

NeuroTrace Academy Study Guide

Category: Medical Terminology

Topic: Tumors & Oncology

Style: Classification-based, exam-oriented, cell-origin focused

1. Core Principles (Must Know)

Tumor Classification System

- **Cell of origin** determines tumor type
- Behavior determines benign vs malignant
- Location + age help identify specific tumors
- Associations (exposures, infections) are high-yield

Key Principle

- Understanding cell of origin eliminates most confusion in tumor terminology
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2. Fundamental Concepts

Tumor vs Cancer vs Neoplasm

Tumor

- **Definition:** An abnormal mass that occurs when cells in a certain area reproduce unchecked
- **Can be:** Benign OR malignant
- **Synonym:** Neoplasm

Cancer

- **Definition:** A group of diseases in which cells grow unrestrained, can spread to tissues around them and destroy them, or be transported through blood or lymph pathways to other parts of the body
- **Key point:** Malignant only (spreads and destroys)
- **Characteristics:**
 - Uncontrolled growth
 - Can spread (metastasize)
 - Can destroy tissue

Neoplasm

- **Definition:** Another term for tumor
- **Can be:** Benign OR malignant
- **Key point:** Synonymous with tumor

👉 **Exam Trap:** Tumor/neoplasm = benign OR malignant. Cancer = malignant only.

Benign vs Malignant

Benign Tumor

- **Definition:** A tumor that is not cancerous - does not spread through the body
- **Characteristics:**
 - Does NOT spread (metastasize)
 - May grow and become dangerous by compression

- Does not invade or destroy tissue

- **Key:** No spread capability

Malignant Tumor (Cancer)

- **Definition:** Cancerous tumor that can spread and destroy tissue

- **Characteristics:**

- Can spread (metastasize)
- Invades surrounding tissue
- Destroys tissue
- Can be fatal

- **Key:** Spreads and destroys

Exam Trap: Spread capability is the critical distinction - no spread = benign, spreads = malignant

Metastasis

- **Definition:** The spreading of a cancerous tumor to another part of the body through lymph, blood, or across a cavity

- **Also refers to:** A tumor that has been produced in this way (metastatic tumor)

- **Routes:**

- Lymphatic system
- Bloodstream
- Direct extension across cavities

- **Key:** Spread to distant sites = metastasis
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Pre-Cancerous

- **Definition:** A term describing a condition from which cancer is likely to develop

- **Examples:**

- Certain types of dysplasia
- Certain polyps
- Some skin lesions

- **Key point:** Increased risk, not certainty

- **Key:** Increased cancer risk = pre-cancerous
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3. Tumor Classification by Cell of Origin

Carcinoma

- **Cell of origin:** Epithelium (surface/lining of organs)

- **Definition:** A cancer that grows on the surface or lining of an organ

- **Examples:**

- Lung carcinoma
- Breast carcinoma
- Colon carcinoma

- **Key:** Epithelium/lining = carcinoma
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Sarcoma

- **Cell of origin:** Connective tissue, fibrous tissue, or blood vessels

- **Definition:** A cancer in connective tissue, fibrous tissue, or blood vessels

- **Origin:** Mesenchymal (connective tissue) origin

- **Examples:**
 - Osteosarcoma (bone)
 - Liposarcoma (fat)
 - Angiosarcoma (blood vessels)
- **🔑 Key:** Connective tissue = sarcoma

🔑 Exam Trap: Carcinoma = epithelium. Sarcoma = connective tissue. These are different origins.

Leukemia

- **Cell of origin:** Bone marrow
 - **Definition:** A group of bone marrow cancers in which white blood cells divide uncontrollably
 - **Effects:**
 - Affects production of normal white blood cells
 - Affects production of red blood cells
 - Affects production of platelets
 - **🔑 Key:** Bone marrow + all blood cells = leukemia
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Lymphoma

- **Cell of origin:** Lymph tissue (lymph nodes, spleen)
 - **Definition:** A group of cancers of the lymph nodes and spleen that spread to other parts of the body
 - **Features:**
 - Causes lymph node enlargement
 - Can spread to other parts
 - Symptoms: Fever, weight loss, loss of appetite (B symptoms)
 - **Types:**
 - Hodgkin's lymphoma
 - Non-Hodgkin's lymphoma
 - **🔑 Key:** Lymph tissue + spread + B symptoms = lymphoma
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Glioma

- **Cell of origin:** Glial cells (cells that support nerve cells)
 - **Definition:** A brain tumor arising from glial cells
 - **Types:**
 - **Glioblastoma multiforme:** Fast-growing, cancerous, often in cerebrum (adults)
 - **🔑 Key:** Glial cells + brain = glioma
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4. Specific Brain Tumors

Medulloblastoma

- **Location:** Cerebellum (controls posture and balance)
- **Age:** Mainly children
- **Type:** Cancerous
- **🔑 Key:** Cerebellum + children = medulloblastoma

🔑 Exam Trap: Cerebellum (not cerebrum) + children (not adults)

Glioblastoma Multiforme

- **Location:** Cerebrum (adults)
 - **Type:** Fast-growing, cancerous brain tumor
 - **Cell origin:** Glial cells
 -  **Key:** Cerebrum + adults + glial = glioblastoma
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Pituitary Adenoma

- **Location:** Pituitary gland
 - **Type:** Non-cancerous (benign)
 - **Features:** Can cause hormonal effects depending on type
 -  **Key:** Pituitary + benign = adenoma
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5. Childhood Tumors

Neuroblastoma

- **Location:** Adrenal glands or sympathetic nervous system
 - **Age:** Children (childhood cancer)
 - **Type:** Cancerous
 -  **Key:** Adrenal/sympathetic + children = neuroblastoma
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Retinoblastoma

- **Location:** Retina
 - **Age:** Infants and children
 - **Type:** Hereditary, cancerous
 -  **Key:** Retina + hereditary + children = retinoblastoma
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6. Skin Cancers

Malignant Melanoma

- **Cell of origin:** Melanocytes (pigment cells)
 - **Definition:** The most serious type of skin cancer
 - **Features:**
 - Mole changes shape, darkens
 - Becomes painful and/or bleeds easily
 - Can metastasize
 -  **Key:** Melanocytes + serious + mole changes = melanoma
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Basal Cell Carcinoma

- **Cell of origin:** Basal cells (skin)
 - **Definition:** A type of cancer caused by exposure to large amounts of sunlight
 - **Location:** Commonly found on neck, face, and arms (sun-exposed areas)
 - **Type:** Less aggressive than melanoma
 -  **Key:** Sun exposure + exposed areas = basal cell carcinoma
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7. Special Association Tumors

Mesothelioma

- **Location:** Lining of the lungs and chest cavity (pleura)
- **Type:** Cancerous
- **Association:** Often associated with exposure to asbestos dust
- **Key:** Asbestos + lung/chest lining = mesothelioma

👉 **Exam Trap:** High-yield occupational exposure association

Burkitt's Lymphoma

- **Cell of origin:** Lymph tissue
- **Location:** Most frequently occurs in abdomen, ovaries, and bones of the face
- **Associations:**
 - Malaria
 - Epstein-Barr virus (EBV)
- **Key:** Malaria + EBV + locations = Burkitt's lymphoma

👉 **Exam Trap:** VERY high-yield - malaria + EBV association

8. Nerve Tissue Tumors

Neurofibroma

- **Type:** Non-cancerous (benign) tumor occurring in nerve tissue
- **Association:** Part of neurofibromatosis
- **Key:** Benign + nerve = neurofibroma

Neurofibromatosis

- **Definition:** A condition in which connective tissue tumors occur on nerves in the skin
- **Also called:** Von Recklinghausen's disease
- **Type:** Genetic disorder
- **Features:** Can affect multiple systems
- **Key:** Nerve tumors + skin + genetic = neurofibromatosis

9. High-Yield Exam Discrimination Table

Tumor Type	Cell of Origin	Key Location	Age	Associations
Carcinoma	Epithelium	Organ lining	Any	-
Sarcoma	Connective tissue	Various	Any	-
Leukemia	Bone marrow	Blood	Any	-
Lymphoma	Lymph tissue	Nodes, spleen	Any	-
Glioma	Glial cells	Brain (cerebrum)	Adults	-
Medulloblastoma	-	Cerebellum	Children	-
Neuroblastoma	-	Adrenal/sympathetic	Children	-
Retinoblastoma	-	Retina	Children	Hereditary

Melanoma	Melanocytes	Skin	Any	Sun exposure
Basal cell	Basal cells	Skin (sun-exposed)	Any	Sun exposure
Mesothelioma	-	Lung/chest lining	Any	Asbestos
Burkitt's	Lymph tissue	Abdomen/ovaries/face	Any	Malaria, EBV
Pituitary adenoma	-	Pituitary	Any	Benign

10. ABRET Exam Pearls

Critical Classification Rules

1. **Cell of origin determines name:**

- Epithelium → Carcinoma
- Connective tissue → Sarcoma
- Bone marrow → Leukemia
- Lymph tissue → Lymphoma
- Glial cells → Glioma

2. **Location + age help identify:**

- Cerebellum + children = Medulloblastoma
- Cerebrum + adults = Glioblastoma
- Adrenal + children = Neuroblastoma
- Retina + children = Retinoblastoma

3. **Associations are high-yield:**

- Asbestos → Mesothelioma
- Malaria + EBV → Burkitt's lymphoma
- Sun exposure → Basal cell carcinoma, Melanoma

Common Exam Traps

- Mixing carcinoma (epithelium) with sarcoma (connective tissue)
 - Confusing medulloblastoma (cerebellum, children) with glioblastoma (cerebrum, adults)
 - Forgetting that benign tumors don't spread (no metastasis)
 - Missing high-yield associations (asbestos, malaria/EBV)
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11. Quick Reference Summary

Cell of Origin → Tumor Name

- **Epithelium** → Carcinoma
- **Connective tissue** → Sarcoma
- **Bone marrow** → Leukemia
- **Lymph tissue** → Lymphoma
- **Glial cells** → Glioma
- **Melanocytes** → Melanoma

Brain Tumors by Location

- **Cerebrum (adults)** → Glioblastoma
- **Cerebellum (children)** → Medulloblastoma
- **Pituitary** → Pituitary adenoma

Childhood Tumors

- **Adrenal/sympathetic** → Neuroblastoma
- **Retina** → Retinoblastoma
- **Cerebellum** → Medulloblastoma

High-Yield Associations

- **Asbestos** → Mesothelioma
- **Malaria + EBV** → Burkitt's lymphoma
- **Sun exposure** → Basal cell carcinoma, Melanoma

Next Steps:

- Memorize cell of origin classification system
- Learn location + age combinations
- Master high-yield associations
- Practice distinguishing benign vs malignant
- Understand metastasis process