A Comprehensive Clinical Reference

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Areas of Expertise

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1. Brain & Spine Cancer

Overview

Brain and spine cancers include primary tumors arising from brain/spinal cord tissue and metastatic lesions. Types include glioblastoma, astrocytoma, meningioma, medulloblastoma, and spinal cord tumors.

Staging

Grade I-II: Low-grade, slow-growing

Grade III: Anaplastic, malignant

Grade IV: Glioblastoma, most aggressive

Treatment Modalities

Surgery	Maximal safe resection is the primary goal. Stereotactic biopsy for inaccessible lesions. Gross total resection improves survival in gliomas.
Radiation Therapy	External beam RT (60 Gy in 30 fractions) post-surgery for high-grade gliomas. Stereotactic radiosurgery (SRS) for small lesions and brain metastases.
Chemotherapy	Temozolomide (TMZ) concurrent with RT, then adjuvant for 6 cycles in GBM. Bevacizumab for recurrent GBM. PCV regimen for oligodendroglioma.
Targeted Therapy	IDH1/2 inhibitors (ivosidenib, enasidenib) for IDH-mutant gliomas. BRAF inhibitors for BRAF V600E-mutant tumors.
Immunotherapy	Checkpoint inhibitors under investigation. Tumor Treating Fields (TTFields) approved for GBM.

Follow-up Protocol

✔ MRI brain every 2-3 months for first 2 years, then every 6 months.

2. Breast Cancer

Overview

Most common cancer in women. Includes ductal carcinoma in situ (DCIS), invasive ductal carcinoma (IDC), invasive lobular carcinoma (ILC), HER2+, triple-negative, and hormone receptor-positive subtypes.

Staging

- Stage I: Tumor <2 cm, no nodal involvement
- Stage II: Tumor 2-5 cm or limited nodal spread
- Stage III: Locally advanced, extensive nodal involvement
- Stage IV: Distant metastasis

Treatment Modalities

Surgery	Lumpectomy + radiation or mastectomy (with/without reconstruction). Sentinel lymph node biopsy; axillary dissection if positive.
Radiation Therapy	Post-lumpectomy whole-breast RT (40-50 Gy). Post-mastectomy RT for high-risk patients. Hypofractionated RT acceptable for most patients.
Chemotherapy	Neoadjuvant/adjuvant chemo for high-risk, HER2+, triple-negative. Regimens: AC-T, TC, dose-dense AC-paclitaxel. Capecitabine for residual disease after neoadjuvant.
Targeted Therapy	Trastuzumab + pertuzumab for HER2+ (12 months). T-DM1/T-DXd for residual/metastatic HER2+. CDK4/6 inhibitors (palbociclib, ribociclib) + aromatase inhibitor for HR+/HER2-.
Hormone Therapy	Tamoxifen (premenopausal) or aromatase inhibitors (postmenopausal) for HR+ disease. 5-10 years of endocrine therapy.
Immunotherapy	Pembrolizumab + chemo for triple-negative, PD-L1+ metastatic or high-risk early-stage disease.

Follow-up Protocol

✔ Clinical exam every 3-6 months for 3 years, then annually. Annual mammography.

3. Cervical Cancer

Overview

Predominantly caused by HPV (types 16, 18). Includes squamous cell carcinoma (70%) and adenocarcinoma. Preventable through vaccination and screening.

Staging

- Stage I: Confined to cervix
- Stage II: Beyond cervix but not to pelvic wall
- Stage III: Pelvic wall/lower vagina involvement
- Stage IV: Distant spread

Treatment Modalities

Surgery	Radical hysterectomy + pelvic LN dissection for Stage IA2-IB1. Fertility-sparing trachelectomy for selected Stage IA-IB1.
Chemoradiation	Concurrent cisplatin-based chemoRT is standard for Stage IB2-IVA. External beam RT 45 Gy + brachytherapy boost.
Chemotherapy	Cisplatin + paclitaxel ± bevacizumab for metastatic/recurrent disease. Pembrolizumab for PD-L1+ recurrent/metastatic.
Targeted Therapy	Bevacizumab (antiangiogenic) in combination for advanced disease. Tisotumab vedotin for recurrent/metastatic disease.

Follow-up Protocol

✔ Pelvic exam + Pap smear every 3-6 months for 2 years, then annually.

4. Colorectal Cancer

Overview

Fourth most common cancer globally. Arises from colorectal epithelium, usually as adenocarcinoma. Associated with FAP, HNPCC, inflammatory bowel disease.

Staging

- Stage I: T1-T2, N0
- Stage II: T3-T4, N0
- Stage III: Any T, N1-N2
- Stage IV: Distant metastasis (liver, lung)

Treatment Modalities

Surgery	Colectomy with adequate margins and lymphadenectomy. TME (total mesorectal excision) for rectal cancer. Laparoscopic approach preferred.
Radiation Therapy	Neoadjuvant chemoRT (long-course 50.4 Gy or short-course 25 Gy) for locally advanced rectal cancer.
Chemotherapy	FOLFOX or CAPOX adjuvant for Stage III colon. FOLFIRI/FOLFOX ± biologics for metastatic disease.
Targeted Therapy	Bevacizumab or cetuximab/panitumumab (RAS wild-type) for metastatic CRC. BRAF inhibitors for BRAF V600E-mutant tumors.
Immunotherapy	Pembrolizumab first-line for MSI-H/dMMR metastatic CRC. Nivolumab for refractory MSI-H.

Follow-up Protocol

✔ CEA every 3-6 months, CT chest/abdomen/pelvis annually for 3-5 years. Colonoscopy at 1 year.

5. Endometrial Cancer

Overview

Most common gynecological cancer. Type I (endometrioid, estrogen-related) and Type II (serous, clear cell, carcinosarcoma - more aggressive).

Staging

- Stage I: Confined to uterus
- Stage II: Cervical stromal invasion
- Stage III: Pelvic/nodal extension
- Stage IV: Bladder/bowel/distant spread

Treatment Modalities

Surgery	Total hysterectomy + bilateral salpingo-oophorectomy + pelvic/para-aortic LN dissection. Minimally invasive approach preferred.
Radiation Therapy	Vaginal brachytherapy for Stage IB/II (intermediate risk). External beam pelvic RT for high-risk or advanced disease.
Chemotherapy	Carboplatin + paclitaxel for Stage III-IV or high-grade histology. Doxorubicin-based regimens as alternative.
Targeted/Immunotherapy	Pembrolizumab + lenvatinib for advanced/recurrent non-MSI-H. Pembrolizumab monotherapy for MSI-H/dMMR. HER2-targeted therapy for serous HER2+ tumors.
Hormone Therapy	Progestins/megestrol acetate for low-grade, hormone receptor-positive recurrent disease. Fertility-sparing in selected young patients.

Follow-up Protocol

✔ Pelvic exam every 3-6 months for 2 years, then annually. CA-125 if elevated at diagnosis.

6. Esophageal Cancer

Overview

Squamous cell carcinoma (proximal/mid) and adenocarcinoma (distal/GEJ). Risk factors: GERD, Barrett's esophagus, smoking, alcohol.

Staging

- Stage I: Mucosa/submucosa involvement
- Stage II: Muscularis propria or regional nodes
- Stage III: Adventitia/extensive nodes
- Stage IV: Distant metastasis

Treatment Modalities

Surgery	Esophagectomy (Ivor Lewis, McKeown, transhiatal) for resectable disease. Minimally invasive approach increasingly used.
Chemoradiation	Neoadjuvant CROSS protocol (carboplatin/paclitaxel + RT 41.4 Gy) improves resectability and survival.
Chemotherapy	FLOT (fluorouracil, leucovorin, oxaliplatin, docetaxel) for GEJ adenocarcinoma. Cisplatin/5-FU or FOLFOX for SCC.
Targeted Therapy	Trastuzumab for HER2+ adenocarcinoma (first-line). Ramucirumab for second-line metastatic.
Immunotherapy	Nivolumab ± ipilimumab or pembrolizumab for advanced/metastatic, PD-L1+. Checkpoint inhibitors in perioperative setting under investigation.

Follow-up Protocol

✔ CT chest/abdomen every 6 months for 2 years. Upper endoscopy as clinically indicated.

7. Head and Neck Cancer

Overview

Includes oral cavity, oropharynx, larynx, hypopharynx, nasopharynx, salivary gland cancers. Predominantly SCC. HPV-related oropharyngeal cancer has better prognosis.

Staging

Stage I-II: Localized, small tumors
Stage III: Larger tumors or single ipsilateral node
Stage IVA-B: Locally advanced
Stage IVC: Distant metastasis

Treatment Modalities

Surgery	Primary resection for oral cavity cancers. Transoral robotic/laser surgery for oropharynx. Neck dissection for nodal disease.
Radiation Therapy	Definitive or adjuvant IMRT (66-70 Gy primary, 54-60 Gy elective nodes). Hyperfractionation for selected cases.
Chemotherapy	Concurrent cisplatin (100 mg/m² q3w or 40 mg/m² weekly) with definitive RT. Induction TPF for organ preservation.
Targeted Therapy	Cetuximab + RT for cisplatin-ineligible patients. Pembrolizumab ± cetuximab for recurrent/metastatic.
Immunotherapy	Pembrolizumab (PD-L1 CPS ≥1) or nivolumab for platinum-refractory R/M HNSCC.

Follow-up Protocol

✔ Clinical exam + endoscopy every 1-3 months year 1, every 2-6 months year 2, annually thereafter. PET-CT at 3 months post-treatment.

8. Kidney Cancer

Overview

Renal cell carcinoma (RCC) is most common (clear cell, papillary, chromophobe subtypes). Transitional cell carcinoma of renal pelvis also occurs.

Staging

Stage I: Tumor ≤7 cm, confined to kidney
Stage II: Tumor >7 cm, confined to kidney
Stage III: Extends to major veins/adrenal/perirenal fat
Stage IV: Beyond Gerota's fascia or distant mets

Treatment Modalities

Surgery	Radical or partial nephrectomy (laparoscopic/robotic preferred). Cytoreductive nephrectomy in select metastatic patients.
Targeted Therapy	Sunitinib, pazopanib, cabozantinib, axitinib (VEGFR inhibitors). Everolimus, temsirolimus (mTOR inhibitors) for second-line.
Immunotherapy	Nivolumab + ipilimumab (first-line intermediate/poor risk). Pembrolizumab + axitinib or lenvatinib for first-line. Nivolumab monotherapy for second-line.
Radiation Therapy	Stereotactic body RT for oligometastatic disease and palliation. Not primary treatment for primary tumor.

Follow-up Protocol

✔ CT chest/abdomen/pelvis every 3-6 months for 3 years, then annually.

9. Leukemia

Overview

Cancers of blood and bone marrow. Major types: AML, ALL, CML, CLL. Treatment varies significantly by type and cytogenetics/molecular profile.

Staging

AML: Based on cytogenetics (favorable/intermediate/adverse)
ALL: Ph+ vs Ph-, WBC count, CNS involvement
CML: Chronic/accelerated/blast phase
CLL: Rai or Binet staging

Treatment Modalities

Chemotherapy-AML	Induction: '7+3' (cytarabine 7 days + daunorubicin/idarubicin 3 days). Consolidation: high-dose cytarabine. Midostaurin for FLT3+.
Chemotherapy-ALL	Multi-agent induction (vincristine, prednisone, L-asparaginase, anthracycline). CNS prophylaxis. Maintenance for 2-3 years.
Targeted Therapy	Imatinib/dasatinib/ponatinib for CML and Ph+ ALL. Venetoclax for AML (with azacitidine) and CLL. Ibrutinib/acalabrutinib for CLL.
Stem Cell Transplant	Allogeneic SCT for high-risk AML/ALL in CR1. Autologous SCT for some lymphomas/myeloma.
Immunotherapy	Blinatumomab (CD3/CD19 bispecific) for relapsed ALL. CAR-T cell therapy (tisagenlecleucel) for relapsed/refractory B-ALL.

Follow-up Protocol

✔ CBC with differential weekly during consolidation, then monthly. Bone marrow biopsy per protocol. MRD monitoring.

10. Liver Cancer

Overview

Hepatocellular carcinoma (HCC) most common primary liver cancer. Risk factors: cirrhosis, HBV/HCV, NAFLD. Cholangiocarcinoma (intrahepatic/extrahepatic) also important.

Staging

- BCLC 0-A: Very early to early stage
- BCLC B: Intermediate
- BCLC C: Advanced (portal invasion/metastasis)
- BCLC D: End-stage

Treatment Modalities

Surgery	Hepatic resection for BCLC 0-A with adequate liver reserve. Liver transplantation for Milan criteria (≤3 nodules ≤3 cm or single ≤5 cm).
Local Ablation	RFA or microwave ablation for ≤3 cm tumors. Excellent outcomes comparable to surgery for early HCC.
TACE/TARE	Transarterial chemoembolization (TACE) for BCLC B. Yttrium-90 TARE as bridge to transplant or definitive treatment.
Systemic Therapy	Sorafenib or lenvatinib first-line for advanced HCC. Regorafenib/cabozantinib/ramucirumab second-line.
Immunotherapy	Atezolizumab + bevacizumab (first-line, Child-Pugh A). Durvalumab + tremelimumab as alternative. Nivolumab/pembrolizumab second-line.

Follow-up Protocol

✔ AFP + ultrasound every 3 months post-treatment. CT/MRI every 3-6 months.

11. Lung Cancer

Overview

Most common cause of cancer death globally. Non-small cell (NSCLC: adenocarcinoma, SCC, large cell) ~85% and small cell (SCLC) ~15%. Molecular profiling mandatory.

Staging

Stage I-II: Localized
Stage IIIA-B: Locally advanced/mediastinal involvement
Stage IIIC: Unresectable locally advanced
Stage IV: Metastatic (A: single site, B: multiple)

Treatment Modalities

Surgery	Lobectomy (gold standard) or segmentectomy for Stage I-II NSCLC. VATS/robotic preferred. Mediastinoscopy for staging.
Radiation Therapy	SBRT (54 Gy/3 fractions) for inoperable Stage I. Concurrent chemoRT (60 Gy) for Stage III. PCI for limited SCLC.
Chemotherapy	Cisplatin/carboplatin + pemetrexed (non-SCC) or paclitaxel (SCC). Etoposide + platinum for SCLC.
Targeted Therapy	EGFR: osimertinib (1st/2nd line). ALK: alectinib/lorlatinib. ROS1: crizotinib/entrectinib. KRAS G12C: sotorasib/adagrasib. MET exon 14: capmatinib. RET: selpercatinib.
Immunotherapy	Pembrolizumab monotherapy (PD-L1 ≥50%) or + chemo. Nivolumab + ipilimumab + chemo. Atezolizumab for SCLC. Durvalumab maintenance for Stage III.

Follow-up Protocol

✔ CT chest every 3-6 months for 2 years, then annually. Molecular testing at progression.

12. Lymphoma

Overview

Hodgkin lymphoma (HL) and Non-Hodgkin lymphoma (NHL: diffuse large B-cell, follicular, mantle cell, T-cell, Burkitt's). Highly treatable, especially HL.

Staging

Stage I: Single nodal region
Stage II: Two or more regions, same side of diaphragm
Stage III: Both sides of diaphragm
Stage IV: Extranodal/disseminated

Treatment Modalities

Chemotherapy-HL	ABVD (doxorubicin, bleomycin, vinblastine, dacarbazine) standard. BV-AVD (brentuximab vedotin replacing bleomycin) for advanced HL.
Chemotherapy-DLBCL	R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, prednisone) x 6 cycles. Polatuzumab vedotin + R-CHP for high-risk.
Radiation Therapy	Involved site RT for early-stage HL after chemo (30 Gy). Consolidative RT for bulky/residual disease.
Targeted Therapy	Rituximab (anti-CD20) for B-cell NHL. Ibrutinib for mantle cell/CLL. Venetoclax for relapsed/refractory.
Immunotherapy/CAR-T	Anti-PD-1 (pembrolizumab/nivolumab) for relapsed HL. CAR-T (axicabtagene ciloleucel, tisagenlecleucel) for relapsed/refractory DLBCL.

Follow-up Protocol

✔ PET-CT at end of treatment. CT every 6 months for 2 years, then annually.

13. Ovarian Cancer

Overview

Most lethal gynecologic cancer. Epithelial ovarian cancer (high-grade serous most common), germ cell tumors, sex cord-stromal tumors. BRCA1/2 mutations in 15-20%.

Staging

Stage I: Confined to ovaries/tubes
Stage II: Pelvic extension
Stage III: Abdominal/retroperitoneal nodes
Stage IV: Distant metastasis/pleural effusion

Treatment Modalities

Surgery	Primary cytoreductive surgery (complete gross resection goal). Interval debulking after 3 cycles NACT for selected patients. HIPEC in selected centers.
Chemotherapy	Carboplatin AUC5-6 + paclitaxel 175 mg/m² q3w x 6 cycles. Weekly paclitaxel (dose-dense) as alternative.
Targeted Therapy	Bevacizumab + chemo then maintenance (FIGO Stage III/IV). PARP inhibitors (olaparib, niraparib, rucaparib) maintenance for CR/PR after platinum-based chemo (especially BRCA-mutant).
Immunotherapy	Limited role currently. Pembrolizumab under investigation. Mirvetuximab soravtansine for FRα+ platinum-resistant disease.

Follow-up Protocol

✔ CA-125 + pelvic exam every 3 months for 2 years, then every 6 months. CT as clinically indicated.

14. Pancreatic Cancer

Overview

Pancreatic ductal adenocarcinoma (PDAC) - very poor prognosis. Often diagnosed late. Resectable (<20%), borderline resectable, locally advanced, or metastatic.

Staging

Resectable: No arterial contact, <180° portal vein
Borderline Resectable: >180° portal vein or <180° artery
Locally Advanced: Unresectable without distant mets
Metastatic: Liver, peritoneum, lungs

Treatment Modalities

Surgery	Pancreaticoduodenectomy (Whipple) for head tumors. Distal pancreatectomy + splenectomy for body/tail. Vascular reconstruction for borderline resectable.
Chemotherapy	Adjuvant FOLFIRINOX (mFOLFIRINOX) or gemcitabine + capecitabine for 6 months post-resection. Gemcitabine + nab-paclitaxel or FOLFIRINOX for metastatic.
Neoadjuvant	FOLFIRINOX or gemcitabine + nab-paclitaxel for borderline resectable/selected locally advanced. Followed by chemoRT then resection.
Targeted Therapy	Olaparib maintenance for BRCA1/2-mutant metastatic PDAC after platinum-based therapy. NTRK inhibitors for NTRK fusion.
Immunotherapy	Pembrolizumab for MSI-H/dMMR (rare, ~1%). Generally not effective in PDAC.

Follow-up Protocol

✔ CA 19-9 + CT chest/abdomen/pelvis every 3-6 months for 2 years.

15. Prostate Cancer

Overview

Most common cancer in men. Adenocarcinoma arising from peripheral zone. Gleason/Grade Group system used for risk stratification. PSA screening controversial.

Staging

Low Risk: T1-T2a, PSA <10, Gleason 6
Intermediate Risk: T2b-T2c or PSA 10-20 or Gleason 7
High Risk: T3a or PSA >20 or Gleason 8-10
Metastatic: Lymph nodes or distant spread

Treatment Modalities

Active Surveillance	For very low/low risk. PSA q6-12 months, biopsy q1-3 years. MRI-targeted biopsy for reclassification.
Surgery	Radical prostatectomy (robotic-assisted preferred) for localized disease. Pelvic LN dissection for intermediate/high risk.
Radiation Therapy	EBRT (78-81 Gy) or SBRT (35-40 Gy/5 fractions) ± brachytherapy boost. ADT x 6 months (intermediate) or 2-3 years (high risk) concurrent.
Hormone Therapy	LHRH agonists/antagonists (leuprolide, degarelix) + antiandrogens. Abiraterone + prednisone or enzalutamide for castration-resistant.
Chemotherapy	Docetaxel for metastatic CRPC (first-line). Cabazitaxel second-line. Docetaxel upfront for high-volume metastatic hormone-sensitive.
Targeted/Immunotherapy	Olaparib/rucaparib for BRCA1/2-mutant mCRPC. PSMA-targeted lutetium-177-PSMA-617. Sipuleucel-T immunotherapy for asymptomatic/minimally symptomatic mCRPC.

Follow-up Protocol

✔ PSA every 3-6 months for 5 years, then annually. Bone scan/CT as clinically indicated.

16. Skin Cancer

Overview

Includes melanoma (most deadly), basal cell carcinoma (BCC, most common), squamous cell carcinoma (SCC), and Merkel cell carcinoma. UV radiation is main risk factor.

Staging

Stage 0: In situ
Stage I-II: Localized (thickness, ulceration, mitotic rate for melanoma)
Stage III: Regional nodal/in-transit metastasis
Stage IV: Distant metastasis

Treatment Modalities

Surgery	Wide local excision (margins based on tumor type/thickness). Sentinel lymph node biopsy for melanoma ≥0.8 mm. Mohs surgery for BCC/SCC in critical areas.
Radiation Therapy	Adjuvant RT for high-risk SCC, Merkel cell, melanoma with positive nodes. Definitive RT for inoperable BCC/SCC.
Targeted Therapy	BRAF + MEK inhibitors (dabrafenib + trametinib, vemurafenib + cobimetinib) for BRAF V600E/K melanoma. Vismodegib/sonidegib for advanced BCC.
Immunotherapy	Nivolumab, pembrolizumab for advanced melanoma (first/second line). Ipilimumab + nivolumab for high-risk Stage III-IV. Avelumab for Merkel cell carcinoma.
Chemotherapy	Dacarbazine, temozolomide, paclitaxel for chemotherapy-refractory melanoma. Less used in era of immunotherapy.

Follow-up Protocol

✔ Skin exam every 3-6 months for 5 years (melanoma). Lymph node exam. Imaging per risk stratification.

17. Thyroid Cancer

Overview

Papillary (most common, excellent prognosis), follicular, medullary (RET mutations), and anaplastic (most aggressive). Incidence increasing due to improved detection.

Staging

Stage I: <55 yrs any T/N or ≥55 yrs T1-T2 N0

Stage II: <55 yrs any T/N M1 or ≥55 yrs T1-T2 N1

Stage III: ≥55 yrs T3a-T3b

Stage IV: T4 or M1 (≥55 yrs)

Treatment Modalities

Surgery	Total thyroidectomy for tumors >1 cm, bilateral, aggressive histology. Hemithyroidectomy for low-risk unifocal papillary <4 cm. Central ± lateral neck dissection for nodal disease.
Radioiodine (I-131)	RAI ablation for intermediate/high-risk differentiated thyroid cancer post-thyroidectomy. Thyrogen stimulation or T4 withdrawal. Dosimetry-guided or empiric dosing.
TSH Suppression	Levothyroxine to suppress TSH <0.1 mU/L for high-risk, 0.1-0.5 for intermediate, and low-normal for low-risk patients.
Targeted Therapy	Lenvatinib or sorafenib (VEGFR inhibitors) for RAI-refractory differentiated thyroid cancer. Vandetanib or cabozantinib for advanced medullary thyroid cancer. Dabrafenib + trametinib for BRAF V600E-mutant anaplastic (with pembrolizumab).
Radiation Therapy	External beam RT for anaplastic thyroid cancer. Palliation for bony metastases.

Follow-up Protocol

✔ Thyroglobulin + anti-Tg antibodies + neck ultrasound every 6-12 months. Whole body scan post-RAI.

IMPORTANT DISCLAIMER This cancer treatment guidelines document has been prepared by Dr. Harshvardhan Atreya for educational and clinical reference purposes. The information presented is based on current evidence-based guidelines including NCCN, ESMO, ASCO, and other major oncology societies. Treatment decisions must always be individualized based on: • Patient's performance status, comorbidities, and preferences • Tumor molecular/pathological characteristics • Institutional resources and expertise • Latest published evidence and guideline updates This document does not replace clinical judgment or professional medical consultation. Always refer to the most current guidelines for specific dosing, eligibility criteria, and protocol details.