

NEUROENDOCRINE NEOPLASMS (NEN)

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WHO 2017 Endocrine Organs and WHO 2019 Digestive systems. Neuroendocrine Neoplasms (NEN) includes Neuroendocrine tumor (NET), Neuroendocrine carcinoma (NEC), Neuroendocrine carcinoma (MiNEN), Mixed neuroendocrine-non-neuroendocrine neoplasm (MiNEN). WHO 2019 uses Ki-67 for grading NET (G1, G2, G3) and NEC (Small cell type, Large cell type). MiNEN includes NEC and NET. WHO 2021 Thoracic Tumours uses TNM staging for ENETS, AJCC/UICC, and TNM. NEN WHO 2019 includes WHO 2019 5 and NIKE Neuroendocrine tumors Innovation in Knowledge and Education. Albertelli M, et al. Front Endocrinol (Lausanne). 2021; 12: 680305.

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WHO 2021 Thoracic Tumours. WHO 2019 5 and NIKE Neuroendocrine tumors Innovation in Knowledge and Education. Albertelli M, et al. Front Endocrinol (Lausanne). 2021; 12: 680305.

1 WHO

WHO2010 ¹⁰ Digestive systems	WHO2017 ²⁰ Endocrine Organs	WHO2019 ³⁰ Digestive systems
Neuroendocrine tumour NET G1/G2	Neuroendocrine tumour NET G1/G2/G3 well-differentiated NEN	Neuroendocrine tumour NET G1/G2/G3 well-differentiated NEN

Neuroendocrine carcinoma NEC G3 large cell or small cell type	NEC G3 large cell or small cell type poorly differentiated NEN	NEC G3 large cell or small cell type poorly differentiated NEN
Mixed adeno-neuroendocrine carcinoma MANEC	Mixed neuroendocrine-non-neuroendocrine neoplasm MiNEN	Mixed neuroendocrine-non-neuroendocrine neoplasm MiNEN*
Hyperplastic and preneoplastic lesions		

NEC MANEC MANEC

2 NEN WHO 2019

		Grade	cells/ 2mm ²	Ki-67 ^b
NET G1		Low	2	3
NET NET G2		Intermediate	2-20	3-20
NET NET G3		High	20	20
NEC Small cell type SCNEC		High ^c	20	20
NEC Large cell type LCNEC			20	20
MiNEN	or ^d	Variable ^d	Variable ^d	Variable ^d

- a. 0.2mm² 50 10mm² 2mm² 10HPF 40 0.5mm
- b. Ki-67 500 Grade Ki-67
- c. NEC grading high-grade
- d. MiNEN NE NE NE NEC grading

3 NEN WHO 2021

		cells/ 2mm ²	
	5mm	2	
		2-10	

