspx](http://www.skh.com.sg/careers/Pages/careers.aspx)

**Email:** [careers@skh.com.sg](mailto:careers@skh.com.sg)

### KK Women's and Children's Hospital

#### Departments seeking:

##### Associate Consultants/Consultants/ Senior Consultants

- Pathology & Laboratory Medicine (Gynaecologic & Breast Pathologist, Microbiologist and Chemical Pathologist)
- Diagnostic & Interventional Imaging

##### Associate Consultants/Consultants

- Dermatology

##### Staff Registrars

- Child Development
- Diagnostic & Interventional Imaging
- Neurology Service
- Paediatric Surgery

##### Family Physician

- Family Medicine

##### Resident Physicians

- Diagnostic & Interventional Imaging
- Emergency Medicine
- Ophthalmology Service
- Orthopaedic Surgery
- Otolaryngology
- Paediatric Medicine
- Paediatric Surgery
- Psychological Medicine
- Women's Anaesthesia

**Website:** [www.kkh.com.sg](http://www.kkh.com.sg)

**Email:** [medical.hr@kkh.com.sg](mailto:medical.hr@kkh.com.sg)

### National Cancer Centre Singapore

#### Departments seeking Resident Physicians

- SingHealth Investigational Medicine Unit (IMU)

**Website:** [www.nccs.com.sg](http://www.nccs.com.sg)

**Email:** [HR-Clinical@nccs.com.sg](mailto:HR-Clinical@nccs.com.sg)

### National Heart Centre Singapore

#### Departments seeking Resident Physicians and Staff Registrars

- Cardiology
- Cardiothoracic Surgery

**Website:** [www.nhcs.com.sg](http://www.nhcs.com.sg)

**Email:** [falicia.tui.y.x@nhcs.com.sg](mailto:falicia.tui.y.x@nhcs.com.sg)

### National Neuroscience Institute

#### Departments seeking Resident Physicians and Service Registrars

- Neurology
- Neuroradiology
- Neurosurgery

**Website:** [www.nni.com.sg](http://www.nni.com.sg)

**Email:** [nni\\_hr@nni.com.sg](mailto:nni_hr@nni.com.sg)

### Singapore National Eye Centre

#### Department seeking

- Clinical Associate
- Resident Physician, Ophthalmology
- Staff Registrar, Ophthalmology

##### Senior Consultant, Consultant, Associate Consultant

- Oculoplastic
- Ocular Inflammation and Immunology

For more information, please visit the Career Opportunities section on the Singapore National Eye Centre website.

**Website:** [www.sneec.com.sg](http://www.sneec.com.sg)

**Email:** [recruitment@sneec.com.sg](mailto:recruitment@sneec.com.sg)

### SingHealth Community Hospitals

(Sengkang Community Hospital, Outram Community Hospital and Bright Vision Hospital)

#### Department seeking:

##### Staff Registrars, Resident Physicians

- Family Medicine

**Website:** <http://www.singhealthch.com.sg/>

**Career Portal:** [www.singhealth.com.sg/SCH/careers/Pages/Careers.aspx](http://www.singhealth.com.sg/SCH/careers/Pages/Careers.aspx)

**Email:** [schrecruitment@singhealthch.com.sg](mailto:schrecruitment@singhealthch.com.sg)

# 19<sup>th</sup> Practice Update in Paediatrics



<b>Date</b> 12 November 2022 (Saturday)	<b>Time</b> 2pm to 4.30pm	<b>Hosted via</b> <b>Zoom Webinar</b>	<b>CME points will</b> <b>be awarded</b>	<b>Free</b> <b>admission</b>
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Join us for an insightful online forum as we discuss the latest updates and best practices in the management of common paediatric conditions.

This event is hosted by the paediatrics units of the Division of Surgery and Division of Medicine, KK Women's and Children's Hospital.



**Scan the QR code to register.**  
Registration closes 10 November 2022 (Thursday).  
Slots will be confirmed on a first-come, first-served basis.  
For enquiries, please email to [marcoms@kkh.com.sg](mailto:marcoms@kkh.com.sg).



## HOTLINES



### GP Fast Track Appointment Hotlines

Singapore General Hospital <b>6326 6060</b>	KK Women's and Children's Hospital <b>6692 2984</b>	National Heart Centre Singapore <b>6704 2222</b>
Changi General Hospital <b>6788 3003</b>	National Cancer Centre Singapore <b>6436 8288</b>	National Neuroscience Institute <b>6330 6363</b>
Sengkang General Hospital <b>6930 6000</b>	National Dental Centre Singapore <b>6324 8798</b>	Singapore National Eye Centre <b>6322 9399</b>