



Christie Clinical Outcomes

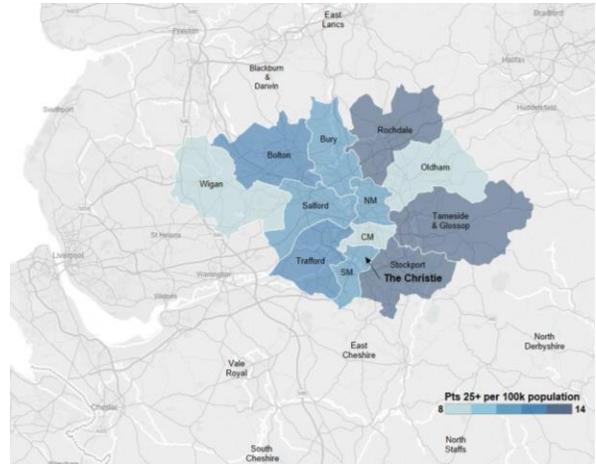
Brain and Central Nervous System

North West England Incidence and Christie Patients

Approximately 900 new cases of primary brain and central nervous system (CNS) tumours (including malignant and benign tumours of the brain, other parts of the CNS, meninges and the pituitary gland) are diagnosed each year in the North West of England¹ which represents approximately 7 new diagnoses per year per 100,000 population. The rate of brain and CNS tumour incidence is similar in the North West to England as a whole.

Referrals to The Christie

Since January 2014, 360 primary brain and CNS tumour patients aged 25 years and over have been newly referred to The Christie for treatment. The majority of these patients are residents of the North West of England and in particular around the Greater Manchester region. A small number of patients travel from outside the NW for treatment. Referral rates within Greater Manchester range from 8 per 100,000 population in Central Manchester CCG to 14 per 100,000 in Stockport CCG (Map 1). Median age of adult brain/CNS patients referred to The Christie is 62 years (Fig 1).



Map 1. Number of new Christie patients (2014) with a brain/CNS tumour (including malignant and benign tumours of the brain, other parts of the CNS and the pituitary gland) from each clinical commissioning group (CCG) per 100,000 population. Depth of colour is relative to the rate of referral for each CCG.

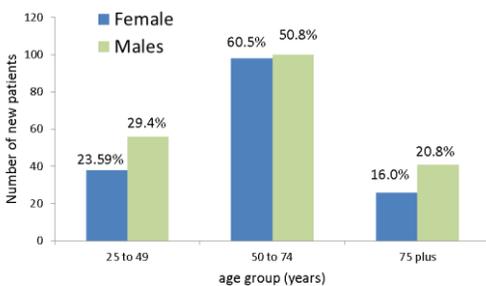


Fig. 1. Age distribution of adult brain and CNS tumour patients (2014-2015 new presentations). Numbers above bars are percentage of cases in each age group for each gender.

Types of primary brain and CNS tumours

Brain and CNS tumours are classified by the type of cell from which they originate and ascribed a World Health Organisation (WHO) grade. The WHO grade is a composite measure which reflects the degree of alteration of cells in a tumour compared with normal cells as well as the clinical behaviour of the tumour. There is no staging system for Brain/CNS tumours. Although there are some differences between tumour types, grade I and II tumours are considered low grade and are typically slow growing. Some grade II tumours (especially gliomas) can over time become higher grade. Without treatment grade III and IV tumours are considered malignant and can recur and grow rapidly.

The majority of brain/CNS tumour patients referred to The Christie have one of the glioma tumour types; pilocytic astrocytoma (WHO grade I), low grade astrocytoma or oligodendroglioma (both grade II), anaplastic astrocytoma or oligodendroglioma (both grade III) or glioblastoma (grade IV) (Fig 2). Other low grade gliomas are mixed gliomas (e.g. low grade oligoastrocytoma) and ependymomas. Other low grade tumour types include meningeal tumours (meningiomas and haemangioblastomas) and pituitary gland tumours.

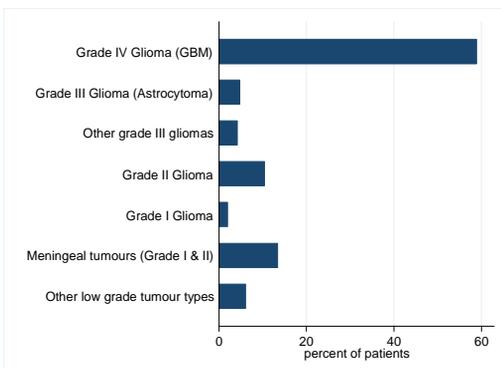


Fig. 2. Distribution of tumour type and grade for new patients (2014-2015) referred to The Christie.

Almost 60% of patients referred to The Christie have a glioblastoma (GBM) which is the most common and aggressive primary malignant brain tumour in adults. Median age of GBM patients is 67 years.

¹ From Office for National Statistics 2012

Performance Status and Comorbidities

All Christie patients are assessed for performance status using the ECOG scale of 0 (patient is fully active) to 4 (completely disabled by poor health). Patients are also assessed for comorbidities measured on a scale of 1 (no comorbidity) to 4 (severe comorbidity). Comorbidities are conditions that a patient has, other than cancer, that can impact on treatment and outcome. The majority of brain and CNS tumour patients have performance status of 0 or 1 (Fig 3) with patients who undergo surgery being more likely to have a better performance status. Fifty-six percent of patients have no comorbidity, 28% have mild comorbidity, 13% have moderate comorbidity and 3% have severe comorbidity.

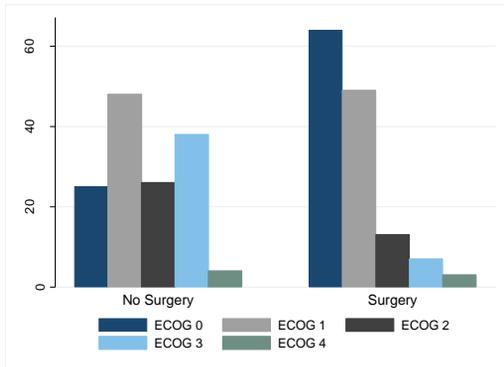


Fig. 3. Performance status for brain and CNS tumour patients for patients with and without surgery.

Treatment at The Christie

The type of treatments offered to a patient will be determined by their diagnosis and other factors such as general health. The majority of patients referred to The Christie receive either external beam radiotherapy and/or chemotherapy, with or without surgery (Fig 4).

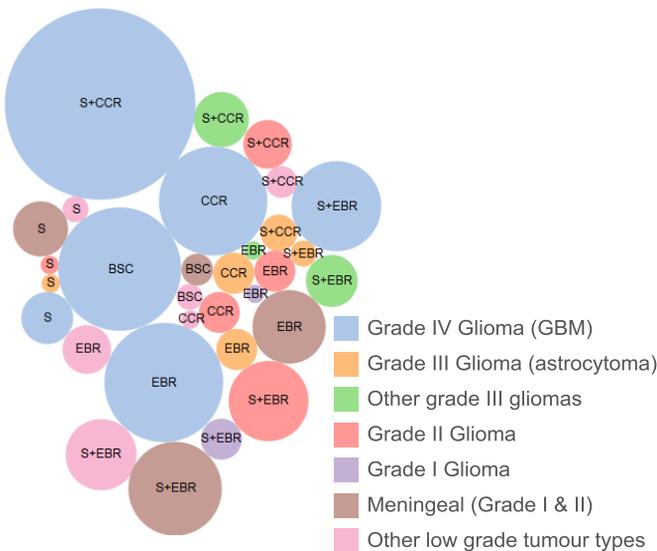


Fig. 4. Treatment by tumour type. Size of circle represents number of patients in each group. CCR = concurrent chemo-radiotherapy, EBR = external beam radiotherapy, S = surgery. No surgery includes biopsies and no surgical intervention. BSC = Best supportive care.

Survival Outcomes

Outcomes are dependent on tumour type, grade, age at diagnosis, and the patient's performance status. These factors should be taken into account when interpreting outcomes.

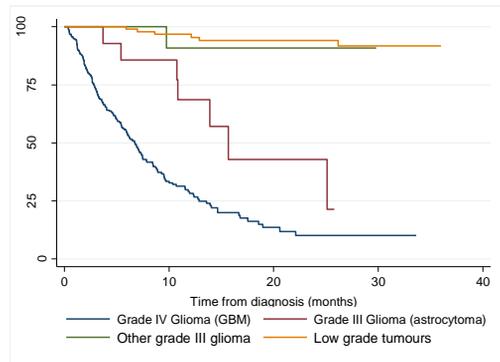


Fig. 5. Survival estimates for brain and CNS tumour patients referred to The Christie by tumour type, diagnosed 2013 - 2015. Follow up is to the end of June 2015.

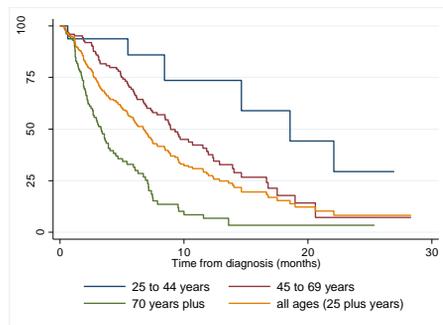


Fig. 6. Survival estimates for adult GBM patients referred to The Christie diagnosed 2013 – 2015 by age group. Follow up is to the end of June 2015.

Survival varies by tumour type with GBM having the worst outcomes (Fig 5). Median survival for GBM in England is 6.1 months² with one year survival estimated at 28.4%. Median survival for GBM patients at The Christie is 6.9 months. One year survival is 27.4% (95% confidence intervals 20.6%-34.5%).

Survival also varies by age, younger patients having better outcomes than older patients. Median survival for GBM in England ranges from 16.2 months for younger adults (aged 20 to 44 years) to 3.2 months for patients aged 70 years and above². At The Christie median survival ranges from 18.6 months for patients in the youngest age range to 3.3 months for patients aged 70 years and above (Fig 6).

²Brodgelt et al (2015)

For more information please contact the Clinical Outcomes Unit at clinicaloutcomesunit@christie.nhs.uk