



Oncology Advanced Knowledge List

Diagnostic Testing

- I. Imaging
 - a. Ultrasonography
 - i. Thoracic
 - ii. Abdominal
 - iii. Echocardiogram
 - b. Radiography
 - i. Thoracic
 - ii. Abdominal
 - iii. Contrast
 - c. Computed Tomography (CT)
 - d. Magnetic Resonance Imaging (MRI)
 - e. Positron Emission Tomography (PET)
 - f. Bone scan
 - g. Thyroid scan
- II. Laboratory Tests
 - a. CBC
 - b. Chemistry profile
 - c. Urinalysis
 - d. Clotting times
 - e. Cytology
 - f. Histopathology
 - g. Immunocytochemistry
 - h. Immunohistochemistry
 - i. Electrophoresis
 - i. Serum
 - ii. Urine
 - j. Serum IgA Quantitation

- III. Procedures
 - a. Biopsy principles
 - b. Fine needle aspirate (FNA)
 - i. External
 - ii. Ultrasound-guided
 - c. Bone marrow aspirate
 - d. Blood pressure measurement
 - e. Electrocardiogram

Clinical pathology

- I. Tumor vs neoplasm
- II. Tumor biology between species/breeds (e.g., Boxers and mast cell tumors [MCTs])
- III. Pseudoneoplasms (e.g., lick granulomas)
- IV. Characteristics of benign vs. malignant tumors
- V. Tumor biology/origins
 - a. Mesenchymal
 - b. Epithelial
 - c. Round cell
 - d. Melanoma

Pathophysiology of neoplasms

- I. Clinical signs, history, physical exam findings for each tumor listed [below](#)
- II. Causes and pathophysiology of each disease
- III. Pathology, cytology, histologic class
- IV. Staging for each disease
 - a. World Health Organization (WHO)
 - b. Tumor Node Metastasis (TNM)
- V. Treatment options for each disease
 - a. Surgery (including cryotherapy, hyperthermia, photodynamic therapy)
 - b. [Radiation therapy](#) (including brachytherapy, tomotherapy)
 - c. [Chemotherapy](#) (including administration, safety, and major goals)
 - d. Biological response modification
 - e. Combinations of above
- VI. Prognosis for each disease
- VII. Knowledge of remission status ([RECIST](#) method)

- VIII. Tumor sites of the dog and cat
- a. Skin and subcutis
 - b. Gastrointestinal (GI) system
 - i. Oral cavity (hard and soft palates, lips, cheeks)
 - ii. Tongue
 - iii. Salivary gland
 - iv. Esophageal
 - v. Exocrine pancreas
 - vi. Gastric
 - vii. Hepatic
 - viii. GI Tract (both small and large intestine)
 - ix. Perianal
 - x. Anal sac
 - xi. Recto-anal
 - xii. Peritoneal
 - c. Cardiovascular system
 - d. Respiratory system
 - i. Nasal planum
 - ii. Nasal cavity
 - iii. Laryngeal
 - iv. Tracheal
 - v. Lung
 - vi. Mediastinum
 - e. Skeletal system (appendicular and axial)
 - i. Bone
 - ii. Joint
 - iii. Fat
 - f. Endocrine system
 - i. Pituitary
 - ii. Thyroid
 - iii. Pancreas
 - iv. Adrenal
 - g. Reproductive system
 - i. Uterus
 - ii. Ovary
 - iii. Vagina
 - iv. Vulva
 - v. Mammary glands
 - vi. Testicles
 - vii. Prostate
 - viii. Penis
 - ix. Prepuce

- h. Urinary tract
 - i. Kidney
 - ii. Bladder
 - iii. Ureter
 - iv. Urethra
- i. Nervous system
 - i. Brain
 - ii. Pituitary
 - iii. Spine
 - 1. Extradural vertebral
 - 2. Extradural soft tissue
 - 3. Intradural, extramedullary
 - 4. Intramedullary
- j. Ocular, retrobulbar
- k. Otic, ceruminous gland, bulla
- l. Carcinomatosis
- m. Mesothelioma
- n. Soft tissue sarcomas

Treatment

Chemotherapy / immunotherapy agents and protocols

- I. Common chemotherapy protocols
 - a. “Standard-of-care” protocols
 - b. Rescue protocols
 - c. Combination therapies
- II. Chemotherapeutic/immunologic classes and mechanism of action
 - a. Alkylating agents
 - b. Antitumor antibiotics
 - c. Platinum agents
 - d. Enzymes
 - e. Mitotic inhibitors
 - f. Vaccines
 - g. Monoclonal antibodies
 - h. Tyrosine kinase inhibitors
- III. Nadirs
- IV. Side effects/adverse reactions and treatments
 - a. Chemotherapy-induced congestive heart failure
 - b. Acute tumor lysis syndrome
 - c. Overdoses of chemotherapeutic agents

- V. Common medications for chemotherapy side effects
 - a. Antiemetics
 - b. Appetite stimulants
 - c. Antidiarrheals
 - d. Sepsis prevention
 - e. Urothelial bladder wall protection
- VI. Safe handling and disposal
 - a. Chemotherapeutics
 - b. Animal waste
- VII. Administration techniques
- VIII. Extravasation protocols
- IX. Chemoprotectants
- X. Chemotherapy resistance

Non-chemotherapeutics used in the treatment of cancer

- I. Anti-inflammatories
- II. Corticosteroids
- III. Bisphosphonates

Radiation therapy

- I. Basic radiobiology and physics
- II. Differences in treatment protocols
 - a. Orthovoltage vs. megavoltage
 - b. IMRT vs. SRT
 - c. Definitive vs. palliative therapy
 - d. Hypofractionation vs. hyperfractionation
- III. Radiation safety
- IV. Side effects and treatments for side effects
 - a. Acute
 - b. Late
 - c. Consequential
 - d. Early delayed
 - e. Acute radiation sickness
 - f. Radiation-induced sarcoma
- V. Radiation-induced congestive heart failure

Patient management

- I. Client communication and education
 - a. Chemotherapy
 - b. Pain management
 - c. Side effect management
- II. Classify and suggest pain management medications
- III. Nutritional support of the cancer patient
- IV. Quality of life (QOL) evaluation and measurement
- V. Grief stages and owner counselling

Miscellaneous

- I. Metabolic emergencies
- II. Transfusion therapy
- III. Paraneoplastic syndromes
- IV. Disseminated intravascular coagulation
- V. Hematopoietic and neuropoietic growth factors
- VI. Utilize multiple body measurement systems (pounds, kg, m²)

Tumor names (alphabetical)

- Acanthomatous epulis
- Adenocarcinoma (ADC)
- Adenoma
- Astrocytoma
- Basal cell
- B-cell insulin-secreting
- Bile duct ADC
- Bronchogenic CA
- Canine Lymphoma (Lymphoid Leukemia)
- Canine myeloproliferative disorders and histiocytosis
- Carcinoma (CA)
- Carcinomatosis
- Ceruminous gland ADC
- Chemodectoma
- Chondrosarcoma
- Ependymoma
- Feline Lymphoma and Leukemia
- Feline retrovirus
- Fibroma
- Fibrosarcoma (FSA)
- Glioma
- Granulomatous meningoencephalitis (GME)
- Hemangiopericytoma (HPC)
- Hemangiosarcoma (HAS)
- Histiocytoma
- Hyperplasia
- Infiltrative lipoma
- Insulinoma
- Leiomyoma
- Leiomyosarcoma
- Leydig cell
- Lipoma
- Liposarcoma
- Lymphangiosarcoma
- Malignant fibrous histiocytoma
- Melanoma
- Mast cell tumor (MCT)
- Meningioma
- Multiple myeloma
- Myeloproliferative disorders
- Myoblastoma
- Myxosarcoma

- Neurofibrosarcoma (NFSA)
- Osteosarcoma (OSA)
- Papilloma
- Perianal adenoma
- Perianal gland ADC
- Peripheral nerve sheath tumor (PNST)
- Pheochromocytoma
- Pituitary CA
- Plasmacytoma
- Pulmonary CA
- Rhabdomyosarcoma
- Schwannoma
- Sebaceous gland ADC
- Seminoma
- Sertoli cell tumor
- Soft tissue sarcoma (STS)
- Spindle cell SA
- Squamous cell carcinoma (SCC)
- Squamous metaplasia
- Sweat gland (apocrine gland) CA
- Synovial cell SA
- Thymoma
- Thyroid CA
- Transitional cell carcinoma (TCC)
- Transmissible venereal tumor (TVT)
- Trichoblastoma
- Trichoepithelioma
- Undifferentiated CA
- Undifferentiated SA