

# Neuroblastoma

**Protocol applies to the examination of specimens from patients with neuroblastoma and related neuroblastic tumors.**

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*Protocol date: July 2005  
No AJCC/UICC staging system*

## **Procedures**

- **Cytology** (No Accompanying Checklist)
- **Incisional Biopsy (Needle or Wedge)** (No Accompanying Checklist)
- **Resection**

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The College of American Pathologists offers these protocols to assist pathologists in providing clinically useful and relevant information when reporting results of surgical specimen examinations of surgical specimens. The College regards the reporting elements in the “Surgical Pathology Cancer Case Summary (Checklist)” portion of the protocols as essential elements of the pathology report. However, the manner in which these elements are reported is at the discretion of each specific pathologist, taking into account clinician preferences, institutional policies, and individual practice.

The College developed these protocols as an educational tool to assist pathologists in the useful reporting of relevant information. It did not issue the protocols for use in litigation, reimbursement, or other contexts. Nevertheless, the College recognizes that the protocols might be used by hospitals, attorneys, payers, and others. Indeed, effective July 1, 2004, the Commission on Cancer of the American College of Surgeons mandated the use of the checklist elements of the protocols as part of its Cancer Program Standards for Approved Cancer Programs. Therefore, it becomes even more important for pathologists to familiarize themselves with the document. At the same time, the College cautions that use of the protocols other than for their intended educational purpose may involve additional considerations that are beyond the scope of this document.

## Summary

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*Protocol date: July 2005*

This is a new protocol for 2005.

### **Important Note**

First priority should always be given to formalin-fixed tissue for morphologic evaluation. Special studies (eg, ploidy analysis, fluorescence in situ hybridization) are critical to the molecular work-up of neuroblastoma and require at least 100 mg of viable snap-frozen tissue as the second priority for work-up (Note **A**).

For more information contact: The Children's Oncology Group Biopathology Center,  
Phone: (614) 722-2890 or (800) 347-2486.

**Surgical Pathology Cancer Case Summary (Checklist)**

*Protocol date: July 2005  
Applies to neuroblastoma only  
No AJCC/UICC staging system*

**NEUROBLASTOMA: Resection**

Patient name:

Surgical pathology number:

<b>Note: Check 1 response unless otherwise indicated.</b>
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**MACROSCOPIC****Specimen Type** Subtotal adrenalectomy Total adrenalectomy Other (specify): \_\_\_\_\_ Not specified**Tumor Site**

Specify: \_\_\_\_\_

 Not specified**Laterality (check all that apply)** Right Left Midline Not specified**\*Specimen Size**

\*Greatest Dimension: \_\_\_ cm

\*Additional dimensions: \_\_\_ x \_\_\_ cm

**\*Specimen Weight**

\*Specify: \_\_\_ g

**Tumor Size**

Greatest dimension: \_\_\_ cm

\*Additional dimensions: \_\_\_ x \_\_\_ cm

 Cannot be determined (see Comment)**Tumor Weight (if separate from total specimen)**

Specify: \_\_\_ g

**MICROSCOPIC****Extent of Invasion**Primary Tumor

- Cannot be assessed  
 Encapsulated  
 Capsular extension without other organ involvement  
 Extension into other organs

Regional Lymph Nodes (check all that apply)

- Cannot be assessed  
 No regional lymph node metastasis  
 Right regional lymph node metastasis  
     Specify: Number examined: \_\_\_\_  
               Number involved: \_\_\_\_  
 Left regional lymph node metastasis  
     Specify: Number examined: \_\_\_\_  
               Number involved: \_\_\_\_

Distant Metastasis

- Cannot be assessed  
 Distant metastasis  
     \*Specify site(s): \_\_\_\_\_

**Margins**

- Cannot be assessed  
 Margins uninvolved by tumor  
 Margin(s) involved by tumor

**\*Venous/Lymphatic (Large/Small Vessel) Invasion**

- \*  Absent  
 \*  Present  
 \*  Indeterminate

**International Neuroblastoma Pathology Classification**

- Cannot be determined

Favorable Histopathology

- Any age; ganglioneuroma (Schwannian stroma-dominant); maturing or mature  
 Any age; ganglioneuroblastoma, intermixed (Schwannian stroma-rich)  
 Less than 1.5 years old; neuroblastoma (Schwannian stroma-poor); poorly differentiated and low or intermediate mitosis-karyorrhexis index (MKI)  
 1.5 years up to less than 5 years old; neuroblastoma (Schwannian stroma-poor); differentiating and low MKI

\* Data elements **with asterisks** are **not required** for accreditation purposes for the Commission on Cancer. These elements may be clinically important, but are not yet validated or regularly used in patient management. Alternatively, the necessary data may not be available to the pathologist at the time of pathologic assessment of this specimen.

Unfavorable Histopathology

- \_\_\_ Any age; ganglioneuroblastoma, nodular (Composite, Schwannian stroma-rich/stroma-dominant and stroma-poor)
- \_\_\_ Any age; neuroblastoma (Schwannian stroma-poor); undifferentiated and any MKI
- \_\_\_ Less than 1.5 years old; neuroblastoma (Schwannian stroma-poor); poorly differentiated and high MKI, or differentiating and high MKI
- \_\_\_ 1.5 years up to less than 5 years old; neuroblastoma (Schwannian stroma-poor); poorly differentiated and any MKI, or differentiating and intermediate or high MKI
- \_\_\_ Equal to or greater than 5 years old; neuroblastoma (Schwannian stroma-poor); any subtype and any MKI

**International Neuroblastoma Staging System (INSS)<sup>#</sup>**

- \_\_\_ Stage 1
  - localized tumor with complete gross excision, with or without microscopic residual disease
  - representative ipsilateral lymph nodes negative for tumor microscopically (nodes attached to and removed with the primary tumor may be positive)
- \_\_\_ Stage 2A
  - localized tumor with incomplete gross excision; representative ipsilateral nonadherent lymph nodes negative for tumor microscopically
- \_\_\_ Stage 2B
  - localized tumor with or without complete gross excision with ipsilateral nonadherent lymph nodes positive for tumor; enlarged contralateral lymph nodes must be negative microscopically
- \_\_\_ Stage 3
  - unresectable unilateral tumor infiltrating across the midline<sup>##</sup>, with or without regional lymph node involvement
  - localized unilateral tumor with contralateral regional lymph node involvement
  - midline tumor with bilateral extension by infiltration (unresectable) or by lymph node involvement
- \_\_\_ Stage 4
  - any primary tumor with dissemination to distant lymph nodes, bone, bone marrow, liver, skin, and/or other organs (except as defined for stage 4S<sup>###</sup>)
- \_\_\_ Stage 4S
  - localized primary tumor (as defined for stage 1, 2A, or 2B), with dissemination limited to skin, liver, and/or bone marrow<sup>###</sup> (limited to infants less than 1 year of age)

<sup>#</sup> Multifocal primary tumors (eg, bilateral adrenal primary tumors) should be staged according to the greatest extent of disease, as defined above, and followed by a subscript "M" (eg, 3<sub>M</sub>).

<sup>##</sup> The midline is defined as the vertebral column. Tumors originating on 1 side and crossing the midline must infiltrate to or beyond the opposite side of the vertebral column.

<sup>###</sup> Marrow involvement in stage 4S should be minimal, ie, less than 10% of total nucleated cells identified as malignant on bone marrow biopsy or marrow aspirate. More extensive marrow involvement would be considered stage 4. The MIBG scan (if performed) should be negative in the marrow.

**\*Additional Pathologic Findings (check all that apply)**

- \*  None identified
- \*  Tumor necrosis
- \*  Tumor calcification
- \*  Other (specify): \_\_\_\_\_

**\*Comment(s)**

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