



WA Cancer and Palliative Care Network

Thyroid Cancer Model of Care



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Introduction

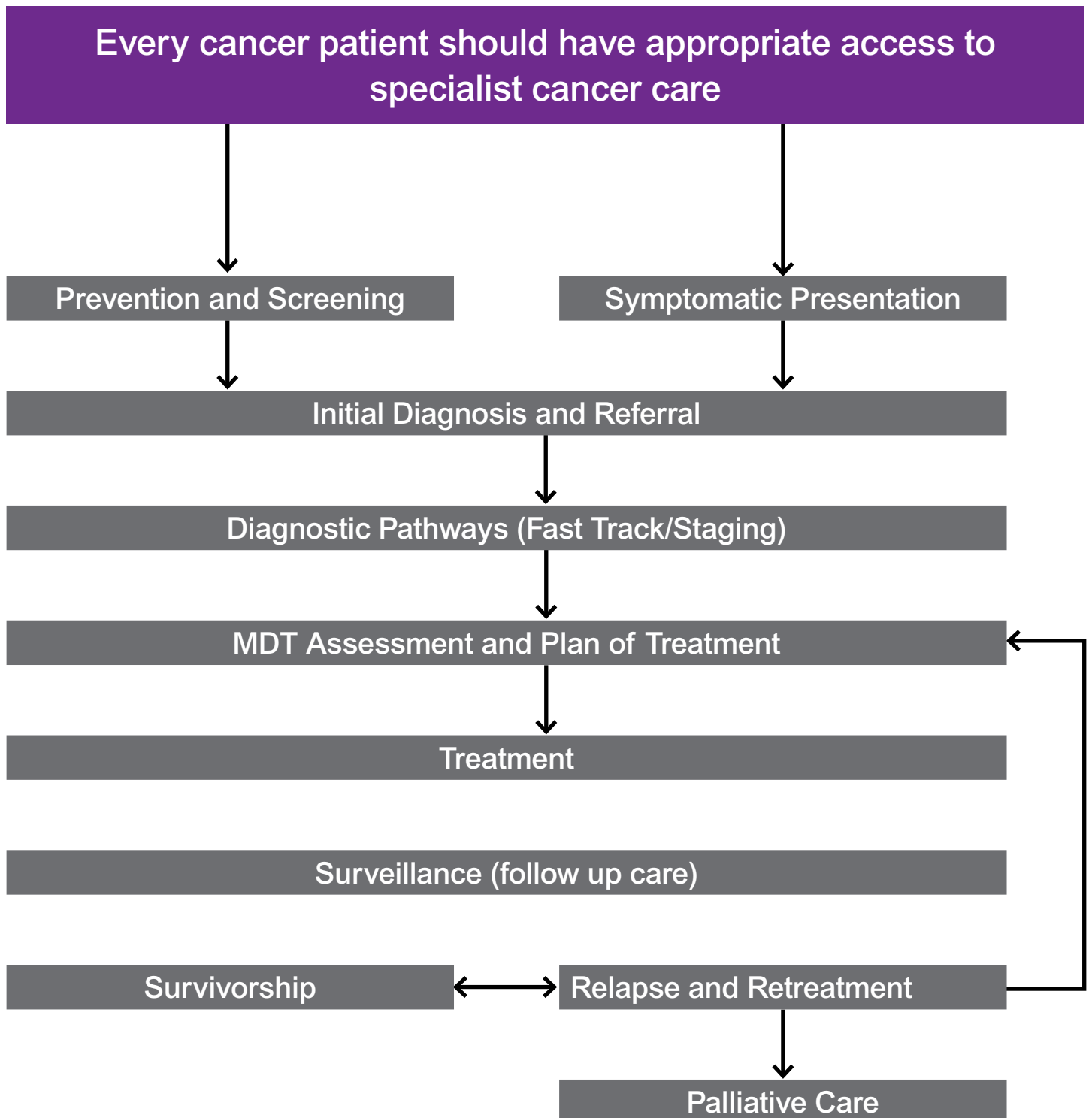
Thyroid cancer is the most common endocrine cancer but only accounts for about one per cent of all malignancies. In 10 years there has been a 40 per cent increase for males and 86 per cent increase for females in the incidence of thyroid cancer. Eighty seven percent of this increase is due to papillary microcancers and FVPTC.

Review of cancer registry data indicates differing rates of cancer diagnosis and outcome reflecting different management strategies:

- WA – 175 new thyroid cancers and 8 deaths in 2007.
- NSW – 650 new thyroid cancers.
- England – 900 new thyroid cancer, 250 deaths.
- USA – 37,200 new thyroid cancers in 2009, 1000 deaths.

The overall five-year survival rate for differentiated thyroid cancer is very good. If the disease is localised to the thyroid 5y S = 98.1 %; regional spread 5y S = 93.3%; distal spread 5y S = 32.7%.

Figure 1. Appropriate access to specialist care



1. Prevention and screening

Prevention

There are no factors recognised which may prevent thyroid cancer in average risk patients. Most patients who develop thyroid cancer will be in the average risk group.

There are some patients who are in a high risk group for thyroid cancer and these patients may benefit from early intervention. For example, people with an inherited gene mutation that increases the risk of thyroid cancer may opt to have thyroid surgery to prevent cancer (prophylactic thyroidectomy). Discussion with a genetic counsellor who can explain the risk of thyroid cancer and treatment options is recommended (all patients with medullary thyroid cancer and all patients with a family history of thyroid cancer).

Screening

Routine screening of asymptomatic patients with neck palpation or USS for thyroid cancer is not recommended.

2. Initial presentation

Recognition of clinical features

- Neck mass
- Hoarse voice
- Airway difficulty or Stridor
- Chronic dry cough especially when supine
- Dysphagia
- Persistent sore throat
- Pemberton's sign positive (facial engorgement on raising upper limbs)
- Venous neck distension.

Particular attention should be paid to patients who have:

- Risk factors for thyroid cancer
 - Radiation exposure:
 - childhood head and neck irradiation
 - total body irradiation for bone marrow transplantation
 - ionising radiation exposure from fallout in childhood or adolescence.
 - Family history of thyroid cancer or thyroid cancer syndromes
 - FPTC (two or more first degree relatives with PTC)
 - MEN 2
 - FAP
 - Cowden's syndrome
 - Carney complex.

AND/OR

- Personal history of:
 - thyroid adenoma
 - Hashimoto's thyroiditis (lymphoma)
 - endemic goitre.

AND/OR

- Clinical evidence of:
 - rapid growth
 - hoarseness or vocal cord paresis
 - tethering or fixation of nodule to surrounding tissue
 - lateral cervical lymphadenopathy.

Initial Medical Consultation

*Initial consultation with a general practitioner (GP) should be within two weeks with patient calls being triaged to achieve this and to facilitate more rapid assessment where appropriate.

Initiation of investigations

- TFT, TPO, Calcium, USS and FNAC.
- Thyroid scans are likely to result in unnecessary delays in the diagnosis of cancer and are not recommended.
- Referral to a surgeon should include clinical information, medical and psychosocial background, radiological films and blood results, and pathology reports. Where necessary, referral can be facilitated by direct communication with the surgeon.

Referral guidelines

URGENCY OF REFERRAL

Immediate referral (seen same day)

- Stridor associated with a goitre.

Urgent referral (seen within two weeks)

- Patients with any of the risk factors for thyroid cancer (see above).
- Thyroid nodule in a child.
- Unexplained hoarseness with a goitre.
- Rapid, painless enlargement of a thyroid mass over weeks (associated with anaplastic thyroid cancer or lymphoma).
- Cervical lymphadenopathy associated with a thyroid mass.
- Tethering or fixation of a mass to surrounding tissues.
- Thyroid cytology showing cancer, suspicion of cancer or atypia.

Non-urgent referral

- Sudden onset of pain in thyroid lump (likely bleed into a benign thyroid cyst or thyroiditis).
- Patients with overactive thyroids (cancer is unlikely in this group) should be referred to endocrinologist.
- Newly diagnosed thyroid lump increasing in size over several months.
- Thyroid cytology showing indeterminate or non-diagnostic features.

3. Diagnosis and referral

Type of specialist

- Patients should be referred to a surgeon or endocrinologist who has a special interest in thyroid cancer and is a member of an endocrine multidisciplinary team (MDT).
- Specialist surgeons who perform a higher volume of thyroid surgery have superior results in terms of morbidity and mortality. There is evidence that surgeons who perform >50 thyroid operations per year have the best results. Referral is most appropriate to an Endocrine Surgeon (FRACS or equivalent) or an ENT/HN Surgeon with a major thyroid interest.

Diagnostic investigations

3.1 Sonography

3.1.1 Thyroid

- Should be performed on all patients with known or suspected thyroid nodules. The assessment should be of the whole thyroid gland as well as central and lateral cervical lymph nodes. Ideally thyroid USS should be performed by a radiologist with head and neck experience.
- Ultrasound is useful to determine which nodules are suspicious and warrant biopsy.
- Suspicious ultrasound features include: nodule hypoechoogenicity compared to the normal thyroid parenchyma, increased intranodular vascularity, irregular infiltrative margins, the presence of microcalcifications, an absent halo, and a shape taller than the width measured in the transverse dimension.
- Ultrasound is useful for surveillance following removal of a thyroid cancer and assessment of cervical lymph nodes for evidence of metastatic spread.

3.1.2 Lymph nodes

- Pre-operative USS identifies suspicious cervical lymphadenopathy in 20-30 per cent of patients.
- Sonographic features suggestive of abnormal metastatic lymph nodes include loss of the fatty hilus, a rounded rather than oval shape, hypoechoogenicity, cystic change, calcifications, and peripheral vascularity.

3.2 Fine needle aspiration cytology

- FNAC is the most accurate and cost-effective way of evaluating a thyroid nodule. Non-diagnostic biopsies and false-negatives are less likely if FNAC is performed under sonographic guidance and with a Pathologist on site.
- Risk of malignancy varies with the cytological diagnosis: Indeterminate (5-15%); Atypical (20-25%); Suspicious (>80%); Malignant (>95%).
- FNAC should be also performed on suspicious lymph nodes. The presence of thyroid cells in a lymph node are usually metastatic in nature.
- Thyroid cytology should be reported by a cytopathologist with a special interest in thyroid disease and should be a member of the MDT. There should be correlation between the cytological diagnosis and any subsequent histology.

3.2.1 Solitary nodules biopsy

- All suspicious nodules >5 mm
- All solid nodules >10 mm
- All spongiform or complex nodules >20 mm
- Pure cysts do not need FNAC, although aspiration is useful if large and causing compressive features. Multiply recurrent cysts are best treated surgically.

3.2.2 Multinodular goitre Biopsy

- The dominant nodule if no other suspicious nodules
- Two or more biopsies for lesions > 10 mm nodules with suspicious USS features
- The risk for any given lesion is the same as if the lesion was seen as a solitary nodule.

3.2.3 Computed Tomography (CT)

- Routine use of CT is not recommended for initial assessment.

3.2.4 Positron Emission Tomography (PET)

- Routine use of PET scan not recommended for initial assessment. There is not enough evidence to rule for or against PET being used to improve the diagnostic accuracy of indeterminate thyroid nodules.
- PET scan detected incidental FDG-avid thyroid lesion are seen in one to two per cent of all scans. One in three of these will have thyroid cancer.

3.2.5 Nasendoscopy

- Pre-operative nasendoscopy in patients with proven thyroid cancer is recommended.
- Thyroid scan (technetium 99m-Tc pertechnetate or 123-I)
- Is only recommended if TSH is suppressed.

3.3 Conveying a diagnosis of malignancy

Clearly the initial conveying of a diagnosis of malignancy may cause severe psychological distress. General recommendations for such communications are:

- An arrangement to provide results should be made pre-emptively and in a timely fashion relative to the procedure.
- Where possible conveyance of a malignant diagnosis should be made in person.
- Arrangements should be made for a support person to be present where possible.
- Such report provision should be coordinated by a managing clinician who can also provide contextual information.
- Access to specialist counsellors or psychologists should be provided.
- Written information should be provided.

4. Multidisciplinary team assessment and management planning

4.1 The Multidisciplinary Team (MDT)

The MDT comprises (in alphabetical order):

- Endocrine Surgeon
- Endocrinologist
- Nuclear Physician
- Pathologist
- Radiologist.

All patients with differentiated thyroid cancer should be reviewed within a multidisciplinary team (MDT) framework.

- Patients will usually be seen initially by an individual member of the MDT, who will be working according to guidelines.
- The treatment plan and care of each newly diagnosed patient should be discussed and supervised by a core team (physician and surgeon) in consultation with other members of the MDT. This discussion should be documented.
- Close communication between members of the MDT is key for delivering optimal care.

4.2 The multidisciplinary meeting (MDM)

- MDT meetings should be held quarterly at mutually convenient times and locations for participants.
- MDT management in a metropolitan setting should be available to all patients in Western Australia.
- Further investigation and subsequent re-presentation to the MDT may be required.
- The MDM is the ideal forum to identify patients who may be entered into clinical trials.

5. Treatment

This step is concerned with the type of treatment that will be delivered, who will provide it and where it should be provided to ensure safe, high quality and effective care.

5.1 Surgery

- The mainstay of treatment for thyroid cancer is surgery. In most cases this will include a total thyroidectomy for lesions >1cm. Thyroid lobectomy may be sufficient for small low risk cancers. *Prophylactic central-compartment neck dissection (ipsilateral or bilateral) may be performed in patients with papillary thyroid carcinoma with clinically uninvolved central neck lymph nodes, especially for advanced primary tumours.
- Therapeutic central-compartment (level VI) neck dissection for patients with clinically involved central or lateral neck lymph nodes should accompany total thyroidectomy to provide clearance of disease from the central neck.
- Therapeutic modified radical lateral neck compartmental lymph node dissection should be performed for patients with biopsy proven metastatic lateral cervical lymphadenopathy.

5.1.1 Training and experience of surgeons

- Surgical services should be provided by an endocrine surgeon or specialist surgeon with adequate training and experience in thyroid cancer surgery that enables institutional credentialing and agreed scope of practice within this area. The surgeon should carry out a comprehensive audit of outcomes and keep current with advances in the treatment of thyroid cancer.

5.1.2 Psychological aspects of surgery

- Psychological effects from thyroid surgery can be both short and longer term. Providing patients with tailored accurate information prior to treatment, facilitating patient decision-making about appearance-altering treatment, and meeting others with similar personal experience may assist some people.

5.1.3 Stratification of thyroid cancer risk

- Low-risk patients have the following characteristics:
 - no local or distant metastases
 - all macroscopic tumour has been resected
 - there is no tumour invasion of locoregional tissues or structures
 - the tumour does not have aggressive histology (e.g., tall cell, insular, columnar cell carcinoma) or vascular invasion
 - and, if 131I is given, there is no 131I uptake outside the thyroid bed on the first post treatment whole-body RAI scan.

Intermediate-risk patients have any of the following characteristics:

- microscopic invasion of tumour into the perithyroidal soft tissues at initial surgery
- cervical lymph node metastases or 131I uptake outside the thyroid bed on the RxWBS done after thyroid remnant ablation
- tumour with aggressive histology or vascular invasion.

High-risk patients have any of the following characteristics:

- macroscopic tumour invasion
- incomplete tumour resection
- distant metastases
- thyroglobulinemia out of proportion to what is seen on the post-treatment scan.

5.2 Nuclear therapy: Radioactive iodine (RAI) ablation

5.2.1 The role of RAI

- remnant ablation (to facilitate detection of recurrent disease and initial staging)
- adjuvant therapy (to decrease risk of recurrence and disease specific mortality by destroying suspected, but unproven metastatic disease)
- RAI therapy (to treat known persistent disease). Please note that RAI does not compensate for inadequate surgery.

Audit of outcomes should form a routine part of service delivery.

Because treatment is limited to tertiary referral centres, infrastructure should be available to provide transport and/or accommodation for patients living a significant distance from treating centres. Details of eligibility for transport funding are available⁸.

5.2.2 Appropriate patients for RAI

- RAI ablation is recommended for all patients with known distant metastases, gross extrathyroidal extension of the tumour regardless of tumour size, or primary tumour size >4 cm even in the absence of other higher-risk features.
- RAI ablation is recommended for selected patients with 1–4cm thyroid cancers confined to the thyroid, who have documented lymph node metastases, or other higher-risk features.

RAI ablation is not recommended for patients with unifocal cancer <1 cm without other higher risk features or multifocal cancer where all foci are <1 cm.

5.2.3 Treating nuclear physician

RAI should be given by a nuclear physician (FRACP or equivalent) with adequate training and experience that enables institutional credentialing and agreed scope of practice within this area.

5.3 TSH Suppression Therapy

5.3.1 Appropriate patients for suppressive thyroxine

- Initial TSH suppression to below 0.1mU/L is recommended for high-risk and intermediate-risk thyroid cancer patients.
- Maintenance of the TSH at or slightly below the lower limit of normal (0.1–0.5mU/L) is appropriate for low-risk patients.

5.3.2 Treating physician

Drug therapy should be given by an endocrinologist or nuclear physician with adequate training and experience that enables institutional credentialing and agreed scope of practice within this area.

5.4 External beam radiation

5.4.1 Appropriate patients for external beam radiation

- The use of external beam irradiation to treat the primary tumour should be considered in patients over age 45 with grossly visible extrathyroidal extension at the time of surgery and a high likelihood of microscopic residual disease, and for those patients with gross residual tumour in whom further surgery or RAI would likely be ineffective.

6. Surveillance and follow-up care

This step concerns the monitoring of the patient following initial treatment. The aim is the early detection of disease relapse. Follow-up care also involves the management of symptoms arising from previous and/or current treatments and from active disease. It also provides reassurance to patients who remain free of disease. A clear documented plan of surveillance should be established and be available to the patient. Multiple visits to multiple specialists should be avoided.

6.1 Plan for follow-up

After treatment patients should be seen*:

- 6–12 monthly depending on risk for recurrence and Tg status
 - diagnostic whole body scan (DxWBS) at 6–12 months after remnant ablation for intermediate or high-risk patients
 - cervical US of thyroid remnant, central and lateral lymph nodes
 - FNAC of suspicious nodes +/- Tg measurement of needle wash out fluid
 - Consider PET for:
 - Tg positive and RAI negative
 - initial staging for poorly differentiated or Hurthle cell cancer
 - evaluation of post-treatment response following local or systemic treatment in metastatic or locally advanced disease

Patients who have received combined modality treatment need coordinated follow-up. Rehabilitation of speech and swallowing is of paramount importance. Some patients may require more frequent visits depending on clinical status at the discretion of the treating nuclear physician/surgeon.

6.2 Persons involved in follow-up care

Not all disciplines need to be involved in longer term follow-up. The multidisciplinary team, in consultation with the general practitioner, decides on the lead clinician who will coordinate follow-up. The team is likely to include:

- general practitioner, particularly to manage co-morbidities
- treating specialists as required.

In addition to follow-up for general medical care, follow-up may include the following:

- calcium management
- thyroid hormone management
- wound management

Rural patients have the option of shared follow-up care between the treating specialist and a local or visiting specialist. The general practitioner has a key role in coordination of follow-up.

7. Survivorship

The transition from active to post treatment care is critical to long-term health. Care should be planned and coordinated. Survivors should have knowledge of their increased risk of second/ recurrent cancers or treatment-related morbidities. This encourages them to actively participate in their continuing post-treatment care.

Survivorship may be medically-led, particularly through primary care, nurse-led or patient-led. Cancer Councils across Australia are developing and evaluating approaches that are patient-centred.

8. Relapse and retreatment

This step concerns the diagnosis and management of patients who have recurrence of the disease (local or metastatic) and who need assessment regarding further treatment. Clinical evaluation and patient discussion will determine the most appropriate treatment which may be curative or palliative in intent. A series of steps should occur at suspected relapse.

8.1 What should be provided

Investigation and diagnosis of potential relapse will usually be made by the specialist coordinating follow-up or by the GP. The following investigations may be indicated for diagnosis and restaging:

- clinical investigation including laryngoscopy if appropriate
- appropriate imaging of sites of persistent or suspicious symptoms
- biopsy of areas of clinical or radiological suspicion
- if relapse is confirmed, diagnostic imaging for the purposes of restaging is appropriate.

8.2 Who should be involved in the management plan

Patients who relapse require expert opinion as to the best plan of management and this should be provided by the MDT. Discussion should be led by the clinician who is responsible for coordinating treatment and follow-up. The management plan should be decided in consultation with the patient and fully documented in the patient record. Participation by the GP and palliative care team may also be appropriate.

8.3 Nature of treatment

Treatment will depend on the location and extent of the recurrence, and on previous management. Treatment may include:

- Surgery is the mainstay of treatment for local or regional recurrence:
 - comprehensive compartmental lateral and/or central neck dissection, sparing uninvolved vital structures (avoid “berry picking”)
 - limited compartmental lateral and/or central neck dissection may be an alternative if patients have undergone previous comprehensive dissection and/or external beam radiotherapy
- external beam radiotherapy for incomplete resection
- radio iodine administration for metastatic thyroid cancers showing radio iodine scan uptake.

8.4 Aspects of supportive care

Relapse may impart numerous burdens on the patient:

- the physical burden of disease-related symptoms
- psychological distress
- financial hardship
- extensive time commitments to treatment.

These burdens may be alleviated by consideration of various supportive measures:

- palliative care referral for symptom control
- pain service referral particularly for analgesic procedures
- psychology service referral
- social work consultation to assess potential financial supports
- provision of aspects of care near home where possible.

9. Palliative care

The WA Palliative Care model defines the appropriate approach to symptom management and end of life care.

It is important that patients and their families receive optimal palliative care and early referral for assessment and advice is recommended.

It is also important to recognise that a major component of palliative care involves symptom relief and this may require surgical intervention, radiation therapy or chemotherapy.

http://www.healthnetworks.health.wa.gov.au/modelsofcare/docs/Palliative_Care_Model_of_Care.pdf

10. Supportive care

The supportive care needs of patients with thyroid cancer will vary in severity and complexity along the disease trajectory. Identifying and assessing the supportive care needs of people with thyroid cancer involves a general assessment of the physical, psychological, social, information and spiritual needs. In addition to these general needs, all members of the multidisciplinary team should be aware of the particular needs related to thyroid cancer detailed below which may require intervention from specific members of the multidisciplinary team.

10.1 Physical Needs

Potential Complication	Action Required
<ul style="list-style-type: none"> Persistent communication difficulties, including hoarseness, can occur in people who have undergone tracheostomy or who have been treated with radiotherapy 	<ul style="list-style-type: none"> Referral to a speech pathologist
<ul style="list-style-type: none"> Nutritional deficiency and swallowing difficulties 	<ul style="list-style-type: none"> Referral to a dietician Consider enteral nutrition
<ul style="list-style-type: none"> Treatments have significant impact on long-term oral health Dry mouth, change in taste, difficulty chewing, difficulty with dentures and increased tooth decay are common following treatment, especially radiation therapy 	<ul style="list-style-type: none"> Referral to a dentist specialising in cancer care prior to commencing treatment Referral to a speech pathologist
<ul style="list-style-type: none"> Loss of libido, change in sexual activity, decreased satisfaction 	<ul style="list-style-type: none"> Sensitive discussion by health care professionals Referral for counselling by clinicians who specialise in this area
<ul style="list-style-type: none"> Severe pain that is difficult to control 	<ul style="list-style-type: none"> Specific pain management techniques coordinated by a medical specialist Other techniques, such as relaxation therapy, distraction and massage, may have short term effects in relieving pain
<ul style="list-style-type: none"> Poor physical capacity 	<ul style="list-style-type: none"> Referral to rehabilitation services

10.2 Psychological Needs

Potential Issue	Action Required
<p>Anxiety</p> <ul style="list-style-type: none"> Stress levels for head and neck patients have been shown to be highest at the point of confirmed diagnosis and recede during the treatment 	<ul style="list-style-type: none"> Referral to a psychologist or psychiatrist as required. Provision of strategies such as information provision, relaxation techniques and meditation

10.3 Information needs

Potential Issue	Action Required
<ul style="list-style-type: none"> ▪ Many patients who have been given a diagnosis of cancer often have decisions to make regarding their treatment choice. This typically involves complex decision-making on side effect profiles and survival benefits with the options presented. ▪ Patients are given large volumes of information at a time where they are experiencing high levels of anxiety. 	<ul style="list-style-type: none"> ▪ Patients should be offered written information which is both disease and treatment-specific in addition to information on the range of supportive care services which are available to them, such as local support groups. Patients should be given reliable sources whom they can contact for further information should they require it. ▪ Patients should be offered information in a language they are able to understand. Where English is not the patient's first language, a translator should be available during consultations. ▪ Clinicians discussing treatment options with patients should offer patients a record of the key points of the discussion including their specific pathology, treatment options and side effect profiles. ▪ All health professionals should be aware of what information has been given to the patient. Timely communication with the patient's general practitioner is an essential part of this process. ▪ For smokers: Information about and assistance with smoking cessation is required. ▪ For people who consume more alcohol than daily recommended limits: Information and support to manage alcohol withdrawal may be required for the patient and the health care professionals caring for the patient.

Recommendations:

- Symptoms suggestive of thyroid cancer warrant prompt referral to an appropriate specialist.
- Multi-disciplinary team (MDT) management should be available to all patients within WA, no matter where they live.
- All treatment for cancers of the thyroid should be planned and managed in a multidisciplinary setting in the metropolitan area by an endocrine cancer specialist with access to MDT meetings.
- MDT meetings must be appropriately resourced, including an MDT coordinator.
- Thyroid cancer patients require equitable access to treatment and supportive care and adequate provision must be made for the subsidised transport of rural patients and for the accommodation of these patients and their carers close to the Cancer Centre. Consideration should be given by the Health Department to developing the appropriate 'hotel' facilities to allow this to occur.
- All thyroid cancer patients requiring nuclear therapy should have access to the most up to date RAI techniques.
- Psychosocial support for all thyroid cancer patients must be included in any treatment program.
- All thyroid cancer patients should be invited to participate in clinical trials where appropriate.
- Data collection regarding treatment and outcomes is essential to monitor the quality and safety of care. An appropriate clinical database for thyroid cancer treatment and outcomes should be available and adequately resourced.

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<http://www.health.vic.gov.au/cancer/framework.htm>

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