Grading and Staging of Neuroendocrine Cancer

NeuroEndocrine Cancer Australia

Understanding the grade and stage of a neuroendocrine cancer is vital as it describes how slow or fast the cancer is growing, and where cancer is located in the body.

The grade and stage of neuroendocrine cancer guides medical decision making, and appropriate treatment recommendations, as well as developing an understanding of prognosis (the expected course of the disease over time).

Tumours arising from neuroendocrine cells are collectively referred to as neuroendocrine cancer or neuroendocrine neoplasms (NENs). Based on cell appearance and grade they are further classified as either neuroendocrine tumours (NETs) or neuroendocrine carcinomas (NECs).

What is Grading?

Grading is the description given to cancer cells when they are viewed under a microscope. Many aspects of the cancer cell are considered:

- Appearance of the cancer cells compared to normal cells (well differentiated or poorly differentiated)
- Growth rate of the cancer cells refers to how quickly or slowly the cancer is growing
- The rate cancer cells are multiplying (Mitotic rate)

Neuroendocrine Cancer Grading

The 2022 World Health Organisation Classification of Neuroendocrine Neoplasms is used to grade neuroendocrine cancer.

The following is an overarching guide.

Neuroendocrine Tumour (NET) Well Differentiated

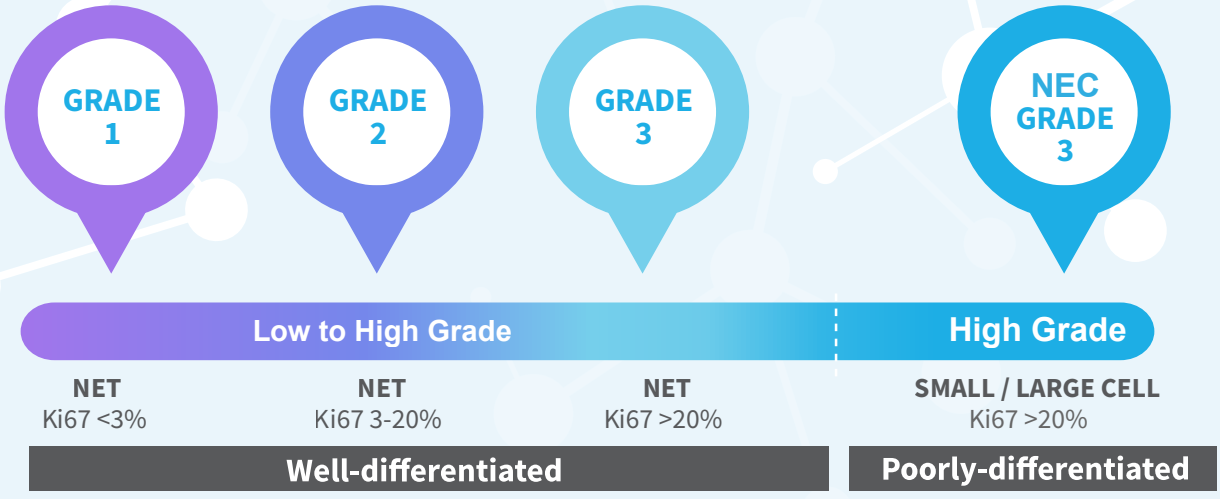
Grade 1: low grade - slow growing (Ki-67 <3%)

Grade 2: intermediate grade (Ki-67 3-20%)

Grade 3: high grade - fast growing (Ki-67 >20%)

Neuroendocrine Carcinoma (NEC) Poorly Differentiated

Grade 3: high grade - fast growing (Ki-67 >20%)



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There are also specific classification criteria used for different locations in the body; such as in the lungs, which is primarily graded upon tumour differentiation, mitoses and necrosis rather than Ki-67 Index.

For example;

- Typical Carcinoid: low grade - well differentiated (<2 Mitosis/2mm2, no necrosis)
- Atypical Carcinoid: intermediate grade - well differentiated (2-10 2 Mitosis/2mm2 and/or minimal necrosis present)
- Large Cell Neuroendocrine Carcinoma: high grade - large cell, poorly differentiated (>10 Mitosis/2mm2)
- Small Cell Lung Carcinoma: high grade - small cell, poorly differentiated (>10 Mitosis/2mm2)

What is Staging?

Staging is a way of describing whether a cancer is located in one distinct area of the body, or if it has spread from the original site to surrounding tissue, lymph nodes or other organs of the body.

Stages of cancer:

Stage 0
Abnormal cells are present but have not spread from where they started. It is often referred to as 'in-situ' cancer.

Stage 1
The cancer is small and has only spread a little into nearby tissues. It has not spread to any lymph nodes or other body areas.

Stage 2 and 3
The cancer is larger or has spread into nearby tissues or lymph nodes.

Stage 4
The cancer has spread to other areas of the body. Stage 4 cancer is also called metastatic cancer or advanced cancer.

Information and investigations used to establish cancer stage:

- Histopathology report of the tissue is the microscopic examination of the cells for structural changes and can determine the severity of the disease.
- Imaging such as Ga68 PET Scan, FDG PET Scan and CT Scans are used to understand where neuroendocrine cancer is located in the body.

Grading and Staging Guides Treatment Options

Once the grade and stage is established, this can be used to inform treatment recommendations. Different types of neuroendocrine cancer require different treatments. This is complex and the expertise of neuroendocrine cancer specialists is essential when determining a treatment plan.

Read our Neuroendocrine Treatment booklet here

If you need further support or information about neuroendocrine cancer, contact the **NET nurses at NeuroEndocrine Cancer Australia on 1300 287 363** Monday-Friday 9am-5pm.