Benign 😇	Malignant 😈
Bene = good	Laius = bad
Encapsulated	Not encapsulated
Localized	Widely infiltrative – spreads
Remains at original site	Metastasizes
Cells are well differentiated	Cells are poorly differentiated
Slow growth	Appears to grow rapidly – rapid division
Does not recur when removed	Likely to recur when removed
Minimally destructive to surrounding area unless pressure or obstruction	Destructive! -Causes death unless treated -Causes infection, necrosis, hemorrhage -Produces cachexia

Grade – Need biopsy; looks at the appearance of cells	**Stage – describes the extent (spread); not cell appearance**
Grade I: cells differ slightly; well differentiated	**Stage 0**: in-situ (localized, on surface)
Grade II: more abnormal; moderately differentiated	**Stage I**: localized- limited to site of origin
Grade III: very abnormal; poorly differentiated	**Stage II**: limited local spread *(direct extension)*
Grade IV: immature, primitive; undifferentiated (embryonic state)	**Stage III**: regional spread, extensive local spread *(direct extension)*
Grade X: cannot assess	**Stage IV**: metastasis – distant sites *(via lymph, blood)*

Diagnostic	**Radical**	**Prophylactic**	**Palliative**	**Supportive**	**Reconstructive**

Confirm or R/O CA (type & classification)	Most widely performed surgery	Preventative	Focus on comfort	Maximize bodily function or facilitates treatment	Rehabilitation surgery: Assists with changes in body image
Biopsy is procedure choice	Goal= remove all of tumor with minimal structure/function changes	Remove pre-cancerous lesions while still harmless and nonmalignant	-Slow tumor growth -Decrease size of existing tumor	Vascular Access Devices: Assists with treatment; different types	Repair of anatomical defect, improves function, improves cosmetic appearance
Decrease use of exploratory surgeries for staging with MRI use	NOT CURATIVE FOR METS	Persons with strong family history of high risk cancer's	Relieves manifestations of cancer from tumor when cure is no longer possible	<u>Relief of obstruction</u>- colostomy, ileal conduit <u>Supportive nutrition</u>- PEG tube, G tube, J tube	-May be done in multiple stages -May be weeks to months after first surgery to remove tumor
Helps determine treatment plan	Definitive- excise as much as possible (lymphatic, margin-surrounding tissue) ex: mastectomy, colectomy	Ex: polyp removal during colonoscopy, mole removal, precancerous skin lesions, mastectomy for BRCA gene	Ex: removing necrotic tissue	Ex: portacath, PICC line, PEG tube, colostomy	Ex: mammoplasty/augmentation after mastectomy

Radiation Therapy – Rad ***Cure, control, palliative***	**Chemotherapy – Chemo** ***Cure, control, palliative***

Local therapy Internal-brachytherapy External-teletherapy	Treatment with chemicals- **affects ALL cells!** Oral, IV, IM, intracavity, subcutaneous, topical, intrathecal, intraarterial, perfusion
Tumor must be radiosensitive! dose: radiosensitivity, normal tissue tolerance, and volume to be eradicated Total dose divided into several smaller doses (5 days/week x 30 treatment sessions)	-Works to interrupt cell cycle: Some are **cell cycle specific** Others **nonspecific** -Single agent, Combined agents
Primary (only tx), combined (with sx or chemo), prophylaxis (treat before disease is evident), palliative (help alleviate symptoms of mets)	-Adjuvant: used in conjunction with surgery, radiation, to increase cure potential -Height/Weight
<u>Teletherapy:</u> noninvasive, allows for greater penetration, done outpatient, need shielding devices, markings for reference (same area treated), exact position, side effects: normal tissue affected in the area being treated! Fatigue, skin toxicity, anorexia, skin reactions, site specific Skin changes: reddened, area darkened, dry or wet desquamation, hair loss-local	<u>Vesicant</u>: blister or tissue destruction, if infiltrated = necrosis <u>Irritant:</u> pain at site with or without inflammatory reaction, damage vein (phlebitis, sclerosis) <u>Extravasation</u>: leakage of med into surrounding tissue = tissue necrosis *Use of VADs has helped decrease these side effects
<u>Brachytherapy:</u> radioactive isotopes inserted or permanent implants, solution/implantation/systemic; sealed or unsealed; physical isolation (time distance shielding); sealed-once removed, no longer radioactive; unsealed-secretions contaminated	<u>Chemoprevention</u>: substances taken to prevent cancer Done in trials (phases) *Vitamins, minerals, natural products, synthetic products*
Side effects: may last up to 4-6 weeks after completed or forever depending on location/dosage, etc; may be site specific (ex: diarrhea with rad to pelvis) <u>Skin care</u>: mild soap, warm water; non-perfume lotion; area needs air; loose clothing- cotton; gentle detergents; avoid direct sun; avoid heating sources; avoid swimming, chlorine; avoid irritants, powders, and perfumes -internal burns!, prevent infection, promote healing ***<u>Late effects: ↑ risk for secondary malignancies</u>***	Side effects: (rapidly proliferating cells; depends on agent used too) **Alopecia** – (all body hair) 2-3 weeks after initial dose, temporary, scarves, wigs; **N/V/D** – bland light meals before chemo, premedicate; **stomatitis** - ↑ po fluids, alcohol free mouthwash; **Dysgeusia** – loss of taste; **BMD** – assess for bleeding, s/sx of infection, s/sx anemia, will need CSF to correct (epogen, neupogen, neumega) ***<u>Late effects: ↑ risk for secondary malignancies</u>***

Immunotherapy	Stimulates person's own immune system to fight cancer;	S/fx: flu-like symptoms, anorexia, wt loss, fatigue, N/V, photosensitivity, tachycardia, orthostatic

(cytokines, vaccines, monoclonal antibodies)	-some types attack ca cells directly -others create an environment ca doesn't want to grow	hypotension, CNS, hepatotoxicity **acetaminophen & fluids* Interferon: flu-like symptoms, look for neurologic problems Interleukin 2: confusion, hypotension, dysrhythmias, pulmonary edema
Targeted Therapy (form of immunotherapy) (tyrosine kinase inhibitors, monoclonal antibodies, angiogenesis inhibitors, proteasome inhibitors)	- Interferes with specific cell receptors and pathways -more selective -Personalized therapy -used in combo r/t cancer cells becoming resistant	See above
Colony Stimulating Factors (bone marrow depression)	Regulate the production, maturation, and function of hematopoiesis	-Epogen/Procrit: ↑ erythrocytes; for Hgb < 10 -Neupogen/Neulasta: ↑ neutrophils, give 24-72 hrs after last chemo dose to prevent chemo induced neutropenia; s/fx bone pain, N/V -Nuemega: ↑ platelets
Hormone Therapy (testosterone, estrogen)	The drug can block the effects of the hormone and stop the growth of cancer cells	Ex: Tamoxifen blocks the effects of estrogen in breast tissue (hormone + breast cancer)
Corticosteroids	Used in combo with other meds (especially several antineoplastics)	Acts as anti-inflammatories, helps with certain side effects of medications
Gene therapy	Attempt to alter genetic material in order to fight or prevent disease (still investigational)	Still in clinical trials, unaware of all potential side effects, especially long term
Vaccines	Prevent against and treatment (immunotherapy); treatment vaccines work against the cancer by boosting immune system	-Gardasil vaccine prevents cervical cancer from HPV -Provenge vaccine against prostate cancer- still in clinical trials
Bone Marrow Transplants (hematopoietic stem cell transplantation)	-Infused bone marrow from donor matched to recipient or receives own marrow (harvested before treatment) -Allows for more doses of chemo, replaces diseased marrow, alters immune status -graft vs. host disease: t-cells from donated marrow think recipient as foreign and attack organs -bacterial/viral/fungal infections common	Risk for rejection! -s/fx: infection, bleeding, anemia -sources: bone marrow, peripheral blood, umbilical cord -harvesting: done in OR, iliac crest or sternum, samples cryopreserved

TNM Classification System

Tumor	To Tis T1, T2,T3,T4	No evidence of primary tumor Tumor in situ Ascending degrees of tumor size and involvment
Nodes	No N1a, N2a N1b, N2b, N3b Nx	No abnormal regional nodes Regional nodes-no metastasis Regional lymph nodes-mets suspected; Regional nodes cannot be assessed clinically
Metastasis	Mo M1, M2, M3	No evidence of distant metastasis Ascending degrees of metastatic involvement of host including distant nodes

Pain	Analgesics, narcotics, CAM methods; advanced cancer: pain control vs relief, OTC
Reduced Immunity: Bone Marrow Suppression	Rad-local, chemo-systemic (more profound), other: cancer cells crowding out normal cells, combination of treatments anemia: happens later, 2-3 months into tx; s/sx: Fatigue, SOB, pale, dizzy, lightheaded, chest tightness, HA thrombocytopenia: remains low for 7-10 days; risk for bleeding Leukopenia/Neutropenia: remains low for 7-10 days, most common, fever = medical emergency; risk for infection; Neutropenic precautions/reverse isolation!! Pancytopenia: all counts low CSF- meds to turn on bone marrow
GI	N/V: small, frequent meals, avoid odors, candies, fluids, crackers, bland diet, antiemetics, avoid extreme temps, avoid fluids with food Mucositis/stomatitis/esophagitis: saline rinses, magic mouthwash, alternative nutrition, moist voids better Diarrhea: hydrate, bowel rest, antidiarrheal 's, bland diet, void extreme temps Constipation: stool softeners, laxatives, fluids, fiber, ambulate Anorexia: small freq meals, high protein, high calorie, supplements Advanced cancer: malnutrition- complications from, cachexia, need high protein high calorie diet
Cardiac	Baseline and periodic ECHO's
Respiratory	Treat the cause, oxygen, inhalers, bronchodilators, tach or vent
Bladder	Hydrate, catheters, bladder training, antibiotics, pyridium, incontinence care
Motor/Sensory	Fatigue: pace activities, peak energy times, mild exercise, prioritize, rest periods Neuropathy: balance training, nerve pain - meds
Lymphedema	Wraps, exercises, risk for cellulitis