# Clinically Important Sites

<table>
<thead>
<tr>
<th>Primary Site</th>
<th>Bone</th>
<th>Lung</th>
<th>Liver</th>
<th>Brain</th>
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<tbody>
<tr>
<td>Head &amp; Neck</td>
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<tr>
<td>Neuroblastoma</td>
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<td>Thyroid</td>
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<td>Lung</td>
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<td>Breast</td>
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<td>Ovary</td>
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<td>Cervix</td>
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<td>Testis</td>
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<td>Prostate</td>
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<tr>
<td>Kidney</td>
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<td>Wilms’</td>
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<td>Bladder</td>
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<td>Stomach</td>
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<td>Pancreas</td>
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<td>Colorectal</td>
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<tr>
<td>Melanoma</td>
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<td>Sarcoma</td>
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Bone Metastases

- Prevalence 30 – 70% of cancer patients
- Most common sites
  - Vertebra
  - Pelvis
  - Femur
  - Skull
  - Ribs
  - Upper extremity
Detection

- Bone scan
  - Sensitive but not specific
  - Require correlation with plain film

- MRI and (CT) myelography
  - Usually reserved for patients with spinal cord compression
Surgical intervention

- Pathologic fractures occur in 9% of patients
- Stabilization with IM nail or hemiarthroplasty should be considered in long bones with significant destruction in the lower extremity
- Decompression of spinal cord compression
- Consider removal of extradural bone fragments, spinal stabilization of vertebrae in healthy patients
Radiation therapy

- Effective for pain relief and increased function
  - 53% complete
  - 30% partial
Chemotherapy

- **Hormonal therapy**
  - Some effectiveness in ER+ breast and prostate CA

- **Systemic agents**
  - Bony lesions rarely respond completely

- **Bisphosphonates**
  - Significant reduction in skeletal morbidity
    - Pain, fracture, hypercalcemia
  - No increase in survival
  - Pamidronate – oral and IV
Lung Metastases

- Second most common site of metastasis
- Other important tumors:
  - Melanoma
  - Sarcoma
- Detection
  - CXR – sensitivity – 52%
  - CT – sensitivity – 82%
Surgical resection

- Consider:
  - Number of mets (usually one)
  - Adequate disease-free interval
  - No other mets
  - Anatomic considerations
  - Primary tumor
    - Renal cell, thyroid, colon, osteogenic and soft-tissue sarcoma
Radiation therapy

- May be use for relief of hemorrhage, obstruction, pain
- Small fields and short treatment
Chemotherapy

- Curative in germ cell tumours, choriocarcinoma and Hodgkin’s disease
- Other responsiveness depends on the primary tumor
- Can be used intrapleurally
Liver Metastases

- GI tumors are most common
- May present with anorexia, nausea, pyrexia, malaise and failure to thrive
Imaging

- CT
- US
Segmental hepatic resection

- Consider
  - Number of metastases
    - 5 year survival <4 lesions – 37%
    - 5 year survival >4 lesions – 23%
  - Disease free interval
    - 5 year survival <1month – 27%
    - 5 year survival >1year – 42%
  - CEA level
    - 5 year survival < 5ng/mL – 47%
    - 5 year survival > 30ng/mL – 28%
Radiation therapy

- Pain relief for diffusely enlarged, massively involved liver
- Dosage is limited by the tolerance of normal liver cells
Chemotherapy

- Hepatic arterial infusion
  - Still in clinical trials
  - Usually use 5-fluorouracil
  - Response rates of 40% to 60% recorded
Detection

- **CT**
  - inexpensive and accessible
  - Often misses meningeal involvement and skull base invasion

- **MRI**
  - Can detect tumors at 1 cm
  - Multiplanar imaging allows more accurate localization for stereotactic biopsy, resection or radiotherapy

- **PET** – differentiates tumor necrosis from radiation necrosis
Surgical resection

- Consider
  - Number of foci
  - Accessibility of the tumor
  - Histology of primary cancer
    - Used with melanoma, renal cell carcinoma
    - Used in combination with radiotherapy in NSC lung and breast CA
  - Disease free interval
- 48 month survival - 18-33% (where primary is controlled and there are no other mets)
- Should be followed by whole brain irradiation
Radiotherapy

- Symptomatic relief
  - 60-80% of patients
  - Most patients surviving 6 months have return of symptoms
  - Of patients with favourable factors – 52% survive past 6 months

- Stereotactic radiosurgery
  - Local control – 85-95%
  - More effective in radioresistant tumours
  - May combine with whole brain radiation
Chemotherapy

- Reserved for patients with select tumours with chemosensitivity (i.e. Breast and SCLung)
- Usually includes cisplatin and (etoposide, vinblastine, dacarbazine and interferons)
- Response rates 15 – 60%
- Median survival time of 6 to 11 months
- Often results in hematologic toxicity
- Use steroids to reduce swelling