# Follow up of Appendix Neuroendocrine Tumours in Auckland

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## Introduction

Follow up for appendix neuroendocrine tumours (ANETs) is recommended when size is >2cm. Computed tomography imaging (CT) should occur at 2,5,10 years (1). ANETs 1-2cm with risk factors (RF) (Table1) should also be considered for follow up (2).

We reviewed our practice in the Auckland region to assess if we are meeting current recommendations.

Table 1 : ANET Risk Factors

| | | | |
|---|---|---|---|
| Lymphovascular Invasion | | Grade | |
| Yes | 8 | 1 (Ki-67<2%) | 35 |
| No | 176 | 2 (Ki-67 3-20%) | 6 |
| Unknown | 61 | 3 (Ki-67>20%) | 0 |
| | | Unknown | 204 |
| Mesoappendix Involvement | | | |
| Yes | 15 | Note: | |
| No | 166 | Ki-67 only came into classification 2004 | |
| Unknown | 64 | | |
| >3mm | 1 | | |

## Method

261 resected ANETs histologically diagnosed between 1995-2012 were identified from the New Zealand NETwork! Registry. NETwork! Registry captures all NET diagnosis by searching the New Zealand Cancer Registry using ICD-0 morphology codes, as well as searching public and private pathology records in each DHB.

Inclusion criteria was resected primary ANETs. Exclusion criteria included goblet cell carcinoma, local invasion or metastasis of other primary site or diagnosis at autopsy.
16 patients did not meet criteria resulting in 245 patients included.
Follow up period ended December 2020.

### QUICK FACTS

> Follow up recommended for:
> > ANETs > 2cm
> > ANET 1-2cm with RF
> RF include:
> > vascular or lymphatic invasion
> > >3mm infiltration of mesoappendix
> > grade 2 or Ki-67: 3-20%
> CT follow up should occur at 2,5,10 years
> > Consideration for MRI in young
> > USS, HIAA, Cromogrannin A have not been proven useful

Electronic clinical records were examined and subsequent CT imaging reviewed for evidence of metastasis or local recurrence. These were grouped into intentional ANET follow up scans versus other indications. Subsequent haematology and microbiology were also reviewed. Deaths and cause of death were identified from hospital records.

## Results

28 ANETs met criteria for follow up (Figure 1).

8 ANETs were >2cm with ENET recommendation for follow up, however only 3 proceeded to any follow up imaging (Figure 2).

13 ANETs were 1-2cm + RF with ENET recommendation for consideration for follow up, however only 8 proceeded with any follow up imaging.

7 ANETs were <1cm + RF with ENET recommendation for consideration for follow up, however none received any follow up imaging.

18 ANETs had unknown size and were unable to be assessed for indiction of follow up with nil proceeding to follow up imaging.

All ANETs follow up scans varied in timing post op, duration of follow up and number of scans (Table 2).

There were 4 ANETs <1cm with follow up plan for annual chromagranin A, with 2 having regular tests for 2 and 5 years.

Table 2. Follow up scans for ANETs meeting criteria

| | # ANETs | # ANET with f/u scans |
|---|---|---|
| <1cm + RF or R1/Base | 7 (3.9%) | 0 (0%) |
| 1-2cm +RF or R1/Base | 13 (13.7%) | 8 (61.5%) |
| >2cm | 8 (100%) | 3 (37.5%) |
| Unknown | 18 (100%) | 0 (0%) |
| | Number of scans | |
| <1cm + RF or R1/Base | 0 | |
| 1-2cm +RF or R1/Base | 34 | |
| >2cm | 3 | |
| Unknown | 0 | |
| Follow up period | Median (months) | Range (months) |
| <1cm + RF or R1/Base | 0 | 0 |
| 1-2cm +RF or R1/Base | 65.6 | 5-43 |
| >2cm | 12 | 12-48 |
| Unknown | 0 | 0 |

There were no identified recurrences, metastasis or deaths related to ANETs.

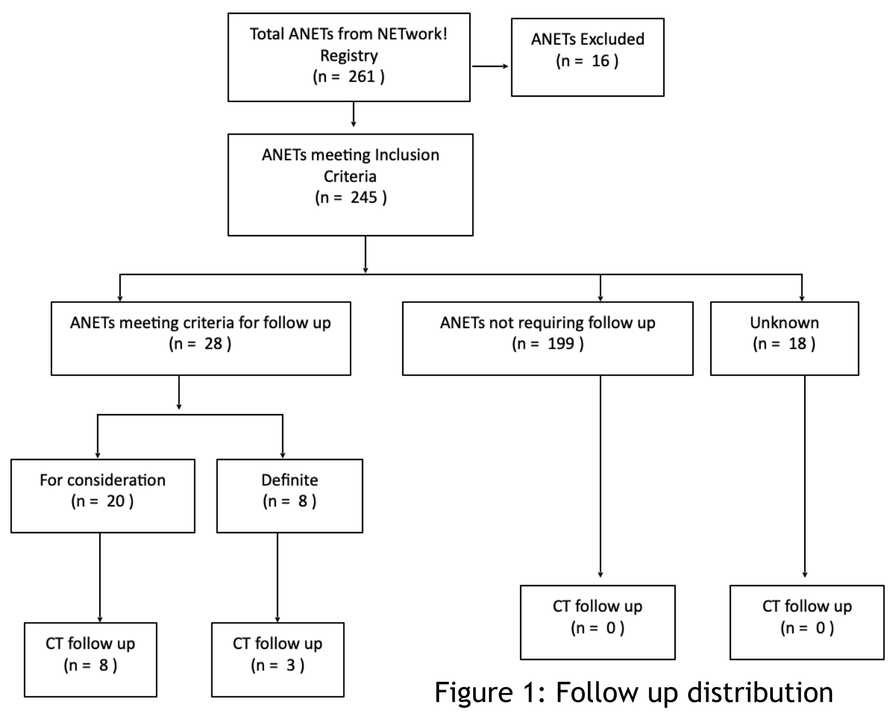


Figure 1: Follow up distribution

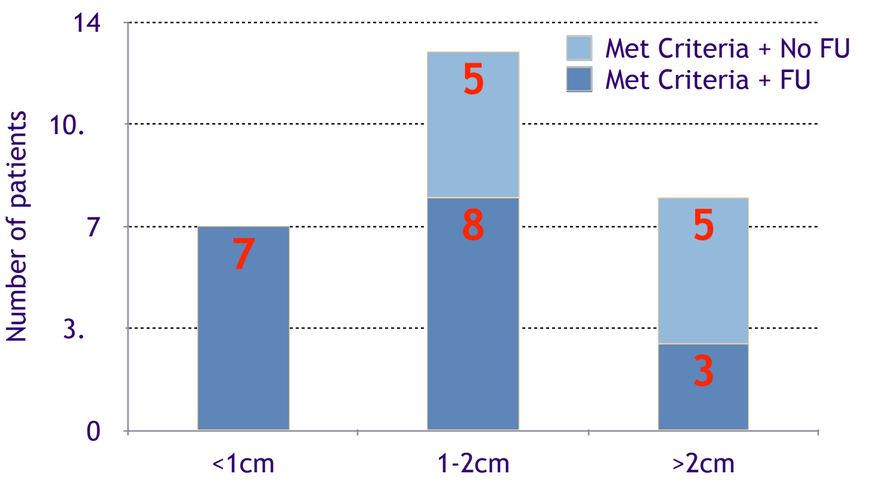


Figure 2: Patients proceeding to Follow up

## Conclusion

- 3% of all ANETs met criteria for definite follow up
- 8% of all ANETs met criteria for consideration of follow up
- There was no standard follow up schedule used in Auckland.
- There were no local recurrence, metastasis or deaths related to ANETs identified.
- By developing and adopting a regional follow up schedule we can bring Auckland into line with current ENET standards of care whilst at the same time minimise unnecessary tests

## References

(1)Singh S, Moody L, Chan D, et al. Resected Gastroenteropancreatic Neuroendocrine tumours. JAMA Oncol. 2018;4(11):1597-1604
(2)Pape U, Niederle B, Costa F, et al. ENETS Consensus Guidelines for Neuroendocrine Neoplasms of the Appendix (Excluding Goblet Cell Carcinomas). Neuroendocrinology 2016; 103:144-152