

BRAF testing for Anaplastic Thyroid Cancer

Anaplastic thyroid cancer is a very rare and aggressive form of thyroid cancer, accounting for 1-2% of thyroid cancers, approximately 100 patients per year in the UK. Patients frequently present with advanced, inoperable or metastatic disease. Historically there have been no useful treatment options, and median survival is less than 6 months.

However, approximately 40% of anaplastic thyroid cancers carry a BRAF V600E mutation (now known as p.Val600Glu on genomics reports). Recent studies have shown significant clinical benefit of targeted treatment with BRAF and MEK inhibitors (dabrafenib and trametinib) in patients with a BRAF mutation, with response rates of up to 69%¹. In some cases patients with inoperable disease at diagnosis have been able to have the cancer resected².

Untreated, anaplastic thyroid cancer progresses very rapidly so it is imperative to identify a BRAF mutation as quickly as possible so treatment can be started if appropriate.

It is also useful to check for other genomic alterations eg RET or NTRK fusions as there are drugs available to target these alterations.

¹ Subbiah V, Kreitman RJ, Wainberg ZA et al. Dabrafenib and Trametinib Treatment in Patients With Locally Advanced or Metastatic BRAF V600-Mutant Anaplastic Thyroid Cancer. J Clin Oncol. 2018 Jan 1;36(1):7-13.

² Wang JR, Zafereo ME, Dadu R et al. Complete Surgical Resection Following Neoadjuvant Dabrafenib Plus Trametinib in BRAFV600E-Mutated Anaplastic Thyroid Carcinoma. Thyroid. 2019 Aug;29(8):1036-1043.

Surgeons/Radiologists

Anaplastic thyroid cancer suspected by Radiologist/Surgeon carrying out biopsy

Comment added to the request card: **'Suspected anaplastic thyroid cancer. If confirmed please request urgent BRAF testing from NW Genomic Lab Hub'**

Pathologists

Anaplastic thyroid cancer confirmed by pathology

Urgent BRAF and panel testing requested by pathology. When sending the referral, include the Thyroid Oncology Team on the request form:

chn-tr.co.headandneck.admin@nhs.net

Results of genomic testing will be returned to the pathology department and Thyroid Oncology Team

Results must be forwarded to referring surgeon/radiologist

- If anaplastic thyroid cancer is confirmed, a BRAF and panel test (RET and NTRK fusions) should be requested immediately. The request form can be found on the NW GLH website by clicking through the following: **Documents and Forms – Test request forms – Cancer Solid Tumour – Tumour Request Form Head & Neck/Endocrine**, [test codes M11.1 and M11.4](#).
- Sample requirements can be found on the request form. Once prepared, the sample and form should be sent to the NW GLH in Manchester (address can be found on the request form)
- The results will be returned to the pathology lab and Thyroid Oncology Team via email. These should then be **urgently** forwarded to the **referring surgeon or radiologist** (contact details should be available on the referral card).