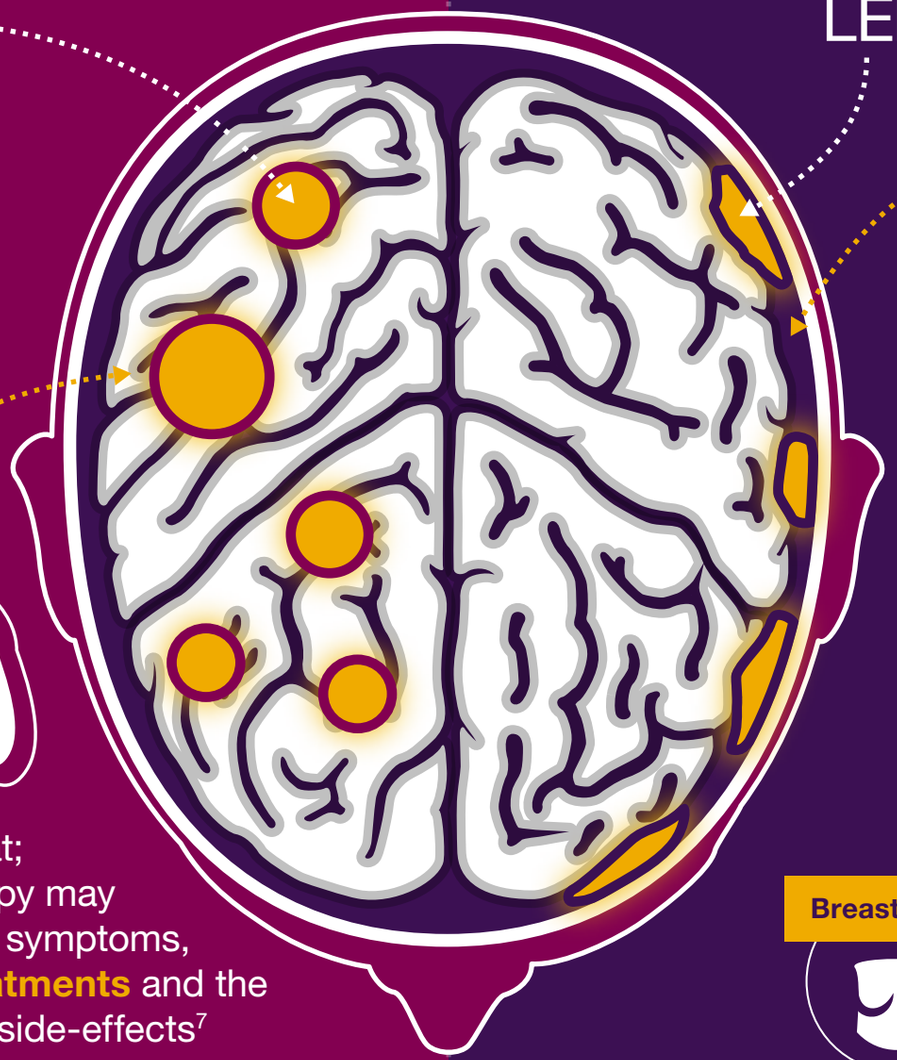
CENTRAL NERVOUS SYSTEM METASTASES

Brain metastases and leptomeningeal disease often occur at the same time and can be termed Central Nervous System (CNS) metastases, although the two conditions remain distinct.[1] In patients with epidermal growth factor receptor mutation-positive non-small cell lung cancer, CNS metastases can occur in up to 44% of patients[2], with median overall survival varying between 4.5[3] and 18 months.[2,4]

BRAIN METASTASES

is a common complication of advanced cancer **(in 20 to 40% of patients)** where the cancer spreads from the original site around the body and starts to regrow in the brain[5]

Lung is the most common type of cancer to spread to the brain.[5] For patients with lung cancer who develop brain metastases, this is often within **2.6 months** of first diagnosis of advanced cancer[6]



Brain metastases are notoriously hard to treat; whilst radiotherapy, surgery and chemotherapy may reduce tumour size and steroids may control symptoms, **metastases are rarely cured by these treatments** and the treatment options themselves cause serious side-effects[7]

LEPTOMENINGEAL DISEASE

(LM) is a rare complication of cancer in which the disease spreads to the meninges **surrounding the brain and spinal cord**[9]

LM occurs in approximately 5% of people with cancer and is usually fatal. If left untreated, **median survival is 4-6 weeks;** if treated effectively, median survival is currently 2-3 months[9]

LM is incurable and difficult to treat. Current therapy options include radiation therapy and intrathecal chemotherapy[9]

The most common cancers to spread to the leptomeninges are:

Breast (35%)[5]

Lung (24%)[5]

Hematologic malignancies (16%)[5]

Symptoms of brain metastases[7] and LM[8] include:

- **Nausea**
- **Difficulty thinking**
- **Double vision**
- **Headaches**
- **Difficulty speaking or swallowing**
- **Pain**
- **Seizures**
- **Weakness and/or lack of coordination in your arms and legs**

1: BRAINMETSBC.ORG. Leptomeningeal Metastases. Available at: http://www.brainmetsbc.org/en/content/leptomeningeal-metastases-1. Accessed November 2016. **2:** Eichler et al. EGFR mutation status and survival after diagnosis of brain metastasis in non-small cell lung cancer Neuro-Oncology. 2010;12;1193-1199 **3:** Liao et al. Epidermal Growth Factor Receptor Tyrosine Kinase Inhibitors for Non–Small-Cell Lung Cancer Patients with Leptomeningeal Carcinomatosis. Journal of Thoracic Oncology. 2015; 10(12): 1754-61 **4:** Umemura et al. Clinical outcome in patients with leptomeningeal metastasis from non-small cell lung cancer: Okayama Lung Cancer Study Group. Lung Cancer. 2012;77:134-139 **5:** National Institutes of Health. Adult Central Nervous System Tumors Treatment–Health Professional Version (PDQ®) Metastatic Brain Tumors. Available here: https://www.cancer.gov/types/brain/hp/adult-brain-treatment-pdq#link/_1167_toc Accessed November 2016. **6:** Kong XT, Alexandru D & Bota DA. Epidemiology of Central Nervous System Metastases, in Brain Metastases From Primary Tumours. Epidemiology, Biology and Therapy. Vol 1. Ed. Hayat MA. 2014. **7:** MacMillian Cancer Support. Secondary Brain Tumours. Available at: http://www.macmillan.org.uk/information-and-support/brain-tumours-secondary#155659 Accessed November 2016. **8:** Memorial Sloan Kettering Cancer Center. Leptomeningeal Metastases. Available at: https://www.cancer.gov/types/brain/hp/adult-brain-treatment-pdq#link/_1167_toc Accessed November 2016. **9:** Schneck MJ et al. Leptomeningeal Carcinomatosis. Practice Essentials. Available at: http://emedicine.medscape.com/article/1156338-overview. Accessed November 2016.

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