

# Right Hemicolectomy for Appendix Neuroendocrine Tumours

Henry, L., Surgical Registrar, General Surgery, Auckland City Hospital, Auckland New Zealand  
 Janssen, G., Surgical Registrar, General Surgery, Auckland City Hospital, Auckland New Zealand  
 Woodhouse, B., Discipline of Oncology, The University of Auckland, Auckland, New Zealand  
 Lawrence, B., Discipline of Oncology, The University of Auckland, Auckland, New Zealand  
 Gandhi, J., Colorectal and Peritoneal Malignancy Surgeon, Auckland City Hospital, Auckland, New Zealand

## Introduction

Appendix neuroendocrine tumours (ANETs) may require right hemicolectomy (RH) to reduce risk of local relapse or metastasis. Current ENET guidelines (Figure 1) outlines when RH is recommended and include size >2cm; size 1-2cm with risk factors (RF) or size 0-2cm with R1 resection or location at base. (1).

We review the surgical practice of ANETs in the Auckland region.

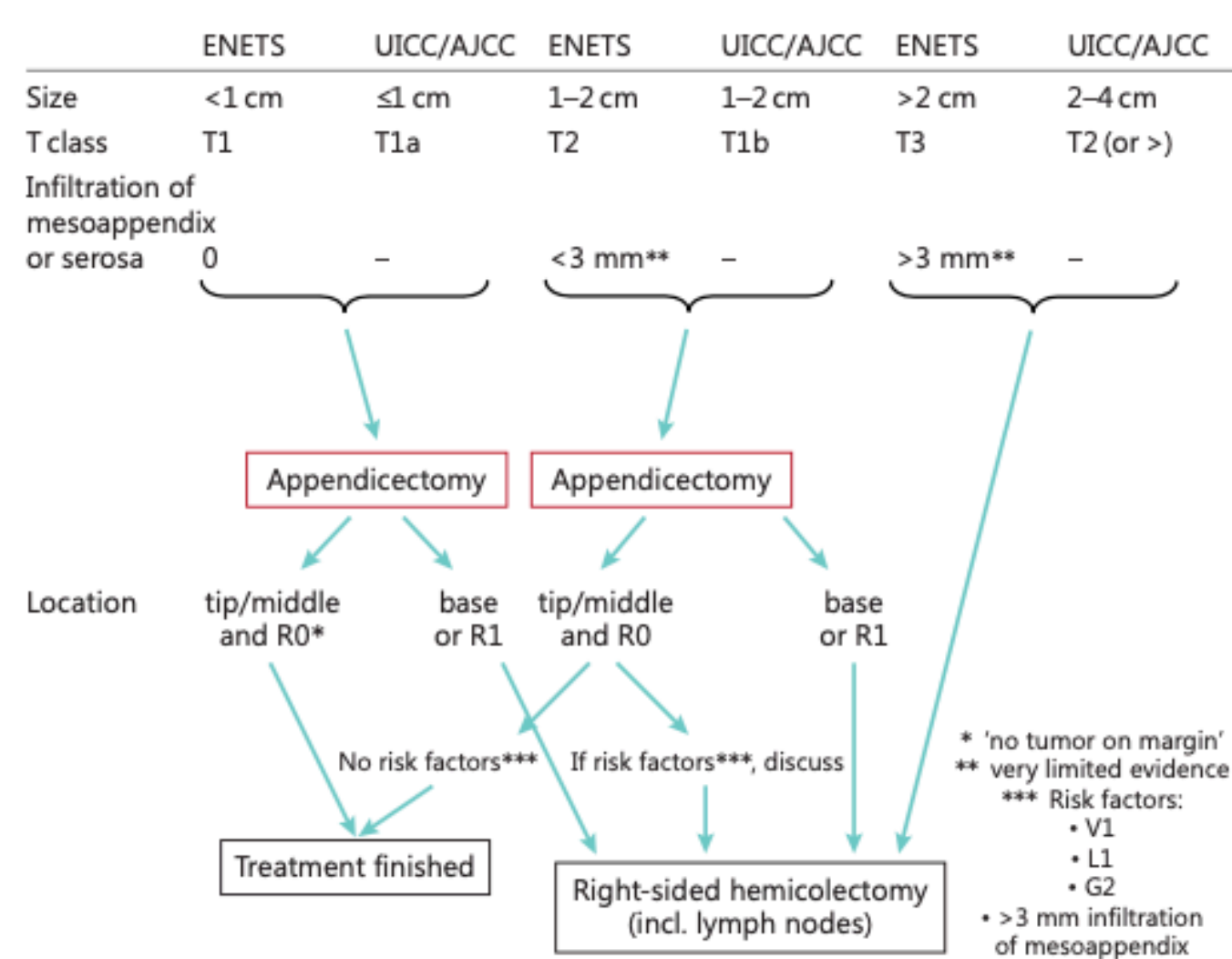


Figure 1: ENET 2016 Algorithm

## Method

261 resected ANETs histologically diagnosed in the Auckland region 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 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.

### QUICK FACTS (ENET Guidelines)

- > Right Hemicolectomy recommended for:
  - > ANET >2cm
  - > 1-2cm with RF
  - > 0-2cm with R1 resection
  - > 0-2cm with location at base
- > RF include:
  - > vascular or lymphatic invasion
  - > >3mm infiltration of mesoappendix
  - > grade 2 or Ki-67: 3-20%

## Results

RF were identified in 12 ANETs 1-2cm and 5 ANETs <1cm (Table 1).

Table 1 : ANET Risk Factors

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

From the <2cm groups, 4 ANETs had R1 resections and 14 ANETs were located at the appendix base (Table 2).

Table 2 : ANET Cohort Demographics

Size	Location	
<1cm	Tip	137
1-2cm	Body	38
>2cm	Base	14
Unknown	Unknown	56
Resection		
R0	199	
R1	4	
Unknown	42	

Eight (3.2%) of the ANETS were >2cm, all meeting criteria for RH. However only four (50%) proceeded to RH.

41 (16.7%) of the ANETs were 1-2cm, with 13 (31.7%) of these meeting criteria for RH. However only five (38.5%) proceeded to RH.

178 (72.7%) of the ANETs were <1cm with 12 (6.7%) meeting criteria for RH. However only five (41.7%) proceeded to RH.

18 patients had an unknown size, with nil proceeding to RH.

Overall 33 (13.5%) of ANETs meet criteria for RH however only 14 (41.2%) of these proceeded (Figure 2).

Importantly, 10 patients underwent RH despite not meeting criteria, 4 patients in the 1-2cm group 6 in the <1cm Group (Figure 3). These operations occurred between 2005-2009.

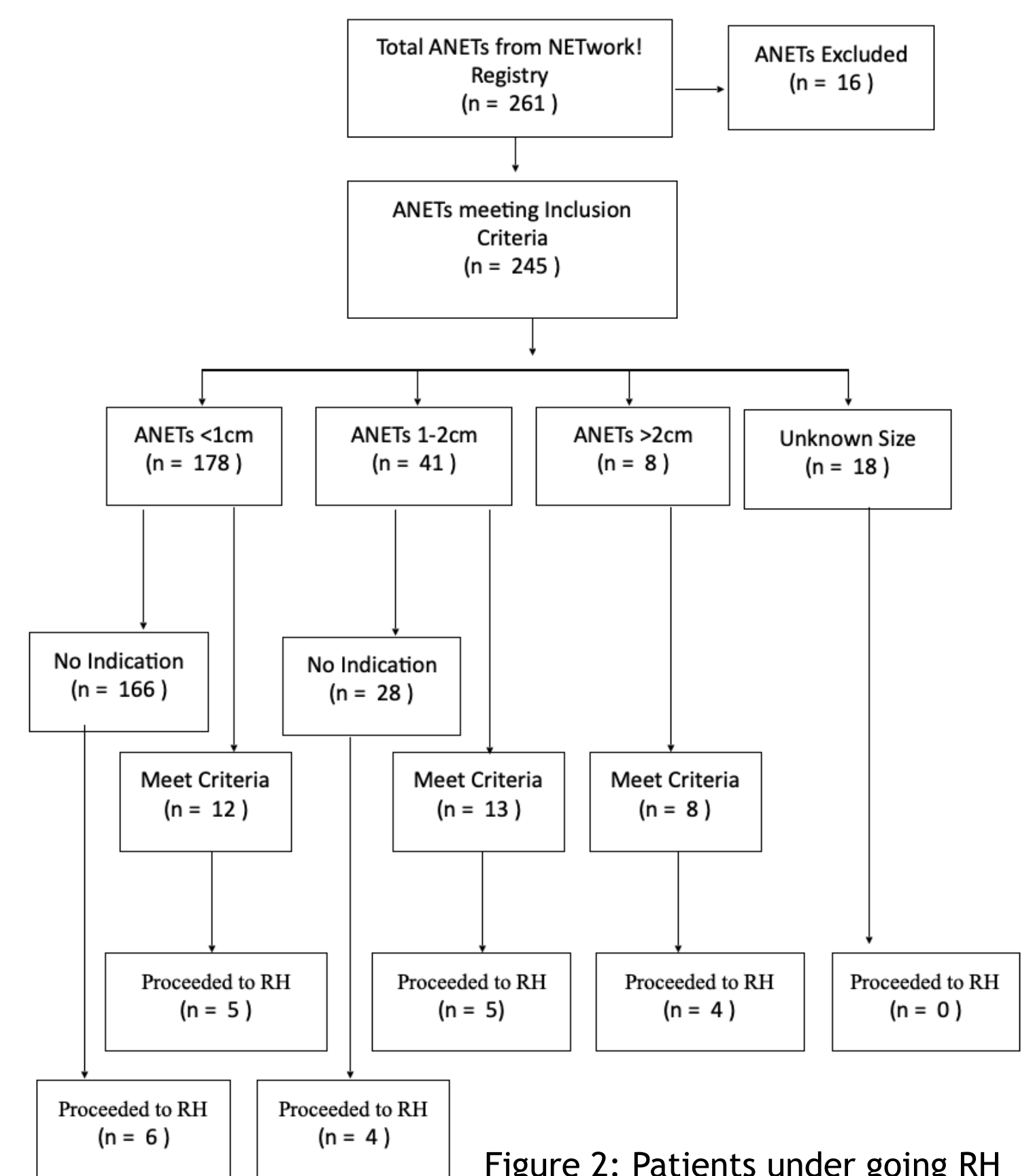


Figure 2: Patients under going RH

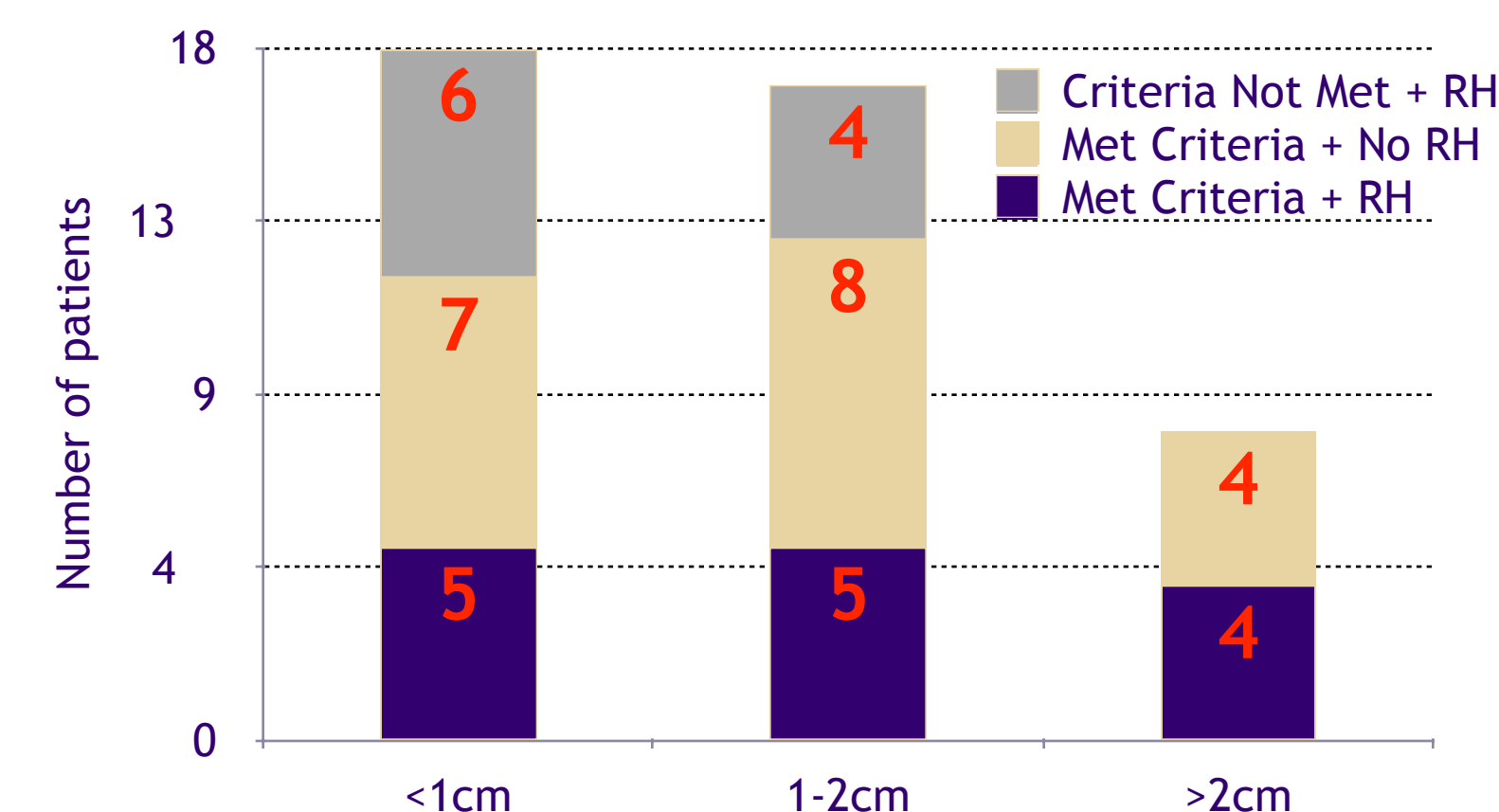


Figure 3: Patients proceeding to RH

## Conclusion

- 13.5% ANETS met criteria for RH.
- patients underwent RH in accordance with ENET guidelines.
- patients did not undergo RH despite meeting ENET guidelines.
- patients underwent RH despite not meeting ENET guidelines.
- Some of the unknown sizes potentially may have meet criteria for RH
- Education and sharing of guidelines amongst surgeons might lead to more consistent practice.

## References

- (1) 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